The UK SPA network: its scope and content

JOINT NATURE CONSERVATION COMMITTEE

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Volume 2: Species accounts

Editors
D.A. Stroud, D. Chambers, S. Cook, N. Buxton, B. Fraser, P. Clement, P. Lewis, I. McLean, H. Baker & S. Whitehead

with the assistance of
S. Brocklehurst, A.F. Brown, S. Buckton, N. Burton, N. Clark, C. Easton, R. Johnston, C. Hall, N. Hodgetts, A. Law, J. Kirby, J. Miles, B. Miller, M.A. Ogilvie, J. Robinson, H. Riley, T. Salmon, R. Saunders, A. Sim, P. Stuttard, M.L. Tasker, R. West, R. Weyl, P. Whitfield, R. Woodburn & J. Young

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
PE1 1JY
UK

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Appendix 5

Data handling issues

As explained in section 2.3, a large number of data issues associated with data sources and qualifying species arose during the production of this review. These are explained in more detail in this Appendix.

A5.1 Defining 'migratory'

This review assesses site-based conservation requirements for all migratory birds regularly occurring in the UK. The following definition of the term 'migratory', given in the Bonn Convention on the Conservation of Migratory Species of Wild Animals (1980), Article I, section 1(a) has been used:

"Migratory species" means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries.

The British Trust for Ornithology was asked to advise on the application of this definition to the UK avifauna. An analysis of ringing data (supplemented by other sources) was used to assess, at different times of the year, the proportion of species moving less than 20 km (*i.e.* a distance that can be regarded as being essentially sedentary) (Clark & Blair 1999). This information was interpreted in the light of an understanding of the likely effects of differences in reporting rates on the species. Thus, some ringed birds, such as those that are quarry species, are more likely to be recovered than those where rings are less likely to be found and reported (*e.g.* many of the smaller passerines). For those species which have a component of their breeding population which winters within 20 km of the breeding area, assessments have been made as to whether the population is truly sedentary, or whether at least a section of the population makes a regular season movement. Seabirds have generally been considered to cross national boundaries if they spend extensive periods at sea, even if they do not land in other countries (*e.g.* Manx Shearwater).

Rarities as defined by the British Birds Rarities Committee (BBRC) have not been included. [These species are labelled "R" in *The Birdwatcher's Yearbook 1998*, pp. 221–246, see Pemberton 1998].

A5.2 Data sources

A5.2.1 Non-breeding waterbirds

Counts collated by the Wetland Bird Survey have been the primary data source for non-breeding waterbirds. Generally, site assessments have been made using five-year peak mean counts[1] for the period 1991/92 to 1995/96 (Cranswick *et al.* 1997). Since the commencement of the review, more recent WeBS data have become available (Waters *et al.* 1998; Cranswick *et al.* 1999; Pollitt *et al.* 2000). These have

1 Calculated by averaging the peak count in each year for a particular species at an individual site, normally using the most recent five years' data.

not been used, however because of the complexity of handling such a large amount of data and the desire to take a 'snap shot' in time. In order to make valid comparisons between sites, all the data used refer to the same period, and have not been selectively updated for individual sites.

Whilst 1991/92–1995/96 data have been used to evaluate the national context of sites for the purposes of this review, SPA classification has continued during its production. For these classifications, country agencies have used the most recent WeBS data. Citations for recently classified sites and totals presented here for the same sites may, thus, differ slightly. Such data discrepancies can also occur for species other than waterbirds (see section A5.6).

When assessing the relative numerical importance of individual sites, it is appropriate to use the five-year peak mean for any particular species on the site. It is *not* appropriate, however, to sum these individual site totals to assess total numbers on several sites, or the overall proportion of a population contained within a species' SPA suite. This is because the peak count of a species on any site may occur in any month of the non-breeding season (generally November to March). Therefore, individual birds that move between sites may be counted on one site in November, another in January and a third in March.

It should be noted that the data presented in WeBS annual reports (Cranswick *et al.* 1999) relate to WeBS count units. These WeBS sites are usually made up of a number of count sectors, and are often larger in extent than SPAs with the same name. Consequently, although the data used in the review match SPA boundaries as closely as possible, they may differ from published data for apparently the same sites. WeBS is currently reviewing and revising data collection to ensure that boundaries of count units match classified SPAs as closely as possible.

A5.2.2 Rare breeding birds

Data on rare breeding birds have been taken from annual unpublished reports provided to JNCC by the Rare Breeding Birds Panel for the period 1990–1995. The Panel in turn receives data from a range of other specialist groups who undertake monitoring in particular areas or of particular species, for example the Welsh Kite Trust.

Summaries of the Panel's data are published annually (*e.g.* Ogilvie & the Rare Breeding Birds Panel 1998, 1999a). The detailed locational information in the unpublished reports supplied to JNCC has allowed review of SPA provision for Avocet, Marsh Harrier and several other rare bird species.

The review presents an assessment of the protection requirements for a number of species with small UK populations. The potential risks associated with publishing details of sites used by these species were considered when undertaking this review. It was concluded, however, that the risks were minimal in comparison with the very significant benefits generated.

A5.2.3 Breeding seabirds

Data from the JNCC/RSPB/Seabird Group's Seabird Colony Register have been used. These comprised the best-available, whole colony counts for the period 1993–1997 or earlier. These data have been supplemented with additional census data for some sites provided by country agencies (especially in Scotland) and/or as the result of more recent surveys of particular species.

Assessing important sites for terns is always problematic given that these birds can regularly move between a number of alternative breeding areas for little apparent reason. Birds can then later return to formerly used sites. Some sites that were known to have supported important numbers of terns in the past, held lesser numbers during the period of the review. Generally, these sites have been retained within the species' SPA suites on the expectation that such low numbers are merely a reflection of short-term shifts in site selection.

A5.2.4 Other birds

Data for moorland breeding waders have normally been taken from the varied national and site-specific surveys undertaken by the country agencies and RSPB (Brown 1991).

Site-related data on birds of prey have generally resulted from surveys undertaken by the Raptor Study Groups, as well as specific national surveys (*e.g.* Sim *et al.* 1999, in press).

In the last decade, a large number of surveys have been undertaken by country agencies to obtain site-related data for classified and possible SPAs. This has been a major source of information for many sites.

A5.3 1% population thresholds and their application

The 1% criterion (Atkinson-Willes 1976; Scott 1980; Atkinson-Willes *et al.* 1982) has been used for many years to identify wetlands of international importance for their waterbird populations, especially those that should be brought within the list of sites designated under the Ramsar Convention. The criterion identifies sites as being of international importance if at least 1% of the waterbirds of a particular migratory flyway or population regularly make use of a wetland at any time during their annual cycle. This simple and globally applicable criterion, to which other criteria have since been added, has played a major role in the identification and listing of sites under the Ramsar Convention.

There is no fundamental biological reason to take 1% of a population as the threshold level for establishing international importance for a site. However, this percentage has been found by long experience and international evaluation to be useful in giving an appropriate degree of protection to populations and in the definition of ecologically appropriate sites. The criterion has, therefore, gained worldwide acceptance and is widely used in the identification of sites of international importance for taxa other than waterbirds (European Commission 1991), and for site designations or site inventories other than those related to Ramsar (*e.g.* Grimmett & Jones 1989). In particular, it has been frequently used to identify sites for listing under the Birds Directive both in the UK (Stroud *et al.* 1990a; Pritchard *et al.* 1992) and in other European countries (van Vessem & Kuijken 1986; Rasmussen 1999; van den Tempel & Osieck 1994; Way *et al.* 1993).

Populations of waterbirds, as with other species, are constantly changing. They are also imprecisely known (Rösner 1998). In applying the 1% criterion, it would clearly be impractical to attempt continuous tracking of exact population levels. For only a few species (mainly some goose populations) are there good annual assessments of the size of international or biogeographic populations. Accordingly, the approach adopted by the Ramsar Convention (formalised by Resolutions C.5.9 in 1993 and C.6.4 in 1996) has been to use specific 1% threshold values. These are nominal values to be used in applying the 1% criterion for a period (nine years – unless significant population change occurs within that period – Rose & Stroud 1994; Stroud 1996). In effect, the 1% threshold acts as a 'bench-mark' that is stable in the medium term and does not involve attempting to track the yearly changes in the numbers of individuals in the population. As such, 1% thresholds can be considered 'nominal' in the context of site selection rather than an exact proportion of a species' population.

Initial thresholds for wildfowl in the 1980s were suggested by Atkinson-Willes *et al.* (1982) – updated by Pirot *et al.* (1989), and for waders by Smit & Piersma (1989). More recently, reassessments of population sizes for European goose populations have been made by Madsen *et al.* (1999) and for other Anatidae populations by Scott & Rose (1996). The population sizes (and hence recommended 1% thresholds) of wader populations using the East Atlantic flyway are currently being re-assessed (Davidson 1998; Kirby *et al.* in prep.). Although this exercise is likely to lead to significant changes in international 1% thresholds for some wader populations, the final revised thresholds were not available in time for use in this SPA review.

Since 1994, Wetlands International has drawn together a regular global compilation of waterbird population estimates and recommended 1% thresholds. This is published every three years to coincide with the Conferences of the Parties to the Ramsar Convention. These Waterbird Population Estimates (Rose & Scott 1994, 1997 – also reprinted in the annual UK WeBS reports *e.g.* Cranswick *et al.* 1999) have been used as the source of 1% thresholds for UK wildfowl and wader populations assessed in this SPA review (unless otherwise stated in section 4.2.1).

A5.4 Assessment of population coverage within SPA suites

For the purposes of assessing coverage of breeding species in the SPA network, SPA suite totals have been added together.

For species in the non-breeding season, site assessment has been undertaken using peak mean counts. It is not appropriate to sum these peak mean counts, however, since this may result in double counting. This is because the peak count of a species on any site may occur in any month of the non-breeding season (generally November to March). Double counting is particularly problematic with species that regularly move between a number of sites in the course of one season. For example, Pink-footed Geese arrive in north-east Scotland in autumn and move progressively south through Scotland to England as winter progresses. Peak numbers occur in Norfolk in mid-winter, after which birds move north again, following the phenology of spring grass growth, before finally departing to Iceland from north-east Scotland in May (Fox *et al.* 1994a). The same birds can thus appear within counts made at Loch of Strathbeg in early autumn, at sites in south-west Lancashire in late autumn, in north Norfolk in mid-winter, and in the Cromarty Firth in spring. The simple addition of peak mean counts of each SPA holding Pink-footed Geese indicates that the network holds 162% of the total international (Icelandic/Greenlandic) population of Pink-footed Geese – *i.e.* many more birds than there are in the world!

In order to avoid double counting, totals have been assessed across the network in one particularly month – generally January. The use of January counts has several advantages. January is usually the month in which peak numbers of waders and wildfowl occur in the UK and is also the month in which greatest coverage of sites is achieved in the UK. It coincides with International Waterbird Census organised by Wetlands International (Delany *et al.* 1999), and so permits direct comparison of UK populations with international population totals. Furthermore, January is normally the period of the winter in which there is least population movement.

There are a few cases where months other than January have been used to obtain suite totals:

- Canada/Greenland Light-bellied Brent Goose, where site totals have been used from October (the month of maximal occurrence on Northern Irish sites prior to dispersal in mid-winter to the Irish Republic – Ó Briain & Healy 1991);
- Bean Goose, Icelandic Greylag Goose and Iceland/Greenland Pink-footed Goose, where site totals have been used from November (the month of co-ordinated national grey goose surveys which provide most complete census coverage – Hearn 1988);
- Greenland Barnacle Goose, for which many remote, off-shore sites are not subject to annual monitoring. For this population the site totals from the co-ordinated aerial census of March 1994 have been used (Delany & Ogilvie 1994) complemented by unpublished data for Islay SPAs provided by SNH;
- Greenland White-fronted Goose for which the site suite includes both feeding sites and roost sites used by the same birds at different times of the day. For this population, a suite total has been derived from the most appropriate site totals collected by the Greenland White-fronted Goose Study's annual co-ordinated census (Fox & Francis 1998);
- For a number of species, the month of peak occurrence in Britain and Ireland occurs either earlier or later in the winter than January (Cranswick *et al.* 1997). Counts from other months have, therefore, been used for Coot, Oystercatcher and Knot (November); Gadwall, Teal and Mallard (December); and Goldeneye, Grey Plover and Curlew (February).

Finally, as a consequence of the large volume of migration through the UK, suite totals for three wader species – Ringed Plover, Sanderling and Redshank – are given for passage periods in addition to the January figures. Owing to turnover, these estimates of passage totals are likely to be minima, but serve to indicate the particular significance of the SPA network for these waders during these periods.

A5.5 Qualifying species

A5.5.1 Resident qualifying species

The assessment of populations of seasonal migrant species has been relatively straightforward because data have normally been available from specific surveys undertaken at important sites in the relevant season. For example, non-breeding waterbirds are counted by WeBS in winter, whilst summer migrants such as Stone Curlew or Osprey are monitored during the breeding season.

A small number of species – generally those listed in Annex I of the Birds Directive – are resident on sites year-round. For example, Fair Isle Wren, Dartford Warbler, Capercaillie and Scottish Crossbill. For these species, population monitoring usually occurs only in the breeding season. Accordingly, information for these species has been presented for the season in which best data exist. Lack of data (or absence of a seasonal species account in Appendix 6) in other seasons does not mean that the provisions of Article 4 do not apply for these species at other times of year. Clearly, these birds depend on the identified SPAs all year round, but in order to simplify data presentation separate summer and winter accounts have not been presented here.

Some species, such as the Chough, remain resident in winter on breeding areas whilst also using additional sites in the non-breeding season for feeding or roosting in a complex ecology (Bignal *et al.* 1989; Bignal *et al.* 1997). Different areas and habitats are used variably by different components of the population at different times of the year (Bignal & McCracken 1996). The additional needs have been highlighted through separate SPA suites for both summer (species account A6.102a) and winter (species account A6.102b), although many of the sites are the same. Another example is the Hen Harrier, with some birds remaining on upland breeding sites during the winter, whilst others move to coastal or lowland areas.

In all these and similar instances, the provisions of the Habitats Regulations apply throughout the year, with no implied seasonality.

A5.5.2 Seasonal occurrence

A number of species occur on SPAs in large numbers in one season (for instance during migration periods) but in lesser numbers at other times of year (*e.g.* mid-winter). This applies particularly to migrant waders, whose numbers are well monitored during the winter period (October – March), but are less well known during the spring and autumn passage periods (when perhaps even larger numbers may be present). The inclusion of a site within a species suite ensures consideration of the conservation needs and ecological requirements of the relevant species at all times of year.

A5.5.3 Reassessment of qualifying species at a site

Qualifying species are those for which an SPA qualifies for classification under Article 4 of the Birds Directive. Conservation management objectives for these species at each relevant SPA have been (or will be) prepared by the country agencies.

Previous national reviews (Stroud *et al.* 1990a; Way *et al.* 1993), and earlier lists of qualifying sites, highlighted the potential levels of population protection provided by the site network as a whole, rather than looking at the requirements of specific qualifying species. Accordingly, some citations for sites classified some years ago may list species that no longer meet the current qualification guidelines. This review has, therefore, modified these citations in accordance with the current guidelines to give a clear overview of the species for which each site is classified as being of European importance, as well as giving a clear view of the combined population protection provided by the overall SPA suites for those species.

Changes have been made to qualifying species on some classified SPAs for one or more of the following reasons:

(1) Numbers of a regularly occurring species have increased in recent years above qualifying levels;

(2) Numbers of individuals on a site have declined below qualifying levels owing to external factors other than those related to site management (*e.g.* long-term contraction of range);

(3) Numbers of individuals on a site have remained stable, but the proportional importance of those numbers have declined (below 1%) owing to:

- an increased size of the biogeographic reference population (either as a true increase or as a result of better (more comprehensive) survey information; or
- a change in the geographic extent (and hence increase in numeric size) of the biogeographic reference population (*i.e.* re-definition of the reference population);

(4) The size of a species' population on a site has remained unchanged, but the policy on listing of species under selection guidelines has changed (for example, species that are now considered sedentary and do not, therefore, require SPA classification – see Appendix 5.5);

(5) Changes to the species listed on Annex I of the Directive. For example, Smew and Bar-tailed Godwit were added to Annex I following the accession of Finland, Sweden and Austria in 1995 (which has resulted in the lowering of the threshold for qualification for these species under the SPA guidelines from 1% of international populations to 1% of national populations); and

(6) Clarification of unclear wording or terminology used on some early site citations.

Most of these changes are necessary because of the dynamic nature of bird populations and an ever-growing understanding of them. Not only are population sizes changing, but our knowledge of wider biogeographic population sizes is also improving. No review can, therefore, be 'the final word'. This review provides the best assessment of the protection needs of species, developed from data from the first half of the 1990s.

A5.6 Data used in recent SPA classifications

During the period of this review, the UK has continued its active programme of SPA classification. In some instances, citations and Natura 2000 data sheets supplied to the European Commission contain site-based data that differ from those presented here. This is because the current review presents a 'snap-shot' assessment of the UK SPA network in the mid-1990s. In contrast, citations and data-sheets used to support classifications must necessarily reflect the most recent information, such as data from site surveys or other monitoring undertaken in the late 1990s (*i.e.* outwith the period of this review).

The list of qualifying species at recently classified SPAs will, however, be identical to the list of qualifying species presented for those same sites in this review. Ultimately, the list of qualifying species in the UK SPA network will be identical to that identified in this review.

Appendix 6

Species accounts: presentational issues

This Appendix presents background information on the protection requirements of two groups of birds:

- For each species for which at least one SPA has been selected, there is an individual species account (section A6.1–A6.103). These accounts summarise population status and size, distribution, and population structure and trends. They also summarise the reasons why the particular suite of SPAs was selected for that species. A map of the UK shows the location of selected sites and a table summarises population data at each SPA within the species' suite. Sections A6.104 and A6.105 outline those sites that have been selected as a consequence of their holding, respectively, internationally important assemblages of waterbirds and breeding seabirds.
- For a number of migratory and/or Annex I species, no SPAs have been selected. The reasons for these decisions are outlined in section A6.106.

Each species account is presented in a standard format.

- Section 1 summarises the biological, legal and conservation status of the species (or sub-species or population) in the UK.
- Section 2 presents population size and 1% threshold information. It shows the total number of individuals occurring within the SPA suite for the species concerned and also expresses this number as a proportion of relevant national and international populations. (Relevant international/biogeographic populations are defined in Appendix 4, and sources for this information given). Note that it is possible to have large numbers of a species occurring within the biogeographic entity of the island of Ireland, although – through features of dispersal – low numbers in Northern Ireland (and thus limited occurrence within SPAs there).
- Section 3 briefly summarises the distribution of the species at global, European and national scales and outlines the taxonomic status of those birds occurring in the UK with respect to the wider context of the species. It also notes aspects of the ecology of the species that are relevant to issues of site-related conservation. Distributional information, where not cited, is taken from *The Birds of the Western Palearctic* (Cramp & Simmons 1977, 1980, 1983, 1985), *The Concise Birds of the Western Palearctic* (Snow & Perrins 1998), the *Handbook of the Birds of the World* (del Hoyo *et al.* 1992, 1994, 1996) as well as from the *EBBC European Bird Atlas* (Hagemeijer & Blair 1997).
- Section 4 outlines the presence of different populations of the same species that may be present in the UK and provides information on corresponding population sizes and trends in these, generally over the last 30–40 years.
- Section 5 summarises the number of SPAs selected for each species. It also highlights relevant wider conservation measures being undertaken for the species, where those measures are specifically targeted to that species' conservation requirements. In particular, it notes the implementation of national and international action/biodiversity plans by the UK.

- Section 6 presents the process of site selection used to develop the species' SPA suite. In particular, it presents justification for any sites selected under Stage 1 of the guidelines but not subsequently selected under Stage 2. It also presents the reasoning for the selection of 'additional' SPAs under Stage 1.4.
- The final section of the account presents a map showing the location of sites within the species' SPA suite and a table listing the sites selected, the total number of birds per site, the proportions of national and international populations present on each site and the guideline by which each site was selected. Note that for non-breeding waterbirds, the total presented against each site is (generally) the five year peak mean count, whilst the suite total presented at the bottom of the table derives from a 'snapshot' assessment of the suite in January or another relevant month. This is in order to ensure there is no double-counting of birds through the use of inappropriate statistics (see Appendix 5, section A5.4 for further information).
- Each species account includes a map showing the location of selected sites within the SPA suite for the species concerned. Sites for species selected under Guidelines 1.1, 1.2 and 1.4 are indicated by a diamond symbol (◆). Sites where the species forms an important component of an assemblage identified under Guideline 1.3 are shown by a square (■). Note that the symbols used are not proportionate to the size of the site. Maps in Appendix 7, sections A7.3–A7.23 give the locations of each site, and show boundaries of classified sites or the indicative size of proposed sites.

Note that in the species accounts and elsewhere, the term 'international population' is used synonymously to refer to the relevant biogeographical population of the species concerned. It does not refer to the total world population for which the terms 'global population' or 'global numbers' are used where they are relevant.

A6.1a Red-throated Diver *Gavia stellata* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✓	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✓	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✓	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	935	9	395 (42% of GB population)
Ireland	<10	1	No SPAs selected in Northern Ireland
Biogeographic population	7,158	71	395 (6% of the biogeographical population)

GB population source: Gibbons et al. *1997*
Ireland population source: Gibbons et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Red-throated Diver has a northern Holarctic distribution. Its breeding range is circumpolar, and Red-throated Divers occur in all arctic countries, generally breeding south to about 60 °N. In a few parts of the global range (*e.g.* Labrador, Sakhalin Island and the UK the range extends further south to about 50–55 °N). The species is monotypic; that is, there are no distinct sub-species.

In Europe, it breeds across northern Russia, Finland and Scandinavia to Iceland, as well as in north-west Britain and Ireland. In Britain, the traditional distribution occurs in north and west Scotland with strongholds in Shetland, Orkney, the Western Isles, Sutherland and Wester Ross (Gibbons *et al.* 1993). Since the reduction of persecution sustained during the 19th century, the population has expanded into Islay, Jura, Perthshire and south-west Scotland.

Small waterbodies within areas of open moorland are the usual breeding habitat but nesting may also occur in lightly forested areas. In some areas, several pairs may nest close together (typically where there are several smaller waterbodies in an area), hence breeding density may be high in some localities. For coastal pairs, most of the feeding during the breeding season is carried out in nearby inshore waters, little being done on the nesting lochs, whilst inland breeding pairs feed mainly in large, valley bottom lochs.

4. Population structure and trends

The biogeographic population used in this review is the European breeding population (Hagemeijer & Blair 1997) consisting of 7,158–10,502 pairs. In western Europe, Norway is estimated to have the largest population of about 3,000 pairs, followed by Iceland (Hagemeijer & Blair 1997) and the UK which supports about 935 breeding pairs (Stone *et al.* 1997). The UK holds about 30% of breeding Red-throated Divers in the EU.

The species is strictly territorial but it does tend to aggregate – although this is typically a consequence of the aggregation of suitable nest sites. On open moorland, Red-throated Divers may breed on a pool smaller than 100 m^2, but where groups of pools exist, such as in the peatlands of the UK, greater densities of birds are found (Batten *et al.* 1990, Hagemeijer & Blair 1997). Nesting on such small lochans is unusual however, and most breeding sites are between 0.1–10 ha in extent. No major changes in range have been recorded in Europe other than a decreased abundance in Fennoscandia at the turn of the century from which the population has not significantly increased after receiving legal protection (Hagemeijer & Blair 1997). In the UK, after the cessation of persecution at the end of the 19th century, there appears to have been a steady recovery of the population, especially in the south of the range (Batten *et al.* 1990). There is some evidence to suggest a 30% decrease from 1,350 pairs in 1980s to 945 pairs in 1994 (Gibbons *et al.* 1993, 1997) but as counting methods were not strictly comparable throughout, this must be treated with some caution.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Red-throated Diver supports, on average, 395 pairs. This amounts to about 42% of the British breeding population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland, and the suite contains about 6% of the international population (numbers in the UK are small in comparison to the larger numbers in Scandinavia). This total is contained within 10 sites (Table 6.1a.1) for which Red-throated Diver has been listed as a qualifying species.

6. Classification criteria

All 13 Red-throated Diver sites in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and ten of these sites were selected after consideration of Stage 2 judgements. The largest, highest-density sites within the core range of Outer Hebrides, Orkney and Shetland were included. Sites outside this area are of particular significance in maintaining range. Three sites in the main core of the range in Shetland (West Burrafirth; Fetlar; and Blackpark & Gutcher, Yell) were not selected under Stage 2 since these areas were either the smallest and/or had lower densities than the other selected sites.

All sites included within the suite have a high degree of naturalness, comprising blanket bog, wet and dry heath interspersed with oligotrophic pools, lochans and lochs. The sites are spread through the British breeding range, from Rum in the south to Hermaness, Saxa Vord and Valla Field in the north of Shetland, and including sites in the Outer Hebrides, northern mainland Scotland and the Orkneys.

Most sites selected are multi-species SPAs, important for a range of other birds, although Otterswick and Graveland in Shetland has been selected solely for this species.

Specific data on productivity are only available for sites on Rum, but as far as can be ascertained, the sites selected show normal levels of breeding success. Many of the sites have a very long recorded history of occupancy, especially in Shetland (Gomersall 1981, 1982; Johnston 1999), Orkney (Berry 1985; Booth 1984) and the Outer Hebrides (Harvie-Brown & Buckley 1888).

Consideration was given to additional sites under Stage 1.4 in Argyll in the very south of the range in Scotland, since this is also the edge of the world range. No sites were selected here, however, since densities in Argyll are very low (Gibbons *et al.* 1993).

Distribution map for breeding Red-throated Diver SPA suite

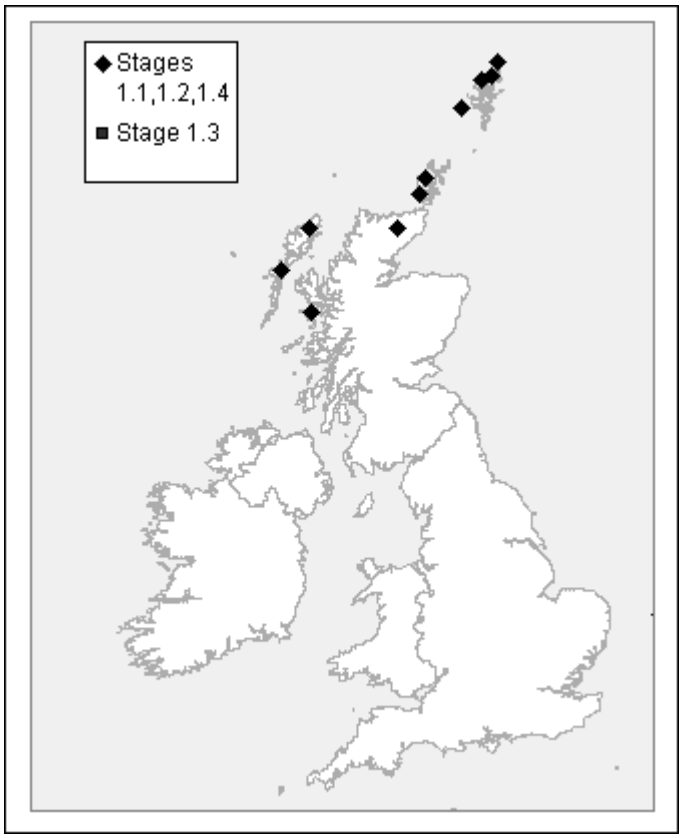


Table 6.1a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	89	1.3	9.5	1.1
Foula	11	0.2	1.2	1.1
Hermaness, Saxa Vord and Valla Field	28	0.4	3.0	1.1
Hoy	56	0.8	6.0	1.1
Lewis Peatlands	60	0.8	6.4	1.1
Mointeach Scadabhaigh	48	0.7	5.1	1.1
Orkney Mainland Moors	15	0.2	1.6	1.1
Otterswick and Graveland	27	0.4	2.9	1.1
Ronas Hill – North Roe and Tingon	50	0.7	5.4	1.1
Rum	11	0.2	1.2	1.1
TOTALS	395	5.6%	42.2%	

A6.1b Red-throated Diver *Gavia stellata* (non-breeding)

1. Status in UK

See section A6.1a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	4,850	50	88 (2% of GB total)
Ireland	1,000	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	75,000	750	88 (0.1% of biogeographic population)

GB population source: Danielsen et al. *1993*
Ireland population source: Lack 1986
Biogeographic population count source: Rose & Scott 1997

3. Distribution

In the non-breeding season, Red-throated Divers move south from their arctic and northern breeding areas to winter in temperate and sub-tropical marine areas. They occur around the coasts of the Northern Pacific and North Atlantic Oceans as well as in the Black, Caspian and north Mediterranean Seas (Cramp & Simmons 1977). Wintering Red-throated Divers are found along most of the coasts of north-west Europe including the Atlantic fringes of the UK, Ireland and Iceland. They especially occur in the southern North Sea, with particular concentrations in the international Wadden Sea and the Dutch Delta area (Stone *et al.* 1995). Those occurring in north-west European waters in winter include not only breeding birds from Russia and Europe, but probably also birds that breed in Greenland.

In the UK, the species is associated with inshore waters, often occurring within sandy bays, firths and sea lochs, although open coastline is also frequently used (Skov *et al.* 1995; Stone *et al.* 1995). The 1981/2–1983/4 winter atlas (Lack 1986) found the distribution to be fairly even along the east coast, with perhaps slightly fewer in the south compared to the north. Around western coasts the species is less abundant and has a patchy distribution, though it is still common, especially off western Scotland (Moser *et al.* 1986; Stone *et al.* 1995). Notable concentrations have been recorded in Cardigan Bay, the Moray Firth, the Clyde and Forth Estuaries, the Aberdeenshire coast, the Suffolk/Essex coast, as well as close to Tiree (Moser *et al.* 1986; Barrett & Barrett 1985; Pollitt *et al.* 2000).

4. Population structure and trends

In the non-breeding season, the biogeographic population (Europe/Greenland) is estimated to be 75,000 individuals (Rose & Scott 1997) with about 4,850 of these occurring in UK waters (Danielsen *et al.* 1993.). Little information is available on changes to either the British or European wintering numbers (Cranswick *et al.* 1999) as there is poor winter monitoring.

Enhancements to monitoring provision are currently being planned at both national and international scales.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's terrestrial SPA suite for Red-throated Diver supports, on average, 88 individuals. This amounts to about 1.8% of the British and 0.1% of the international populations. Within an all-Ireland context, there have been no terrestrial SPAs selected in Northern Ireland. The

suite amounts to one site (Firth of Forth – Table 6.1b.1) at which Red-throated Diver has been listed as a qualifying species.

6. Classification criteria

Most sites supporting non-breeding Red-throated Divers in the UK (Pollitt *et al.* 2000) are marine, with birds occurring offshore. Accordingly, these sites have not been included within this review (see section 2.3 outlining scope of review). Only one terrestrial site supporting more than 1% of the national total in close inshore areas was identified. This was considered under Stage 1.1, and selected after consideration of Stage 2 judgements.

Distribution map for non-breeding Red-throated Diver SPA suite

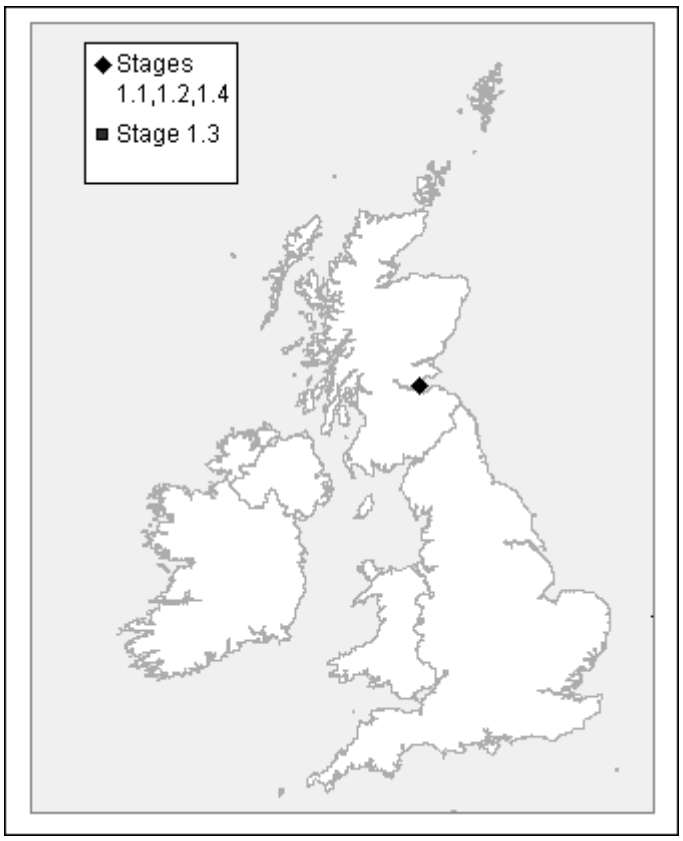


Table 6.1b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Firth of Forth	88	0.1	1.8	1.1
TOTALS	88	0.1%	1.8%	

A6.2 Black-throated Diver *Gavia arctica* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	155	2	95 (61% of GB population)
Ireland			
Biogeographic population	19,196	192	95 (0.5% of international population)

GB population source: Stone et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Black-throated Diver has a northern Holarctic distribution. Its breeding range is virtually circumpolar, extending from the UK in the west, through Russia and North America to Baffin island in the east. The species does not breed in Greenland, Iceland or Svalbard, however. Breeding occurs from the high arctic south to about 55°N, although in central Asia the range extends further south to about 42°N, where its occurrence is patchy (Cramp & Simmons 1977; Batten *et al.* 1990).

The species is polytypic, with three sub-species having been described. Of these, only the nominate race *G. a. arctica* occurs in Europe with any regularity.

In Europe, the nominate race breeds in Britain, Fennoscandia, the Baltic States and through northern Russia. It is absent from Ireland. Within Britain, which is the extreme oceanic edge of its range, it is restricted to western and northern Scotland (although not including Orkney and Shetland). The main concentrations are centred within Sutherland, Wester Ross and the Outer Hebrides with breeding birds becoming scarcer southwards into Perthshire and Argyll as far south as Dumfries and Galloway (Campbell & Talbot 1987; Gibbons *et al.* 1993). In the absence of ringing, it is not known where British breeding divers spend the winter.

Breeding habitat in Britain is normally large oligotrophic lochs amongst mountains, on open moorland or in lightly forested areas (Campbell & Talbot 1987). Breeding lochs, usually with large islets, have highly indented shorelines and support a typical aquatic vegetation where the emergent and edge species are mainly *Carex* spp. and *Juncus* spp. All breeding and feeding activities are normally carried

out on these lochs or their immediate satellites; salt water is rarely used outside passage and wintering periods.

Post-breeding and moulting flocks occur in sealochs and bays off the north and west Scottish coasts. A few birds winter in the inshore waters of the west coast but the main wintering areas are in the coastal waters of the southern North Sea (notably the inshore waters of the international Wadden Sea – Stone *et al.* 1995), as well as the Baltic, Black, Caspian and Mediterranean Seas (Danielsen *et al.* 1993; Hagemeijer & Blair 1997).

4. Population structure and trends

The international population (Europe) is estimated to be about 19,196 pairs (Hagemeijer & Blair 1997). Finland holds most (>7,000 pairs), with Sweden and Norway combined (>10,000 pairs) supporting the other large populations (Danielsen *et al.*1993; Hagemeijer & Blair 1997).

The species is strictly territorial, and its territories are normally extensive. In Finland, pairs breed on 250–400 ha lakes; each pair requiring 50–100 ha. Few lochs in the UK support more than 1–2 pairs and even then productivity is variable (Danielsen *et al.*1993; Mudge *et al.* 1991; Hancock 2000). In the UK, productivity is low with few pairs regularly producing fledged young. Fluctuating water levels, water quality and disturbance are important factors that influence breeding success and productivity.

There is no evidence on a European scale of significant change in range or population size but there is a trend of slight decrease in some countries. Even in the UK, the situation is not clear. It is generally agreed that the population has increased since the mid 20th century, prior to which it was depressed by both persecution and disturbance (Holloway 1996). However, whilst Mudge *et al.* (1991) suggested both a slight population and range reduction in the 1970s and 1980s, reflecting the European trend, the population in Britain has remained at about 150 pairs from the mid 1980s to present.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Black-throated Diver supports, on average, 95 pairs. This amounts to 61% of the British breeding population. The species does not breed in Northern Ireland. The suite contains about 0.5% of the international population (numbers in the UK are small in comparison to the larger numbers in Scandinavia). This total is contained within 11 sites (Table 6.2.1) for which Black-throated Diver has been listed as a qualifying species.

6. Classification criteria

All 14 sites in the UK that were known to support more than 1% of the national breeding population of Black-throated Divers were considered under Stage 1.1. Sites were ranked in order of population size and, after consideration of Stage 2 judgements, three sites (Loch Awe and nearby lochs; Loch Stac, Loch nam Brac and Nearby Lochs; and Glengarry Lochs) were not selected as they failed to contribute significantly to the population size, range or productivity. The SPA suite is comprised of the remaining11 sites. In selecting sites for the suite, chick production has been considered the most important of the factors reviewed at Stage 2 since a large proportion of the population is unproductive. This was assessed by ranking sites in terms of chick production (productivity multiplied by population size). All the most productive sites are included within the suite.

Whilst all sites have a very high degree of naturalness, most have one or more artificial nesting rafts present to moderate the effects of unnaturally fluctuating water levels and/or disturbance from human activities. This technique has been shown to greatly improve productivity at some sites (Hancock 2000), and in territories where rafts have been used, productivity increased by a factor of 2.7. It has been estimated that raft provision has improved the overall chick production of the Scottish Black-throated Diver population by 44% (Hancock 2000). Rafts are present on all sites other than the Lewis Peatlands and Mointeach Scadabhaigh.

The sites are spread through the British breeding range, from the central Highlands in the south, to the Outer Hebrides and northern mainland Scotland. Two sites (Caithness and Sutherland Peatlands, and Mointeach Scadabhaigh in the Outer Hebrides) are multi-species SPAs but the remaining eight are

selected solely for Black-throated Divers – an indication of the specialised habitat requirements of this species.

Distribution map for breeding Black-throated Diver SPA suite

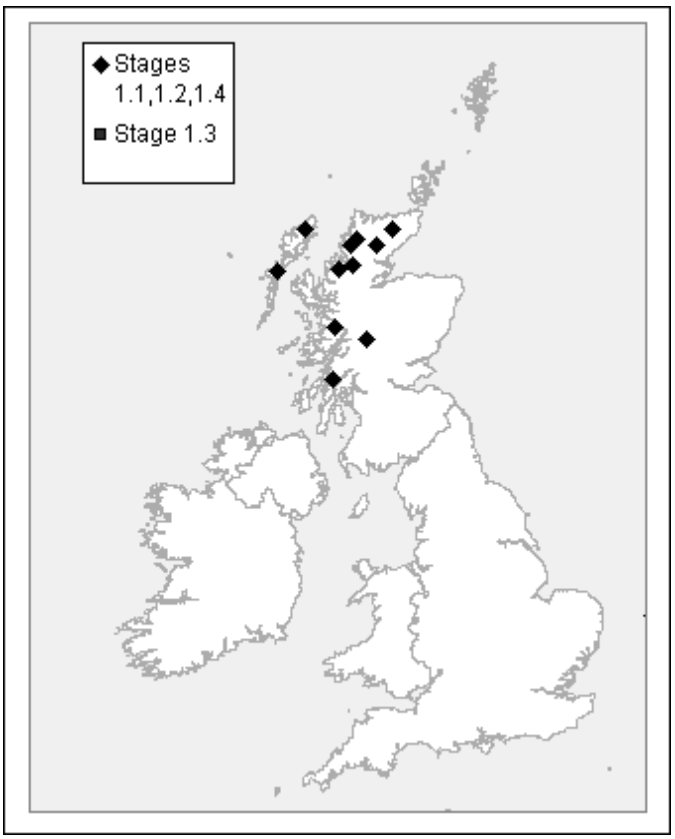


Table 6.2.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Assynt Lochs	7	<0.1	5	1.1
Caithness and Sutherland Peatlands	26	0.1	17	1.1
Wester Ross Lochs	8	<0.1	5	1.1
Inverpolly, Loch Urigill and Nearby Lochs	9	<0.1	6	1.1
Knapdale Lochs	4	<0.1	3	1.1
Lairg/Strathbrora Lochs	6	<0.1	4	1.1
Lewis Peatlands	11	<0.1	7	1.1
Loch Maree	10	<0.1	6	1.1
Loch Shiel	4	<0.1	3	1.1
Mointeach Scadabhaigh	3	<0.1	2	1.1
Rannoch Lochs	7	<0.1	5	1.1
TOTALS	95	0.5%	61%	

A6.3 Little Grebe *Tachybaptus ruficollis* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	3,290	50 (see section 5.1.2 for rationale)	445 (15% of GB total)
Ireland	5,000	50	382 (8% of all-Ireland total)
Biogeographic population	550,000	5,500	828 (0.2% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Sheppard 1993
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Little Grebe has a wide global distribution, with a breeding range extending across Europe, central/southern Asia and central/southern Africa, to Japan and Papua New Guinea in the east. Outside the breeding season, the species prefers open, although sheltered waters on coasts and estuaries. It moves to these areas in the autumn (Snow & Perrins 1998).

The species is polytypic, with at least nine sub-species having been described (Cramp & Simmons 1977). Of these, only the nominate race *T. r. ruficollis* occurs in Europe with any regularity.

In Europe, breeding occurs from Iberia and Britain and Ireland in the west as far as the borders of Russia and the Caucasus. In the eastern part of this range, Little Grebes are totally migratory, with birds moving south and west in winter to avoid the severe continental winters. Elsewhere in its European range the species is a partial migrant, with some birds being resident, whilst others move to coastal waters, where feeding occurs in shallow tidal areas (Fox 1994).

Within the UK, which lies in the north-west of the species' world range, the Little Grebe is widely, though thinly distributed, being scarcer in the north of Scotland (Lack 1986). The species' secretive habits mean that it is probably under-recorded in much of its range. Little Grebes occur in a wide variety of wetland types, from inland freshwaters to shallow estuaries. Common features of important sites are muddy bottoms and significant growths of emergent vegetation within which birds can conceal themselves (Snow & Perrins 1998). Indeed, because of their ability to hide, Little Grebes can often occupy waters that are unattractive to other species owing to human disturbance.

4. Population structure and trends

In the non-breeding season, the international population (Western Palearctic) is estimated to be about 550,000 individuals (Rose & Scott 1997). However, information of the international context is generally poor for this species since it is not monitored by the International Waterbird Census (Delany *et al.* 1999). Thus, trends in the non-breeding season need to be inferred from information about breeding numbers.

The species' European breeding population has shown little recent change in most countries, and its status is described as stable (Tucker & Heath 1994). Within Britain, the species showed a slow, steady increase from the mid-1980s, but data from the 1997/98 winter (Cranswick *et al*. 1999) show a marked decrease compared to the preceding two years. This decline is thought to be due to a particularly cold winter in 1996/7 combined with a very wet June in 1997, adversely affecting both non-breeding and breeding birds.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Little Grebe supports, on average, 828 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 15% of the British population, about 8% of the all-Ireland population, and about 0.2% of the international flyway populations. The suite comprises ten sites where Little Grebe has been listed as a qualifying species (Table 6.3.1).

The dispersed distribution of non-breeding Little Grebes means that the SPA suite makes only a small contribution to the conservation of the species during winter.

6. Classification criteria

Owing to the dispersed nature of Little Grebes in winter, no UK site supports more than 1% of the international population – indeed numbers in the UK as a whole are less than 1% of the international population. At ten sites holding internationally important assemblages of waterbirds, Little Grebes occur as significant components of the assemblage. Accordingly, these sites were considered and all were selected under Stage 1.3 (see section 5.3) after consideration of Stage 2 judgements.

These sites are situated in southern and eastern England, and Northern Ireland. However, given that Little Grebes are widely distributed at low densities across Britain and Ireland in winter, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Little Grebe SPA suite

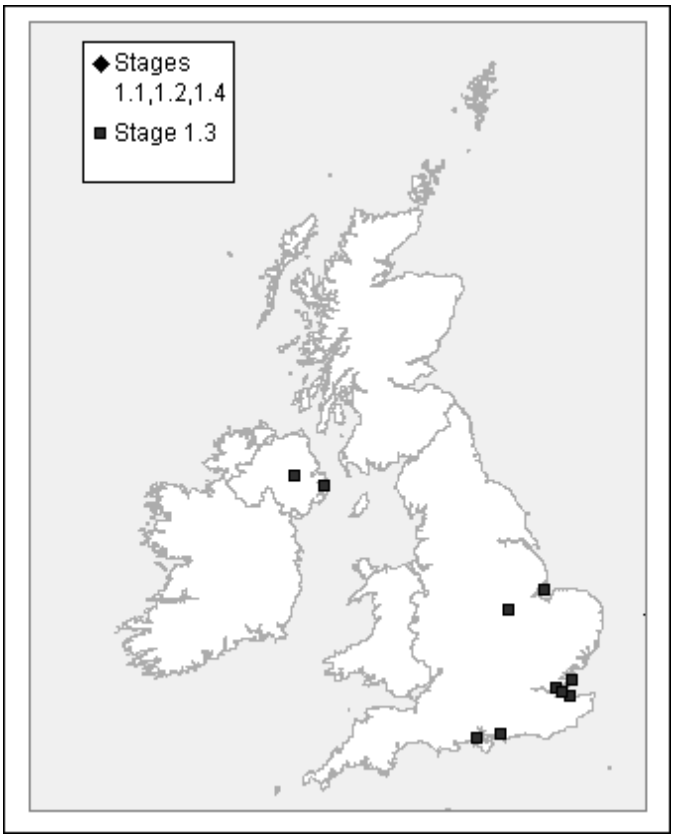


Table 6.3.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Chichester and Langstone Harbours	68	<0.1	2.1	1.3
Foulness	52	<0.1	1.6	1.3
Lough Neagh and Lough Beg	465	<0.1	9.3 (Ire)	1.3
Medway Estuary and Marshes	53	<0.1	1.6	1.3
Rutland Water	51	<0.1	1.6	1.3
Solent and Southampton Water	91	<0.1	2.8	1.3
Strangford Lough	127	<0.1	2.5 (Ire)	1.3
Thames Estuary and Marshes	209	<0.1	6.1	1.3
The Swale	126	<0.1	3.8	1.3
The Wash	93	<0.1	2.8	1.3
TOTALS	828 (in January)	0.2%	14.8% 7.6% (Ire)	

A6.4a Great Crested Grebe *Podiceps cristatus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	4,000	40	No SPAs selected in Great Britain
Ireland	2,074	20	500 (24% of all-Ireland population)
Biogeographic population	50,000	500	500 (1.0% of biogeographic population)

GB population source: Gibbons et al. *1993*
Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Great Crested Grebe has a temperate Holarctic distribution, with a breeding range extending across Europe, central/southern Asia to China. Disjunct populations occur in Africa, Australia and New Zealand.

The species is polytypic, with three sub-species described (Cramp & Simmons 1977). Only the nominate race *P. c. cristatus* occurs in Europe.

In Europe, breeding occurs from Spain, Britain and Ireland in the west, across Europe to Russia. The breeding distribution is not continuous, and is very patchy, especially in central Europe. Within Europe, Great Crested Grebes are absent as a breeding bird only from Iceland and other northern latitudes (Hagemeijer & Blair 1997). In the eastern and northern parts of their European range, Great Crested Grebes are totally migratory, with birds moving south and west in winter to avoid the severe continental winters. Ringing recoveries indicate significant movement between Scandinavian breeding areas and Black Sea wintering grounds (Adriaensen *et al.* 1993). Elsewhere in its European range, the species is a partial migrant, with some birds being resident, and others moving to coastal waters.

Within the UK, which is lies at the north-west of the world range, Great Crested Grebes are widely, though thinly distributed. They occur throughout south-east England and the Midlands, most of East Anglia, the Forth–Clyde corridor of Scotland, and the low wetland belt of Ireland, including Northern Ireland. In remaining parts of the UK range, Great Crested Grebe distribution is patchy (Gibbons *et al.* 1993).

Great Crested Grebes breed on large, shallow waters with some fringing vegetation, and can be found on still waters or in the reedy fringes of slow-flowing rivers in many parts of lowland Britain and Ireland.

4. Population structure and trends

The biogeographic population used in this review is Northwest Europe and is estimated at 50,000 breeding pairs, derived from Rose & Scott (1997). The European status of the Great Crested Grebe is categorised as secure by Tucker & Heath (1994). A marked increase in the European population between the 1950s and the 1960s-1970s has been attributed largely to eutrophication of standing waterbodies (which has increased their productivity thus improving food supplies for grebes), together with a reduction in hunting (Hagemeijer & Blair 1997).

The most recent complete survey in Great Britain, conducted in 1975 (Hughes *et al*. 1979), reported an estimated population of 6,813 pairs, representing a 47% increase in population size since a similar survey ten years previously (Prestt & Mills 1966). More recent population estimates derived from tetrad counts during April to July in 1988–91 suggested 8,000 birds in Britain (Gibbons *et al*. 1993). Much of this population growth was concentrated in England and Wales, with an increase of only 9% being recorded in Scotland since the 1975 survey. A contributory factor to the increase in numbers breeding in England and Wales has been the increase in availability and suitability of gravel pits, especially in south England. Great Crested Grebes have progressively filled preferred breeding habitat and there has been an increasing tendency to breed on lowland rivers (Gibbons *et al*. 1993).

5. Protection measures for population in UK

SPA suite

In the breeding season, the single site (Lough Neagh and Lough Beg in Northern Ireland – Table 6.4a.1) in the UK's SPA suite for Great Crested Grebe supports an average of 500 pairs. This amounts to over 24% of the all-Ireland breeding population and 1% of the international population.

6. Classification criteria

The SPA suite in the breeding period comprises Lough Neagh and Lough Beg in Northern Ireland (Table 6.4a.1), selected under Stage 1.2. There is a long history of occupancy by Great Crested Grebes on Lough Neagh and Lough Beg and a generally high breeding success there. Accordingly, the site makes an important contribution to maintaining the European range of this species.

No other site in the UK holds comparable numbers and given that the species has a wide distribution in Britain, an increasing population trend, and is not ranked as a Species of European Conservation Concern (Tucker & Heath 1994), there was no case to consider additional sites under Stage 1.4.

Distribution map for breeding Great Crested Grebe SPA suite

Table 6.4a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Lough Neagh and Lough Beg	500	1.0	24%	1.2
TOTALS	500	1.0%	24.1% (Ire)	

A6.4b Great Crested Grebe *Podiceps cristatus* (non-breeding)

1. Status in UK

See section A6.4a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	9,800	100	1,383 (14% of GB total)
Ireland	Winter: 3,500 Passage/post-breeding: 3,060	50 (see section 5.1.2 for rationale)	1,296 (43% of all-Ireland winter total) 2,440 (80% of all-Ireland passage total)
Biogeographic population	150,000	1,500	2,679 (2% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Some Great Crested Grebes move immediately after breeding to large lakes and reservoirs and certain coastal areas to moult. Few ringing data are available, but it is believed that the migration routes are on a broad front, occurring over land as well as along coasts (Cramp 1977). Some of the largest autumn (and winter) concentrations occur in The Netherlands and Switzerland (SOVON 1987; Stone *et al.* 1995; O'Donnel & Fjeldså 1997), but the migration pattern has changed markedly with the increase in the European population (Adriaensen *et al*. 1993). In the UK, moulting Great Crested Grebes are widely distributed on inland and sheltered coastal sites, particularly in England and Wales.

In winter, Great Crested Grebes show a marked shift from inland waters to the sea, although on the continent large numbers remain on inland lakes, *e.g.* in Switzerland (Cramp 1977). In normal winters, Britain and Ireland receive birds from continental western Europe. During severe winter weather, birds move through Britain in search of milder conditions either to the west in Ireland, or southwards to France (Lack 1986).

Within the UK, non-breeding Great Crested Grebes show a broadly similar distribution to that in the breeding season, although birds are more numerous and more widely spread (Lack 1986). There is some shift to coastal areas, including shallow inshore waters and estuaries, particularly on sheltered areas of the east coast.

4. Population structure and trends

The breeding population of Great Crested Grebe in the UK is increasing. Consequently, winter numbers are also rising, although these can be significantly reduced as a result of high mortality in severe winters. Maximum counts in Britain have declined fairly steadily from a peak of 9,580 in 1992–93, but annual indices suggest that numbers have been very stable over this period, at around a third higher than during the 1980s (Pollitt *et al*. 2000). As with the breeding population, this increase is largely attributed to increases in the availability of suitable habitat.

In the post-breeding moult period, Loughs Neagh and Beg in Northern Ireland are of particular importance, holding an average of 2,440 Great Crested Grebes. This amounts to a large proportion of the all-Ireland population in this season. Numbers of non-breeding birds at this site are slightly fewer.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Great Crested Grebe supports, on average, 2,679 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 14% of the British population, about 43% of the all-Ireland population, and about 2% of the international flyway population. The suite comprises 17 sites, distributed throughout the UK, at which Great Crested Grebe has been listed as a qualifying species (Table 6.4b.1).

6. Classification criteria

The single known site (Lough Neagh and Lough Beg) in the UK that regularly supports more than 1% of the international total of Great Crested Grebes in winter was considered under Stage 1.2. It was selected after consideration of Stage 2 judgements. A further 16 sites were identified under Stage 1.3 (see section 5.3). At each of these sites, Great Crested Grebe is an important component of a wider non-breeding waterbird assemblage, and all were included within the suite. All sites within the suite are multi-species SPAs, of importance for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites.

As the selection of sites under Stages 1.2 and 1.3 resulted in a widely spread suite of sites holding key resorts for non-breeding Great Crested Grebes in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Great Crested Grebe SPA suite

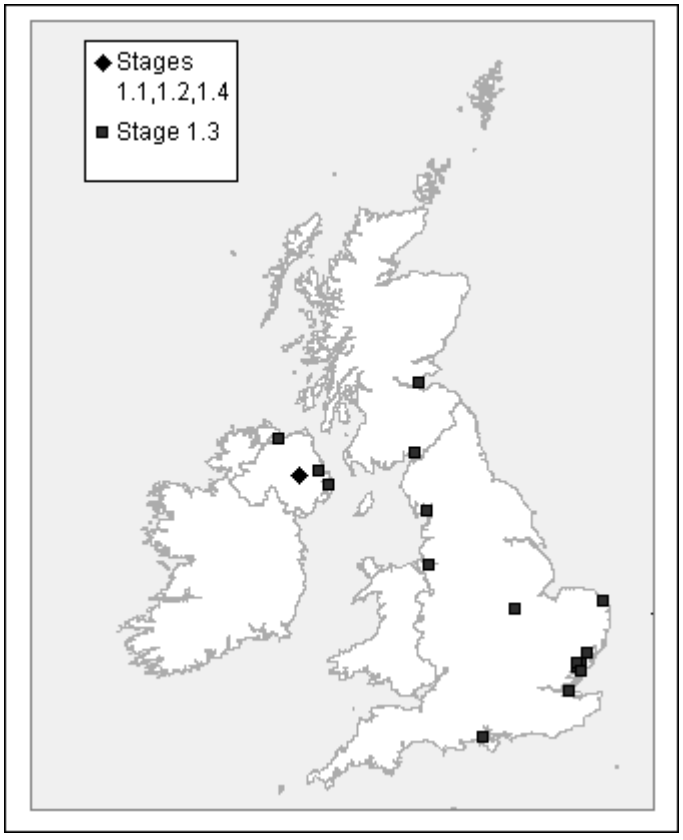


Table 6.4b.1 – SPA suite

All site totals refer to winter populations unless otherwise indicated.

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	132	0.1	1.4	1.3
Belfast Lough	1,385	0.9	39.6 (Ire)	1.3
Blackwater Estuary	277	0.2	2.8	1.3
Broadland	146	0.1	1.5	1.3
Colne Estuary	205	0.1	2.1	1.3
Dengie	119	0.1	1.2	1.3
Firth of Forth	632	0.4	6.5	1.3
Lough Foyle	220	0.2	6.3 (Ire)	1.3
Lough Neagh and Lough Beg (winter)	1,821	1.2	52.0 (Ire)	1.2
Lough Neagh and Lough Beg (post-breeding moult period)	*2,440*	*1.6*	*79.7 (Ire)*	*1.2*
Medway Estuary and Marshes	116	0.1	1.2	1.3
Mersey Estuary	126	0.1	1.3	1.3
Morecambe Bay	318	0.2	3.2	1.3
Rutland Water	762	0.5	7.8	1.3
Solent and Southampton Water	113	0.1	1.2	1.3
Stour and Orwell Estuaries	260	0.2	2.7	1.3
Strangford Lough	90	0.1	2.6 (Ire)	1.3
Upper Solway Flats and Marshes	176	0.1	1.8	1.3
TOTALS	2,679 (in January)	1.8%	13.8% 43.2% (Ire)	

A6.5a Slavonian Grebe *Podiceps auritus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	70	1	37 (53% of GB population)
Ireland			
Biogeographic population	6,058	60	37 (0.6% of biogeographic population)

GB population source: Ogilvie et al. *1996*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Slavonian Grebe has a near circumpolar, boreal range, from Iceland in the west, through central Asia and North America, as far as the Great Lakes region. There are two sub-species, the nominate (*P. a. auritus*) being that which occurs within the Palearctic (del Hoyo *et al.* 1992).

Slavonian Grebes are patchily distributed in western Europe. Most occur in Fennoscandia, with smaller numbers in Iceland, the Baltic States and the UK (Hagemeijer & Blair 1997). Breeding range is linked to the occurrence of small, often shallow, eutrophic lakes with sparse emergent vegetation, although in the northern parts of its range the species will use more oligotrophic lakes with little or no emergent vegetation (Cramp & Simmons 1977). In the UK, breeding occurs solely within Scotland, with birds nesting in the Highland and Grampian regions (Gibbons *et al.* 1993; Thom 1986; Ward & Hewitson 1999).

The species is migratory throughout its range, with birds moving mainly to inshore seas and estuaries close to their breeding range during winter months (Cramp & Simmons 1977). There is some evidence that birds return to the same breeding lochs in different years, and some British birds are found on breeding lochs during milder winters (Ward & Hewitson 1999).

The preferred nesting sites of Slavonian Grebe in Britain are those lakes with high water quality and extensive marginal sedge-beds *Carex rostrata* (Summers & Mavor 1995), together with abundant Three-spined Sticklebacks *Gasterosteus aculeatus* (the main food). The requirement for clear water has been related to the efficiency of catching fish (Summers & Mavor 1995).

4. Population structure and trends

Throughout Europe, the range of the Slavonian Grebe has expanded during the 20th century apparently because of the eutrophication of lakes from human activity (Cramp & Simmons 1977). However, there have been local declines, especially in eastern areas. Short-term fluctuations are probably linked to severe weather (Hagemeijer & Blair 1997). The total European population is estimated to be about 6,058 pairs (Hagemeijer & Blair 1997).

In the UK, breeding was first recorded in 1909 (McGhie 1994), and numbers gradually increased to about 80 pairs in the late 1970s (Batten *et al*. 1990; Thom 1986; Ward & Hewitson 1999). Following a decline through the 1980s, and another peak of nearly 90 pairs in 1990 the population has again declined in the last decade, with only 42 pairs recorded in 1998 (Crooke *et al*. 1993; Ward & Hewitson 1999). Factors influencing the British population include poor productivity and perhaps winter survival. Productivity varies between breeding sites (Batten *et al*. 1990; Crooke *et al*. 1993; Ward & Hewitson 1999). Clearly, the influence of the different factors that affect nesting productivity vary according to local circumstances.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Slavonian Grebe supports an average of 37 pairs. This amounts to 53% of the British breeding population. The species does not breed in Northern Ireland. The suite contains about 0.6% of the international population (a consequence of numbers in the UK being small in comparison to the larger numbers in Scandinavia). This total is contained within six sites (Table 6.5a.1) for which Slavonian Grebe has been listed as a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population of Slavonian Grebe were considered under Stage 1.1, and all but Loch Oire were selected after consideration of Stage 2 judgements. Loch Oire was not selected because it had failed to support any breeding pairs in five breeding seasons from 1996 to 2000.

The sites within the SPA suite cover the principal breeding areas within the core range of the Slavonian Grebe in Britain (Summers & Mavor 1995; Gibbons *et al.* 1993). They all have high breeding success (subject to annual variation) and a long history of occupancy. The lochs comprising the SPAs are generally characterised as being shallow and mesotrophic, fringed by extensive areas of sedge-beds and other emergent vegetation. Many are surrounded by moorland with scattered pinewoods and/or broadleaf deciduous woodlands. All sites have a high degree of naturalness.

Distribution map for breeding Slavonian Grebe SPA suite

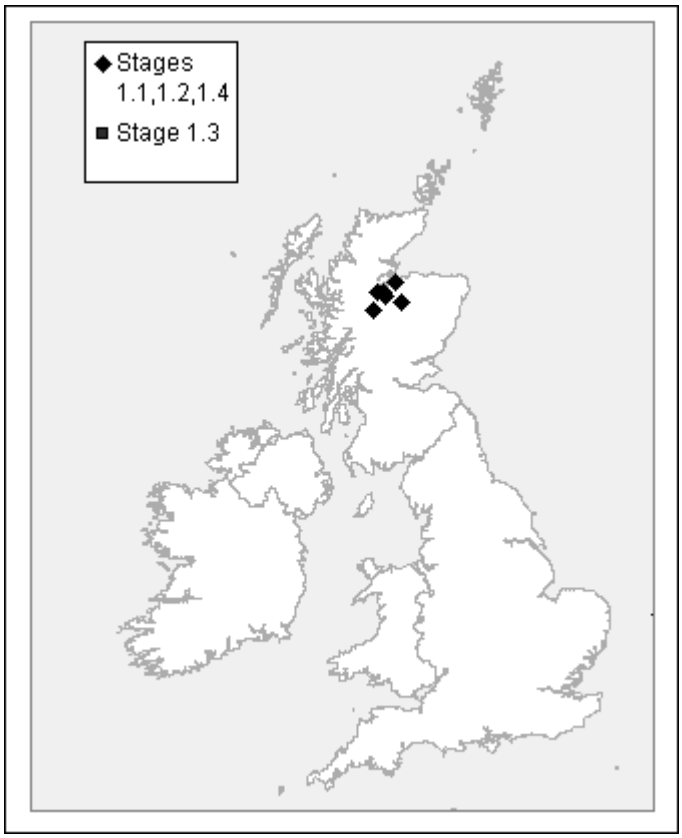


Table 6.5a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Loch Ashie	1	<0.1	1	1.1
Loch Flemington	5	<0.1	7	1.1
Loch Knockie and Nearby Lochs	5	<0.1	7	1.1
Loch Ruthven	14	0.2	20	1.1
Loch Vaa	5	<0.1	7	1.1
North Inverness Lochs	7	0.1	10	1.1
TOTALS	37	0.6%	53%	

A6.5b Slavonian Grebe *Podiceps auritus* (non-breeding)

1. Status in UK

See section 6.5a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	400	50 (see section 5.1.2 for rationale)	31 (8% of GB total)
Ireland	30	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	5,000	50	31 (0.6% of biogeographic population)

GB and Ireland population source: Lack 1986
Biogeographic population source: Rose & Scott 1997

3. Distribution

Europe's Slavonian Grebes winter inshore, on coasts and estuaries often close to breeding areas. The range includes all western European coasts from northern France to north Norway (except the eastern Baltic and Gulf of Bothnia), the northern Adriatic Sea and northern Black Sea. Some small non-breeding groups occur on inland freshwater lakes in south-east Europe (Cramp & Simmons 1977). Ringing recoveries throughout Europe indicate that birds migrate to more southerly wintering grounds (Ward & Hewitson 1999).

The UK's breeding population probably winters around the coasts of Britain and Ireland, although there is scant evidence to suggest the range of dispersal. The single recovery of a bird ringed in the Scottish Highlands and found on the west coast of Italy suggests that British birds may winter as far south as the Mediterranean (Cramp & Simmons 1977; Thom 1986; Ward & Hewitson 1999). Most of Britain's wintering birds probably occur along the south coast of England, but birds are found around the entire coast concentrating in large estuaries and sheltered sea lochs. A few birds winter on inland freshwater lakes in central and southern England (Lack 1986).

Little is known of the migration behaviour of the species, but birds departing from breeding areas from August to October may gather on inland freshwater lakes to moult prior to dispersal to coastal wintering sites in November (Cramp & Simmons 1977; Thom 1986; Summers & Mavor 1995). Slavonian Grebes use traditional wintering sites and tend to remain at these sites for long periods (Lack 1986). This might indicate rapid dispersal to coastal areas after breeding, and the use of inland passage sites may be localised to particular breeding populations (Cramp & Simmons 1977).

The distribution of passage birds is poorly understood, as is the temporal use of passage sites. However, such sites may be used by birds during autumn passage whilst they moult (Ward & Hewitson 1999). In the UK, autumn passage sites can include breeding lochs, or others close to them, used by local breeding birds (Ward & Hewitson 1999). Birds wintering in the UK from northern European breeding populations possibly remain for a time on coastal waters after the UK breeding population has already returned to breeding sites in late March (Thom 1986; Ward & Hewitson 1999).

4. Population structure and trends

There are insufficient data to allow a good estimate of the non-breeding total population in Europe, or to gain an idea of population trends. However, the population is thought to be around 15,000 individuals (Lack 1986). Within the Northwest Europe biogeographical region, the wintering total is estimated at 5,000 individuals, and is declining (Rose & Scott 1997). About 400 birds were thought to winter in Britain and Ireland, but there are insufficient data to estimate general population trends,

although numbers wintering around south-east England have been increasing since the 1960s (Lack 1986). More recent estimates suggest about 700 wintering around Britain and Ireland (Evans 2000).

Within Europe, numbers in the passage period are the same as those in the winter period (Rose & Scott 1997). The estimated passage total in the UK is 400 individuals, based on wintering numbers (Lack 1986).

Slavonian Grebes are vulnerable to changes in the quality of their inshore non-breeding habitats, and oil pollution has been to shown to cause high winter mortality (Thom 1986) and may pose a threat to Slavonian Grebes. There is some evidence to suggest that birds wintering around Britain and Ireland originate from as far away as north-west Russia (Lack 1986), but may include birds mainly from Iceland, Faeroes, and northern Norway (Cramp & Simmons 1977; Ward & Hewitson 1999). Population trends in these countries together with the quality of winter habitats around western Europe, and localised climatic conditions, may have a direct influence on numbers wintering around Britain (Lack 1986).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's terrestrial SPA suite for Slavonian Grebe supports, on average, 31 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 8% of the British population and about 0.6% of the international flyway population. In an all-Ireland context, no SPAs have been selected in Northern Ireland. The terrestrial SPA suite comprises three SPAs at which Slavonian Grebe has been listed as a qualifying species (Table 6.5b.1).

Two sites (Firth of Forth and the Exe Estuary) are non-breeding areas whilst the remaining site (Loch Ashie) is an important moulting areas and spring gathering area prior to dispersal to breeding sites in north-east Scotland.

6. Classification criteria

The three terrestrial sites (Loch Ashie, Firth of Forth and the Exe Estuary) in the UK that regularly support more than 1% of the national total of Slavonian Grebe in the non-breeding season were considered under Stage 1.1, and both were selected after consideration of Stage 2 judgements. Both the estuarine sites within the suite are multi-species SPAs, of importance for a range of other waterbirds, although Loch Ashie has been selected solely because of its importance for Slavonian Grebes.

Distribution map for non-breeding Slavonian Grebe SPA suite

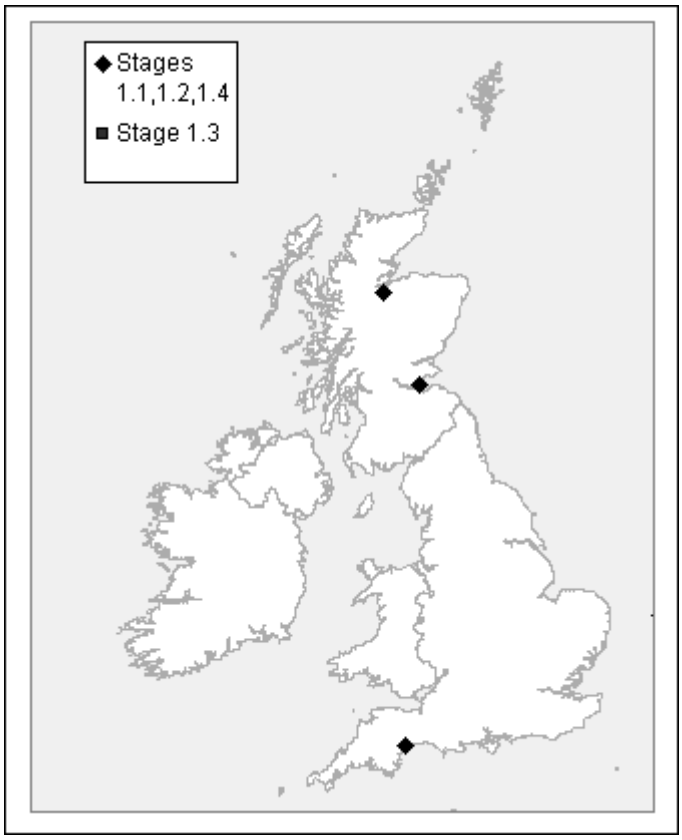


Table 6.5b.1 – SPA suite

All site totals refer to winter populations except for Loch Ashie which represents the spring passage population.

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Loch Ashie (spring gathering area)	*44*	*0.9*	*11*	*1.1*
Exe Estuary	20	0.4	5.0	1.1
Firth of Forth	71	1.4	17.8	1.1
TOTALS	31 (in January)	0.6%	7.8%	

A6.6 Fulmar *Fulmarus glacialis* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	539,000	5,390	308,797 (57% of GB population)
Ireland	31,300	313	1,482 (5% of all-Ireland population)
Biogeographic population	7,540,000	75,400	310,279 (4% of biogeographic population)

GB population source: Lloyd et al. *1991*
Ireland population source: Lloyd et al. *1991*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

Fulmars have a circumpolar distribution breeding from the high arctic to about 45°N in both the North Pacific, as well as the North Atlantic (Fisher 1952). The species is polytypic – the Nominate *F. g. glacialis* occurs in the North Atlantic, whilst *F. g. rodgersii* breeds in the North Pacific.

In the northern and eastern Atlantic, breeding occurs in Greenland, Iceland, Norway, Svalbard, the Faeroe Islands and Britain, and the species reaches the southern edge of its eastern Atlantic range in northern France (Brittany). Fulmars are present at their UK colonies during most months of the year, although as a highly pelagic species, they range widely, not only during the non-breeding season, but also whilst nesting. Accordingly, they can be found in waters around the UK in all months of the year (Stone *et al.* 1995).

In the UK, breeding occurs on all coasts with suitable cliff nesting sites, but is concentrated in the northern and western isles of Scotland (Lloyd *et al*. 1991). On islands free from mammalian predators, Fulmars nest on relatively level surfaces.

4. Population structure and trends

The North Atlantic population of this species has increased dramatically over the past 350 years to the current estimate of 7,540,000 pairs (Lloyd *et al.* 1991). Prior to this, the only sites where breeding occurred in Europe was on St Kilda and at a site in Iceland. It colonised Foula, Shetland in 1878 and then extended its breeding range steadily around the coastline of Britain and Ireland.

On the south coast of England, prospecting for breeding sites started in the 1940s (Fisher 1952), and since the 1950s the population has continued to increase steadily. In 1949, the British and Irish

population was estimated at about 109,000 pairs, with 38,200 of these on St Kilda (Fisher 1952). This had increased to 571,000 pairs by the time of the 1985–87 census, with 62,800 on St Kilda (Cramp *et al.* 1974). However, the percentage annual increase appears to have been higher in the 1950s and 1960s than more recently. A similar population increase and spread in range has occurred on other suitable coasts in northern France, Ireland, and Germany. There has been relatively little expansion in Norway.

The causes of expansion have been the subject of some debate, with the most likely reason being associated with the human provision of food in the form of offal and waste. Initially this would have been from the whaling industry, but more recently from the offshore, deeper water fishing industry.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Fulmar supports an average of 310,279 pairs. This amounts to about 57% of the British breeding population, nearly 5% of the all-Ireland population and 4.1% of the international population. This total is contained within 25 sites (Table 6.6.1) for which Fulmar has been listed as a qualifying species.

6. Classification criteria

All the sites within the SPA suite for Fulmar were selected under Stage 1.3 (see section 5.3); that is, Fulmars were identified as important components of a wider breeding seabird assemblage. All sites thus identified were included within the suite. Some of these sites in the remote north-west of Scotland (Flannan Islands, St Kilda, North Rona and Sula Sgeir, and Foula) have a very long recorded history of occupancy with records from the 19thcentury (Fisher 1952; Holloway 1996). Other sites were colonised in the expansion and spread of the population that occurred in the twentieth century.

Given that the selection of sites under Stage 1.3 resulted in a suite which gives good coverage of key breeding sites for Fulmar in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Fulmar SPA suite

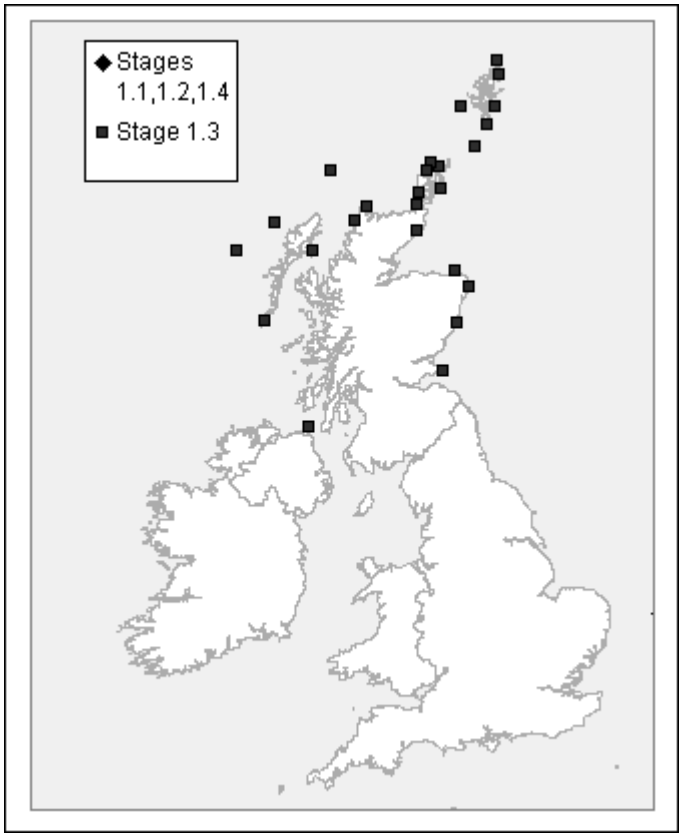


Table 6.6.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Buchan Ness to Collieston Coast	1,765	<0.1	0.3	1.3
Calf of Eday	1,955	<0.1	0.4	1.3
Cape Wrath	2,300	<0.1	0.4	1.3
Copinsay	1,615	<0.1	0.3	1.3
East Caithness Cliffs	15,000	0.2	2.8	1.3
Fair Isle	43,320	0.6	8.0	1.3
Fetlar	9,800	0.1	1.8	1.3
Firth of Forth Islands	1,600	<0.1	0.3	1.3
Flannan Isles	4,700	<0.1	0.9	1.3
Foula	46,800	0.6	8.7	1.3
Fowlsheugh	1,170	<0.1	0.2	1.3
Handa	3,500	<0.1	0.7	1.3
Hermaness, Saxa Vord and Valla Field	14,890	0.2	2.8	1.3
Hoy	35,000	0.5	6.5	1.3
Mingulay and Berneray	12,500	0.2	2.3	1.3
North Caithness Cliffs	16,310	0.2	3.0	1.3
North Rona and Sula Sgeir	11,500	0.2	2.1	1.3
Noss	5,870	<0.1	1.1	1.3
Rathlin Island	1,482	<0.1	4.7	1.3
Rousay	1,240	<0.1	0.2	1.3
Shiant Isles	6,820	<0.1	1.3	1.3
St Kilda	62,800	0.8	11.7	1.3
Sumburgh Head	2,542	<0.1	0.5	1.3
Troup, Pennan and Lion's Heads	4,400	<0.1	0.8	1.3
West Westray	1,400	<0.1	0.3	1.3
TOTALS	310,279	4.1%	57.3% 4.7% (Ire)	

A6.7 Manx Shearwater *Puffinus puffinus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**localised**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	220,000	2,200	219,898 (100% of GB population)
Ireland	30,000	300	No SPAs selected in Northern Ireland
Biogeographic population	265,100	2,651	219,898 (82.9% of biogeographic population)

GB population source: Stone et al. *1997*
Ireland population source: Lloyd et al. *1991*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

Manx Shearwaters breed at high densities at just a few colonies in the North Atlantic. The UK and Ireland support over 93% of the breeding population of Manx Shearwaters *P. p. puffinus*, with the remainder nesting in eastern North America (very small numbers), Iceland, Faeroes and France.

The taxonomy of the *Puffinus* shearwaters is complex and changing as taxonomic understanding improves. Although several sub-species of *Puffinus puffinus* in Europe have previously been recognised (Cramp & Simmons 1977), the current consensus is to treat the Balearic Shearwater *P. p. mauretanicus* (breeding in the Balearic islands) and the Levantine or Yelkouan Shearwater *P. p. yelkouan* (breeding elsewhere in the Mediterranean) as full species – *P. mauretanicus* and *P. yelkouan* (Bourne *et al.* 1988; del Hoyo *et al.* 1992; Hagemeijer & Blair 1997; Snow & Perrins 1998; BOURC 2000). This treatment is followed here.

Within the UK, there are two major areas supporting most of the breeding population: the small isles of the Inner Hebrides of Scotland, and the islands off south-west Wales (Lloyd *et al.* 1991). Nesting Manx Shearwaters are especially susceptible to the effects of mammalian predators; nearly all of their breeding islands are predator-free, with the notable special exception of Rum (see below). Manx Shearwaters are at their colonies between March and September and during this time, they occur in inshore waters, especially near breeding colonies. Particular concentrations are found in the Irish Sea, around the Inner Hebrides, and in The Minch (Stone *et al.* 1995). At other times of the year, they are

entirely pelagic, undertaking a trans-Atlantic migration to winter in tropical seas off the eastern coasts of South America.

4. Population structure and trends

The world population of *P. puffinus* is about 280,000 pairs with breeding confined entirely within the North Atlantic, though only small numbers breed in North America, Iceland and the Faeroes (18,200). Manx Shearwaters nest at very high densities in underground burrows. In the largest of the British colonies on Rum, Skomer and Skokholm, densities of occupied burrows reach 460/ha (Brooke 1990).

It is extremely difficult to judge how overall numbers of Manx Shearwaters may have changed during this century. It is reasonable to say that no major changes have occurred on the islands in south-west Wales as these have been visited regularly.

Population declines and extinction have been recorded on islands that have been invaded by rats (through accidental introduction or otherwise). For example, the species became absent or extremely rare on the Calf of Man and on Lundy following the arrival of rats.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Manx Shearwater supports an average of 219,898 pairs. This amounts to effectively all of the British breeding population and most (nearly 83%) of the international population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The UK total is contained within four sites (Table 6.7.1) for which Manx Shearwater has been listed as a qualifying species.

6. Classification criteria

Manx Shearwater is highly localised in the UK and all the major breeding colonies have been selected for the SPA network. Three sites (Skomer, Skokholm and Middleholm; Rum; and Glannau Aberdaron and Ynys Enlli/Aberdaron Coast and Bardsey Island) were selected under Stage 1.2. Of these, Skomer and Skokholm in Wales, and Rum in Scotland are the two largest breeding colonies in the world. St Kilda was additionally selected under Stage 1.3 (see section 5.3), since Manx Shearwaters there were identified as an important component of a wider breeding seabird assemblage. Only a few small breeding colonies in Northern Ireland and elsewhere in Britain were not included in the network.

All the colonies have a very long recorded history of occupancy (Holloway 1996). There are written records of the Rum colony since at least 1716 (Evans & Flower 1967), and for Glannau Aberdaron and Ynys Enlli since at least 1901 (Aplin 1902; Norris 1953). Skomer has been reported as the largest British breeding colony since the nineteenth century (Mathew 1894).

Distribution map for Manx Shearwater SPA suite

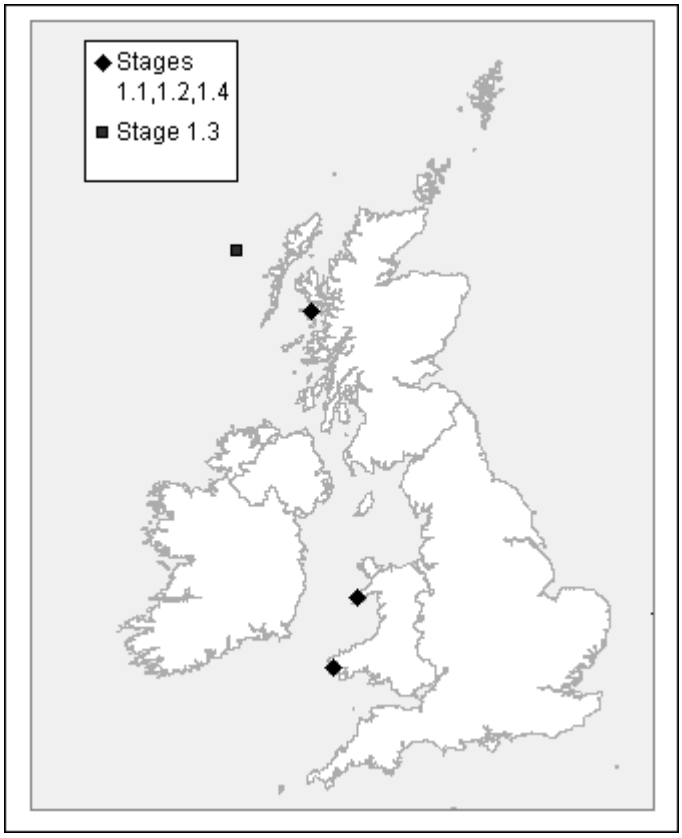


Table 6.7.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Glannau Aberdaron and Ynys Enlli/Aberdaron Coast and Bardsey Island	6,930	2.6	3.2	1.2
Rum	61,000	23.0	27.7	1.2
Skomer, Skokholm and Middleholm	150,968	56.9	68.6	1.2
St Kilda	1,000	0.4	0.5	1.3
TOTALS	219,898	82.9%	*c.* 100%	

A6.8 Storm Petrel *Hydrobates pelagicus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**localised**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex 1 Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	85,000	850	29,356 (35% of GB population)
Ireland			
Biogeographic population	257,000	2,570	29,356 (11% of biogeographic population)

GB population source: Lloyd et al. *1991*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The global distribution of Storm Petrels is restricted to the north-east Atlantic. They nest colonially on a small number of islands – from Iceland and Norway in the north, to the Canaries in the south. They also breed in relatively small numbers in the Mediterranean. Largest breeding numbers are found in the Faeroes, Ireland and Britain (Lloyd *et al.* 1991). The species is monotypic, although there have been suggestions that those occurring in the Mediterranean may be a distinct sub-species – *H. p. melitensis* (del Hoyo *et al.* 1992).

In the UK, colonies are scattered along the full length of the Atlantic seaboard from the north of Shetland to the Isles of Scilly.

Storm Petrels are present at their colonies in the UK from May to September, and occur in surrounding waters. Particular concentrations are found in the South-west Approaches, off the Inner and Outer Hebrides, in The Minch, and in the waters around Orkney and Shetland (Stone *et al.* 1995). Outside the breeding period, they are at sea, probably mostly in the South Atlantic off the coasts of Namibia and South Africa, south to 38°S.

4. Population structure and trends

Storm Petrels nest in underground burrows, and crevices amongst scree or boulder-slopes. In many UK locations, they also nest in the base of stone walls or in the walls of 'brochs' (ancient dry-stone fortifications). The nature of the breeding habitats poses great difficulties when surveying the species; hence

very little is known about its population size. All population estimates, with the exception of a few islands subjected to relatively intense study, have a very low degree of accuracy; most being little more than informed guesses. The midpoint of the world population estimate is 257,000 pairs, but numbers may be as high as 380,000 pairs (Lloyd *et al*. 1991).

Owing to study difficulties, it is extremely difficult to judge how overall numbers of Storm Petrels may have changed during this century. Population declines and extinctions have been recorded on islands that have been invaded by rats that were accidentally, or otherwise introduced. However, there are particular methodological and logistical difficulties in assessing and understanding the causes of population changes of this widely-dispersed species given its breeding habitat in difficult terrain on remote islands.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Storm Petrels supports an average of 29,356 pairs. This amounts to 34.5% of the British breeding population and over 11% of the international population. The species does not breed in Northern Ireland. This total is contained within nine sites (Table 6.8.1) for which Storm Petrel has been listed as a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population of Storm Petrel were considered under Stage 1.1, and all these sites were selected after consideration of Stage 2 judgements. The sites selected are spread throughout the British range of the species, from the Isles of Scilly in the south, to Shetland in the north, and including the remote outlying islands of St Kilda, North Rona and Sula Sgeir, and Sule Skerry and Sule Stack. Given that the selection of sites under Stage 1.1 resulted in a suite which gives comprehensive coverage of the Storm Petrel population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Many of the SPAs for this species have a very long recorded history of occupancy (Holloway 1996). On the Isles of Scilly, Storm Petrels were known to be breeding in the last quarter of the nineteenth century (Holloway 1996), whilst the Treshnish Islands have been occupied since at least 1865 (Baxter & Rintoul 1953). They have been recorded at Skomer, Skokholm and Middleholm since at least 1894 (Mathew 1894), at Priest Island since the 1930s (Darling 1940), on North Rona and Sula Sgeir since 1885 (Harvie-Brown reported in Benn *et al.* 1989), and on the St Kilda archipelago since at least 1697 (Baxter & Rintoul 1953). Most of these sites are multi-species SPAs, important for a range of other seabirds, although Priest Island has been selected solely for this species.

Distribution map for Storm Petrel SPA suite

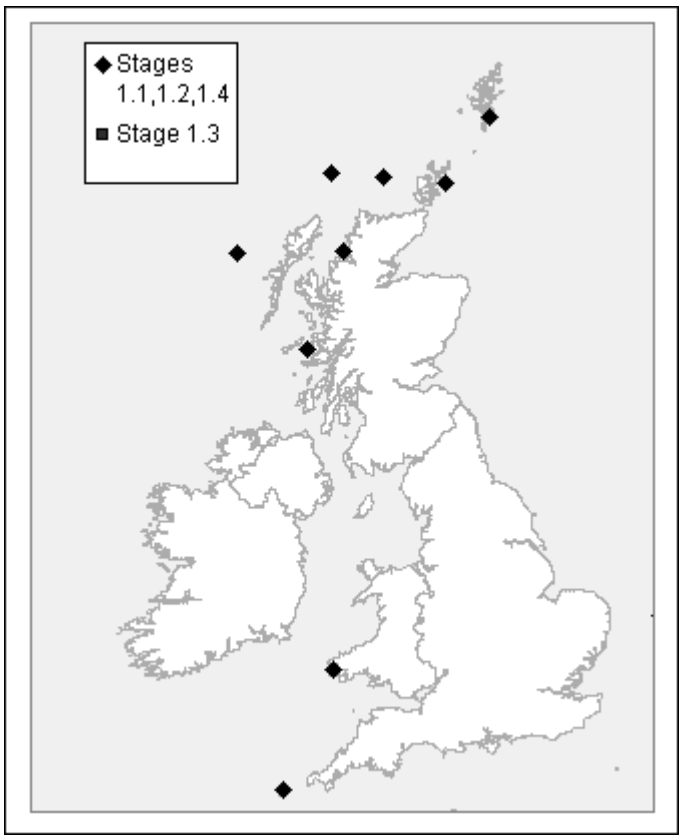


Table 6.8.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Auskerry	3,600	1.4	4.2	1.1
Isles of Scilly	5,406	2.1	6.4	1.1
Mousa	6,760	2.6	8.0	1.1
North Rona and Sula Sgeir	1,000	0.4	1.2	1.1
Priest Island (Summer Isles)	2,200	0.9	2.6	1.1
Skomer, Skokholm and Middleholm	3,500	1.4	4.1	1.1
St Kilda	850	0.3	1.0	1.1
Sule Skerry and Sule Stack	1,000	0.4	1.2	1.1
Treshnish Isles	5,040	2.0	5.9	1.1
TOTALS	29,356	11.4%	34.5%	

A6.9 Leach's Petrel *Oceanodroma leucorhoa* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**localised**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex 1 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	55,000	550	55,000 (100% of GB population)
Ireland			
Biogeographic population	955,000	9,550	55,000 (5.8% of the biogeographic population)

GB population source: Lloyd et al. *1991*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

Leach's Petrels have a wide global distribution. Breeding occurs in both the North Atlantic and North Pacific Oceans, and they have recently been found on islands in the Southern Ocean. The taxonomy of Leach's Petrel is complex and changing, although four sub-species are currently recognised (del Hoyo *et al.* 1992). Of these, only the nominate race occurs in European waters.

The East Atlantic/European distribution is highly restricted – with single localities in Ireland, Norway and the Faeroes, and two sites in southern Iceland. The remaining seven sites occur on remote offshore islands of the north and west of Scotland close to feeding areas near the continental shelf.

The birds are present at their colonies in Britain from May to September. During this time, they feed at sea close to their breeding islands (Stone *et al.* 1995). During September to November, some sporadically occur in British waters (Stone *et al.* 1995), but the bulk of the population migrates south to overwinter in tropical waters. There is a major movement down the west coast of Africa into the South Atlantic, and some reach the Indian Ocean (del Hoyo *et al.* 1992).

4. Population structure and trends

The world population size is estimated at seven to nine million pairs, with the majority on islands in Alaska (Lloyd *et al*. 1991).

Owing to the great difficulty in surveying this species, which nests in burrows and crevices on offshore islands and possibly cliffs, very little is known about its population size. All population estimates,

with the exception of a few islands subjected to relatively intense study, have a very low degree of accuracy; most being little more than informed guesses. The midpoint of the estimate of the North Atlantic biogeographic population is 955,000 pairs, but numbers may be as high as 1,135,000 pairs (Lloyd *et al*. 1991).

Owing the study difficulties, it is extremely difficult to judge how overall numbers of Leach's Petrels may have changed during this century. Leach's Petrels nest mostly on islands free from rats, cats and other mammalian predators. It seems likely that numbers on Foula in Shetland have declined since the arrival of cats. Leach's Petrels are also preyed upon by Great Skuas, and Phillips *et al*. (1999) suggested that Leach's Petrels on St Kilda may be declining as a consequence of this predation.

Surveys undertaken during the *Seabird 2000* initiative have been targeted at obtaining better estimates for this species at many of its haunts. Thus, a much more precise estimate for most breeding sites can be anticipated when these data are available.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Leach's Petrel supports about 55,000 pairs. This amounts to the whole of the British breeding population and about 6% of the international population. The species does not breed in Northern Ireland. This total is contained within six sites (Table 6.9.1) for which Leach's Petrel has been listed as a qualifying species.

It should be noted that both the national population estimate and site totals have a significant degree of uncertainty attached to them, a consequence of the major logistical and methodological difficulties of assessing numbers of this enigmatic, nocturnal bird on highly remote offshore islands. The results of fieldwork carried out at most sites as part of the Seabird 2000 survey will enhance our knowledge of numbers.

6. Classification criteria

The suite comprises all known breeding sites in the UK. Two SPAs (St Kilda, and North Rona and Sula Sgeir) were selected under Stage 1.1, whilst the remaining four colonies were selected under Stage 1.4. This was in light of the recommendation of the 1988 ICBP-EC Working Group on the selection of SPAs (see Appendix 3 of Stroud *et al.* 1990) that all breeding sites of six very poorly known seabirds in Europe be selected as SPAs. Of these six, only Leach's Petrel occurs in the UK.

Most sites selected are multi-species SPAs, important for a range of other seabirds, although Ramna Stacks and Gruney, and the Flannan Islands have been selected solely for this species. The sites have a high degree of naturalness, with Leach's Petrel selecting nest sites in natural crevices on these locations – in contrast to Storm Petrels which are often found nesting in human artefacts such as old walls, 'brochs' (ancient dry-stone fortifications) or dikes.

Most UK SPAs for this species have a very long recorded history of occupancy (Holloway 1996). The first record of this species in the UK came from St Kilda in 1818 (being at that time only the fourth specimen known to science), although breeding was not confirmed until 1841. On North Rona, the first record was in 1883 (Swinburne 1884) and on nearby Sula Sgeir it was discovered in 1939 by Atkinson & Ainslie (1940). It was first recorded from the Flannans by W. Eagle Clarke in 1904. There were records from Sule Skerry and Sule Stack in 1933 (Robinson 1934) and from Foula in the 1950s (Wilson 1958). There are few historical records from Ramna Stacks and Gruney where the species was first located in 1980 (Fowler 1982) and numbers at that site have always been thought to be low.

Distribution map for breeding Leach's Petrel SPA suite

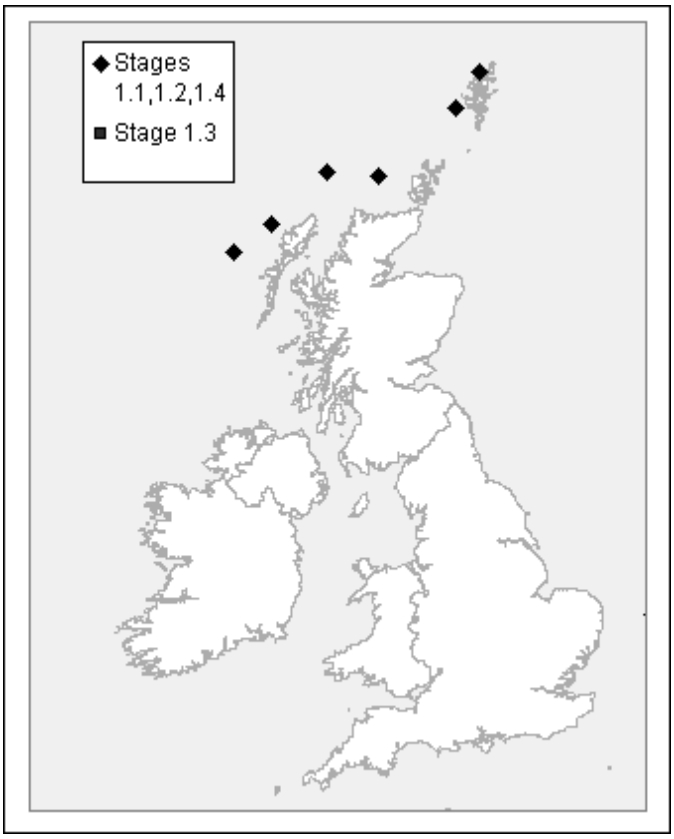


Table 6.9.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Flannan Isles	100	<0.1	0.2	1.4
Foula	50	<0.1	<0.1	1.4
North Rona and Sula Sgeir	2,750	0.3	5.0	1.1
Ramna Stacks and Gruney	22	<0.1	<0.1	1.4
St Kilda	52,073	5.5	4.7	1.1
Sule Skerry and Sule Stack	5	<0.1	<0.1	1.4
TOTALS	55,000	5.8%	100%	

A6.10 Gannet *Morus bassanus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**localised**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	201,000	2,010	197,127 (98% of GB population)
Ireland[2]			
Biogeographic population	263,000	2,630	197,127 (75% of biogeographic population)

GB population source: Stone et al. 1997
Biogeographic population source: Lloyd et al. 1991

3. Distribution

The Gannet's global range is restricted to the North Atlantic where it breeds in very large numbers contained in just a few major colonies at northern latitudes (Fisher & Vevers 1943–44; Nelson 1978). Whilst there are some colonies on the coast of Newfoundland and Quebec (amounting to about 39,700 pairs) most of the population (*i.e.* about 223,500 pairs) breed in the eastern Atlantic (Lloyd *et al.* 1991). The species is monotypic.

Within the East Atlantic, greatest numbers breed in the UK. Between 60% and 70% of the world population of Gannets nest around the British coastline with other colonies in Ireland, France, Norway, Faeroes, and Iceland.

Most British Gannets nest on Scottish offshore islands (Murray & Wanless 1986, 1997), with one colony in England (Bempton on the east coast) and one off south-west Wales (Grassholm). Gannets also nest in the Channel Islands (Lloyd *et al.* 1991), though in relatively small numbers.

Gannets are present at their colonies from March to September and during this period they fish in waters relatively close to the colonies (Stone *et al.* 1995). At other times of the year, the species is pelagic, occurring not only in inshore European waters – generally south of their summer range around British and Irish coasts – but also more widely in the North Atlantic as far south as West Africa (Stone *et al.* 1995).

2 Although occurring in the Republic of Ireland, there are no Gannetries in Northern Ireland.

4. Population structure and trends

Gannet colonies have been censused accurately for nearly a century. During that time, the population has consistently increased in size and new colonies have been founded (Fisher & Vevers 1943–44). These trends apply both within Britain and elsewhere in the species' range. In the early 1900s, there were only seven British Gannetries and the population was thought to be around 50,000 pairs (Gurney 1913). Now, there are 14 colonies holding around four times the number of birds. The increase is continuing with a current rate of growth of about 2.4% per annum (Murray & Wanless 1997).

The initial increase in Gannet numbers was attributed to the introduction of bird protection laws. Since then, it seems likely to have been a consequence of the provision of food by man, since Gannets are vigorous competitors for discarded fish around trawlers (Hudson & Furness 1988; Camphuysen *et al*. 1995). They have probably also taken advantage of increased sandeel stocks in the North Sea.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Gannet supports an average of 197,127 pairs. This amounts to over 98% of the British breeding population and about 75% of the international population. The species does not breed in Northern Ireland. This total is contained within ten sites (Table 6.10.1) for which Gannet has been listed as a qualifying species.

6. Classification criteria

All Gannet colonies in the UK that were known to support more than 1% of the international breeding population were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. Additionally, Fair Isle, and Flamborough Head and Bempton Cliffs were selected under Stage 1.3 (see section 5.3), with Gannet identified as an important component of the wider breeding seabird assemblages at these localities. These sites also contribute to the range coverage of the suite, Flamborough Head and Bempton Cliffs being the only Gannet breeding colony on the east coast of England.

Most sites selected are multi-species SPAs, important for a range of other seabirds, although Grassholm in west Wales has been selected solely for this species.

Most UK SPAs for this species have a very long recorded history of occupancy (Gurney 1913; Fisher & Vevers 1943–44, Nelson 1978; Holloway 1996). Archaeological evidence on St Kilda indicates that it was occupied by Gannets prior to the 9th century, and the colony was used for subsistence purposes by islanders until about 1910. It is the world's biggest Gannetry, holding nearly a quarter of the world population. The Bass Rock, amongst the Firth of Forth Islands, is the second largest Gannetry in Britain. The species' scientific name is derived from the site, giving an indication of its long history of occupation (earliest written records date from 1521). Ailsa Craig was occupied prior to 1526, whilst Gannets were breeding on Sula Sgeir by 1549. However, occupation of the latter site must considerably pre-date this period since the name of the site is originates from the Viking name for Gannet (as is the case for Sule Skerry and Sule Stack). Young Gannets at this colony are still harvested in a traditional hunt dating back several centuries (Beatty 1992). As a consequence, the rate of growth of this colony is not as high as at other sites. Gannets were harvested on Sule Stack until 1932, with the earliest written record of the specie's presence at the site dating from 1710. Other colonies are known to have been founded more recently (relative to the long-recorded history of some sites), with Grassholm founded between 1820 and1860, Noss in 1914, Hermaness in 1917, Flamborough Head in the 1930s, the Flannans in the mid-1960s, and Fair Isle in 1975.

Distribution map for breeding Gannet SPA suite

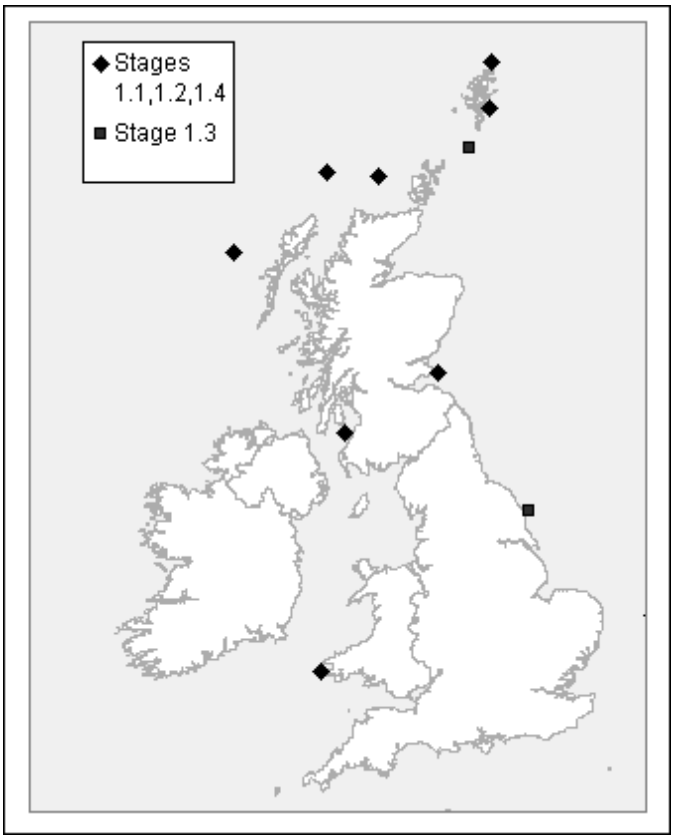


Table 6.10.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ailsa Craig	32,460	12.3	16.2	1.2
Fair Isle	1,166	0.4	0.6	1.3
Firth of Forth Islands	34,400	13.1	17.1	1.2
Flamborough Head and Bempton Cliffs	2,501	0.95	1.2	1.3
Grassholm	33,000	12.6	16.4	1.2
Hermaness, Saxa Vord and Valla Field	12,000	4.6	6.0	1.2
North Rona and Sula Sgeir	9,000	3.4	4.5	1.2
Noss	7,310	2.8	3.6	1.2
St Kilda	60,400	23.0	30.1	1.2
Sule Skerry and Sule Stack	4,890	1.9	2.4	1.2
TOTALS	197,127	75.0%	98.1%	

A6.11a Cormorant *Phalacrocorax carbo carbo* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	7,000	70	2,067 (29.5% of GB population)
Ireland	4,700	47	249 (5.3% of all-Ireland population)
Biogeographic population	41,200	412	2,316 (5.6% of biogeographic population)

GB population source: Lloyd et al. *1991*
Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The world range of the Cormorant extends discontinuously from north-east America (Labrador and Newfoundland) across Eurasia to Australia and New Zealand, as well as to southern Africa. The distribution is far from continuous, especially in Europe and central Asia.

The species is polytypic with five sub-species described. Of these, two occur in Europe. The nominate sub-species, *P. c. carbo*, occurs on the coasts of the North Atlantic from France, Britain and Ireland, to north-east America, including Iceland and Greenland (Debout *et al.* 1995). *P. c. sinensis* occurs in continental Europe and across Asia, east to Japan and south to Sri Lanka (Cramp & Simmons 1977; Van Eerden & Gregersen 1995; Lindell *et al.* 1995).

There are colonies of *P. c. carbo* on most coasts of Britain and Northern Ireland, with inland sites mostly in southern England (Lloyd *et al.* 1991; Kirby *et al.* 1995; Sellers & Hughes 1997). The situation in Britain has become more complex recently with individuals of the *sinensis* sub-species apparently breeding in south-east England (see discussion in Wernham *et al.* 1999).

4. Population structure and trends

Cormorants breeding in Britain amount to about 17% of the biogeographic population (total *P. c. carbo*) of around 41,000 pairs (Lloyd *et al.* 1991). Since the first UK census in 1969–70, numbers have increased, particularly inland, but this increase has not occurred uniformly across Britain (Lloyd *et al.* 1991; Kirby *et al.* 1995). Increases have occurred elsewhere in the North Atlantic range of *P. c. carbo*

(Debout *et al.* 1995), as well as significant increases in continental European populations of *P. c. sinensis* (Van Eerden & Gregersen 1995; Lindell *et al.* 1995). All these increases are thought to result from relaxation in former persecution and increased provision of food sources such as fish farms and hatcheries. Numbers in western Scotland have, however, decreased, particularly in areas holding salmon farms, suggesting the effects of both licensed killing and illegal persecution (Wernham *et al.* 1999).

Breeding Cormorants can fly long distances to feed. For example, birds nesting on coastal Sheep Island in Northern Island regularly fly up to 60 km inland to feed in Lough Neagh and Lough Beg.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Cormorant supports an average of 2,316 pairs. This amounts to about 30% of the British breeding population, over 5% of the all-Ireland population, and about 5.6% of the international population. This total is contained within seven sites (Table 6.11a.1) for which Cormorant has been listed as a qualifying species.

6. Classification criteria

The two Cormorant colonies in the UK that support more than 1% of the international breeding population (Ynys Seiriol/Puffin Island and Abberton Reservoir) were both considered under Stage 1.2. Both were selected after consideration of Stage 2 judgements. Four additional sites (Calf of Eday, East Caithness Cliffs, Farne Islands, and Firth of Forth Islands) were selected under Stage 1.3 (see section 5.3), since Cormorants were identified as an important component of a wider breeding seabird assemblage. In order to provide for range coverage in Northern Ireland, Sheep Island was selected under Stage 1.4. Most sites selected are multi-species SPAs, important for a range of other seabirds, although Ynys Seiriol/Puffin Island in Wales, and Sheep Island in Northern Ireland have been selected solely for this species.

The distribution of SPAs covers most of the range of Cormorants in the UK and includes the largest inland colony at Abberton Reservoir. (These birds are considered to be *P.c. carbo* (Sellers 1993) despite their tree-nesting habits more commonly associated with the European race *P.c. sinensis*).

Some UK SPAs for this species have a very long recorded history of occupancy. For example, they are known to have bred on the Farne Islands since at least 1865 (Holloway 1996).

Distribution map for breeding Cormorant SPA suite

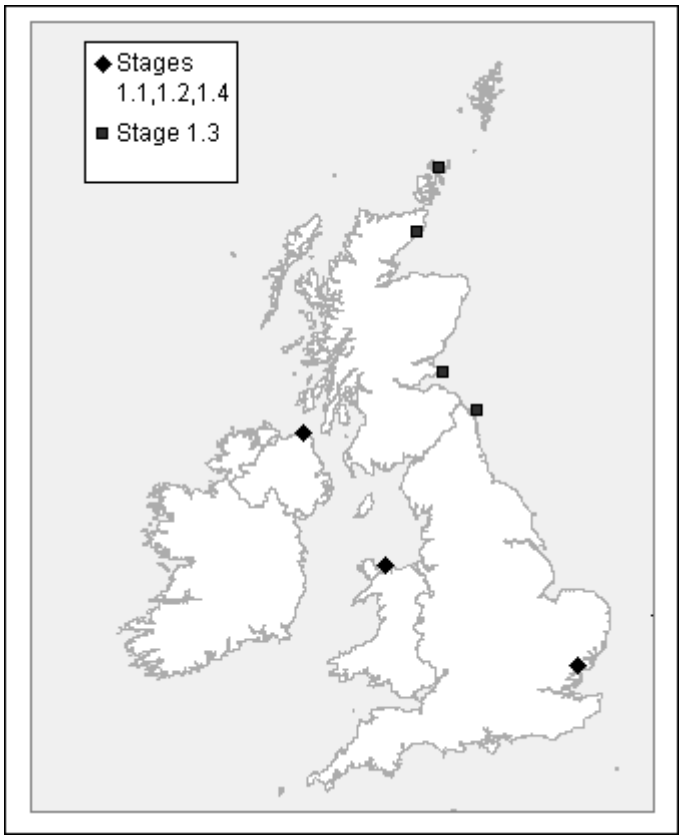


Table 6.11a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	490	1.2	7.0	1.2
Calf of Eday	223	0.5	3.2	1.3
East Caithness Cliffs	144	0.4	2.1	1.3
Farne Islands	194	0.5	2.8	1.3
Firth of Forth Islands	240	0.6	3.4	1.3
Sheep Island	249	0.6	5.3 (Ire)	1.4
Ynys Seiriol/Puffin Island	776	1.9	11.1	1.2
TOTALS	2,316	5.6%	29.5% 5.3% (Ire)	

A6.11b Cormorant *Phalacrocorax carbo carbo* (non-breeding)

1. Status in UK

See section 6.11a.

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	13,200	130	4,434 (34% of GB total)
Ireland	5,000	50	551 (5% of all-Ireland total)
Biogeographic population	120,000	1,200	4,986 (4% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section 6.11a outlined the general breeding distribution of Cormorants in Europe and the UK. Outside the breeding season (August to February), some Cormorants remain in the vicinity of their colonies, while others move to sheltered, coastal or inland locations – mostly south and east of their breeding sites. Ringing analyses (Wernham *et al.* in press) show that Cormorants from Britain and Ireland move to continental Europe, and birds from the continent also spend the winter on the coasts of south-east England.

There is significant movement of coastal breeding birds inland in winter. Kirby *et al.* (1995) analysed British count data in different seasons. Whilst in September, 71–75% of Cormorants counted in Britain were on coastal sites, this had fallen to 50–54% by February, with numbers on inland sites increasing significantly.

In the marine environment, they are largely absent from inshore waters any significant distance from the coast (Stone *et al.* 1995).

4. Population structure and trends

There is little historical information on trends in the non-breeding population, with the first survey of distribution in this season only carried out in the early 1980s (Lack 1986). Trends monitored by the WeBS counts indicate approximately stable numbers following an increase in the late 1980s, shortly after Cormorants were included in the scheme, (Kirby *et al.* 1995; Pollitt *et al*. 2000). It is likely, however, that the non-breeding population of this species has increased in parallel with that of the British breeding population (Lloyd *et al*. 1991). These increases are reflected elsewhere in the species' range (Van Eerden & Gregersen 1995; Debout *et al.* 1995; Lindell *et al.* 1995), and are possibly attributable to a general relaxation in levels of illegal persecution in many countries, as well as an increased provision of food sources such as fish farms and hatcheries.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Cormorant supports, on average, 4,9286 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 34% of the British, about 5% of the all-Ireland, and about 4% of the international flyway populations. The suite comprises 32 sites

distributed throughout the UK at which Cormorant has been listed as a qualifying species (Table 6.11b.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international total of Cormorants in winter (Stage 1.2). However, 32 sites in the suite were identified under Stage 1.3 (see section 5.3); where Cormorants are important components of a non-breeding waterbird assemblage. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, also of importance for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stage 1.3 resulted in a widely spread suite of sites holding key resorts for non-breeding Cormorants in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Cormorant SPA suite

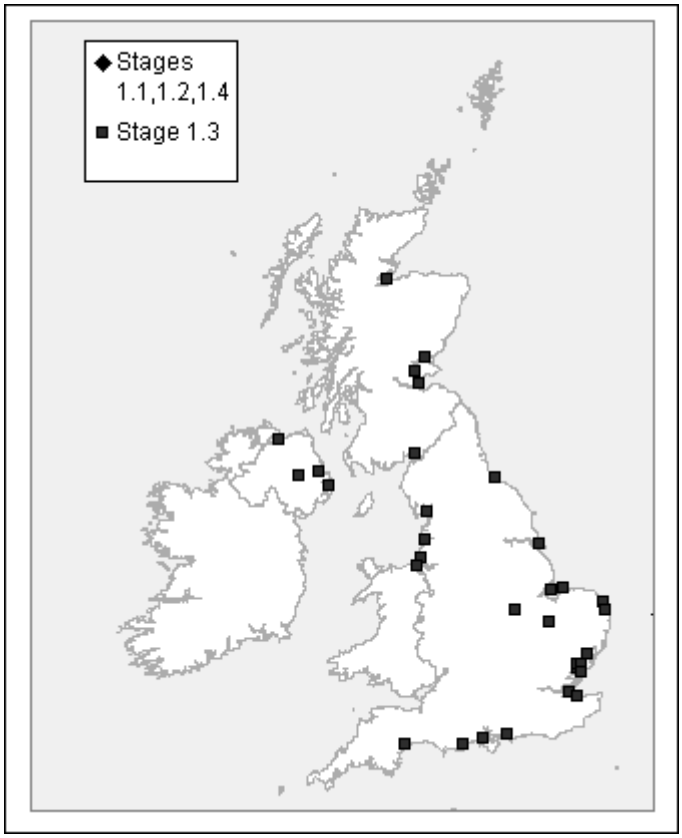


Table 6.11b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	400	0.3	3.0	1.3
Belfast Lough	346	0.3	6.9 (Ire)	1.3
Blackwater Estuary	555	0.5	4.2	1.3
Breydon Water	139	0.1	1.1	1.3
Broadland	633	0.5	4.8	1.3
Chichester and Langstone Harbours	155	0.1	1.2	1.3
Colne Estuary	313	0.3	2.4	1.3
Dengie	200	0.2	1.5	1.3
Exe Estuary	138	0.1	1.1	1.3
Firth of Forth	697	0.6	5.3	1.3
Firth of Tay and Eden Estuary	230	0.2	1.7	1.3
Humber Flats, Marshes and Coast	130	0.1	1.0	1.3
Inner Moray Firth	418	0.4	3.2	1.3
Loch Leven	374	0.3	2.8	1.3
Lough Foyle	118	0.1	2.4 (Ire)	1.3
Lough Neagh and Lough Beg	728	0.6	14.6 (Ire)	1.3
Medway Estuary and Marshes	231	0.2	1.8	1.3
Mersey Narrows and North Wirral Foreshore	289	0.2	2.2	1.3
Morecambe Bay	879	0.7	6.6	1.3
North Norfolk Coast	140	0.1	1.1	1.3
Ouse Washes	259	0.2	2.0	1.3
Poole Harbour	348	0.3	2.6	1.3
Ribble and Alt Estuaries	296	0.3	2.2	1.3
Rutland Water	619	0.5	4.7	1.3
Solent and Southampton Water	214	0.2	1.6	1.3
Stour and Orwell Estuaries	225	0.2	1.7	1.3
Strangford Lough	183	0.2	3.7 (Ire)	1.3
Teesmouth and Cleveland Coast	191	0.2	1.5	1.3
The Dee Estuary	238	0.2	1.8	1.3
The Swale	187	0.2	1.4	1.3
The Wash	256	0.2	1.9	1.3
Upper Solway Flats and Marshes	502	0.4	3.8	1.3
TOTALS	4,986 (in January)	4.2%	34.1% 5.3% (Ire)	

A6.12 Shag *Phalacrocorax aristotelis* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	37,500	375	17,584 (47% of GB population)
Ireland	8,800	88	No SPAs selected in Northern Ireland
Biogeographic population	125,000	1,250	17,584 (14% of biogeographic population)

GB population source: Lloyd et al. *1991*
Ireland population source: Lloyd et al. *1991*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

In contrast to the closely related Cormorant, the Shag has a much more restricted global distribution, being found only in the Western Palearctic, where it breeds in North Atlantic coastal areas from Iceland in the north, south to Morocco, including the whole of the Norwegian coastline as far north as the Kola Peninsula. It also has a restricted and discontinuous breeding distribution along the shores of the Mediterranean and Black Seas.

Three sub-species of Shag have been described. The nominate *P. a. aristotelis* is the most abundant, occurring through most of the global range in north and west Europe. The small numbers of birds occurring in north-west Africa belong to *P. a. riggenbachi*, whilst *P. a. desmarestii* is endemic to the Mediterranean basin (Aguilar & Fernández 2000).

In the UK, the Shag is restricted to rocky coasts of Britain, being mostly absent from southern and eastern England, *i.e.* from the Isle of Wight in southern England, to Northumberland in north-east England. Most of the population breeds in the northern isles and in western Scotland (Lloyd *et al.* 1991; Gibbons *et al.* 1993).

Shags in Britain and Northern Ireland stay close to their breeding colonies throughout the year (Stone *et al.* 1995), thus the species' distribution remains coastal outside the breeding season.

4. Population structure and trends

There have been two complete British and Irish censuses of Shags, in 1969/70 (Cramp *et al.* 1974) and 1985–87 (Lloyd *et al.* 1991). The latter census recorded a 40% increase in numbers, with 37,500 pairs in Britain, and 8,800 pairs in Ireland (260 pairs of which were in Northern Ireland). There was some regional variation in proportional increases between these two surveys (Lloyd *et al.* 1991). This population increase has probably been caused by a relaxation in levels of illegal persecution and also by a general increase in the supply of sandeels – one of their preferred foods.

Shags are particularly susceptible to rapid changes in breeding numbers, though usually the effects are local or regional, rather than national. These fluctuations have been caused by poisoning from (natural) toxic algal blooms (Coulson *et al.* 1968), but more frequently relate to fluctuations in food supply (Harris *et al.* 1987).

The biogeographic population has increased in past decades, and is currently estimated at 125,000 (although may be as low as 85,500). Long-term trends at an international scale are generally obscured however, by the effects of short-term fluctuations at individual colonies or within specific regions.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Shag supports an average of 17,584 pairs. This amounts to about 47% of the British breeding population, and over 14% of the international population. This total is contained within 13 sites (Table 6.12.1) for which Shag has been listed as a qualifying species. Within an all-Ireland context, there have been no SPAs selected for Shags in Northern Ireland.

6. Classification criteria

All four Shag colonies in the UK that support more than 1% of the international breeding population (Firth of Forth Islands, Foula, East Caithness Cliffs and the Shiant Isles) were considered under Stage 1.2. All were selected after consideration of Stage 2 judgements. Additionally, nine sites were selected under Stage 1.3 (see section 5.3), since Shag was identified as an important component of the breeding seabird assemblages at these localities.

All sites selected are multi-species SPAs, important for a range of other seabirds. The SPA suite is spread through most of the Shag's UK range, from Shetland in the north-east, through to the Isles of Scilly in the extreme south-west. Some UK SPAs for this species have a very long recorded history of occupancy. For example, Shags are known to have been breeding on Foula, Sule Skerry and Sule Stack, East Caithness Cliffs, St Abb's Head, the Firth of Forth Islands (Bass Rock), and the Farne Islands since at least the last quarter of the nineteenth century (Holloway 1996).

Distribution map for breeding Shag SPA suite

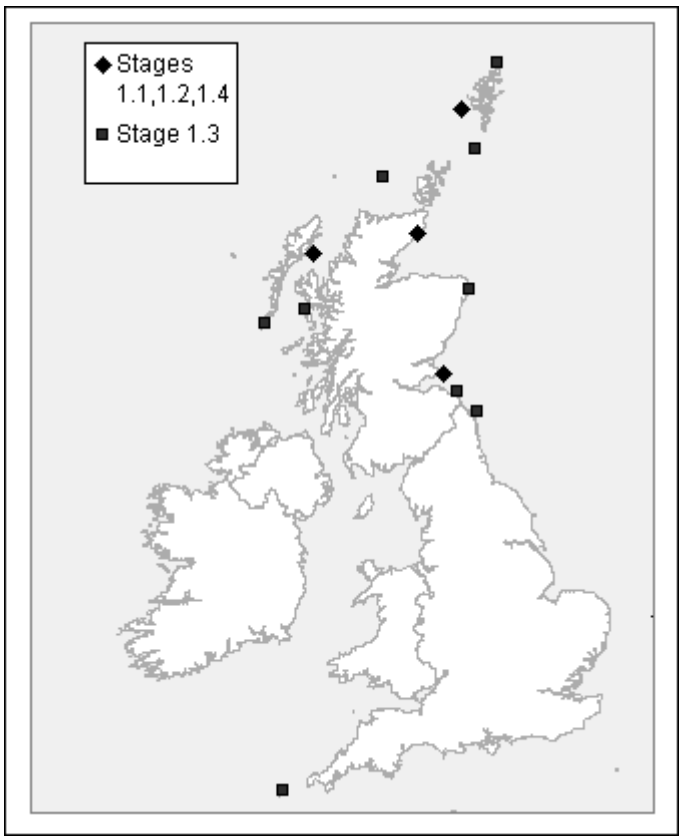


Table 6.12.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Buchan Ness to Collieston Coast	1,045	0.8	2.8	1.3
Canna and Sanday	1,140	0.9	3.0	1.3
East Caithness Cliffs	2,345	1.9	6.3	1.2
Fair Isle	1,099	0.9	2.9	1.3
Farne Islands	994	0.8	2.7	1.3
Firth of Forth Islands	2,887	2.3	7.7	1.2
Foula	2,400	1.9	6.4	1.2
Hermaness, Saxa Vord and Valla Field	540	0.4	1.4	1.3
Isles of Scilly	1,108	0.9	3.0	1.3
Mingulay and Berneray	721	0.6	1.9	1.3
Shiant Isles	1,780	1.4	4.8	1.2
St Abb's Head to Fast Castle	651	0.5	1.7	1.3
Sule Skerry and Sule Stack	874	0.7	2.3	1.3
TOTALS	17,584	14.1%	46.9%	

A6.13a Bittern *Botaurus stellaris* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (booming males)	Selection thresholds	Totals in species' SPA suite
GB	20	1	18 (90% of GB population)
Ireland			
Biogeographic population	10,044	100	18 (0.2% of biogeographical population)

GB population source: Stone et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global distribution of the Bittern extends from western Europe, across central Asia to Sakhalin and north Japan. An isolated population occurs in southern Africa. Across this extensive area, its breeding range is confined to wetland areas supporting extensive stands of the Common Reed *Phragmites australis*.

Two sub-species are recognised. The nominate race occurs throughout the Palearctic, whilst those breeding in southern Africa below to the race *B. stellaris capensis.* The distribution of Bitterns in eastern and central Asia is largely continuous. In Europe, however, the range is very discontinuous. This is a consequence of the loss of habitat and the isolated nature of suitable remaining wetland areas. Accordingly, although Bitterns occur in most European countries, they are highly localised (Hagemeijer & Blair 1997).

Bitterns are currently one of the rarest breeding birds in the UK, with the entire population (20 booming males) confined to England. Here, the species breeds regularly in reedbeds in the counties of Norfolk, Suffolk and Lancashire. In the past, it bred in other counties within the UK (Holloway 1996). Many of the significant former breeding sites, along with current ones, are currently subject to active habitat management and restoration to enhance their suitability for this species.

4. Population structure and trends

The Bittern's European population is estimated at 10,000–12,000 pairs (Hagemeijer & Blair 1997).

At one time a locally numerous breeding species in the UK, Bitterns became extinct by the 1880s as wetlands were drained for agricultural purposes and the remaining birds were persecuted by egg and skin collectors and by 'sportsmen'.

Breeding was established again in the UK in 1911 and the population grew to an estimated peak of 78–83 booming males in the mid-1950s (Day & Wilson 1978). The increase was almost certainly a result of legislative protection, the protection of existing reedbeds as nature reserves, and the flooding of coastal areas as war-time defence against invasion, with the coincident growth of extensive stands of reed. As these reedbeds matured, they accumulated reed-litter and dried out, pools and dykes became choked with reed growth and became unsuitable for Bitterns. Numbers have also been adversely affected by changes to food supply, a lowering of water tables due to high levels of ground water abstraction, and local pollution. As a result of these negative factors, numbers have fallen steadily, reaching what was probably their lowest point in 1997 of an estimated 11–12 'booming' males. The population has since increased to 19–22 'booming' males in 1999 (Gilbert *et al*. 1999) with 20 males (Stone *et al*. 1997) accepted by this review for standardised reporting purposes.

The Bittern's decline in the UK has been mirrored in populations elsewhere in Europe (Tucker & Heath 1994) and the species is consequently regarded as being of conservation concern in both European and UK contexts.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Bittern supports, on average, 18 booming males. This amounts to about 90% of the British breeding population whilst the suite contains about 0.2% of the international population. Bitterns do not breed in Northern Ireland. This total is contained within five sites (Table 6.13a.1) where Bittern has been listed as a qualifying species.

Other measures

A number of reedbeds outside the SPA suite have been subject to, or are programmed for, active habitat management in order to make them more attractive to breeding Bitterns. The essential action at these sites is to re-wet the reedbeds (RSPB *et al.* 1994; Tyler 1994). This can be achieved by lowering the bed level by reed litter-removal and/or by raising water levels through sluicing and bunding. New feeding areas can be created by clearing dykes and deepening existing pools (Tyler 1994). Reedbed management within and outwith the SPA suite is expected to provide habitat suitable for 30–40 'booming' Bitterns.

National and international conservation concern for the species is reflected in action plans on both scales for this species (Heredia *et al.* 1996; Biodiversity Steering Group 1995).

New reedbed creation is in progress in areas of limited existing wildlife interest with the aim of establishing a substantial area for breeding Bitterns in the near future. The UK Bittern Action Plan (Biodiversity Steering Group 1995) seeks to provide sufficient habitat for 100 'booming' males by 2020. Sea-level rise poses a significant threat to Bittern habitat in south-eastern England and a considerable area of new reedbed will need to be created to compensate for their inevitable loss or degradation. Therefore, the essential requirement is to create a further 1,000 ha of new reedbed in the bird's traditional stronghold in south-eastern England, but safe from the impact of sea-level rise.

6. Classification criteria

All sites in the UK that were known to regularly support more than 1% of the national breeding population of Bitterns (booming males) were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. The distribution of the four sites encompasses the core of the remaining range of Bitterns in the UK, notably extensive coastal wetlands in East Anglia where current active conservation management is being undertaken for this species.

Distribution map for breeding Bittern SPA suite

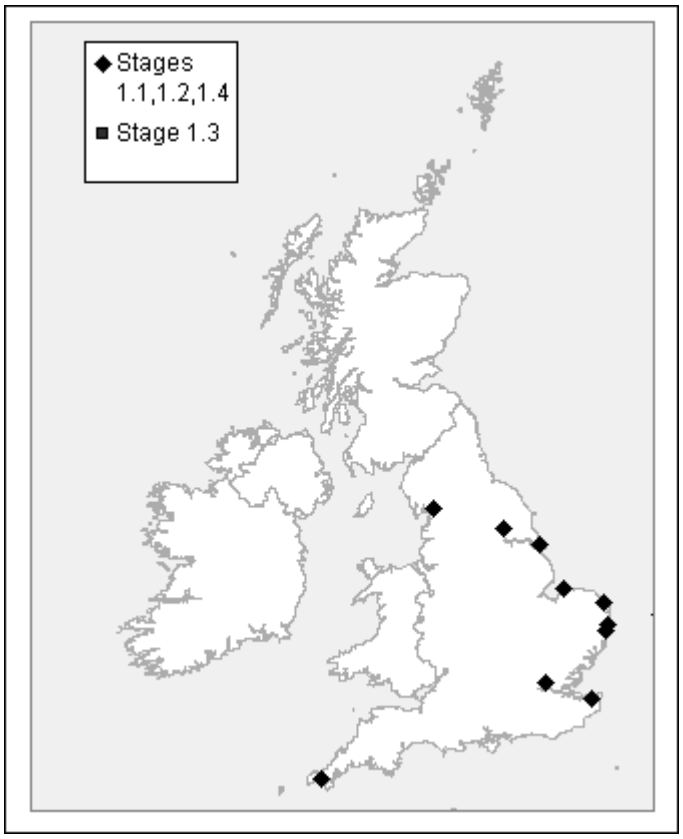


Table 6.13a.1 – SPA suite

Site name	Site total (booming males)	% of biogeographical population	% of national population	Selection stage
Benacre to Easton Bavents	1	<0.1	5	1.1
Broadland	3	<0.1	15	1.1
Leighton Moss	4	<0.1	20	1.1
Minsmere – Walberswick	7	0.1	35	1.1
North Norfolk Coast	3	<0.1	15	1.1
TOTALS	18	0.2%	90%	

A6.13b Bittern *Botaurus stellaris* (non-breeding)

1. Status in UK

See section A6.13a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	100	1[3]	50 (50% of GB total)
Ireland			
Biogeographic population	25,000	250	50 (0.2% of biogeographic population)

GB population source: Lack 1986
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global and European distribution of Bitterns is described in section A6.13a. Birds in the south and west of the European range tend to be sedentary, whilst those in the north and east tend to be migratory. These move south-westwards in search of ice-free feeding areas and small numbers arrive in the UK each autumn or winter, most departing again in spring.

British reedbeds are likely to be of particular European significance during severe weather, when ice-free waters may provide a refuge for unusually high numbers of birds which might ordinarily winter in continental Europe. The European population is estimated at 25,000 individuals in the non-breeding season.

4. Population structure and trends

Numbers of non-breeding Bitterns in Britain vary each year with a larger influx when severe weather affects the near continent (Bibby 1981). Bitterns are extremely secretive and silent outside the breeding season, thus they tend to be under-recorded by birdwatchers and rarely figure amongst Wetland Bird Survey data (*e.g.* Cranswick *et al.* 1999). Hence, the estimated total of 30 to 100 individuals wintering in Britain cannot be treated with entire confidence.

No comprehensive information is available on between-year variation in population size, nor on long-term trends in the winter population. However, as the number of breeding Bitterns has declined both in Britain and in Europe as a whole (Tucker & Heath 1994), the non-breeding population is also likely to have declined.

Habitat loss through wetland drainage continues to be a major cause of loss in some areas, as is the accumulation of reed litter that causes reedbeds to progressively dry out, rendering them unsuitable for foraging Bitterns.

5. Protection measures for population in UK

SPA suite

In winter, the UK's SPA suite for Bitterns supports, on average, 50 individuals. This amounts to about 50% of the British non-breeding population whilst the suite contains about 0.2% of the corresponding

3 The convention of adopting a threshold of 50 individuals for the selection of SPAs for wintering waterbirds (section 4.1.2) has not been adopted for Bittern in light of its status on the shortlist of Globally Threatened Declining Species of the UK Biodiversity Action Plan (Biodiversity Steering Group 1995).

international population. Bitterns do not regularly occur in winter in Northern Ireland. The total is contained within ten sites (Table 6.13b.1) where Bittern has been listed as a qualifying species.

Other measures

Several targeted conservation management measures are being undertaken to better manage Bittern habitat throughout the year (see section 6.13a for details). A UK Biodiversity Action Plan has been drafted for this species (Biodiversity Steering Group 1995) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

All sites in the UK that were known to regularly support more than 1% of the national total of Bitterns in winter were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. The ten sites are distributed through the winter range of Bitterns in the UK. These include extensive coastal wetlands in East Anglia and elsewhere which are under active conservation management for this species.

Distribution map for non-breeding Bittern SPA suite

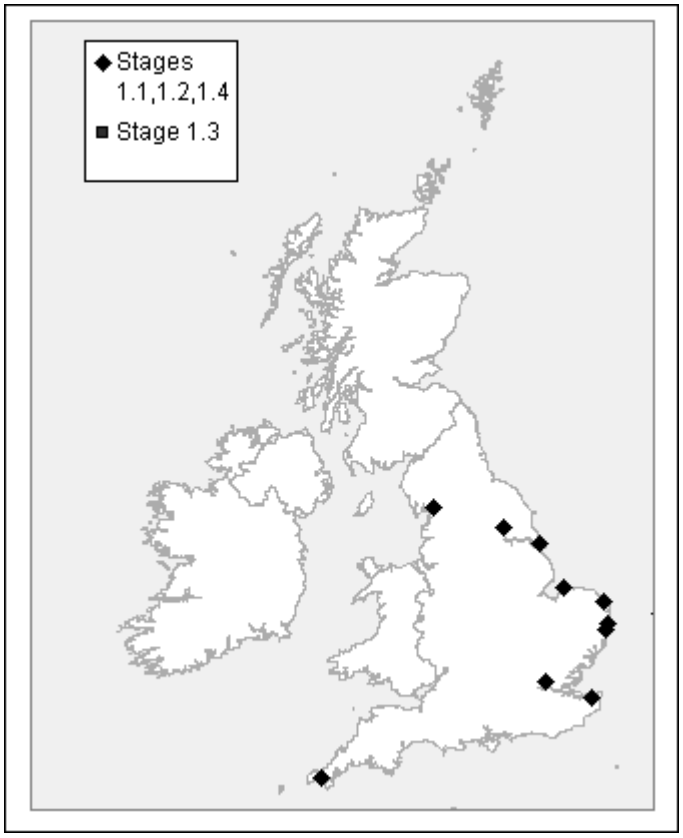


Table 6.13b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Benacre to Easton Bavents	2	<0.1	2	1.1
Broadland	6	<0.1	6	1.1
Humber Flats, Marshes and Coast	2	<0.1	2	1.1
Lee Valley	6	<0.1	6	1.1
Leighton Moss	8	<0.1	8	1.1
Lower Derwent Valley	3	<0.1	3	1.1
Marazion Marsh	2	<0.1	2	1.1
Minsmere – Walberswick	14	<0.1	14	1.1
North Norfolk Coast	5	<0.1	5	1.1
Stodmarsh	2	<0.1	2	1.1
TOTALS	50	0.2%	50%	

A6.14 Little Egret *Egretta garzetta* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	500	50 (see section 5.1.2 for rationale)	225 (45% of GB total)
Ireland			
Biogeographic population	125,000	1,250	225 (0.2% of biogeographic population)

GB population source: BTO in litt.
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Little Egret has an extensive global breeding distribution that includes Europe, Africa, Asia and Australasia. Four subspecies have been recognised with only the nominate *E. g. garzetta* occurring in Europe (as well as in south Asia, east, south and north-west Africa). Most birds from the Western Palearctic breed in the south of the Iberian Peninsula, in southern and western France, and through northern Italy and the Balkans to the coast of the Black Sea. These birds winter in Africa or southern Europe (Cramp & Simmons 1977).

Britain lies at the northern limit of the European breeding range, with the closest nesting areas being in the western part of Brittany (Hagemeijer & Blair 1997). The Little Egrets that winter in the UK occur primarily on southern estuaries from Pembrokeshire in South Wales to the Thames. Individuals also occur away from this area, typically as autumn or spring vagrants (Combridge & Parr 1992; Smiddy & O'Sullivan 1998). Those that occur in the non-breeding season in the UK may also include birds that originate from north-west France. There are movements within Britain in the course of the non-breeding season – Combridge & Parr (1992) noted a tendency for birds to move from the vicinity of the Solent to south-west England in late winter.

Three English sites are of notable importance for Little Egrets – Chichester and Langstone Harbours, Poole Harbour and the Tamar Estuaries Complex. The species is still comparatively rare in Scotland and Northern Ireland (Fraser *et al*. 1997; Smiddy & O'Sullivan 1998). The Little Egret is primarily an estuarine bird in the UK in winter, although it may also occur in freshwater habitats. Birds typically feed along muddy creeks and river channels, roosting in trees or saltmarsh. Nocturnal roosts may be at

considerable distance from foraging areas (A. Musgrove pers. comm.). Individuals may be strongly site-faithful during winter (Rogers *et al*. 1990).

4. Population structure and trends

During the period from 1958 to 1988, the average number of Little Egrets recorded each year in the UK was under 15, with most records coming in spring (Fraser *et al*. 1997). An influx occurred in the autumn of 1989, however, and records from the following winter indicated a peak of at least 18 birds (Combridge & Parr 1992). Numbers in the UK have increased markedly since then (Lock & Cook 1998), and an autumn total of 800, and a winter total of 500 was estimated in 1998 (BTO unpublished data). This estimate was based on Wetland Bird Survey counts, a pilot roost survey in January 1998, and additional data from county bird reports.

Peak numbers of Little Egrets in the UK occur in autumn, as juveniles and adults disperse from breeding colonies in north-west France (Combridge & Parr 1992). Numbers then fall as some of these birds return to the continent to winter. Autumn numbers have risen progressively since a major influx in the autumn of 1989 (Combridge & Parr 1992). There were over 100 records in August 1989, rising to over 600 in August 1993 and nearly 1,000 in August 1995 (Fraser *et al*. 1997). Peak autumn (July to October) numbers at Poole Harbour have increased from 32 in 1993 to 107 in 1997 and at Chichester and Langstone Harbours from 57 to 137. Numbers on the Tamar Estuary have been more stable. Coincident with the increases in the UK, numbers of Little Egrets in the autumn have also risen in Ireland (Smiddy & O'Sullivan 1998).

Peak winter numbers at Poole Harbour SPA increased from 25 in 1993/94 to 83 in 1997/98. Numbers at the Tamar Estuary and Chichester and Langstone Harbours SPAs peaked in the winter of 1995/96 at 76 and 144 respectively.

The increase in UK numbers has come as a result of the extension of the species' breeding distribution into northern France and the Low Countries. Breeding first took place in northern France in 1978 and in The Netherlands in 1979 (Combridge & Parr 1992; Lock & Cook 1998). Little Egrets bred for the first time in Great Britain at Poole Harbour in 1996 (Lock & Cook 1998) and breeding has since occurred at one or two other sites in southern England and in Co. Cork and probably Co. Wexford in Ireland (Milne & O'Sullivan 1999; Smiddy & O'Sullivan 1998).

Increases in numbers in the non-breeding season, associated with the spread in the species' breeding distribution, have also been recorded in Ireland, northern and western coasts of France and northern Spain (Combridge & Parr 1992; Milne & O'Sullivan 1999; Smiddy & O'Sullivan 1998). This spread may partly be the result of milder winters. Little Egrets have previously been shown to suffer heavy mortality during severe cold weather (Hafner *et al*. 1994).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Little Egret supports, on average, 225 individuals. This total amounts to about 45% of the British population and about 0.2% of the international flyway population. Little Egrets do not regularly winter in Northern Ireland. The suite is comprised of three sites where Little Egret has been listed as a qualifying species (Table 6.14b.1).

6. Classification criteria

The three sites in the UK that support more than 1% of the national population in the non-breeding seasons were considered for selection under Stage 1.1, and all were selected after consideration of Stage 2 judgements (Chichester and Langstone Harbours; Poole Harbour; and the Tamar Estuaries Complex).

Distribution map for non-breeding Little Egret SPA suite

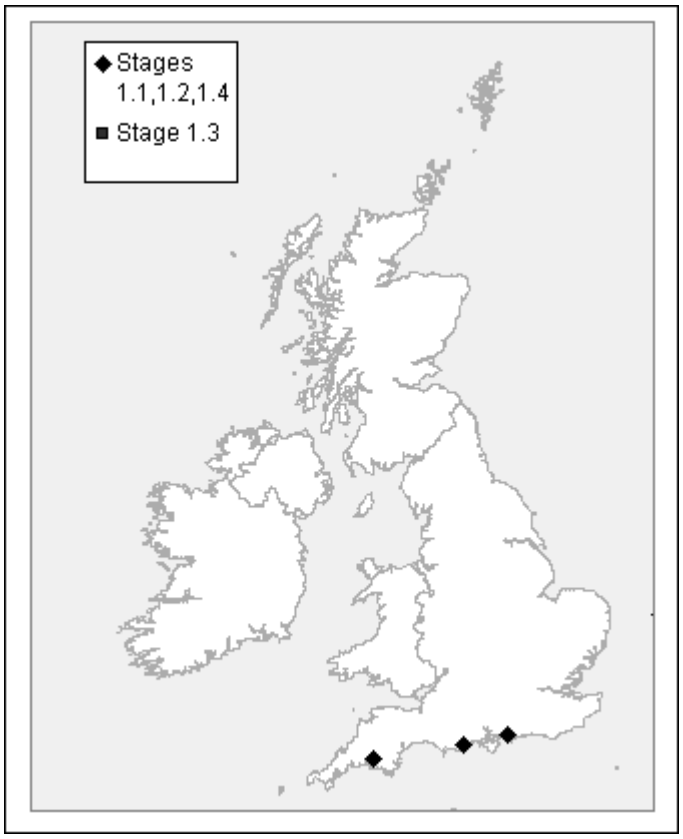


Table 6.14b.1 – SPA suite

Site name	Site population	% of biogeographical population	% of national population	Selection stage
Chichester and Langstone Harbours	100	<0.1%	20.0	1.1
Poole Harbour	83	<0.1%	16.6	1.1
Tamar Estuaries Complex	42	<0.1%	8.4	1.1
TOTALS	225	0.2%	45.0%	

A6.15 Bewick's Swan *Cygnus columbianus bewickii*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3 (winter)** Unfavourable conservation status (**vulnerable – in winter**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	7,200	70	6,937 (99% of GB total)
Ireland	2,500	50 (see section 5.1.2 for rationale)	136 (5% of all-Ireland total)
Biogeographic population	17,000	170	7,072 (42% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Bewick's Swan is the Palearctic sub-species of *Cygnus columbianus*, a species which has a Holarctic breeding range extending through Alaska, northern Canada and Arctic Russia, and wintering south to the USA, north-west Europe, Caspian Sea, China and Japan (Scott & Rose 1996). Two sub-species have been identified. The nominate *C. c. columbianus* (the Tundra Swan) occurs in North America. The sub-species *C. c. bewickii* (Bewick's Swan) breeds on Arctic tundra across the northern Russian Palearctic, from the Kanin Peninsula to Kolyuchin Bay in the Chukchi Sea (Rees 1997). *C. c. jankowski,* which occurs in eastern Asia, was also previously considered to be a sub-species but recent evidence suggests these birds are of the race *bewickii* (Rees *et al.* 1997a).

The main European wintering grounds of Bewick's Swan are in lowland areas of northern Europe, from Denmark, through the Low Countries to northern France, Britain and Ireland. Smaller numbers occur in the Camargue, southern France and the south Caspian region.

In Britain, the species has a southerly distribution during the winter, with by far the largest concentrations in eastern England, especially the Nene and Ouse Washes. Smaller flocks occur in western England with relatively small numbers in Wales. In Northern Ireland, the only flocks of note occur at Loughs Foyle, Neagh and Beg. This species shows a high level of winter site fidelity in the UK (Rees 1987). Furthermore, movements between sites within a given winter are infrequent (Rees & Bacon 1996), although such movements can occur, especially in response to severe weather conditions.

Bewick's Swans winter on shallow freshwater lakes, marshes or slow-moving rivers near or adjacent to extensive grasslands liable to flooding (Rees *et al.* 1997b; Rees 1990). In Ireland, they feed predominantly on permanent wet grassland and, in the past, brackish coastal lagoons (Kennedy *et al.* 1954). In recent decades this species has increasingly taken to foraging on agricultural land, especially waste root crops, grain stubbles and winter cereals (MacMillan 1969; Merne 1972; Owen & Cadbury 1975; Rees *et al.* 1997b). In general, they feed by day and return to wetland areas to roost overnight. They are highly gregarious and often occur in flocks of several hundreds.

4. Population structure and trends

Two populations of *C. c. bewickii* have been identified: a large population of 17,000 individuals that breeds in north-east Europe and north-west Siberia and winters in north-west Europe, and a much smaller population, approximately 500 individuals, which breeds further east and winters in the Caspian (Rose & Scott 1997).

The trend for the population of Bewick's Swans wintering in north-west Europe indicates that there was a marked increase in the population between 1974 and 1994, with slight evidence of a decline since the mid-1990s (Beekman 1997; Delany *et al.* 1999). In the mid-1970s, the population was thought to comprise 9,000–10,000 individuals (Mullie & Porter 1977) rising to 17,000 by the mid-1980s (Monval & Pirot 1989). A dramatic increase occurred during the 1980s; 25,800 birds were recorded in January 1990 and 29,000 in January 1995 (Beekman 1997). The reasons for this increase are unknown but may have been related to increased survival rates or emigration from the eastern population. Productivity (judged from the numbers of juveniles occurring in wintering areas) was extremely variable during the period of increase and was therefore unlikely to have been responsible.

During the 19th and early 20th centuries, Bewick's Swan was rare in England and Wales but occurred in relatively high numbers in north-west Scotland, particularly in the Outer Hebrides and Tiree (Owen *et al.* 1986). In the 1930s, numbers began to rise in England and decline in Scotland as the migration route shifted southwards. It is thought that cold-weather influxes of birds in the late 1930s and mid-1950s (Nisbet 1959) helped establish England as a regular wintering area. The Scottish population dwindled to almost nothing until a small wintering flock started to over-winter at Caerlaverock, on the north shore of the Solway, during the mid-1950s (Rees & Bowler 1997).

Numbers of Bewick's Swans have increased at the Ouse Washes since the 1940s when only a small number of birds wintered there. The flock grew to about 1,000 in the early 1970s and numbers have continued to climb; around 5,000 birds now winter at this site making it the key wintering area in Britain. There is now some interchange between birds at this site and those at the nearby Nene Washes. Population increases at the Ouse Washes are largely due to the establishment of RSPB and WWT refuges during the late 1960s and early 1970s. These sites are characterised by low levels of disturbance and supplementary feeding at some sites.

Fewer Bewick's Swans cross the North Sea from the continent during mild winters and this probably explains recent declines in the numbers visiting Britain (Cranswick *et al.* 1999) and may also be responsible for the decline in numbers overwintering in Ireland in recent decades (Colhoun 2000).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Bewick's Swan supports, on average, 7,072 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 99% of the British population, about 5% of the all-Ireland population, and about 42% of the international flyway population. The suite comprises 15 sites where Bewick's Swan has been listed as a qualifying species (Table 6.15.1).

WeBS counts of swans at many of the sites selected may often include numbers in surrounding areas of intensively managed farmland outwith the SPA boundary. This highlights the continuing need to manage these areas in a way that is sympathetic to the needs of the swans.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite are distributed throughout the winter range of the population in the UK, from sites in Northern Ireland, across England from sites in Lancashire, to the east and south coasts of England. Most sites are multi-species SPAs, of importance also for a range of other waterbirds, although Walmore Common has been selected solely for its importance for Bewick's Swans. There is a very long recorded history of occupancy at many of these sites, particularly the Ouse Washes (Nisbet 1959; Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes the main population centres of Bewick's Swans throughout their UK distribution, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Bewick's Swan SPA suite

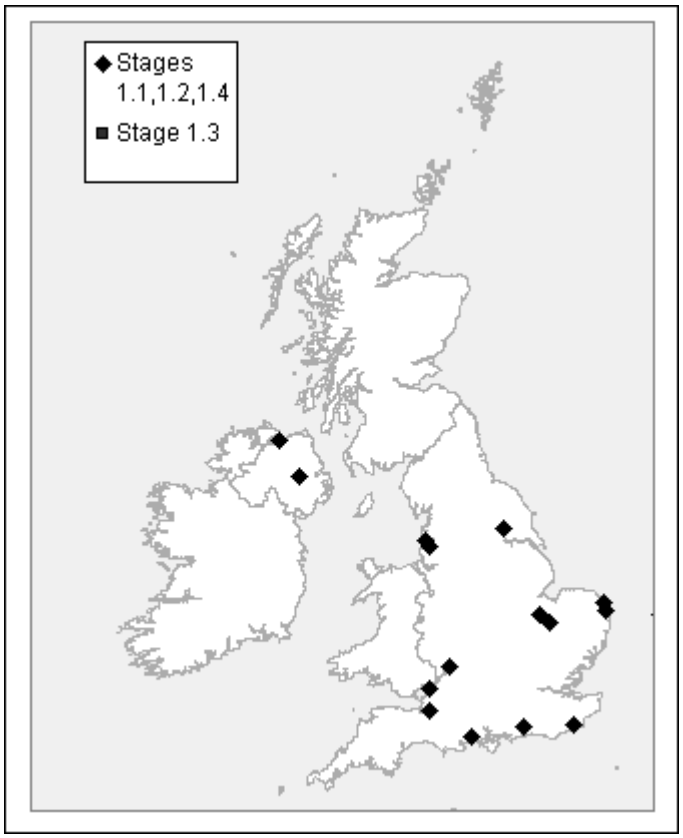


Table 6.15.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Arun Valley	115	0.7	1.6	1.1
Avon Valley	135	0.8	1.9	1.1
Breydon Water	391	2.3	5.4	1.1
Broadland	320	1.9	4.4	1.1
Dungeness to Pett Level	179	1.1	2.5	1.1
Lough Foyle	78	0.5	3.1 (Ire)	1.1
Lough Neagh and Lough Beg	136	0.8	5.4 (Ire)	1.1
Lower Derwent Valley	72	0.4	1.0	1.1
Martin Mere	449	2.6	6.2	1.1
Nene Washes	1,718	10.1	23.9	1.1
Ouse Washes	4,639	27.3	64.4	1.1
Ribble and Alt Estuaries (Phase 2)	229	1.4	3.2	1.1
Severn Estuary	280	1.7	3.9	1.1
Somerset Levels and Moors	191	1.1	2.7	1.1
Walmore Common	104	0.6	1.4	1.1
TOTALS	7,072 (in January)	41.6%	99.1% 5.4% (Ire)	

A6.16 Whooper Swan *Cygnus cygnus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4 (winter)** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	5,600	56	2,394 (44% of GB total)
Ireland	10,320	100	1,853 (19% of all-Ireland total)
Biogeographic population	16,000	160	4,247 (27% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Whooper Swan is monotypic and has a Palearctic breeding distribution between 55ºN and 70°N, from Iceland to the Bering Sea. They winter south to western Europe, the Black Sea, the Caspian Sea, central China and Japan (Scott & Rose 1996). In western Eurasia, Whooper Swans breed in Iceland, Norway, Sweden, Finland and northern Russia, and winter in Denmark, Germany, southern Sweden, Britain, Ireland, Belgium, northern France, the northern Black Sea and the Caspian Sea (Laubek *et al.* 1999). A few birds move slightly further south in some years. A very small number of birds attempt to breed in Scotland each year, but with only occasional success.

In the UK, most non-breeding Whooper Swans occur in northern Britain and Northern Ireland. Ringing recoveries indicate that the majority of these birds originate from the Icelandic breeding stock. It has been suggested that some birds wintering in the south of Britain originate from continental breeding grounds (Garðarsson 1991) but this remains unclear (Laubek 1998). The large wintering flock that occurs at the Ouse Washes has doubled over the past ten years (Cranswick *et al.* 1999) making this site the species' main wintering area in Britain. Lough Neagh and Lough Beg are by far the most important sites in Northern Ireland and, together with the Ouse Washes, regularly hold >5% of the Icelandic population.

Re-sightings of individually marked Whooper Swans in Ireland have shown that these birds are particularly mobile, frequently moving between Britain and Ireland, as well as using several sites within

Ireland, in a single winter (McElwaine *et al.* 1995). Nevertheless, Whooper Swans show a high degree of winter site fidelity (Black & Rees 1984).

Whooper Swans winter on freshwater lakes and marshes, and, in western Europe especially, on low agricultural land, generally in coastal areas (Owen & Kear 1972; Owen & Cadbury 1975). Whooper Swans were occasionally reported feeding in potato fields during severe weather conditions in the 1940s and have regularly done so since the 1960s (Kear 1963). Recent estimates indicate that less than 15% of Whooper Swans occur on arable land during the winter (Rees *et al.* 1997).

4. Population structure and trends

Four discrete populations of the Whooper Swan have been identified in western Eurasia (Rose & Scott 1997). The Icelandic breeding stock winters in Iceland, Britain and Ireland and comprises about 16,000 birds (Cranswick *et al.* 1996). Another population of approximately 59,000 swans occurs in the rest of north-west Europe, wintering primarily in Denmark, and the Schleswig-Holstein and Mecklenburg regions of northern Germany (Laubek *et al.* 1999). Approximately 17,000 individuals make up the western Siberia, Black Sea and eastern Mediterranean population, and the fourth population of at least a further 20,000 occurs in western Siberia, wintering near the Caspian Sea.

The Icelandic population is believed to be stable or declining slightly. The most recent population census in January 1995 found some 15,842 birds, of which 7,799 (59%) were in Britain and Northern Ireland, 7,072 were in the Republic of Ireland, and 971 (6%) wintered in Iceland (Cranswick *et al.* 1996). Elsewhere in north-west Europe, breeding numbers have increased in Norway and Sweden (by 11% per annum, Haapanen 1991) although much of this increase may be the result of re-colonisation of areas where the species had formerly been eradicated by man (Garðarsson 1997).

In the early 1960s, it was estimated that around 5,000 – 7,000 were wintering in Britain (Boyd & Eltringham 1962; Boyd 1963). Numbers at this time were probably higher than those in previous decades but confirmatory data are sparse (Owen *et al.* 1986). The first full census of Britain and Northern Ireland took place in November 1979 (Brazil & Kirk 1981). The coverage of this survey was incomplete, but it was estimated that 6,765 birds were present in Britain and Northern Ireland during that year. Owen *et al.* (1986) estimated that the population had increased by 6% per annum between 1970 and 1979, and attributed this rise primarily to reduced mortality.

The first co-ordinated census of the entire Icelandic breeding population took place in 1986 and estimated the total population to be 16,700 swans, of which 5,136 were counted in Britain and 2,363 in Northern Ireland (Salmon & Black 1986). The population total increased to 18,035 by the second census of 1991 (Kirby *et al.* 1992) when 5,225 and 3,484 swans were counted in Britain and Northern Ireland respectively. Between this and the most recently reported census in 1995 (see above, Cranswick *et al.* 1996), the total population declined at a rate of 3% per annum, probably due, in part, to poor breeding success over the period. The results of the January 2000 census will indicate how numbers have changed since the 1995 decline.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Whooper Swans supports, on average, 4,247 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 44% of the British population, about 19% of the all-Ireland population, and about 27% of the international flyway population. The suite comprises 20 sites where Whooper Swan has been listed as a qualifying species (Table 6.16b.1).

WeBS counts of swans at many of the sites selected may often include numbers in surrounding areas of intensively managed farmland outwith the SPA boundary. This is especially the case in Northern Ireland (Lough Foyle and to a lesser extent Lough Neagh) and highlights the continuing need for sympathetic management of these surrounding agricultural areas.

Some of the sites selected for the suite, for example the Rinns of Islay, are used particularly during the autumn and spring passage periods and less so during mid-winter.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national population were considered under Stage 1.1, and all except two were selected after consideration of Stage 2 judgements. The two sites holding smallest numbers in Scotland were not selected – Wigtown Bay, and Mill Dam, Shapinsay. Caithness Lochs and Lochs of Spiggie and Brow in Shetland were preferred sites to Mill Dam, Shapinsay, occurring in the northernmost part of the range and holding greater numbers, whilst the Upper Solway Flats and Marshes was likewise selected in preference to Wigtown Bay

The sites within the SPA suite are distributed throughout the winter range of Whooper Swans in the UK, and hold all the main centres of distribution, from a site in Shetland, through Scotland, to Northern Ireland and to eastern England. Most sites are multi-species SPAs, of importance also for a range of other waterbirds, although Black Cart, Lochs of Spiggie and Brow, and Upper Lough Erne have been selected solely for their importance for Whooper Swans. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963). Away from these sites, only small, often transient, numbers of Whooper Swans occur during the winter.

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes the main population centres of Whooper Swans throughout their UK distribution, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Whooper Swan SPA suite

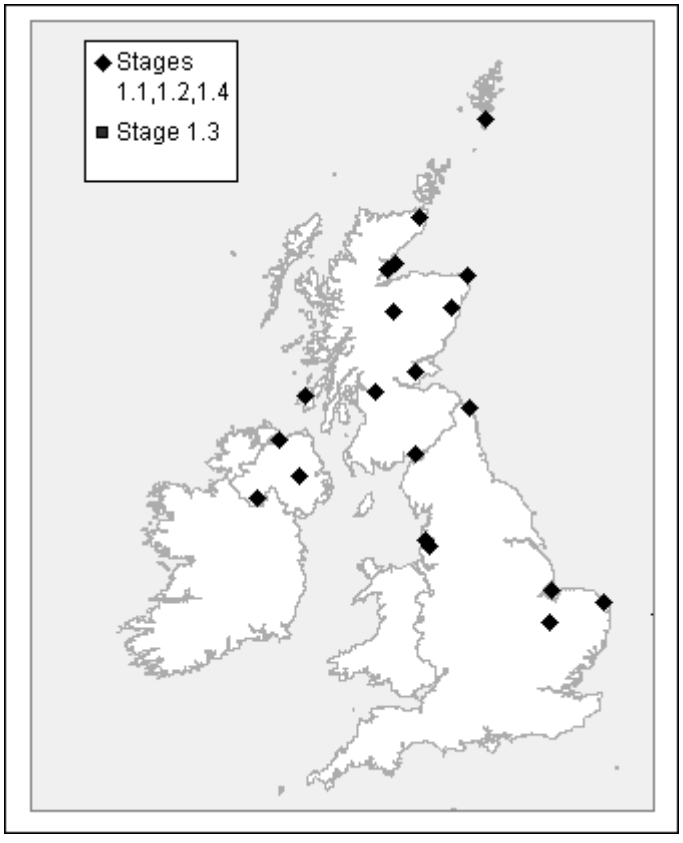


Table 6.16.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Black Cart	220	1.4	3.9	1.1
Broadland	133	0.8	2.4	1.1
Caithness Lochs	250	1.6	4.5	1.1
Cromarty Firth	55	0.3	1.0	1.1
Lindisfarne	79	0.5	1.4	1.1
Loch Eye	213	1.3	3.8	1.1
Loch Leven	101	0.6	1.8	1.1
Loch of Skene	203	1.3	3.6	1.1
Loch of Strathbeg	183	1.1	3.3	1.1
Lochs of Spiggie and Brow	143	0.9	2.6	1.1
Lough Foyle	890	5.6	8.6 (Ire)	1.1
Lough Neagh and Lough Beg	1,031	6.4	10.0 (Ire)	1.1
Martin Mere	621	3.9	11.1	1.1
Ouse Washes	963	6.0	17.2	1.1
Rinns of Islay	140	0.9	2.5	1.1
Ribble and Alt Estuaries	159	1.0	2.8	1.1
River Spey – Insh Marshes	190	1.2	3.4	1.1
The Wash	68	0.4	1.2	1.1
Upper Lough Erne	352	2.2	3.4 (Ire)	1.1
Upper Solway Flats and Marshes	117	0.7	2.1	1.1
TOTALS	4,247 (in January)	26.5%	43.5% 18.5% (Ire)	

A6.17 Bean Goose *Anser fabalis*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	450	50 (see section 5.1.2 for rationale)	207 (51.8% of GB total)
Ireland			
Biogeographic population	80,000	800	207 (0.3% of biogeographic population)

GB population source: Batten et al. *1990*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution of Bean Goose extends across northern Eurasia from Scandinavia to the Bering Sea. The species breeds from the shores of the Arctic Ocean, through tundra and taiga zones to about 50°N in the central Asian parts of its range. Birds from the eastern parts of the breeding range migrate to winter in Europe, where it occurs discontinuously in most western European countries.

There are two races of Bean Goose, the Taiga (or Western) Bean Goose *A .f. fabalis* and the Tundra Bean Goose *A. f. rossicus*. Taiga Bean Geese winter in southern Sweden and countries along the southern shores of the Baltic and North Seas after migration from their main breeding area in the taiga zone of northern Fennoscandia and western Russia. Tundra Bean Geese migrate to their wintering grounds in central and southern Europe (from Spain to the Balkans) from breeding grounds on the north Russian tundra (Hagemeijer & Blair 1997; van den Bergh 1999). Some mixing of the two races occurs during autumn and winter, but the races are morphologically clearly separable (Cramp & Simmons 1977; Owen *et al*. 1986).

Most birds wintering in Britain are of the Taiga race from western Russia and northern Scandinavia, but small numbers of Tundra Bean Geese also occur and often associate with European White-fronted Geese with which they share high-latitude breeding grounds (Owen *et al*. 1986; Lack 1986; Rogačeva 1992).

The Bean Goose is no longer a common wintering species in Britain and occurs only in small, widely dispersed groups from north-east Scotland to south-east England generally close to the east coast (Owen *et al*. 1986). There are currently only two regularly used sites: the Slamannan Plateau in central

Scotland (used since 1981, Watson 1986) where the numbers of birds fluctuate both within and between winters (Pollitt *et al*. 2000); and the Yare Valley in Norfolk (Parslow-Otsu 1991). The flock formerly wintering in the Dee–Ken valley of south-west Scotland is now extinct (Watson 1986).

Bean Geese have a long association with agricultural habitats foraging mainly on grasses, but also grain from stubble, potatoes, and winter wheat (Cramp & Simmons 1977; Owen *et al*. 1986; Batten *et al*. 1990; Nilsson *et al*. 1999). Roost sites are typically small lakes that are well sheltered and often surrounded by woodland (Batten *et al*. 1990).

4. Population structure and trends

The total of wintering Taiga Bean Geese in Europe is estimated to be 80,000 individuals, whilst that of the Tundra race is estimated to be 300,000 individuals (Rose & Scott 1997). The largest wintering population of Taiga race birds is found in southern Sweden (30,000 individuals), with the remaining 50,000 birds migrating further south and extending from Britain and the Netherlands, east to Poland (Hagemeijer & Blair 1997; Madsen 1991; Nilsson *et al*. 1999). The population of Taiga Bean Geese staging in southern Sweden has increased from about 20,000 individuals in the early 1960s to 50,000–70,000 in the 1980s (Madsen 1991), suggesting a general increase in the population as a whole, for which the reasons are not currently understood.

The total number wintering in Britain is estimated to be 450 birds (Batten *et al*. 1990). Taiga Bean Geese were much more common in Britain in the early 1800s, often out-numbering other geese at some sites, but a decline began in the 1860s and continued into the early 1900s (Owen *et al*. 1986; Lack 1986; Batten *et al*. 1990). The cause of this considerable decline is not clearly understood.

Recent studies of the Broadland population give an indication that the species is susceptible to agricultural changes, especially improvements to grazing marshes and conversion of grazing marshes to arable farmland (Allport 1989a,b). Broadland birds favour cattle-grazed swards containing *Poa* spp. Grassland areas re-seeded with Ryegrass *Lolium* spp. and which are sheep-grazed, are rarely used. The close-cropped grassland that develops in these conditions provides favourable grazing for Wigeon, which compete successfully with Bean Geese (Allport 1989a,b). The insights from these detailed studies have allowed the implementation of a management regime in the Yare Valley that favours the Bean Goose flock there.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Bean Geese supports, on average, 207 individuals (calculated using January WeBS totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 52% of the British total and 0.3% of the international populations. The suite comprises a single site (Broadland) where Bean Goose has been listed as a qualifying species (Table 6.17.1).

6. Classification criteria

No site in the UK regularly holds more than 1% of the international population. As Britain lies at the south-western edge of the wintering range of the Taiga race of Bean Goose a single site was selected as being important maintaining the species' range in Europe.

A single site, Broadland, was considered and selected under Stage 1.3 (see section 4.3), with Bean Goose being identified as an important component of the non-breeding waterbird assemblage. There is a long history of Bean Goose occupancy at this site (Boyd in Atkinson-Willes 1963), which is also a multi-species SPA. Another significant wintering population in the UK occurs at a second site, Slamannan Plateau in Scotland, and this site was considered as a possible SPA under Stage 1.4. After consideration of stage 2 judgements, however, Slamannan Plateau was not selected for classification because regular wintering has only been established recently (1981 – Watson 1986, numbers are lower than in Broadland, and no other bird species occur there in numbers of European importance (*i.e.* it is not a multi-species site).

Distribution map for Bean Goose SPA suite

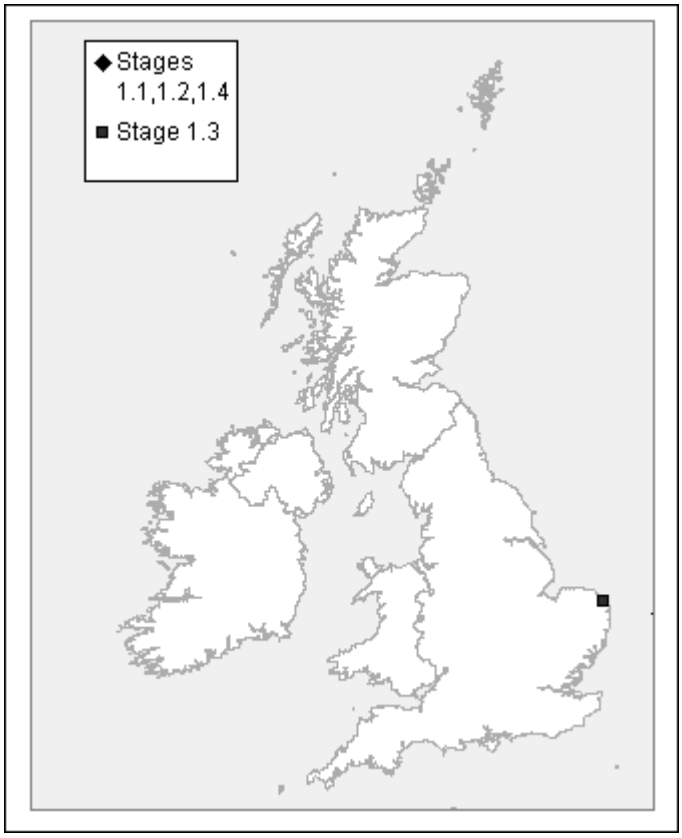


Table 6.17.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Broadland	277	0.4	62	1.3
TOTALS	207 (in January)	0.3%	51.8%	

A6.18 Pink-footed Goose *Anser brachyrhynchus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 2(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status at species level (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	192,000 (see text)	1,900	155,582 (82% of GB total)
Ireland			
Biogeographic population	225,000 (see text)	2,250	155,582 (69% of biogeographic population)

GB population source: Kirby 1995a
Biogeographic population source: Rose & Scott 1997

3. Distribution

The breeding areas of the monotypic Pink-footed Goose are globally restricted to eastern Greenland, Iceland and Svalbard. The geese migrate to winter in the countries surrounding the North Sea, meaning that the entire world population winters in just a few European countries. There are two biogeographical populations: those that breed in east Greenland and Iceland migrate to spend the winter months in Britain and Ireland, and those that breed in Svalbard that winter in the Netherlands, Denmark and Belgium (Mitchell *et al.* 1999; Madsen *et al.* 1999). There is no mixing between these two populations which are separated throughout the year.

Most British-wintering Pink-footed Geese occur around estuaries between eastern Scotland and North Norfolk/The Wash (Lack 1986; Owen *et al.* 1986; Mitchell *et al.* 1999). Up to three-quarters of Britain's wintering Pink-footed Geese are found in Scotland, with strongholds in Aberdeenshire, Perth, Kinross, Stirlingshire, the Lothians, and, in late winter, the Dumfries coast of the Solway. In England, the most important sites are around the Lancashire coast, North Norfolk/The Wash, and previously around the Humber (Lack 1986).

There are strong seasonal movements within Britain, with birds moving south during autumn from north Scottish arrival areas. In spring, birds move north again, following the progression of spring grass growth (Fox *et al.* 1994a). This means that Pink-footed Geese may use many separate sites in the course of one winter.

Historically, estuaries provided the most important roost sites, but larger lakes and reservoirs are now also used. Birds usually feed close to their roost site, but may occasionally fly more than 20 km to find suitable forage. Agricultural crops are eaten in addition to native coastal food-plants, but Pink-footed Geese are sensitive to disturbance and prefer large, open areas in which to feed. Birds gradually move south during the winter, utilising several different wintering areas, and may make long movements to alternative feeding areas in severe weather (Lack 1986; Owen *et al*. 1986; Mitchell *et al*. 1999). In spring, birds departing from Britain stage in the southern lowlands of Iceland for several weeks before moving to inland breeding grounds or departing for Greenland (Mitchell *et al*. 1999).

4. Population structure and trends

The British wintering total is estimated at 192,000 individuals (Kirby 1995a). The difference between the national population figure (192,000; Kirby 1995a) and international population figure (225,000; Rose & Scott 1997) populations used in this review are a consequence of the different time periods adopted by the relevant sources. It does not imply that 27,000 birds winter outside the UK.

The first comprehensive census of the population in 1950/51 estimated 30,000 individuals, and the population has increased steadily since (Madsen 1991; Mitchell *et al*. 1999). In the early 1980s, approximately 100,000 individuals were estimated to winter in Britain, but by the early 1990s, the population had reached its current size. It has remained relatively stable since (Hagemeijer & Blair 1997; Pollitt *et al*. 2000; Mitchell *et al*. 1999).

The increase reflects an expansion of the breeding range in Iceland where birds have now spread to lowland nesting areas (Hagemeijer & Blair 1997; Mitchell *et al*. 1999). However, the population increase is also probably related to improved winter survival as a result of better foraging opportunities and the establishment of refuges where birds can roost undisturbed (Lack 1986; Batten *et al*. 1990; Owen *et al*. 1986).

Pink-footed Geese are hunted in Iceland, but remain in the remote interior to moult before the autumn migration and therefore far fewer are killed than is the case for Greylag Geese. Between 1995 and 1997, the annual bag of Pink-footed Geese in Iceland was about 12,500 individuals, around a third of the corresponding figure for Greylag Geese (Cranswick *et al*. 1999; Mitchell *et al*. 1999). It may be for this reason that the Pink-footed Goose population has not experienced the same decline as that of the Icelandic Greylag Goose.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for the Iceland/Greenland population of Pink-footed Goose supports, on average, 155,582 individuals (calculated using totals from the WWT/JNCC November Grey Goose census (Hearn 1998) for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 82% of the British population and 69% of the international population. The suite comprises 24 sites at which Iceland/Greenland Pink-footed Geese have been listed as a qualifying species (Table 6.18.1).

6. Classification criteria

All natural and semi-natural sites in the UK that were known to support more than 1% of the international population of Iceland/Greenland Pink-footed Geese were considered under Stage 1.2 and, of these, 21 were selected after consideration of Stage 2 judgements. A further two sites (Moray and Nairn Coast, and Lindisfarne) were considered and selected under Stage 1.3 (see section 5.3), as Pink-footed Geese were identified as an important component of a wider non-breeding waterbird assemblage at these localities. One further site, Din Moss – Hoselaw Loch has been selected under Stage 1.4 as it supports a population important in maintaining the species' range in Europe.

Given the mobility of these geese through the non-breeding season, especially their use of distinct areas in autumn and spring for staging (pre-migratory feeding), potential SPAs were considered in a number of broadly defined regions. This approach ensured that key sites would be selected from throughout the range within the UK and that areas used upon autumn arrival, in mid-winter, and in

spring prior to departure to Iceland and Greenland, would all be represented within the species SPA suite. The Stage 2 judgements made are as follows:

Within the Moray Basin, the Moray and Nairn Coast was selected since Pink-footed Geese occur there as an important component of an internationally important assemblage of waterbirds. Numbers at this site have fallen markedly since the site was classified. The regularly used sites of Cromarty Firth and Loch Eye were also considered but not selected, as they did not add significantly to range or numerical coverage within the Moray Basin.

Ythan Estuary, Sands of Forvie and Meikle Loch, and the Loch of Strathbeg were selected as regularly holding major concentrations of Pink-footed Geese within Grampian. Indeed, the Loch of Strathbeg holds amongst the largest regular numbers in the UK (c. 18% of the international population).

Firth of Tay and Eden Estuary, Montrose Basin, South Tayside Goose Roosts (which comprises Carsebreck and Rhynd Lochs, Drummond Lochs, Dupplin Loch, and Pitcarnie Loch), and Loch of Kinnordy were selected as the key roost sites within the Tayside area. The Loch of Kinnordy was selected solely on the basis of its importance for Pink-footed Geese. The South Tayside Goose Roosts SPA[4] holds the largest regular numbers in the UK (over 19% of the international population). The following regularly used sites were also considered but not selected, as they did not add significantly to range or numerical coverage within the region: Crombie Loch, Loch Tullybelton, Glenfarg Reservoir, Tay/Isla Valley, and Loch Mullion.

Cameron Reservoir, Loch Leven, and the Firth of Forth were selected as the key roost sites within central Scotland. Cameron Reservoir was selected solely on the basis of its importance for Pink-footed Geese. The following regularly used sites were also considered but not selected, as they did not add significantly to range or numerical coverage within central Scotland: River Forth at Gargunnock, Ardloch Loch, and Lake of Menteith.

Gladhouse Reservoir, Greenlaw Moor, Westwater, Fala Flow, and Din Moss – Hoselaw Loch were all selected solely on the basis of their importance for Pink-footed Goose. These sites together protect the key roosting areas within south-east Scotland and Borders. Din Moss – Hoselaw Loch was selected under stage 1.4 by virtue of its importance to maintenance of range, although numbers there have fallen markedly since classification. Cowgill Reservoir was not selected, as it did not provide a significant addition to the range coverage already provided by Westwater Reservoir. The regularly used site of Hule Moss was also considered but not selected, as it did not add significantly to range or numerical coverage within south-east Scotland and Borders.

Castle Loch, Lochmaben and Upper Solway Flats and Marshes were selected as the major sites within south-west Scotland for Pink-footed Geese. Castle Loch, Lochmaben, was selected solely on the basis of its importance for Pink-footed Geese, whilst the Upper Solway Flats and Marshes is an extensive multi-species SPA. Wigtown Bay was not selected, as it did not provide a significant addition to the range coverage already provided by the Solway. The regularly used site of Hightae Loch was also considered but not selected, as it did not add significantly to range or numerical coverage within south-west Scotland.

In England, Morecambe Bay, the Ribble and Alt Estuaries, and Martin Mere were all selected as the core areas supporting Pink-footed Geese in Lancashire, whilst in eastern England, both The Wash and the North Norfolk Coast were included in the suite as major multi-species SPAs holding very large numbers of geese, especially in mid-winter. In north-east England, Lindisfarne was selected since Pink-footed Geese occur there as an important component of an internationally important assemblage of waterbirds.

4 comprising Carsebreck and Rhynd Lochs in Strathallan, and Drummond Lochs and Dupplin Lochs in Strathearn.

Distribution map for Pink-footed Geese SPA suite

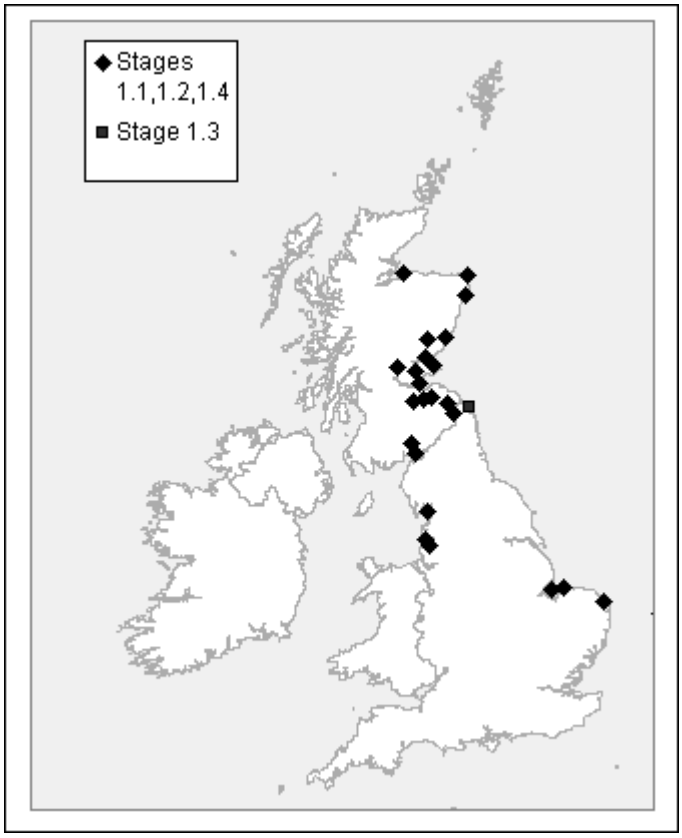


Table 6.18.1 – SPA suite

Site name	Season of peak use	Site total	% of biogeographical population	% of national population	Selection stage
Broadland	Winter	3,290	1.5	1.7	1.2
Cameron Reservoir	Autumn	16,233	7.2	8. 5	1.2
Castle Loch, Lochmaben	Spring	5,450	2.4	2.8	1.2
Din Moss – Hoselaw Loch	Winter	1,180	0.5	0.6	1.4
Fala Flow	Autumn	6,719	3.0	3.5	1.2
Firth of Forth	Autumn	12,400	5.5	6.5	1.2
Firth of Tay and Eden Estuary	Autumn	3,769	1.7	2.0	1.2
Gladhouse Reservoir	Autumn	3,068	1.4	1.6	1.2
Greenlaw Moor	Autumn/ Spring	5,450	2.4	2.8	1.2
Lindisfarne	Winter	1,984	0.9	1.0	1.3
Loch Leven	Autumn	18,230	8.1	9.5	1.2
Loch of Kinnordy	Autumn	4,760	2.1	2.5	1.2
Loch of Strathbeg	Autumn	39,924	17.7	20.8	1.2
Martin Mere	Autumn	25,779	11.5	13.4	1.2
Montrose Basin	Autumn	31,622	14.1	16.5	1.2
Moray and Nairn Coast	Spring	139[5]	0.1	0.1	1.3
Morecambe Bay	Spring	2,475	1.1	1.3	1.2
North Norfolk Coast	Winter	23,802	10.6	12.4	1.2
Ribble and Alt Estuaries	Winter	23,860	10.6	12.4	1.2
South Tayside Goose Roosts	Autumn	43,300	19.2	22.6	1.2
The Wash	Winter	33,265	14.8	17.3	1.2
Upper Solway Flats and Marshes	Spring	15,983	7.1	8.3	1.2
Westwater	Autumn/ Spring	31,127	13.8	16.2	1.2
Ythan Estuary, Sands of Forvie and Meikle Loch	Autumn/ Spring	17,213	7.7	9.0	1.2
TOTALS		155,582 (in November)	69.1%	81.9%	

5 Numbers have declined to low levels following classification.

A6.19 Russian White-fronted Goose *Anser albifrons albifrons*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 2(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	6,100	60	4,586 (76% of GB total)
Ireland			
Biogeographic population	600,000	6,000	4,586 (0.8% of biogeographic population)

GB population source: Kirby 1995a
Biogeographic population source: Rose & Scott 1997

3. Distribution

White-fronted Geese have a circumpolar distribution, breeding from Kanin Peninsula (44°E) in the eastern Russian Arctic, 4,500 km west to the Kolyma River (155°E). They additionally breed discontinuously in Alaska and across high Arctic Canada, as well as in west Greenland. Six sub-species are recognised, two of which (*A. a. albifrons* and *A. a. flavirostris*) occur in Europe. SPA provision for the latter sub-species is presented in section 6.20.

The Russian White-fronted Goose winters in five distinct areas in Europe: north-west Europe (Baltic – North Sea group); which includes Britain, France, Belgium, the Netherlands, and Germany; central Europe (Pannonic group), which includes Yugoslavia, Hungary and Italy; Southeast Europe (Pontic group), including Greece, Bulgaria, Romania, and Turkey; central Turkey (Anatolian group); and eastern Turkey (Caspian group) (Cramp & Simmons 1977; Owen *et al*. 1986; Madsen 1991; Madsen *et al*. 1999). All these breed in the tundra of northern Russia and there appears to be considerable mixing of birds from the Western Palearctic breeding range during migration, staging and wintering (Hagemeijer & Blair 1997; Mooij *et al*. 1999).

The north-west European population migrates along the Baltic coasts and uses staging areas in southern Sweden and eastern Germany where numbers peak in November, before moving west into the Netherlands and Britain where numbers peak in January (Owen *et al*. 1986; Mooij *et al*. 1999). Severe weather may cause additional westward movements into Britain of birds wintering in the Netherlands (Owen *et al*. 1986). Spring migration is easterly, with birds staging in southern Russia for up to a month before moving north in May to their breeding grounds (Owen *et al*. 1986). In Britain, large wintering

flocks occur in just a few coastal or estuarine areas, but small numbers of passage and wintering birds are recorded throughout England and Wales (Owen *et al*. 1986; Lack 1986).

The most important wintering areas are in south Wales, including the Severn Estuary, and along the south, south-east and east coasts of England (Lack 1986). In winter, Russian White-fronted Geese show a preference for grasslands, especially low-lying wet pastures bordering coastal marshes and in river valleys, where the main foods are grasses and clover (Cramp & Simmons 1977; Lack 1986; Owen *et al*. 1986). Like other geese, the Russian White-fronted Goose has adapted to changes in land use, utilising grain from stubbles and potatoes as important additional foods in some areas, particularly staging sites. Roost sites include coastal waters, estuarine sandbanks and lakes, and tend to be close to foraging areas (Cramp & Simmons 1977; Owen *et al*. 1986).

4. Population structure and trends

The Northwest European population of Russian White-fronted Geese is estimated to be 600,000 individuals (Rose & Scott 1997) with about 6,100 of those regularly wintering in Britain (Kirby 1995a). The Northwest European population has increased tenfold since the late 1960s (Madsen 1991; Cramp & Simmons 1977; Mooij *et al*. 1999). The reason for this increase is unclear, but redistribution of birds from other biogeographic populations elsewhere in Europe may be a major cause (Mooij *et al*. 1999). In addition, improved winter survival because of better forage availability and tighter hunting regulations in many countries may have contributed (Cramp & Simmons 1977; Owen *et al*. 1986; Mooij *et al*. 1999).

Numbers wintering in Britain fluctuate from winter to winter, and can be significantly increased by influxes of birds from continental Europe during severe weather conditions, with counts as high as 13,000 recorded in some years (Lack 1986). However, there has been a general decrease since regular counts began in the mid-1960s (Pollitt *et al*. 2000; Mooij *et al*. 1999). This is thought to be due to birds remaining in wintering sites further east ('short-stopping'), especially in The Netherlands, possibly due to improved feeding opportunities, reduced hunting pressure, and mild winters in many recent years (Owen *et al*. 1986).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for the Russian population of White-fronted Geese supports, on average, 4,586 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 76% of British wintering numbers and about 0.8% of the international population. Russian White-fronted Geese do not regularly occur in Northern Ireland. The suite comprises eight sites at which geese of this sub-species have been listed as a qualifying species (Table 6.19.1).

6. Classification criteria

There are no sites in the UK that support more than 1% of the international population of Russian White-fronted Geese (the UK lies at the western edge of their range). A total of eight sites were considered and selected under Stage 1.3 (see section 5.3), as Russian White-fronted Goose was identified as an important component of the non-breeding waterbird assemblages at these locations.

Collectively, the suite of SPAs includes most major areas used on a regular basis by significant numbers of Russian White-fronted Geese. The selected sites are distributed through the core winter range of the population, notably including many of the east coast estuaries of England. By definition, all sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at many of these sites (Boyd 1957).

Distribution map for Russian White-fronted Goose SPA suite

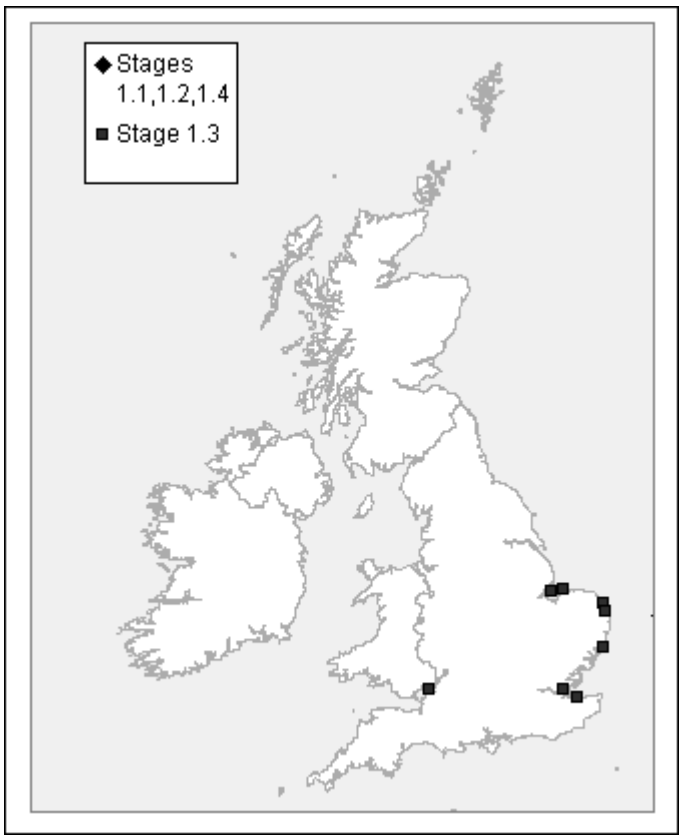


Table 6.19.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	97	<0.1	1.6	1.3
Breydon Water	164	<0.1	2.7	1.3
Broadland	746	0.1	12.4	1.3
North Norfolk Coast	352	<0.1	5.8	1.3
Severn Estuary	2,664	0.4	43.7	1.3
Thames Estuary and Marshes	88	<0.1	1.4	1.3
The Swale	1,309	0.2	21.5	1.3
The Wash	100	<0.1	1.6	1.3
TOTALS	4,586 (in January)	0.8%	76.4%	

A6.20 Greenland White-fronted Goose *Anser albifrons flavirostris*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	13,700	140	8,243 (59% of GB total)
Ireland	14,000	140	No SPAs selected in Northern Ireland
Biogeographic population	30,000	300	8,243 (28% of biogeographic population)

GB population source: Stroud 1992
Ireland population source: WeBS 1998
Biogeographic population source: Rose & Scott 1997

3. Distribution

White-fronted Geese have a circumpolar distribution, breeding from Kanin Peninsula (44°E) in the eastern Russian Arctic, 4,500 km west to the Bering Strait. They breed discontinuously in Alaska and across high Arctic Canada, as well as in west Greenland. Four sub-species are recognised, two of which (*A. a. albifrons* and *A. a. flavirostris*) occur in Europe, including the UK. SPA provision for the former sub-species is presented in section 6.19.

The population of Greenland White-fronted Geese is small and their world range limited. Breeding occurs in low-Arctic west Greenland between 65° and 72°N (Salomonsen 1950). On autumn and spring passage, the population passes through areas of south and west Iceland (Fox *et al.* 1994b, 1999).

The winter range of the population falls entirely within Britain and Ireland, with groups in Ireland, the west and north of Scotland (with a major population segment on the island of Islay), as well as in Wales (Fox *et al.* 1994b, 1998; Fox & Stroud 1985). In the past, the population appears to have traditionally wintered on lowland peatlands (both raised and blanket bogs), and the birds' distribution mirrors the climatic template for the formation of oceanic blanket bog.

Originally, the geese foraged almost exclusively on various bog plants, notably Broad-leaved Cotton Grass *Eriophorum angustifolium* and White-beaked Sedge *Rhynchospora alba*. More recently, geese have adapted to using grasslands under a variety of intensities of management. On Islay, geese use intensively managed grasslands in some (but not all) areas, although through much of the wintering range it is more typical for wintering flocks to occur on less-intensively managed grasslands, including callows in Ireland (Bignal *et al.* 1988; Norriss & Wilson 1993; Fox *et al.* 1994b; Fox & Stroud in press).

4. Population structure and trends

The world population declined from a maximum of 23,000 birds in the late 1950s to *c.* 15,000 birds by the late 1970s, due primarily to wintering habitat destruction and agricultural intensification, especially in Ireland. Correspondingly, the British population declined by 35%, whilst all-Ireland numbers fell by around 50% (Ruttledge & Ogilvie 1979). Following positive conservation measures in the UK and other range states (Ireland, Iceland, and Greenland), combined with several good breeding seasons, the total population in Great Britain has since risen from 7,282 birds in 1983 to 16,635 birds in 1995, and for the island of Ireland from 9,259 birds in 1983 to 13,824 birds by 1995 (Fox *et al.* 1998).

Despite these overall population increases, five traditional flocks have since become extinct and 18 more have declined. Analysis indicates that size, number and quality of feeding areas, levels of disturbance, flock size and latitude are all factors that influence flock status. The smallest, most southerly flocks occurring on ranges that contain the fewest feeding sites, which are both of the poorest quality and most limited in extent, are those that have shown the most serious declines (Fox *et al.* 1998). The continued contraction of range to a few major sites is an issue of conservation concern highlighted by both international and national conservation action plans for the population (Fox *et al.* 1998).

5. Protection measures for population in the UK

SPA suite

The UK's SPA suite for Greenland White-fronted Geese supports, on average, 8,243 individuals (calculated using site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). Estimating use of the suite by the population is complex: some SPAs act as feeding areas, supporting the geese during the day, with other nearby SPAs being used as roost sites at night. Thus, the same birds may utilise two or more SPAs in any one day. The estimated total amounts to about 59% of the British population and about 28% of the international flyway population. In an all-Ireland context, no SPAs for Greenland White-fronts have been selected in Northern Ireland. The suite comprises 12 sites where Greenland White-fronted Geese have been listed as a qualifying sub-species (Table 6.20.1).

The distribution of the SPA suite for the sub-species reflects the fact that Islay forms the core UK wintering range. Outside the SPA suite, the population is typically very locally scattered in traditional small flocks of less than 100 birds (Fox *et al.* 1994). This is particularly the case in Northern Ireland, with the majority of the all-Ireland population occurring within the Republic of Ireland.

Other measures

On Islay, a Goose Management Scheme has been implemented and this supplements site protection measures for those SPAs on Islay (listed below).

Following detailed analysis of the causes of population change since the early 1980s, Fox *et al.* (1998) highlighted that urgent management consideration now needs to be given to the consequences arising from increasing concentration of the population at a few wintering areas.

A draft international conservation plan for the sub-species has been published (Stroud 1992) following international consultation, although this has yet to be implemented by the states within the range of the sub-species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national population were considered under Stage 1.1, and all except Danna/Keills and Lismore/Benderloch were selected after consideration of Stage 2 judgements. On mainland Argyll and Bute, Loch Lomond was selected in preference to the larger populations at Danna/Keills and Lismore/Benderloch since it contributes more to the coverage of range.

The peatland SPA of Eilean na Muice Duibhe, Islay, is the most important individual roost site within the UK wintering range (Nature Conservancy Council 1985). It comprises high quality semi-natural habitat (peatland). Laggan Peninsula and Gruinart Flats SPAs were selected for as core daytime feeding areas within the wintering range of Greenland White-fronted Geese on Islay. They do not include roosting areas, with birds feeding on Laggan flying mainly to Eilean na Muice Duibhe SPA or the Rinns

of Islay SPA to roost, and birds feeding on Gruinart Flats in part using Feur Lochain and other roosts on the Rinns of Islay (Ridgill *et al.* 1994). In addition, whilst being largely agricultural, both Laggan Peninsula and Gruinart Flats SPAs also include areas of semi-natural habitat, have a long history of occupancy by this sub-species and are also multi-species areas supporting another two bird species in numbers of European importance. The goose populations on these two SPAs are shown on Table 6.20.1 but do not form part of the SPA suite's total population, as these birds are already included on their respective roost site SPAs.

Kintyre Goose Roosts is a composite of a number of individual roost locations (all freshwater lochs), which together support a substantial proportion of the British wintering total. All comprise semi-natural habitat and have a very long history of occupancy for this sub-species.

Both Coll and Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) are important components in maintaining the sub-species' UK wintering range (Fox *et al.* 1989). Coll is primarily a roost site, whilst Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) SPA additionally includes important feeding areas. Both sites comprise extensive areas of high quality semi-natural habitat, have a long history of occupancy for this sub-species, and are multi-species areas.

The SPAs of Caithness Lochs, Loch Lomond, Loch Inch and Torrs Warren, and Loch Ken and River Dee Marshes are distributed across the wintering range in Scotland, and are important components in maintaining the species' UK wintering range. All have a long history of occupancy for this sub-species (Ruttledge & Ogilvie 1979). All include roost areas, whilst Loch Lomond and Loch Ken and River Dee Marshes additionally include some feeding areas.

The Dyfi Estuary is the sole remaining wintering site in Wales and the most southerly in the UK. It is both a roosting and feeding area, and is particularly important in the context of maintaining the traditional wintering range within the UK. The geese here have been subject to a range of current and past conservation measures to enhance their status. It has a long history of occupancy (Fox & Stroud 1985) and the geese use both semi-natural habitat as well as agriculturally managed grassland areas for feeding and roosting.

Distribution map for Greenland White-fronted Goose SPA suite

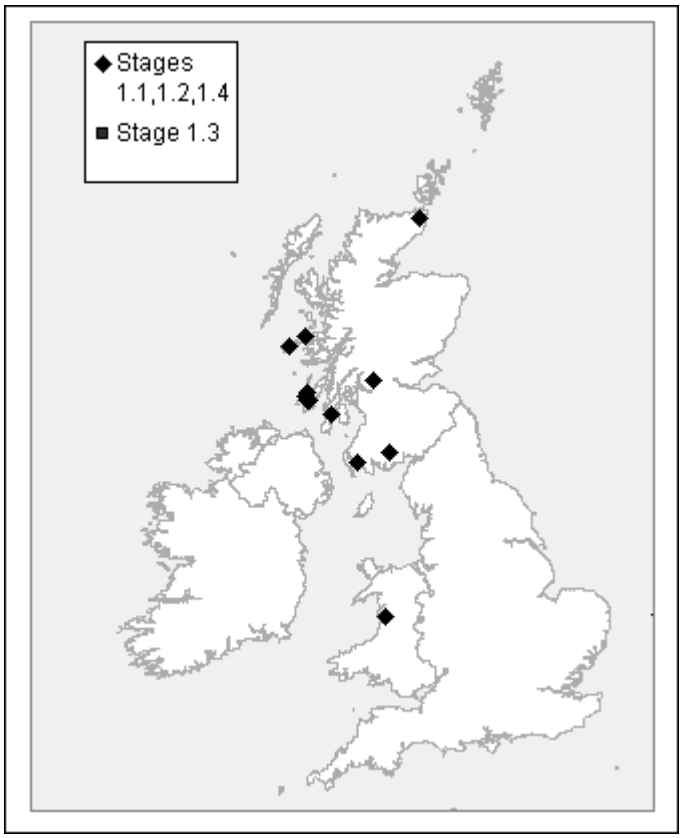


Table 6.20.1 – SPA suite

Site name	Site total[6]	% of biogeographical population	% of national population	Selection stage
Caithness Lochs	183	0.6	1.3	1.1
Coll	789	2.6	5.7	1.1
Dyfi Estuary	144	0.5	1.1	1.1
Eilean na Muice Duibhe/Duich Moss, Islay	1,300	4.3	9.5	1.1
Gruinart Flats, Islay	1,000	3.3	7.3	1.1
Kintyre Goose Roosts	2,323	7.7	17.0	1.1
Laggan, Islay	300	1.0	2.2	1.1
Loch of Inch and Torrs Warren	534	1.8	3.9	1.1
Loch Ken and River Dee Marshes	350	1.2	2.6	1.1
Loch Lomond	237	0.8	1.7	1.1
Rinns of Islay	1,600	5.3	11.7	1.1
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	783	2.6	5.7	1.1
TOTALS	8,243	27.5%	58.9%	

6 Note that the totals in this column are not additive since many geese move between sites listed here on a regular, diurnal basis.

A6.21 Icelandic Greylag Goose *Anser anser*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 2(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1; Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	100,000	1,000	56,972 (57.0% of GB total)
Ireland	3,800	50 (see section 5.1.2 for rationale)	547 (18.2% of all-Ireland total)
Biogeographic population	100,000	1,000	57,519 (57.5% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Greylag Geese have a Palearctic distribution extending from Iceland in the west, discontinuously through Europe and central Asia to the Pacific shores of Russia (Miyabayashi & Mundkur 1999). Two sub-species have been described, both of which occur in Europe – the nominate form occurs in west and north-west Europe, whilst *A. a. rubrirostris* occurs in south-east and eastern Europe as well as western and central Asia. Only the nominate sub-species occurs in the UK.

A number of distinct biogeographic populations of the nominate sub-species are recognised (Scott & Rose 1996). Birds from the Icelandic breeding population of Greylag Goose winter exclusively in Great Britain and Ireland (Owen *et al*. 1986; Hagemeijer & Blair 1997; Madsen *et al*. 1999). Most winter in Scotland, with concentrations in the Moray Firth, Aberdeenshire, eastern central Scotland, the central Southern Uplands and southwest Scotland (Lack 1986; Owen *et al*. 1986; Madsen *et al*. 1999).

Non-breeding Greylag Geese south of the line between the Isle of Man and Teesmouth are sedentary re-established birds, established from geese translocated from the Hebrides since the 1930s, but there is also a large re-established flock in south-west Scotland. In addition to non-breeding feral birds, there are small populations of native breeding Greylag Geese in the Western Isles, and western and northern Scotland. Birds in the Western Isles and in much of western Scotland are sedentary, but those nesting in northern Scotland migrate to nearby agricultural and coastal areas in winter, with some birds moving elsewhere in Scotland and even as far south as England (Lack 1986; Batten *et al*. 1980; Paterson 1991; Owen *et al*. 1986; Thom 1986; Buxton *et al*. 1995; Mainwood 1996; Mitchell & Sigfusson 1999).

There is some mixing of Icelandic and native Greylag Geese, especially when Icelandic birds are migrating through northeast Scotland, but also at a few wintering locations (Mainwood 1996). Many of the birds wintering in Ireland, however, are feral, with only small flocks of Icelandic birds recorded (Lack 1986; Mitchell *et al*. 1999). In autumn, birds migrating from Iceland arrive at a limited number of locations before dispersing to other areas later in the winter period. There can be considerable re-distribution during the winter, especially to sites in the south of the range. In late winter, birds begin to move north, with pre-migratory staging occurring in northeast Scotland and Orkney (Mitchell *et al*. 1995; Mitchell & Sigfusson 1999). During spring migration, Greylag Geese stage in the southern lowlands of Iceland for several weeks, foraging on improved grasslands before returning to breeding grounds (Mitchell & Sigfusson 1999).

Historically, Greylag Geese concentrated on estuaries in winter, where they fed on water plants (Owen 1976). However, more recently they have adapted almost exclusively to using agricultural areas near favoured roost sites. Roost sites include estuaries, lakes and reservoirs, and occasionally river islands. Grasses form the majority of the winter diet. Crops such as winter barley and brassicas may be eaten in severe weather, but grains and root crops are important foods (Lack 1986).

4. Population structure and trends

The total British non-breeding population is currently estimated to be 100,000 individuals, and the all-Ireland population is estimated to be 3,800 individuals (Kirby 1995a; Way *et al*. 1993; Rose & Scott 1997). These totals do not include the sedentary feral population, which may number about 22,000 wintering individuals (Delany 1993; see also Madsen *et al*. 1999), and so represent only the Icelandic and native British populations. The native (North Scottish) British population is estimated to be just less than 10,000 wintering individuals, with an estimated 3,300 in the Uists, 2,900 in Coll and Tiree, 2,500 in northeast Scotland and small populations elsewhere (Cranswick *et al*. 1999; Owen *et al*. 1986; Madsen 1991; Paterson 1991; Buxton *et al*. 1995; Mainwood 1996; Mitchell & Sigfusson 1999).

The Icelandic breeding population was estimated at 25,000 individuals in 1952 and since then has increased steadily to over 100,000 individuals in the late 1980s (Madsen 1991). This increase was reflected in the British wintering total that increased from 26,500 individuals in 1960 to just over 100,000 in 1984 (Mitchell & Sigfusson 1999). The increase in the Icelandic population is in most part attributable to lower winter mortality due to regulated hunting and improved winter foraging opportunities (Owen *et al*. 1986; Thom 1986; Fox *et al*. 1989).

Since the early 1990s, the wintering numbers have entered a period of decline, possibly as a result of hunting in Iceland where large numbers are shot each year (about 35,000 individuals annually during the mid-1990s) (Cranswick *et al*. 1999; Mitchell & Sigfusson 1999). The native British population has increased steadily since the mid-1960s, when it was estimated to be 600–700 birds (Paterson 1991; Madsen 1991; Mitchell & Sigfusson 1999). The increase in the native British population is attributed to lack of hunting, but may also be related to improved foraging opportunities as a result of changes in agriculture (Paterson 1991).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Icelandic Greylag Goose supports, on average, 57,519 individuals (calculated using site totals from the WWT/JNCC co-ordinated November census of grey goose populations (Hearn 1998) for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to 57.0% and 18.2% of numbers in Britain and Northern Ireland respectively, and 57.5% of the total flyway population. The SPA suite comprises 22 sites at which Icelandic Greylag Geese has been listed as a qualifying species (Table 6.21.1).

6. Classification criteria

All natural and semi-natural sites in the UK that were known to support more than 1% of the international population of Icelandic Greylag Geese were considered under Stage 1.2 and, of these, 19 were selected after consideration of Stage 2 judgements. A further three sites (all in Northern Ireland) were considered and selected under Stage 1.3 (see section 5.3), with Icelandic Greylag Goose identified as an important component of wider non-breeding waterbird assemblages at these localities.

Given the mobility of these geese through the non-breeding season, especially their use of distinct areas in autumn and spring for staging (pre-migratory feeding), potential SPAs were considered in a number of broadly defined regions. This approach ensured that key sites would be selected from throughout the range within the UK and that areas used upon autumn arrival, in mid-winter, and in spring prior to departure to Iceland, would all be represented within the species' SPA suite. The Stage 2 judgements made are as follows:

There are two main areas used in the northernmost part of the wintering range. Caithness Lochs was included in preference to Orkney as supporting a larger population on a multi-species site.

Within the Moray Basin area, Loch Eye was included as supporting the largest numbers, whilst Cromarty Firth, Dornoch Firth and Loch Fleet, Inner Moray Firth, and Moray and Nairn Coast (which includes Findhorn Bay) were included as multi-species sites. Loch Spynie was selected in preference to Lower Bogrotten as supporting a larger population on a single species site.

Loch of Skene and Muir of Dinnet were selected within Grampian as regularly supporting the largest numbers of these geese in the UK. Loch of Strathbeg was included in preference to Abernethy Forest (Loch Garten) as although both are multi-species sites, Loch of Strathbeg has previously supported larger numbers. The regularly used sites of Haddo House Lochs, Corby Loch, and the River Spey were also considered but not selected, as they did not add significantly to range or numerical coverage within Grampian.

In the Tayside and Fife area, South Tayside Goose Roosts[7], Loch of Lintrathen, Firth of Tay and Eden Estuary, Loch of Kinnordy, and the Montrose Basin were all selected to provide population and range coverage within the core of the range of Icelandic Greylag Geese in Scotland. The regularly used sites of Tay/Isla Valley, River Tay at Scone, Fincastle Loch, Kilconquhar Loch, Carlhurlie Reservoir, and Ballo Reservoir, were all considered but not selected, as they did not add significantly to range or numerical coverage within Tayside and Fife.

In the Borders area and northern England, Holburn Lake and Moss, and Lindisfarne are both included because they lie at the edge of the range of Icelandic Greylag Geese in Britain, whilst Din Moss – Hoselaw Loch provides additional population coverage. The regularly used site of Gadloch was also considered but not selected, as it did not add significantly to range or numerical coverage within Borders.

Loch Ken and River Dee Marshes is a long-established site in south-west Scotland and provides for range and population coverage in this part of the Scottish range of Icelandic Greylag Geese. The regularly used sites of Stranraer Lochs, and Bute, were also considered but not selected, as they did not add significantly to range or numerical coverage within the region.

In Northern Ireland, Lough Foyle, Lough Neagh and Lough Beg, and Strangford Lough were all selected because they support Icelandic Greylag Geese at levels of all-Ireland importance within internationally important assemblages of waterbirds.

No sites were selected for the north Scottish Greylag Goose population since this is a discrete non-migratory population (see section 5.7.3).

7 comprising Carsebreck and Rhynd Lochs in Strathallan, and Drummond Lochs and Dupplin Lochs in Strathearn

Distribution map for Icelandic Greylag Goose SPA suite

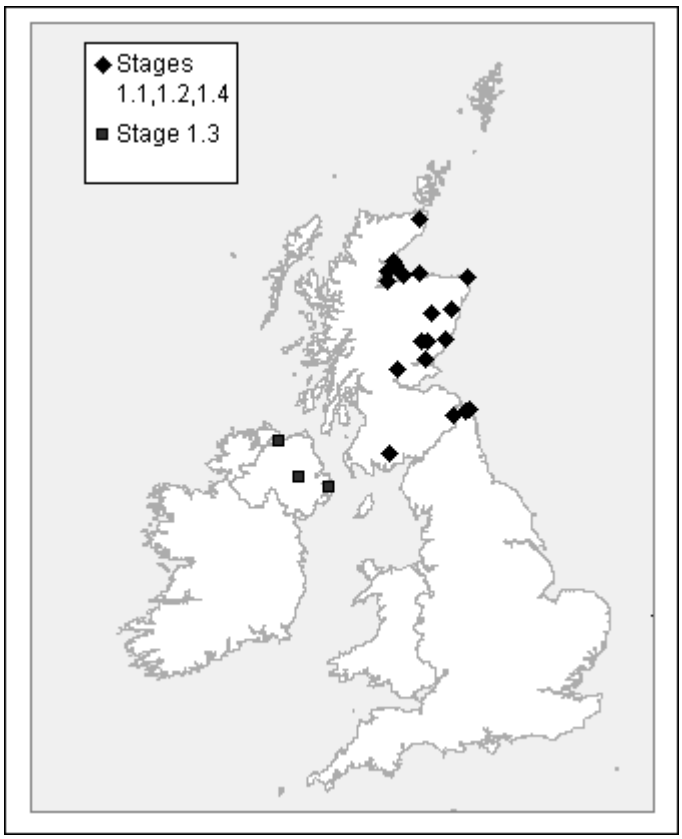


Table 6.21.1 – SPA suite

Site name	Season of peak use	Site total	% of biogeographical population	% of national population	Selection stage
Caithness Lochs	Autumn	6,872	6.9	6.9	1.2
Cromarty Firth	Autumn	1,777	1.8	1.8	1.2
Din Moss – Hoselaw Loch	Autumn	1,081	1.1	1.1	1.2
Dornoch Firth and Loch Fleet	Winter (DF) / Autumn (LF)	2,079	2.1	2.1	1.2
Firth of Tay and Eden Estuary	Winter	1,355	1.4	1.4	1.2
Holburn Lake and Moss	Winter	2,150	2.2	2.2	1.2
Inner Moray Firth	Winter	1,731	1.7	1.7	1.2
Lindisfarne	Spring	1,416	1.4	1.4	1.2
Loch Eye	Autumn	11,321	11.3	11.3	1.2
Loch Ken and River Dee Marshes	Winter	1,000	1.0	1.0	1.2
Loch of Kinnordy		1,000	1.0	1.0	1.2
Loch of Lintrathen	Winter	3,098	3.1	3.1	1.2
Loch of Skene	Autumn	10,840	10.8	10.8	1.2
Loch of Strathbeg	Winter	3,325	3.3	3.3	1.2
Loch Spynie	Autumn	3,360	3.4	3.4	1.2
Lough Foyle	Spring	67	0.1	1.8 (Ire)	1.3
Lough Neagh and Lough Beg	Winter	176	0.2	4.6 (Ire)	1.3
Montrose Basin		1,080	1.1	1.1	1.2
Moray and Nairn Coast		2,679	2.7	2.7	1.2
Muir of Dinnet	Autumn	29,458	29.5	29.5	1.2
South Tayside Goose Roosts	Autumn	3,667	3.7	3.7	1.2
Strangford Lough	Winter/ Spring	419	0.4	11.0 (Ire)	1.3
TOTALS		57,519 (in November)	57.5%	57.0% 18.2% (Ire)	

A6.22 Greenland Barnacle Goose *Branta leucopsis*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2 (winter)** Unfavourable conservation status (**localised – winter**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 9(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	26,950	270	19,115 (63% of GB total)
Ireland[8]			
Biogeographic population	32,000	320	19,115 (50% of biogeographic population)

GB population source: Fox et al. *1990*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Barnacle Geese are globally restricted to limited breeding areas in north-east Greenland, Svalbard, and the islands of Novaya Zemyla and Vaigach in the Russian high Arctic. Although the species is monotypic, the populations breeding in each of these three areas are strongly distinct with separate migratory flyways and wintering areas within Europe.

Those breeding in Svalbard, winter in just two areas in Scotland, and stage during migration in Norway (see section 6.23). The north Russian population winters mainly in The Netherlands (staging on migration in Germany, Sweden and Estonia, and amounts to about 176,000 geese (Madsen *et al*. 1999). The Greenland population breeds in north-east Greenland and winters along the north and west coasts of Scotland and Ireland. There is very little interchange between the three populations (Cabot & West 1983; Owen *et al*. 1986; Madsen *et al*. 1999).

After departing in autumn from post-breeding moulting grounds in eastern Greenland, birds stage in southern Iceland, spending up to a month there before moving to British and Irish wintering grounds. The whole population arrives in the Loch Gruinart area of Islay for some days before dispersing elsewhere to traditional wintering sites in Scotland and Ireland (Easterbee *et al.* 1987). During spring

8 Although the species occurs in the Republic of Ireland, there are sites regularly used by Greenland Barnacle Geese in Northern Ireland.

migration, staging again occurs in Iceland, in several northern valleys, for about a month before returning to breeding grounds (Owen *et al*. 1986; Percival & Percival 1997; Ogilvie *et al*. 1999).

The wintering distribution of the Greenland Barnacle Goose is nearly exclusively on islands along the west coast of Scotland, from Orkney and northern Sutherland to Islay, and along the west coast of Ireland. The most important area is Islay, on which the majority of the Greenland population winters. About a fifth of the population winters in Ireland, with smaller numbers occupying other small and usually uninhabited islands within the Hebrides and on islands off the coast of northern Scotland (Boyd 1968; Owen *et al*. 1986; Lack 1986; Ogilvie *et al.* 1999). After Islay, the next largest concentration in Britain occurs on the adjacent islands of Coll, Gunna and Tiree (Newton & Percival 1989).

Most of the population winters in just a few sites, typically coastal grazed saltmarshes and pastures as well as more intensively managed grasslands on Islay. The birds are well adapted for feeding on short coastal turf, including saltmarshes, and machair, but have become more dependent on intensively managed grasslands, and will also take clover, and spilled grain amongst stubble (Owen *et al*. 1986; Ogilvie *et al*. 1999).

Barnacle Geese rarely travel more than 5 km from their roost to feed (Percival 1991), with roosts occurring on saltmarsh and intertidal sandbanks as well as on small offshore islands. Barnacle Geese are predominantly faithful to specific wintering areas, but there is some movement between sites. Detailed studies of the movement of individually marked birds on Islay have shown that birds are highly site faithful. On average, 66% stay at the same site during the course of the winter, and 70% of surviving birds return to the same site in the following winter (Percival 1991; Pettifor *et al.* 1996). These characteristics, together with localised distribution, mean that site-based conservation is a particularly appropriate conservation strategy, especially if combined with targeted management of grasslands within sites (Percival 1993).

4. Population structure and trends

The total numbers of Greenland Barnacle Geese wintering in Britain in the period of the review was estimated to be 31,000 individuals, and the all-Ireland population 7,500 individuals (Fox *et al.* 1990; Delany & Ogilvie 1994; Merne & Walsh 1994). The Greenland population has been counted at about five-year intervals since 1959, when the population was first assessed at about 8,300 individuals (Boyd 1968).

The increase in population size is thought to result from improved winter survival, probably the consequence of several factors including restrictions on hunting and changes in agriculture. It has not been uniform across the range; the largest increases occurring on Islay, Tiree and Coll, and the Sound of Harris (Cranswick *et al.* in press). Proportionately the largest increases have occurred on Islay – in the late 1950s, the island held about 35% of the whole Greenland population, whilst it now holds about 65% (Cranswick *et al.* in press).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for the Greenland population of Barnacle Geese supports, on average, 19,115 individuals (calculated with data from the international census of March 1994 (Delany & Ogilvie 1994) – see section 4.4.1 and Appendix 2 for further explanation). Estimating use of the suite by the population is complex: some SPAs act as feeding areas, supporting the geese during the day, with other nearby SPAs being used as roost sites at night. Thus, the same birds may utilise two or more SPAs in any one day. Allowing for such movements, the total within the suite amounts to about 63% of British wintering numbers and about 50% of the international population. Greenland Barnacle Geese do not regularly occur in Northern Ireland. The suite comprises 11 sites at which Greenland Barnacle Geese have been listed as a qualifying interest (Table 6.22.1).

Other measures

Changes in agricultural practice have benefited the species by improving foraging opportunities, with birds on Islay showing a strong preference for grazing on grassland subject to intensive agricultural management (Percival 1993). Conflict between Barnacle Geese and farmers has followed such changes in agriculture, population growth and the growth of numbers on Islay. To maintain protection of the

population a variety of management schemes have been put in place on Islay, the most recent being the Islay Goose Management Scheme, which began in 1992. Such schemes have aimed to reduce the conflict. A similar scheme has been established on South Walls in Orkney.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national population were considered under Stage 1.1, and all except Danna/Keills/Eilean Mór; Colonsay and Oronsay; South Walls (Orkney); and islands in the Sound of Harris were selected after consideration of Stage 2 judgements (especially those relating to population size and range). Danna/Keills/Eilean Mór, and Colonsay and Oronsay, were not selected owing to their relatively small populations and proximity to the population centre of Islay. South Walls in Orkney provides the feeding area of geese that roost on Switha. It was not selected because, being largely an agricultural feeding area, it did not meet the requirements of the Birds Directive as an SPA for wintering geese. The islands in the Sound of Harris were not selected because they did not significantly enhance either the numbers or range contained within the site series.

The Rinns of Islay was not selected as recent records show that the site is not regularly used. This is also the case for Eilean na Muice Duibhe on Islay, which was previously noted as being of international importance for Barnacle Geese (Pritchard *et al.* 1992). There have been no recent records of use.

Distribution map for Greenland Barnacle Goose SPA suite

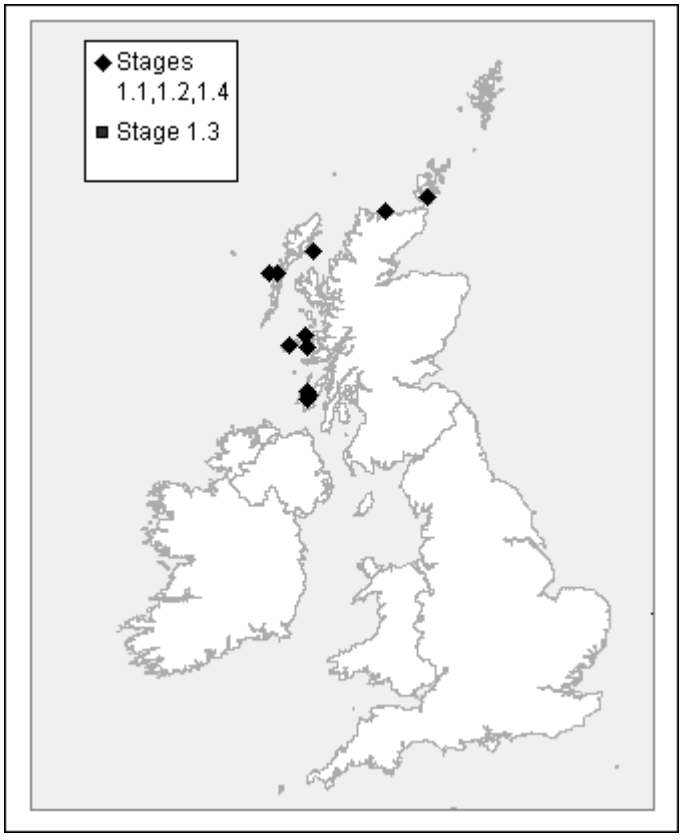


Table 6.22.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Bridgend Flats, Islay	6,700	20.9	21.6	1.1
Coll	1,029	3.2	3.3	1.1
Gruinart Flats, Islay	20,000	62.5	64.5	1.1
Laggan, Islay	1,800	5.6	5.8	1.1
Monach Isles	540	1.7	1.7	1.1
North Sutherland Coastal Islands	631	2.0	2.0	1.1
North Uist Machair and Islands	1,500	4.7	4.8	1.1
Shiant Isles	172	0.5	0.6	1.1
Switha	1,000	3.1	3.2	1.1
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	959	3.0	3.1	1.1
Treshnish Isles	82	0.3	0.3	1.1
TOTALS	19,115 (in March 1994)	49.8%	63.2%	

A6.23 Svalbard Barnacle Goose *Branta leucopsis*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2 (winter)** Unfavourable conservation status (**localised – winter**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 9(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	17,450	120	13,821 (79% of GB population)[9]
Ireland			
Biogeographic population	12,000[10]	120	13,821 (*c.* 100% of biogeographic population)

GB population source: WeBS 1995/6
Biogeographic population source: Rose & Scott 1997

3. Distribution

Barnacle Geese are globally restricted to limited breeding areas in north-east Greenland, Svalbard, and the islands of Novaya Zemyla and Vaigach in the Russian high Arctic. Although the species is monotypic, the populations breeding in each of these three areas are strongly distinct with separate migratory flyways and wintering areas within Europe (Rose & Scott 1996).

The Svalbard Barnacle Goose is geographically isolated from the two other populations of this species breeding in northern Eurasia. It breeds in the Svalbard archipelago between 80°N and 76°30'N (Prestrud *et al.* 1989). In late August and early September, many birds migrate to the southernmost islands in the archipelago, Bjørnøya, were they stay for several weeks before migrating through northern Scotland to wintering grounds around the Solway Firth (Owen & Gullestad 1984). In recent years, small numbers have taken to wintering at Loch of Strathbeg, and larger numbers occur there on spring and autumn passage.

During the winter, flocks roost at night in sheltered locations within the estuary and fly to nearby merses and pastures to feed during the day. The winter diet consists of a range of natural and cultivated

9 This assessment underestimates the actual coverage of the population within the SPA suite owing to a lag in reporting times and more recent assessments of numbers. The actual proportion is close to 100%.

10 The formally reported international assessment of the size of this population given in Rose & Scott (1996) is significantly out of date and does not reflect the recent large counts that have been made (see text).

grasses (especially Ryegrass *Lolium perenne*), clover *Trifolium* stolons, the seeds and leaves of saltmarsh plants and grain on stubble fields (Owen & Kerbes 1971; Owen 1975).

In Britain, almost the entire population occurs around the Solway Firth. Three areas are used intensively: the Caerlaverock area, Rockliffe Marsh, and farmland around Southerness. However, numbers of birds using these areas have changed markedly over the years. During the early 1970s, when the Wildfowl & Wetlands Trust (WWT) began managing farmland for geese, the use of the Caerlaverock area increased markedly (Owen & Campbell 1974). In the late 1970s and early 1980s, when the population began to grow, the carrying capacity at Caerlaverock was reached and the proportion of time spent there declined by 40%. The use of Southerness increased at this time.

In the early 1980s, better management at Caerlaverock meant that more geese used that site as the carrying capacity of Rockliffe during the spring was reached (Owen *et al.* 1987). In the 1990s, the Southerness area was afforded further protection and has become more important at the expense of Caerlaverock and Rockliffe (Shimmings *et al.* 1993), in part due to the establishment of the RSPB reserve at Mersehead.

4. Population structure and trends

The number of Svalbard Barnacle Geese wintering in Britain has increased substantially since the 1940s. In the mid-1940s, there was considerable disturbance at the wintering grounds from military activities and shooting. In 1948, only 300 geese were recorded on the Solway (Owen & Norderhaug 1977). The geese were legally protected from shooting in 1954 and in Svalbard in 1955. This, together with the establishment of the NNR at Caerlaverock in 1957, led to a recovery, to 3,000–4,000 birds in the 1960s.

Further increases occurred in the 1970s and 1980s following the establishment of the WWT refuge at Caerlaverock in 1970 and the creation of breeding sanctuaries on the main breeding areas in 1973. Numbers appeared to stabilise at around 12,000–14,000 in the early 1990s (Black *et al.* 1999). However, a comprehensive census in spring 1997 indicated that the population comprises 23,000 birds. It is thought that this count represented a more accurate estimate of the population than earlier counts made in late autumn, when the majority of birds may not have arrived. A huge count of 32,000 birds in February 1998 suggests that some birds from the Greenlandic population wintering in Islay may have moved to the Solway during that year. A count made during the winter of 1999–2000 confirmed that the population is around the 24,000 mark.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Svalbard Barnacle Geese supports, on average, 13,821 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 –see section 4.4.1 and Appendix 2 for further explanation). This total amounts to virtually the entire British and international flyway population. The population does not occur in Northern Ireland. The suite comprises two sites at which the Svalbard Barnacle Goose has been listed as a qualifying interest (Table 6.23.1).

Other measures

In 1993, Scottish Natural Heritage established a Goose Management Scheme by which farmers in the main goose areas of the Solway are subsidised for the damage caused by Barnacle Geese on their land. Furthermore, the Merse Management Scheme pays grants to farmers to improve the grazing of merses with the aim of improving land for wildlife.

A Flyway Management Plan has been produced for the Svalbard population of Barnacle Geese (Black 1998). It is hoped to formalise this plan under the African-Eurasian Waterbird Agreement, which was signed by the United Kingdom and Norway in 1995. The plan provides a framework for co-ordinated conservation action to secure the protection of important areas throughout the flyway and promote relevant research on population dynamics.

6. Classification criteria

The two sites in the UK that support more than 1% of the international population of Svalbard Barnacle Geese were considered under Stage 1.2, and both were selected after consideration of Stage 2 judgements. The population does not occur in Northern Ireland. The SPA suite contains substantially all of the winter range of this discrete population.

Loch of Strathbeg is primarily an autumn arrival point (first landfall on the flight from the breeding areas), whilst the whole population winters on the Solway Firth.

Distribution map for Svalbard Barnacle Goose SPA suite

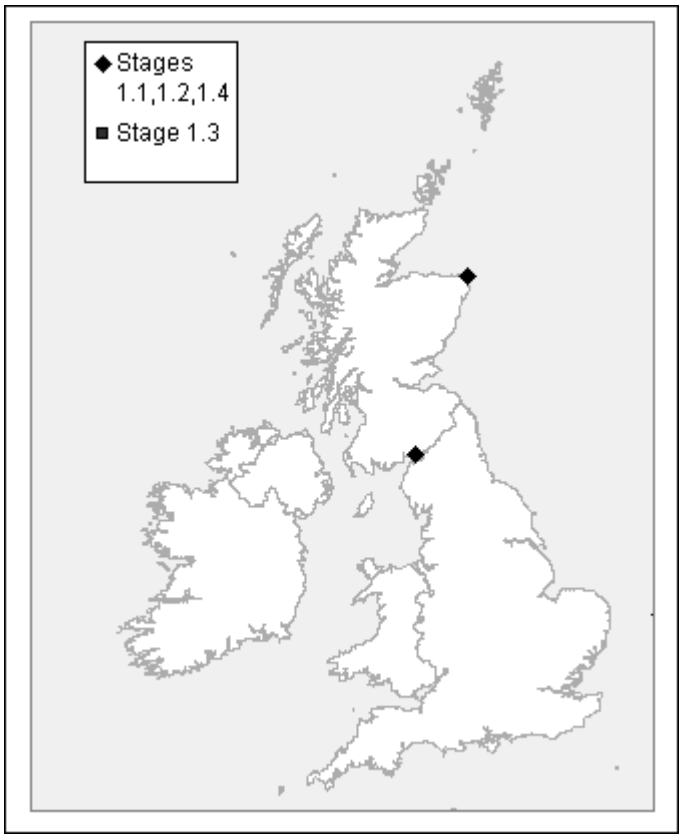


Table 6.23.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Loch of Strathbeg	226	1.9	1.3	1.1
Upper Solway Flats and Marshes	13,595	*c.* 100	*c.* 100	1.1
TOTALS	13,821 (in January)	*c.* 100%	*c.* 100%	

A6.24 Dark-bellied Brent Goose *Branta bernicla bernicla*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	103,300	1,000	93,677 (94% of GB total)
Ireland			
Biogeographic population	300,000	3,000	93,677 (31% of biogeographic population)

GB population source: Kirby 1995a
Biogeographic population source: Rose & Scott 1997

3. Distribution

Brent Geese have a circumpolar distribution breeding in the extreme high Arctic in all northern countries. The range extends from Greenland to Svalbard and northern Russia, continuing through Alaska to the Canadian Arctic Archipelago. There are three sub-species, only two of which regularly occur in Europe. The Black Brant *Branta bernicla nigricans* is an occasional vagrant in the UK, originating from North America.

The sub-species *B. b. hrota* occurs generally in the western Arctic (Yamal Peninsula in the west, through to Canada and Svalbard in the east). Two distinct populations of *B. b. hrota* occur in Britain and Ireland – one breeds in Canada and winters in Ireland (section 6.25), the other breeds in Svalbard and winters in Denmark and England (section 6.26).

The nominate Dark-bellied Brent Goose *B. b. bernicla* breeds in the Russian high Arctic from the Yamal Peninsula in the west, extending east to the Lena Delta at about 120°E (Ebbinge *et al.* 1999). Those breeding in the western part of this range migrate to winter on the coasts of North Sea countries in Europe. Most recoveries of birds ringed in western Europe come from the Taiymyr Peninsula (*c.* 100°E), although the most easterly record is of a British-ringed Brent Goose recovered from 145°E (Ebbinge *et al.* 1999). The winter range of the population of this race occurs from Denmark and the western Baltic, west through England (mostly south of a line from the Wash to the Severn Estuary) to western France. Large concentrations occur on the coast of the international Wadden Sea. This major intertidal area plays a particularly important role on the initial arrival of birds from the breeding grounds in late

summer and again as a staging area prior to northward migration in spring (van Nugteren 1994; Ebbinge 1992).

The main wintering areas of Dark-bellied Brent Geese in the UK are in England, along the North Sea and Channel coasts, from The Wash south to Poole Harbour. Important concentrations are found around The Wash, along the Norfolk, Essex and north Kent coasts, and in the natural harbours of the south coast.

The traditional wintering habitat is mostly shallow coasts and estuaries with extensive mudflats and intertidal areas, as Dark-bellied Brent Geese rarely occur far from the sea and feed on intertidal plants such as *Zostera, Enteromorpha* and a small range of littoral plants. Population growth during the 1980s resulted in more rapid seasonal depletion of natural food sources. Thus, since the late 1970s, the geese have adapted to use coastal grasslands and the early growth of cultivated cereal crops (van Nugteren 1994; Ebbinge *et al.* 1999).

4. Population structure and trends

The world population of this sub-species has increased from *c.* 22,000 birds in winter 1960/61 to around 300,000 birds in the late 1990s (Batten *et al.* 1990; Rose & Scott 1997). This followed a long period of decline from the early 1930s until the late 1950s, during which time the population remained at around 16,500 individuals (Salomonsen 1958). The subsequent increase has been largely due to a reduction in mortality following the introduction of protection measures in the wintering areas (Ebbinge 1991). Indeed, the population was largely stable at a very low level from the 1950s until Denmark conferred protection in 1972. Since then, the introduction of protective legislation in all wintering areas, and other internationally co-ordinated conservation provisions, have allowed the population to recover its former range and abundance (Smart 1979; van Nugteren 1994; Ebbinge *et al.* 1999).

Numbers wintering in England have increased in proportion to the world population, with an average maximum of 57,300 during 1976–81 and 94,300 during 1985–89, representing 50% of the world population during each period. By winter 1997–98, the peak of the wintering numbers in Britain had reached just over 99,000 (Cranswick *et al.* 1999). In the winters of 1993/94 to 1997/98 The Wash alone held over 20,000 individuals, 20% of the total British wintering numbers.

As wintering Dark-bellied Brent Geese in Britain are concentrated in relatively few areas, wider countryside conservation measures are not ideally suited to the conservation of the species. Many important grazing marsh and saltmarsh areas used for feeding are protected within nature reserves, such as Old Hall Marshes RSPB Reserve in the Blackwater Estuary and Cley Norfolk Wildlife Trust Reserve on the North Norfolk Coast. The grassland of many of these sites is managed specifically for Dark-bellied Brent Geese through appropriate grazing regimes that include provision of alternative feeding areas such as high-quality grassland (Stroud 1994; Vickery *et al.* 1994a, b).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Dark-bellied Brent Geese supports, on average, 93,677 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 94% of the British population[11], and about 31% of the international flyway population. Dark-bellied Brent Geese do not regularly winter in Northern Ireland. The suite comprises 19 sites at which Dark-bellied Brent Geese have been listed as a qualifying species (Table 6.24.1).

6. Classification criteria

All sites in the UK that were known to support more than 1% of the international population of Dark-bellied Brent Geese were considered under Stage 1.2, and all 13 were selected after consideration of

11 Calculation of population coverage for Dark-bellied Brent Geese is problematic due to the sometimes rapid movements of birds between wintering areas within Britain, and to and from other wintering areas in France and the Low Countries (Ebbinge & St. Joseph 1992). These movements can be stimulated by the onset of severe cold weather. The proportions of populations presented here should thus be regarded as indicative rather than exact.

Stage 2 judgements. A further six sites were considered and selected under Stage 1.3 (see section 5.3); at these sites Dark-bellied Brent Geese were identified as important components of a wider non-breeding waterbird assemblage.

The sites are distributed throughout the full range of the population in England, from the Humber in the north-east, to the Exe Estuary in the south-west. Most of the sites are multi-species SPAs, of importance also for a range of other waterbirds, although Portsmouth Harbour has been selected solely for Dark-bellied Brent Geese. There is a very long recorded history of occupancy at most of these sites (Salomonsen 1958; Boyd in Atkinson-Willes 1963; Ogilvie & St Joseph 1976).

As the selection of sites under Stage 1.3 resulted in a suite which gives comprehensive coverage of the population and range of wintering Dark-bellied Brent Geese in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Dark-bellied Brent Goose SPA suite

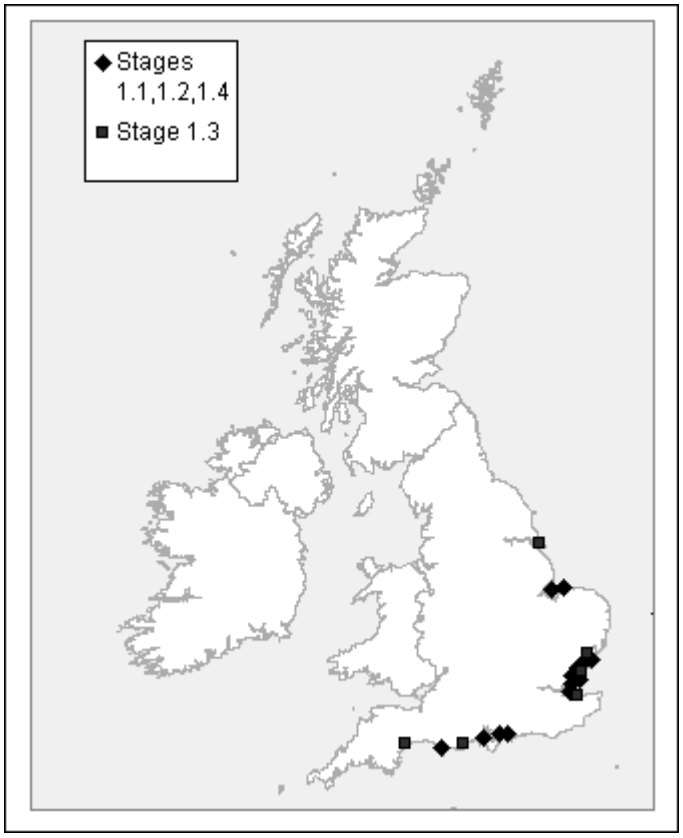


Table 6.24.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Benfleet and Southend Marshes	3,819	1.3	3.7	1.2
Blackwater Estuary	15,392	5.1	14.9	1.2
Chesil Beach and The Fleet	3,182	1.1	3.1	1.2
Chichester and Langstone Harbours	17,119	5.7	16.6	1.2
Colne Estuary	4,907	1.6	4.8	1.2
Crouch and Roach Estuaries	3,074	1.0	3.0	1.2
Dengie	2,308	0.8	2.2	1.3
Exe Estuary	1,905	0.6	1.8	1.3
Foulness	13,075	4.4	12.7	1.2
Hamford Water	6,892	2.3	6.7	1.2
Humber Flats, Marshes and Coast (Phase 1)	2,553	0.9	2.5	1.3
Medway Estuary and Marshes	3,205	1.1	3.1	1.2
North Norfolk Coast	11,512	3.8	11.1	1.2
Poole Harbour	1,480	0.49	1.4	1.3
Portsmouth Harbour	2,847	0.95	2.8	1.2
Solent and Southampton Water	7,506	2.50	7.3	1.2
Stour and Orwell Estuaries	2,711	0.90	2.6	1.3
The Swale	1,961	0.65	1.9	1.3
The Wash	22,248	7.42	21.5	1.2
TOTALS	93,677 (in January)	31.2%	93.7%	

A6.25 Canadian Light-bellied Brent Goose *Branta bernicla hrota*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB			
Ireland	20,000	200	14,087 (70.4% of all-Ireland total)
Biogeographic population	20,000	200	14,087 (70.4% of biogeographic population)

Ireland population source: Way et al. 1993
Biogeographic population source: Rose & Scott 1997

3. Distribution

Brent Geese have a circumpolar distribution breeding in the extreme high Arctic in all northern countries. The range extends from Greenland to Svalbard and northern Russia, continuing through Alaska to the Canadian Arctic Archipelago. There are three sub-species, only two of which regularly occur in Europe (section 6.24). The sub-species *B. b. hrota* occurs generally in the western Arctic (Canada to Svalbard and Franz Joseph Land). Two distinct populations of *B. b. hrota* occur in Britain and Ireland. One breeds in Svalbard and north-east Greenland and winters in Denmark and England (section 6.26), the other breeds in Canada and winters in Ireland.

The Canadian breeding population winters almost entirely in Ireland, with only small numbers continuing on to Wales, the Channel Islands and the north French coast (Merne *et al.* 1999). The distribution in Ireland is wholly coastal, with large estuaries and areas of intertidal mudflats with fine sediments preferred (Lack 1986).

Light-bellied Brent Geese use many sites in the course of the winter. Most birds congregate at Strangford Lough in Northern Ireland on autumn arrival, prior to dispersing to other estuaries. Five estuaries are used as main autumn staging areas, with Strangford Lough holding up to 75% of the population (Ó Briain & Healy 1991). Lough Foyle in Northern Ireland has also become increasingly important in autumn.

Light-bellied Brent Geese feed on a range of plants, particularly eelgrasses *Zostera* spp. and algae on mudflats, various saltmarsh plants and, more recently, on grass and cultivated crops such as barley, wheat and oilseed rape. The movements of birds wintering in Ireland are less extensive than those of

other Brent Goose populations and are mainly influenced by regular changes in the availability of eelgrass (Ó Briain & Healy 1991). Early in the winter, more than 90% of the population feed on eelgrass, followed by a switch to green algae, saltmarsh and increasingly terrestrial habitats. It is thought that the rapid depletion of eelgrass in the autumn prompts redistribution within and between sites. Birds roost communally on sheltered coastal and estuarine waters.

4. Population structure and trends

The numbers of all populations of Brent Geese crashed in the early 1930s, caused in part by a reduction in availability of eelgrass due to disease (Salomonsen 1958) together with probable high levels of shooting. Since the 1950s, when the population was first estimated at 6,000 birds (Salomonsen 1958), the Canadian population of Light-bellied Brent Goose has shown a steady increase in numbers. During the 1960s and 1970s, the population was estimated to range from 7,000 to 16,000, and in 1983, it was around 12,000 birds (Cramp & Simmons 1977; Lack 1986; Owen *et al.* 1986). Although a peak of 24,600 was recorded in 1985 (Ó Briain & Healy 1991) the population is currently estimated to be 20,000 birds and has apparently stabilised (Scott & Rose 1996). As with other populations of Brent Geese, this increase is largely attributed to improved protection in wintering and staging areas leading to reduced mortality and improved energetic conditions.

Many birds disperse to intertidal habitats outside the main sites during midwinter and, in some areas birds have recently taken to feeding on grasslands and cultivated crops inland. Although the habit of feeding on agricultural land appears to be a more recent development in Ireland than in England, and fewer birds and localities are involved, conflicts with farmers could become more frequent if large numbers of birds begin to feed more extensively on winter cereals and newly sown grass. On Strangford Lough, in particular, there has been a recent increase in the use of adjacent agricultural land by geese, a trend which has been linked to an overall decline in the abundance of eelgrass at this site (Andrews *et al.* 1996; Mathers 1995).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for the Canadian population of Light-bellied Brent Goose supports, on average, 14,087 individuals (calculated using WeBS October site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 70% of the all-Ireland and international flyway populations. Canadian Light-bellied Brent Geese do not regularly winter in Great Britain in significant numbers. The suite comprises six sites in Northern Ireland at which Light-bellied Brent Geese have been listed as a qualifying species (Table 6.25.1).

The suite includes all the main coastal wintering sites in Northern Ireland, including the two most important sites at Strangford Lough and Lough Foyle, which, between them, occasionally hold up to 90% of the total population. No further SPAs have been selected due to the dispersed, low-density occurrence of the birds outside the SPA suite.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the international population of Canadian Light-bellied Brent Geese were considered under Stage 1.2, and all six were selected after consideration of Stage 2 judgements.

The sites are distributed throughout the range of the population in Northern Ireland, from Lough Foyle in the north-west to Carlingford Lough in the south-east. Most of the sites are multi-species SPAs, of importance also for a range of other waterbirds, although Killough Harbour has been selected solely for its importance for this population of Light-bellied Brent Geese. There is a very long recorded history of occupancy at most of these sites (Salomonsen 1958; Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a suite that gives comprehensive coverage of the population and range of wintering Canadian Light-bellied Brent Geese in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Canadian Light-bellied Brent Goose SPA suite

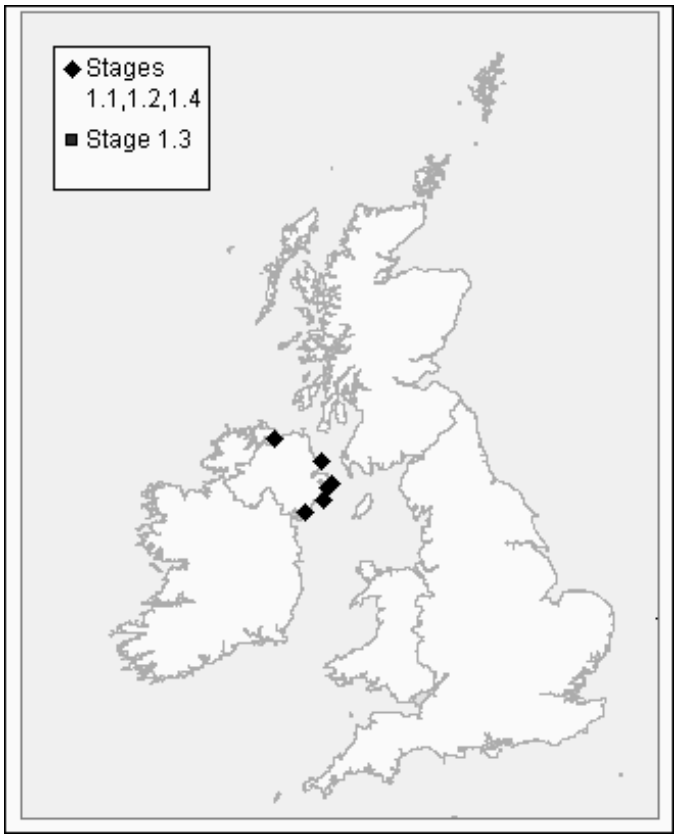


Table 6.25.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Carlingford Lough	319	1.6	1.6 (Ire)	1.2
Killough Harbour	354	1.8	1.8 (Ire)	1.2
Larne Lough	227	1.1	1.1 (Ire)	1.2
Lough Foyle	3,730	18.7	18.7 (Ire)	1.2
Outer Ards	245	1.2	1.2 (Ire)	1.2
Strangford Lough	10,527	52.6	52.6 (Ire)	1.2
TOTALS	14,087 (in October)	70.4%	70.4% (Ire)	

A6.26 Svalbard Light-bellied Brent Goose *Branta bernicla hrota*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	2,430	50 (see section 5.1.2 for rationale)	1,844 (75.9% of GB total)[12]
Ireland			
Biogeographic population	5,000	50	1,844 (36.9% of biogeographic population)

GB population source: Cranswick et al. *1992*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Brent Geese have a circumpolar distribution breeding in the extreme high Arctic in all northern countries. The range extends from Greenland to Svalbard and northern Russia, continuing through Alaska to the Canadian Arctic Archipelago. There are three sub-species, only two of which regularly occur in Europe (section 6.24). The sub-species *B. b. hrota* occurs generally in the western Arctic (Canada to Svalbard and Franz Joseph Land). Two distinct populations of *B. b. hrota* occur in Britain and Ireland. One breeds in Canada and winters in Ireland (section 6.25); the other breeds in Svalbard and north-east Greenland, wintering in Denmark and England.

The whole population of the Svalbard Light-bellied Brent Goose migrates along the Norwegian coast to arrive in Denmark in October. A variable proportion of the population then moves on to Lindisfarne on the Northumberland coast later in the winter (Clausen *et al.* 1998). The peak number of birds wintering in England depends on weather conditions on the continent and, during severe winters, nearly the whole population has been recorded at Lindisfarne (Clausen *et al.* 1998). The majority of birds usually depart their English wintering grounds in mid-January following food depletion.

12 This assessment underestimates the actual coverage of the population within the SPA suite owing to lag in reporting times and more recent assessments of numbers. The actual UK proportion is *c.* 100% and the corresponding international proportion is 54.2%.

In common with other Brent Goose populations, the Svalbard birds feed on mudflat vegetation, mainly eelgrasses *Zostera noltii* and *Z. marina* and green seaweeds *Enteromorpha* and *Ulva* spp.. More recently, a small but increasing number of Svalbard Light-bellied Brent Geese have also taken to feeding on farmland adjacent to their coastal wintering areas.

4. Population structure and trends

It is estimated that the biogeographic population of Svalbard Light-bellied Brent Geese stood at around 40,000 to 50,000 individuals in the early 20th century (Scott & Rose 1996). At this time they were common and widespread in their UK wintering grounds with approximately 10,000 geese, nearly all light-bellied birds, wintering in the Moray Firth (Owen *et al.* 1986). However, by the 1930s, this had dropped to 4,000 birds and the site was deserted soon after. Similarly, at Lindisfarne, the population was reduced to 4,000 geese by the 1950s, and further reduced to between 2,500 and 3,000 birds by the 1960s.

The total population declined to its lowest level in the early 1970s when numbers breeding on Svalbard were estimated to be about 2,000 individuals (Owen *et al.* 1986). The population crash this century, in common with other Brent Goose populations, has been attributed to an eelgrass die-off due to disease, in combination with shooting and disturbance (Salomonsen 1958). However, unlike other populations, and despite total protection throughout its range, the Svalbard Light-bellied Brent Goose remains depressed. More recent estimates of the biogeographic population are of 3,400 birds in 1983 (Lack 1986) and between 4,000 and 5,800 in the early 1990s (Clausen *et al*. 1998). Suggested explanations for this very slow recovery include competition with an expanding Barnacle Goose *Branta leucopsis* population on the breeding grounds, as well as heavy predation there by Polar Bears *Ursus maritimus* and Arctic Foxes *Alopex lagopus* (Owen *et al.* 1986; Madsen *et al.* 1989, 1992).

Currently estimated at 5,000 birds (Rose & Scott 1997), this is one of the smallest and most vulnerable goose populations in the world.

Recent total winter counts for both Light-bellied Brent Geese and Wigeon *Anas penelope* at Lindisfarne represent only 40 % of the potential population that the food supply could support (Percival *et al.* 1998). This suggests that numbers have been held down by some factor other than food supply.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for the Svalbard population of Light-bellied Brent Geese supports, on average, 1,844 individuals (the five year peak mean count at Lindisfarne for the period 1991/92 to 1995/96). This total amounts to all of the British population, and about 37% of the international flyway population. The species does not occur in Northern Ireland. The suite comprises a single site where these geese have been listed as a qualifying species (Table 6.26.1).

6. Classification criteria

The single UK site identified under Stage 1.2, by regularly supporting 1% or more of the biogeographical population, has been selected for the species' SPA suite after consideration of Stage 2 judgements. The site is located in north-east England, the only area where the population regularly overwinters in the UK.

During periods of peak influxes from Denmark, when virtually the whole population is present in Britain, smaller flocks of geese can occur outside the suite, particularly in south-east England. However, no further SPAs have been selected due to the inconsistent, dispersed, low-density occurrence of the species outside the SPA suite.

Distribution map for Svalbard Light-bellied Brent Goose SPA suite

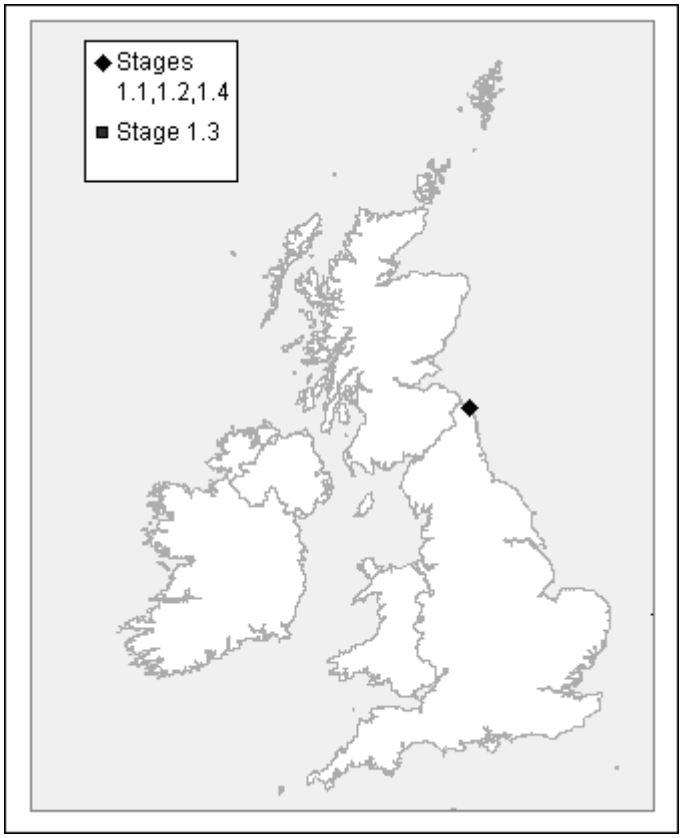


Table 6.26.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Lindisfarne	1,844	36.9	75.9	1.2
TOTALS	1,844	36.9%	75.9%[13]	

13 This assessment under-estimates the actual coverage of the population within the SPA suite owing to lag in reporting times and more recent assessments of numbers. The actual national proportion is close to 100% and the corresponding international proportion is 54.2%.

A6.27 Shelduck *Tadorna tadorna* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	73,500	750	62,810 (84% of GB total)
Ireland	7,000	70	2,663 (38% of all-Ireland total)
Biogeographic population	300,000	3,000	65,472 (22% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global range of the Shelduck extends discontinuously east from western Europe, through central Asia to approximately 120°E, and south to Iran and Pakistan. In the non-breeding season the species occurs along most of the coasts of north-west Europe, from western France to inshore Danish waters. It has a more localised distribution on the coasts of southern Spain and France as well as other discrete localities on the European and North African coasts of the Mediterranean (Scott & Rose 1996).

The species is monotypic, although six biogeographic populations are recognised (Rose & Scott 1994). Of these, three populations occur in Europe. Non-breeding Shelduck in the UK are part of the north-west European population, which comprises 300,000 individuals (Rose & Scott 1997). Shelduck wintering in the UK occur on most coasts. There are notable concentrations on the muddy estuaries of East Anglia, the south coast of England, the Severn Estuary, north-west England, eastern Scotland, and the east coast of Northern Ireland (Lack 1986).

In late summer, major aggregations gather to moult. Many British and Irish birds move to the Helgoland Bight of the Wadden Sea, with very large numbers occurring in this area from mid-July to the end of August (Meltofte *et al.* 1994). Significant late summer moulting concentrations also occur in the UK, notably on the Humber Estuary, The Wash, Bridgwater Bay in the Severn Estuary, and the Firth of Forth (Pattersen in press).

4. Population structure and trends

Increases are reported in the breeding populations of most European countries (Snow & Perrins 1998). Consequently, numbers of the north-west European population counted in winter have also increased in recent decades. However, data from the International Waterbird Census indicate that this increasing trend stabilised between 1987and 1996 (Delany *et al.* 1999). In the mid 1980s, the north-west European population was in the order of 120,000–130,000 birds (Lack 1986) but by the mid 1990s it had risen by approximately 140% to 300,000 individuals (Rose & Scott 1997). The reasons underlying this international increase are not clearly known.

Annual indices show that numbers of non-breeding Shelduck in the UK have remained stable over the last 35 years, particularly since the mid-1970s (Pollitt *et al.* 2000). Up to the 1970s, the wintering population in Britain was around 50,000 individuals after which there was an increase of between 20% and 30% to 60,000–65,000 by the mid-1980s (Lack 1986). This is partly due to an increase in the British breeding population but may also be due to birds moving west from the Wadden Sea in response to severe winters (Lack 1986). Numbers counted in most recent winters have fallen to totals more typical of the mid-1980s (Pollitt *et al.* 2000).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Shelduck supports, on average, 65,472 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 84% of the British population, about 38% of the all-Ireland population, and about 22% of the international flyway population. The suite comprises 32 sites at which Shelduck has been listed as a qualifying species (Table 6.27.1).

6. Classification criteria

All 13 sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements.

A further 19 sites were considered and selected under Stage 1.3 (see section 5.3) as Shelducks were an important component of a non-breeding waterbird assemblage in these sites.

The sites are distributed through most of the range of the population in the UK, from the Firth of Tay in eastern Scotland, down the east and west coasts of England, to sites on the south coast, and four sites in Northern Ireland. All these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the population and range of wintering Shelduck in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Shelduck SPA suite

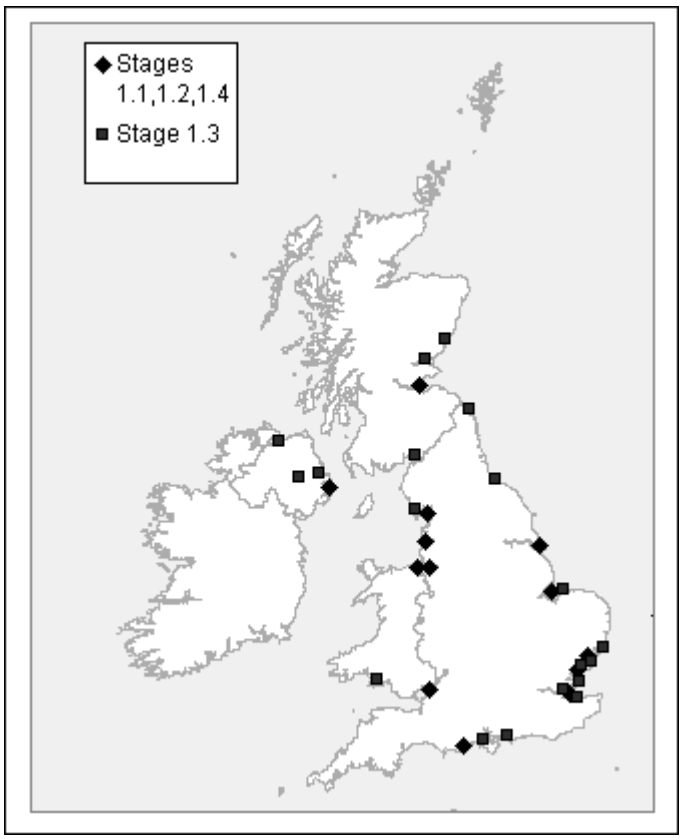


Table 6.27.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	1,059	0.4	1.4	1.3
Belfast Lough	589	0.2	8.4 (Ire)	1.3
Blackwater Estuary	4,594	1.5	6.3	1.2
Burry Inlet	968	0.3	1.3	1.3
Chichester and Langstone Harbours	2,410	0.8	3.3	1.3
Colne Estuary	1,773	0.6	2.4	1.3
Duddon Estuary	1,108	0.4	1.5	1.3
Firth of Forth	3,586	1.2	4.9	1.2
Firth of Tay and Eden Estuary	1,144	0.4	1.6	1.3
Foulness	1,024	0.3	1.4	1.3
Hamford Water	1,629	0.5	2.2	1.3
Humber Flats, Marshes and Coast	4,083	1.4	5.6	1.2
Lindisfarne	899	0.3	1.2	1.3
Lough Foyle	287	0.1	4.1 (Ire)	1.3
Lough Neagh and Lough Beg	159	0.1	2.3 (Ire)	1.3
Medway Estuary and Marshes	4,465	1.5	6.1	1.2
Mersey Estuary	5,039	1.7	6.9	1.2
Montrose Basin	753	0.3	1.0	1.3
Morecambe Bay	6,372	2.1	8.7	1.2
North Norfolk Coast	1,016	0.3	1.4	1.3
Poole Harbour	3,569	1.2	4.9	1.2
Ribble and Alt Estuaries	4,103	1.4	5.6	1.2
Severn Estuary	3,330	1.1	4.5	1.2
Solent and Southampton Water	1,476	0.5	2.0	1.3
Stour and Orwell Estuaries	3,672	1.2	5.0	1.2
Strangford Lough	3,871	1.3	55.3 (Ire)	1.2
Teesmouth and Cleveland Coast	1,139	0.4	1.5	1.3
Thames Estuary and Marshes	1,625	0.5	2.2	1.3
The Dee Estuary	6,827	2.3	9.1	1.2
The Swale	2,609	0.9	3.6	1.3
The Wash	15,981	5.3	21.7	1.2
Upper Solway Flats and Marshes	2,196	0.7	3.0	1.3
TOTALS	65,472 (in January)	21.8%	83.7% 38.0% (Ire)	

A6.28a Wigeon *Anas penelope* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	300	3	80 (27% of GB population)
Ireland			
Biogeographic population	420,000	4,200	80 (<0.1% of biogeographic population)

GB population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution of the Wigeon extends from Iceland in the west, across Eurasia to the coasts of the Bering Sea and the Sea of Okhotsk, as far south as northern Sakhalin. The species is a boreal breeder, occurring widely between about 50°–71°N throughout the extensive Russian taigas (Rogačeva 1992) where it is the most abundant of the dabbling ducks.

In Europe, Wigeon breed in Iceland, northern Britain, throughout Fennoscandia (including the Baltic States) and eastward through northern Russia (Rose & Scott 1996). Breeding has also been recorded locally in The Netherlands and eastward through Germany (Hagemeijer & Blair 1997). The species is monotypic, although five biogeographic populations are recognised (Rose & Scott 1994). Of these, two populations occur in Europe. Wigeon breeding in the UK are part of the north-west European population.

In the UK, Wigeon breed sparsely throughout much of eastern England, becoming more widely distributed in the uplands of northern England, central Scotland, the northern Scottish bogs and the Northern Isles (Gibbons *et al*. 1993). Over 75% of the UK population breeds in Scotland (Batten *et al*. 1990), and the species' range may be limited by water quality (with a preference for neutral or alkaline waters), and availability of suitable nesting sites (Cramp & Simmons 1977; Gibbons *et al*. 1993). Non-breeding Wigeon are recorded regularly during the breeding season on inland waters (Gibbons *et al*. 1993). There have been no regular or recent breeding records from the island of Ireland (Hutchinson 1989; Gibbons *et al.* 1993), although there are occasional records of birds seen in summer.

When breeding, the species prefers open, shallow, mesotrophic fresh waters with ample submerged or floating vegetation, but lacking dense emergent or marginal vegetation. It avoids fast flowing water but

may use saline wetlands. Nest placement is in dense cover close to wetlands, such as rank Heather *Calluna vulgaris,* Bracken *Pteridium aquilinum*, and open-structured woodlands (Cramp & Simmons 1977).

4. Population structure and trends

The European population is estimated at nearly 104,000 pairs, most of which occur in Finland and Sweden (Hagemeijer & Blair 1997). However, the biogeographic population of north-west Europe and northern Russia is estimated at 1,250,000 individuals, which equates to 420,000 pairs (Rose & Scott 1997). There is little information on population trends throughout Europe, although there were declines in Iceland and Norway in the 1960s, but an increase in Finland during the same period (Cramp & Simmons 1977). In the UK, Wigeon were first recorded nesting in 1834, in Scotland, with a subsequent increase and spread into northern England.

The current breeding population in the UK is estimated to be at least 300 pairs (Stone *et al*. 1997; Gibbons *et al*. 1993), which is similar to that of the 1970s (Cramp & Simmons 1977) and late 1960s (Yarker & Atkinson-Willes 1971). There have been localised declines in population size, such as at Loch Leven, where there has been a drop from 25–30 pairs around 1970 to an average of nine pairs between 1988–1991. However, the range of the species changed little between 1970 and 1990 (Gibbons *et al*. 1993). Possible factors influencing changes in population size may include acidification of favoured waters, fluctuations in insect foods, and loss of nesting habitat as a result of conifer afforestation (Fox *et al.* 1989; Gibbons *et al*. 1993; Thom 1986).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Wigeon supports an average of about 80 pairs. This amounts to about 27% of the British breeding population. Within an all-Ireland context, there have been no SPAs selected for breeding Wigeon in Northern Ireland. The UK suite contains less than 0.1% of the international population (numbers in the UK population are very small in comparison to the large population in Scandinavia and Russia). This total is contained within two sites (Table 6.28a.1) for which Wigeon has been listed as a qualifying species.

6. Classification criteria

The population of breeding Wigeon is generally dispersed and occurs at low densities in the British uplands. Accordingly, there are no concentrations that would qualify under Stage 1.2 (indeed were the entire British population to be found in one location, this would still amount to less than 1% of the international population). Two sites located within the core of the British distribution were selected under Stage 1.4.

The Caithness and Sutherland Peatlands support a large concentration of breeding Wigeon (14% of the British population – Fox *et al.* 1989). This area has a very long history of occupancy – indeed the first breeding record for the UK was of a nest found on an island in Loch Loyal in 1834 (Selby 1835; Holloway 1996). The River Spey – Insh Marshes supports 12% of the British population and has long been known as an important site for this species. There are no other sites holding comparable concentrations. Both sites are multi-species SPAs with a high degree of naturalness.

Distribution map for breeding Wigeon SPA suite

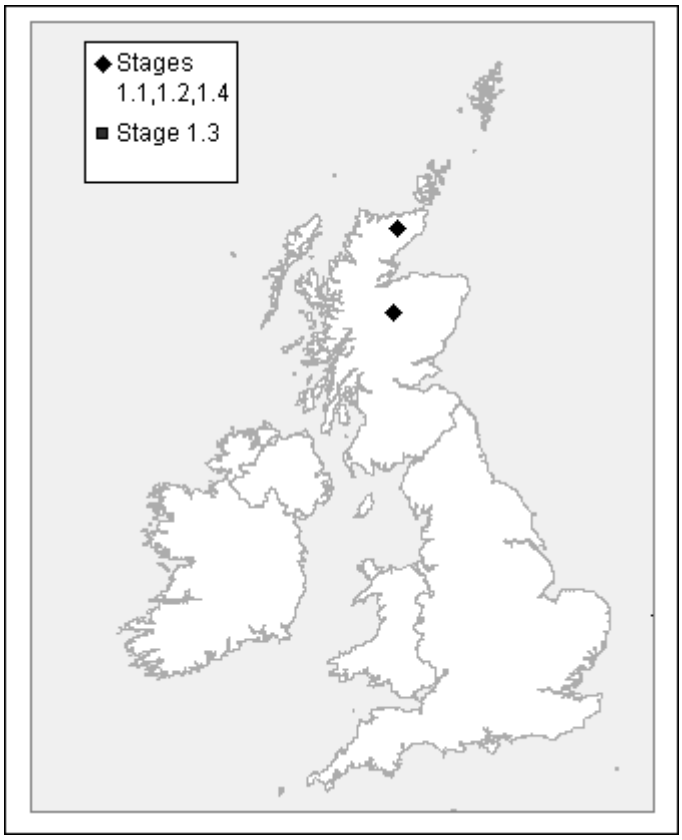


Table 6.28a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	43	<0.1	14.3	1.4
River Spey – Insh Marshes	37	<0.1	12.3	1.4
TOTALS	80	<0.1%	27%	

A6.28b Wigeon *Anas penelope* (non-breeding)

1. Status in UK

See section 6.28a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	277,800	2,800	220,475 (79% of GB total)
Ireland	125,000	1,250	3,863 (3% of all-Ireland total)
Biogeographic population	1,250,000	12,500	224,338 (18% of biogeographic population)

GB population source: Kirby 1995a
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global and European breeding distribution of the monotypic Wigeon is summarised in section 6.28a. In winter, Wigeon undertake significant migrations south and south-west to winter on the coasts of Europe. Wintering areas are discontinuous, but occur especially on Atlantic coasts, the shores of the Mediterranean and Black Sea, some inland areas of North Africa and the Middle East.

As only a small number of Wigeon breed in Britain and most of the British wintering total originate from other parts of the species' European and Asian range. Recoveries of ringed birds indicate that Wigeon wintering in the UK breed in Iceland, Scandinavia and Russia, with a significant proportion of birds being recovered east of 60°E (Owen *et al*. 1986; Mitchell in press).

In winter, Wigeon are highly gregarious, and occur in large, mobile flocks that rapidly move to other areas should conditions change for the worse. Wigeon is largely a coastal species, feeding on mud-flats, coastal flooded grassland and saltmarsh pastures. In the UK, the species is also widespread on inland flooded grassland. The use of inland sites appears to have increased in recent years, as birds have adapted their feeding habits in response to changes in the availability of food (Batten *et al*. 1990), as well as the conservation management of key floodplain and other wetlands (Self *et al.* 1994).

4. Population structure and trends

Five biogeographic populations are recognised (Rose & Scott 1994). Of these, two populations occur in Europe. Wigeon wintering in the UK are part of the north-west European population. Most recent population estimates for Wigeon suggest a north-west European wintering population of 1,250,000 individuals (Rose & Scott 1997), of which over 300,000 occur in Great Britain (Pollitt *et al*. 2000). The remainder winter on the Atlantic and North Sea coasts of north-west Europe.

The north-west European population has steadily increased since the early 1970s, despite some fluctuations in this overall trend (Delany *et al.* 1999). Wigeon are particularly vulnerable to prolonged periods of severe weather (Ridgill & Fox 1990). Occasional reversals in the general upward trend of the biogeographic population may be attributed to these severe weather impacts. These can either result in a distribution shift (notably south and south-west to Iberia) or high levels of mortality.

Much the same trend has been seen in numbers wintering in Britain (Kirby 1995a; Pollitt *et al*. 2000), although numbers in Northern Ireland are lower than they were in the mid-1980s.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Wigeon supports, on average, 224,338 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 79% of the British population, about 3% of the all-Ireland population, and about 18% of the international flyway population. The suite comprises 38 sites where Wigeon has been listed as a qualifying species (Table 6.28b.1).

6. Classification criteria

All sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and all six were selected after consideration of Stage 2 judgements. A further 32 sites were considered and selected under Stage 1.3 (see section 5.3) where Wigeon was identified as an important component of non-breeding waterbird assemblages.

The 38 sites are distributed through most of the UK winter range, from the Moray Basin in north-eastern Scotland, Lough Neagh and Lough Beg in Northern Ireland, to sites on the south, west and east coasts of England as well as inland in the English Midlands. All these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Wigeon in the UK, and given that the species is widely dispersed in the UK in winter and increasing in numbers, it was not considered necessary to select additional sites under Stage 1.4.

Distribution map for non-breeding Wigeon SPA suite

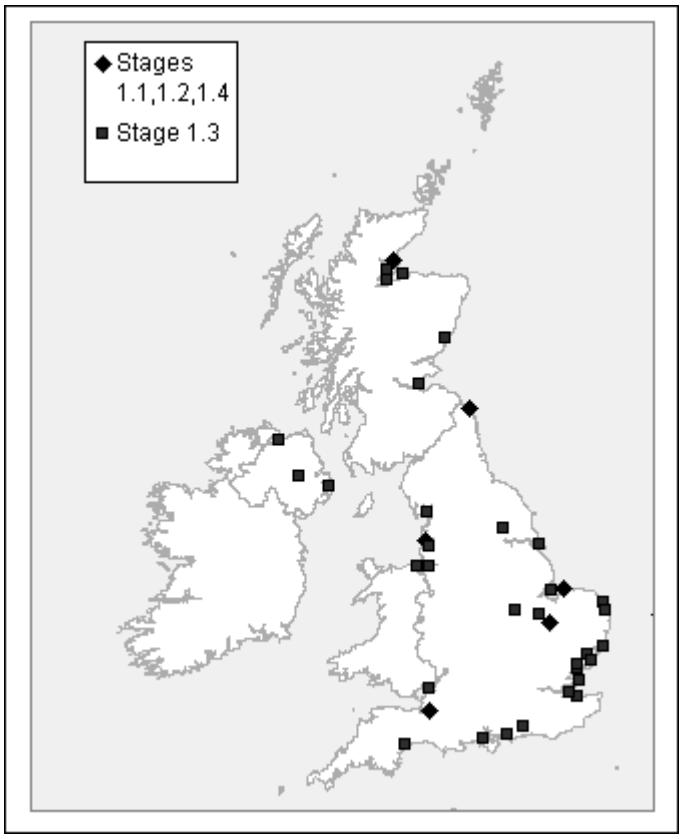


Table 6.28b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	2,888	0.2	1.0	1.3
Alde – Ore Estuary	4,366	0.4	1.6	1.3
Arun Valley	3,329	0.3	1.2	1.3
Blackwater Estuary	3,280	0.3	1.2	1.3
Breydon Water	4,320	0.4	1.6	1.3
Broadland	6,435	0.5	2.3	1.3
Chichester and Langstone Harbours	2,055	0.2	0.7	1.3
Cromarty Firth	10,476	0.8	3.8	1.3
Dornoch Firth and Loch Fleet	15,304	1.2	5.5	1.2
Exe Estuary	2,379	0.2	0.9	1.3
Firth of Forth	2,139	0.2	0.78	1.3
Foulness	2,026	0.2	0.7	1.3
Hamford Water	2,314	0.2	0.8	1.3
Humber Flats, Marshes and Coast	4,941	0.4	1.8	1.3
Inner Moray Firth	6,800	0.5	2.5	1.3
Lindisfarne	13,375	1.1	4.8	1.2
Lough Foyle	8,107	0.7	6.5 (Ire)	1.3
Lough Neagh and Lough Beg	3,117	0.3	2.5 (Ire)	1.3
Lower Derwent Valley	9,323	0.8	3.4	1.3
Martin Mere	9,062	0.7	3.3	1.3
Medway Estuary and Marshes	4,346	0.4	1.6	1.3
Mersey Estuary	11,752	0.9	4.2	1.3
Montrose Basin	4,340	0.4	1.6	1.3
Moray and Nairn Coast	2,600	0.2	0.9	1.3
Morecambe Bay	5,838	0.5	2.1	1.3
Nene Washes	8,292	0.7	3.0	1.3
North Norfolk Coast	14,039	1.1	5.0	1.2
Ouse Washes	29,713	2.4	10.7	1.2
Ribble and Alt Estuaries	84,699	6.8	30.5	1.2
Rutland Water	4,236	0.3	1.5	1.3
Severn Estuary	4,667	0.4	1.7	1.3
Solent and Southampton Water	5,717	0.5	2.1	1.3
Somerset Levels and Moors	13,661	1.1	4.9	1.2
Stour and Orwell Estuaries	4,101	0.3	1.5	1.3
Strangford Lough	1,921	0.2	1.5 (Ire)	1.3
The Dee Estuary	3,624	0.3	1.3	1.3
The Swale	11,929	0.9	4.3	1.3
The Wash	3,241	0.3	1.2	1.3
TOTALS	224,338 (in January)	17.9%	78.7% 3.1% (Ire)	

A6.29a Gadwall *Anas strepera* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	770	8	111 (14% of GB population)
Ireland	30	1	No SPAs selected in Northern Ireland
Biogeographic population	10,000	100	111 (1% of biogeographic population)

GB and Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Gadwall has a wide but discontinuous global distribution, breeding in wetlands within temperate steppe and other grassland habitats between about 40°–60°N. It is a widespread breeding species in the Prairie Pothole regions of North America where birds migrate to more southern areas in winter. Gadwall breed across Eurasia from Iceland and Iberia in the west, east to near Lake Baikal at about 100°E. A small number of isolated populations occur further east in China, Kamchatka and Alaska.

The nominate sub-species of Gadwall *A. s. strepera* has a Holarctic population. The only other sub-species (*A. s. couesi* described from the Pacific) is now extinct.

Almost three-quarters of the European breeding population occur in Russia, where the distribution is rather even. Since the 19th century, the population has expanded westwards throughout the rest of Europe, giving a highly discontinuous distribution westward as far as Iceland (Tucker & Heath 1994).

In the UK, the breeding Gadwall population is spread throughout south-east England, East Anglia and the Midlands, with the breeding stronghold in Norfolk. Gadwall inhabit inland, eutrophic, still waters in lowland areas, including reservoirs and flooded gravel pits, as well as marshy grassland and flood meadows (Fox 1988; Gibbons *et al.* 1993).

4. Population structure and trends

The European biogeographic population is 10,000 pairs and the population breeding in the UK is estimated at 770 pairs. In the last few decades, there has been a major increase in both the range and

numbers of breeding Gadwall, both in the UK and on the near continent. The breeding Gadwall population predominantly originates from introduced birds (Gibbons *et al.* 1993; Fox 1988). Around 1849 at Dersingham, Norfolk, two wild birds were caught and pinioned and established a breeding population which spread to Breckland, with the probable influence of continental migrants (Holloway 1996). Between the 1950s and 1960s the Gadwall population increased and became widespread in the county. Further populations became established at Chew Valley Lake (following escapes from the WWT's collection at Slimbridge), Sevenoaks in Kent, Leicestershire and Cumbria (all following the release of hand-reared birds by wildfowlers) (Fox 1988; Fox & Salmon 1989).

Increases in September numbers (*i.e.* numbers after the end of the breeding season) in areas where introductions have taken place correlate well with the documented growth in nesting pairs (Fox 1988), and reflect the ability of the naturalised populations to exploit an increase in available breeding habitat. Longer-established populations in south-east Scotland and East Anglia show more stable population trends, reflecting the sedentary nature of the species and more complete habitat occupancy (Fox 1988). Thus, in Scotland, Loch Leven was first colonised in 1909 and has been the nucleus of the Scottish population ever since, with between 25–40 pairs breeding each year (Gibbons *et al.* 1993).

There have also been significant increases of breeding birds in continental Europe, where the role of climate change could be involved (Cramp & Simmons 1977), although the extent of the contribution that migrant birds have had on the UK breeding population is not known.

The total British population was estimated at 580–590 pairs in 1983, representing a 4.5% annual increase between the years 1960–1985. This increase was not uniform throughout the birds range, with a stable population in East Anglia and increases of 9.5% and 9% in south-west and south-east England, where reservoirs are more numerous. There was a corresponding rise in the proportion of the population associated with reservoirs from 14% in 1970 to 49% in 1984 (Fox 1988).

5. Protection measures for population in UK

In the breeding season, the UK's SPA suite for Gadwall supports, on average, 111 pairs. This amounts to about 14% of the British breeding population and 1% of the international population. In an all-Ireland context, no sites have been selected in Northern Ireland for breeding Gadwall. The UK SPA suite is comprised of a single site (Table 6.29a.1) where Gadwall has been listed as a qualifying species.

6. Classification criteria

The single site (Ouse Washes) in the UK that supports more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. The Ouse Washes has a long history of occupancy by breeding Gadwall and is a multi-species area supporting a further 11 qualifying species as well as a non-breeding bird assemblage with numbers of European importance. It is a high-quality, semi-natural habitat with lowland wet grassland and controlled summer flooding providing areas of standing water.

It was not considered necessary to select additional sites using Stage 1.4, as breeding Gadwall are widely, though thinly, dispersed elsewhere in the UK and in Europe.

Distribution map for breeding Gadwall SPA suite

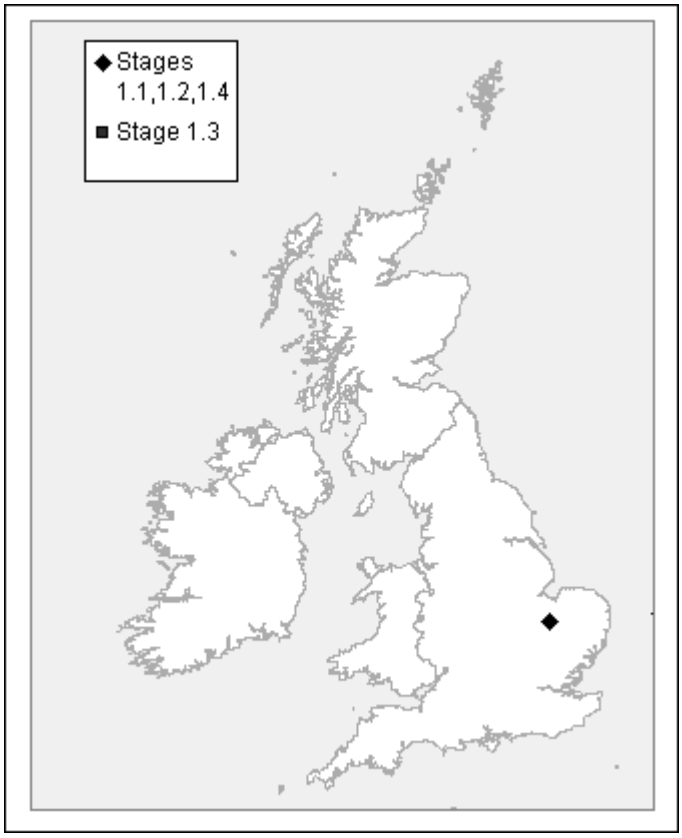


Table 6.29a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ouse Washes	111	1.1	14.4	1.2
TOTALS	111	1.1%	14.4%	

A6.29b Gadwall *Anas strepera* (non-breeding)

1. Status in UK

See section 6.29a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	8,200	80	3,425 (43% of GB total)
Ireland	600	50 (see section 5.1.2 for rationale)	156 (26% of all-Ireland total)
Biogeographic population	30,000	300	3,580 (12% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution of Gadwall is outlined in section A6.29a. As much of the breeding range of Gadwall in eastern Europe and elsewhere in continental Russia is subject to winter freezing, this duck is necessarily a winter migrant to areas where winter conditions are milder.

In Europe, Gadwall spend the winter around the North Sea (with concentrations in Britain and The Netherlands), as well as across France, around Mediterranean coasts and as far east as the Black and Caspian Seas. Wintering birds around the North Sea derive from breeding birds in northern Germany, Poland, southern Sweden, and west-central Russia, whereas birds in France and some birds in Britain and The Netherlands are resident or partial migrants.

Most non-breeding Gadwall in Britain occur in south-east England, the Midlands and East Anglia. The largest concentrations occur at the larger reservoirs and gravel pits as well as the winter floodwaters of the Ouse Washes. Birds are aggregated, with most occurring on only half those sites regularly used. Notable concentrations occur in the Avon Valley (Hampshire), the Lee Valley, the London Water Bodies, the Ouse Washes and the Nene Valley.

Gadwall inhabit inland, eutrophic, still waters in lowland areas, including reservoirs and flooded gravel pits as well as marshy grassland/flood meadows. In winter, they tend to concentrate locally in suitable habitats within larger wetland areas (Lack 1986; Fox 1991).

4. Population structure and trends

There are six biogeographical populations of the nominate sub-species *A. s. strepera* (Rose & Scott 1997). Of these, two occur in Europe with birds occurring in Britain belonging to the north-west European population.

This population has increased significantly in recent decades, as a consequence of the continuing expansion and consolidation of the species in Europe. Between 1986 and 1994, the north-west European population increased from 12,000 to 25,000 birds (Scott & Rose 1996), and is currently estimated at 30,000 birds (Rose & Scott 1997). Since the mid-1990s, numbers have continued to increase (Delany *et al.* 1999).

During the 1950s, only 12 UK sites held 25 or more birds (Atkinson-Willes 1963). From the 1960s onwards there was a rapid increase from a British total of 520 birds in 1963/64, to approximately 1,750 in the mid- to late-1970s (Owen *et al.* 1986). Between 1966/67 and 1991/92 there was a 1,233% increase in the winter population index (Kirby *et al.* 1995) and a 12–17% increase in mid-winter WeBS counts

between 1960/61 and 1985/86 (Fox & Salmon 1989). The total December count in 1985 was 5,128, and this more than doubled to 10,698 by December 1994. Based on data from 1991/92, the UK non-breeding population is estimated at 8,000 birds. However, the average total for the period 1994/95 to 1998/99 was 11,998 birds (Kirby 1995a; Pollitt *et al.* 2000).

Increases in non-breeding numbers in the UK seem to have been caused by corresponding growth in numbers of continental breeding birds that form the majority of the UK wintering population, and, to a much lesser extent, an increase in the number of birds breeding in Britain. Approximately a quarter of English Gadwall migrate to the Low Countries, France and Spain, with between a third and a half of English non-breeding Gadwall originating from eastern Europe (Fox & Mitchell 1988).

Population increases have been aided by an association with Coots. Theft of pond-weed from feeding Coots no longer restricts Gadwall to feeding by up-ending and head-bobbing in shallow waters. This enables Gadwall to exploit the deeper water of reservoirs and gravel pits, types of wetland that have expanded in area as new sites have been created (Fox 1991).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Gadwall supports, on average, 3,580 individuals (calculated using WeBS December site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 43% of the British population, about 26% of the all-Ireland population, and about 12% of the international flyway population. The suite comprises 18 sites where Gadwall has been listed as a qualifying species (Table 6.29b.1).

6. Classification criteria

All sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and all eight were selected after consideration of Stage 2 judgements. A further 10 sites were considered and selected under Stage 1.3 (see section 5.3), where Gadwall was identified as an important component of non-breeding waterbird assemblages.

The sites are distributed through most of the population's UK range, including Loch Leven in eastern Scotland, two sites in Northern Ireland, sites in south Wales, and on the south and east coasts of England, as well as in the Midlands. Most of these sites are multi-species SPAs, of importance also for a range of other waterbirds, although Hornsea Mere has been selected solely because of its importance for Gadwall.

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Gadwall in the UK, and the species is widely dispersed in winter and increasing its numbers and range, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Gadwall SPA suite

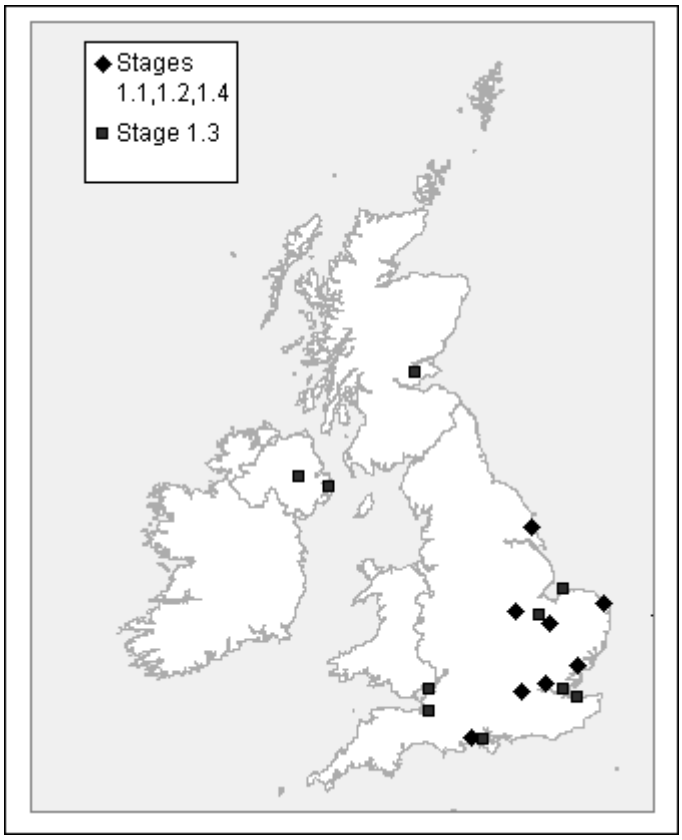


Table 6.29b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	518	1.7	6.3	1.2
Avon Valley	667	2.2	8.1	1.2
Broadland	605	2.0	7.6	1.2
Hornsea Mere	300	1.0	3.7	1.2
Lee Valley	515	1.7	6.3	1.2
Loch Leven	236	0.8	2.9	1.3
Lough Neagh and Lough Beg	166	0.6	27.7 (Ire)	1.3
Nene Washes	206	0.7	2.5	1.3
North Norfolk Coast	177	0.6	2.2	1.3
Ouse Washes	342	1.1	4.2	1.2
Rutland Water	1,156	3.9	14.1	1.2
Severn Estuary	282	0.9	3.4	1.3
Solent and Southampton Water	119	0.4	1.5	1.3
Somerset Levels and Moors	143	0.5	1.7	1.3
South-West London Water Bodies	786	2.6	9.6	1.2
Strangford Lough	108	0.4	18.0 (Ire)	1.3
Thames Estuary and Marshes	136	0.5	1.7	1.3
The Swale	86	0.3	1.1	1.3
TOTALS	3,580 (in December)	11.9%	42.8% 25.9% (Ire)	

A6.30 Teal *Anas crecca* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	135,800	1,400	65,335 (47% of GB total)
Ireland	65,000	650	3,098 (5% of all-Ireland total)
Biogeographic population	400,000	4,000	68,433 (17% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Teal have a wide global distribution across Eurasia and North America, breeding in boreal regions on both continents, especially within taiga and steppe regions (south to about 45°N) but also extending north into the low Arctic (at about 70°N). The species is migratory on both continents, moving south in autumn from northern breeding areas to more southerly wintering grounds. In the Palearctic, these include western Europe, northern Africa and the Rift Valley, the Middle East, India, and South-east Asia.

Three sub-species have been described, and of these, only the nominate (which occurs throughout the Palearctic range of the Teal) regularly occurs in Europe. There are European records of the North America sub-species *A. c. carolinensis* but only as vagrants.

In Europe, Teal breed discontinuously from Iceland, Britain, Ireland, and France eastward to Russia. In winter, the species occurs across much of Europe, wherever there are suitable wetland habitats, including inland and coastal wetlands. Most non-breeding Teal in the UK, as elsewhere in Europe, originate from the east and north, including Iceland, Fennoscandia, and Russia (Batten *et al*. 1990). Winter flocks also contain locally breeding birds that, within Europe, are of a more sedentary or dispersive nature.

Non-breeding Teal are widespread throughout Britain and Ireland, favouring areas of shallow water on estuarine coastal lagoons, coastal and inland marshes, and flooded pastures and ponds. They are absent only from mountainous areas, coastal stretches with high cliffs and inland areas which lack suitable freshwater habitats (Lack 1986).

4. Population structure and trends

Three biogeographic populations of Teal are recognised, two of which occur in Europe (Scott & Rose 1996). Birds wintering in the UK belong to the North-west European population, the size of which is currently estimated at 400,000 (Rose & Scott 1997). The general trend in the North-west European population over the last 23 years has been one of increase, with annual growth of 2.5% over the period 1967–1993 (Rose 1995). Recent international monitoring shows that the population increase has levelled off and numbers were generally stable between 1987–1996 (Delany *et al.* 1999).

Population changes in the UK have been largely similar to those noted elsewhere in north-west Europe. There has been an increase in British and Irish non-breeding numbers over the last three decades (Gilburn & Kirby 1992), but in recent years the increase has slowed, with peak counts fluctuating around 130,000 (Cranswick *et al*. 1999). The long-term increase in numbers of Teal in Britain has been attributed to an increase in the number of birds occurring on migration, as well as an increase in habitat availability, particularly through the creation of new inland wetlands as a consequence of mineral extraction (Gilburn & Kirby 1992).

Locally large fluctuations in numbers occur in response to changes in environmental conditions, such as the freezing of shallow waters. Indeed, Teal are highly susceptible to the consequences of periods of severe winter weather and often show significant dispersal to warmer areas (Ridgill & Fox 1990). Such movements can either be within the UK or to more southerly wintering areas.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Teal supports, on average, 68,433 individuals (calculated using WeBS December site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 47% of the British population, about 5% of the all-Ireland population, and about 17% of the international flyway population. The suite comprises 30 sites at which Teal has been listed as a qualifying species (Table 6.30.1).

6. Classification criteria

All eight sites in the UK that were known to support more than 1% of the international population of Teal were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. A further 22 sites were considered and selected under Stage 1.3 (see section 5.3). At these sites, Teal was identified as an important component of non-breeding waterbird assemblages.

The sites are distributed throughout the population's UK, from sites in Northern Ireland and Wales, to the Dornoch Firth and Loch Fleet in northern Scotland, to sites on the English south coast. All of the sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Teal in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Teal SPA suite

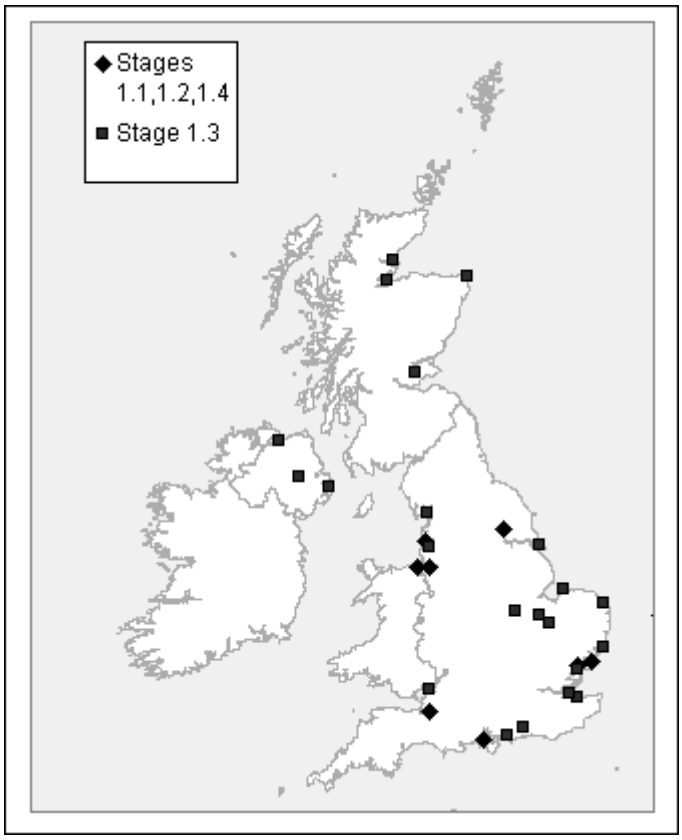


Table 6.30.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	5,326	1.3	3.9	1.2
Alde – Ore Estuary	1,931	0.5	1.4	1.3
Arun Valley	1,849	0.5	1.4	1.3
Blackwater Estuary	2,963	0.7	2.2	1.3
Broadland	3,869	0.9	2.8	1.3
Chichester and Langstone Harbours	1,824	0.5	1.3	1.3
Dornoch Firth and Loch Fleet	1,462	0.4	1.1	1.3
Hamford Water	4,206	1.1	3.1	1.2
Humber Flats, Marshes and Coast	1,652	0.4	1.2	1.3
Inner Moray Firth	1,849	0.5	1.4	1.3
Loch Leven	2,483	0.6	1.8	1.3
Loch of Strathbeg	1,898	0.5	1.4	1.3
Lough Foyle	751	0.2	1.2 (Ire)	1.3
Lough Neagh and Lough Beg	1,596	0.4	2.5 (Ire)	1.3
Lower Derwent Valley	5,853	1.5	4.3	1.2
Martin Mere	3,282	0.8	2.4	1.3
Medway Estuary and Marshes	1,824	0.5	1.3	1.3
Mersey Estuary	11,667	2.9	8.6	1.2
Morecambe Bay	2,163	0.5	1.6	1.3
Nene Washes	2,179	0.5	1.6	1.3
North Norfolk Coast	2,837	0.7	2.1	1.3
Ouse Washes	3,085	0.8	2.3	1.3
Ribble and Alt Estuaries	7,641	1.9	5.6	1.2
Rutland Water	1,420	0.4	1.1	1.3
Severn Estuary	3,276	0.8	2.4	1.3
Solent and Southampton Water	4,400	1.1	3.2	1.2
Somerset Levels and Moors	13,307	3.3	9.8	1.2
Strangford Lough	1,435	0.4	2.2 (Ire)	1.3
The Dee Estuary	5,918	1.5	4.2	1.2
The Swale	2,969	0.7	2.2	1.3
TOTALS	68,433 (in December)	17.1%	46.7% 4.8% (Ire)	

A6.31 Mallard *Anas platyrhynchos* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/1 Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	500,000	5,000	24,389 (5% of GB total)
Ireland	50,000	500	4,748 (10% of all-Ireland total)
Biogeographic population	5,000,000	50,000	29,137 (0.6% of biogeographic population)

GB population source: Owen et al. *1986*
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Mallard has a widespread global distribution across most of the northern hemisphere, breeding from 70°N in the Arctic, to 35°N in North Africa, and 20°N in the Middle East (Scott & Rose 1996). Those breeding in temperate regions are sedentary or dispersive, while northern breeding birds are generally migratory. In the winter, the species occurs between 20° to 60°N (Scott & Rose 1996). Expansion in some parts of the range has resulted from introductions for shooting purposes (Madge & Burn 1988), posing a localised threat to native birds through hybridisation (Callaghan *et al.* 1997). The number of recognised sub-species varies with authority, but Scott & Rose (1996) name three that are extant: *A. p. conboschas* in Greenland; *A. p. diazi* in Mexico; and the nominate sub-species in the rest of the range.

Mallards are widespread throughout Europe in both breeding and non-breeding seasons, being absent only from high montane regions and the Russian low Arctic.

Within the UK, Mallards are widely distributed, occurring on almost every type of freshwater wetland, though they generally avoid fast-flowing and oligotrophic waters (Scott & Rose 1996). They tolerate human presence, often occurring on artificial waterbodies in close proximity to man (Scott & Rose 1996; Berndt & Hill 1997). In winter they also occur commonly in estuaries and along sheltered coasts, but avoid offshore waters (Scott & Rose 1996). They are omnivorous and opportunistic feeders, consuming seeds and vegetative parts of aquatic plants, and variable amounts of terrestrial and aquatic invertebrates, especially during the breeding season (Thomas 1981; del Hoyo *et al*. 1992). In brackish habitats, seeds predominate in the diet, with molluscs, crustacea and insects also being taken (Olney 1964).

Despite its general abundance and widespread distribution, there are few large concentrations of Mallard in the UK (Salmon 1986; Pollitt *et al.* 2000). Only ten sites regularly hold more than 2,000 birds. There is little emigration by British breeding birds but many birds do move short distances between sites through the winter (Boyd & Ogilvie 1961). There is significant movement into Britain and Ireland of birds originating from more northerly and easterly breeding areas, especially the taiga zones of Russia.

4. Population structure and trends

In Eurasia, there are five recognised populations, the discrete Greenlandic subspecies (15,000–30,000 individuals), and four populations of the nominate subspecies in north-west Europe (5,000,000), northern Europe/west Mediterranean (1,000,000), north-east and central Europe/Black Sea/east Mediterranean (2,250,000 million) and west Siberia/south-west Asia (800,000) (Scott & Rose 1996).

The Mallard is the most abundant and widespread of the Anatidae species in north-west Europe (Rose & Scott 1997). The total wintering in the UK is estimated at 500,000 (Owen *et al.* 1986), representing 10% of the north-west European population (Rose & Scott 1997). More than one third of those wintering in the UK are believed to be continental immigrants (Owen *et al*. 1986).

Numbers in Europe as a whole were stable between 1970 and 1990, though there were both local increases (*e.g.* The Netherlands, Ukraine, Sweden and Great Britain) and decreases (*e.g.* Romania, Spain and Czech Republic). Increases are believed to be due to creation of new wetlands left by mineral extraction, as well as the release of birds for hunting (Berndt & Hill 1997). Delany *et al*. (1999) reported decreases in numbers counted in north-west Europe between 1987 and 1996. The assessment of trends in this species, both at UK and international scales, is hindered however, by the lack of reliable statistics regarding numbers of Mallards bred and released for shooting purposes, and changes to this activity over time.

More recently, there is evidence of a decline in the number of Mallards wintering in Britain, with counts at larger wetland sites in Great Britain falling by up to 40% between 1987/88 and 1997/98 (Cranswick *et al*. 1999). Fluctuations in the numbers of Mallard over the UK as a whole are difficult to monitor due to its dispersed distribution on many small waterbodies that are not regularly counted. Clearly, further research is required to identify the reasons for the decline in the UK wintering population. Numbers in Northern Ireland remained relatively stable during the 1990s but there are indications of a recent decline in the Republic of Ireland (Colhoun 2000).

Although the Mallard is migratory, it does not normally move in large numbers to Britain and Ireland from the continent during cold winters, although a large influx was noted in winter 1978/79 (Ridgill & Fox 1990). Ringing recoveries indicate that British-bred and immigrant Mallards return to broadly the same wintering areas between years (Boyd & Ogilvie 1961).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Mallard supports, on average, 29,137 individuals (calculated using WeBS December site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 5% of the British population, 10% of the all-Ireland population, and 0.6% of the international flyway population. The suite comprises 14 sites where Mallard has been listed as a qualifying species (Table 6.31.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Mallard population in winter (Stage 1.2). However, 14 sites were identified under Stage 1.3 (see section 5.3), with Mallard forming an important component of non-breeding waterbird assemblages. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Mallards in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Mallard SPA suite

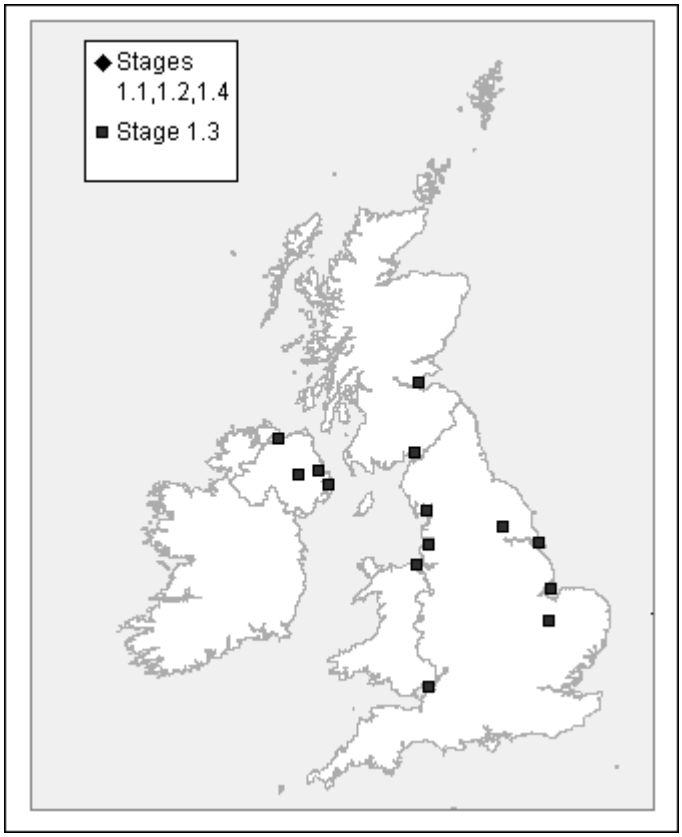


Table 6.31.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	613	<0.1	3.1 (Ire)	1.3
Firth of Forth	2,564	<0.1	0.5	1.3
Humber Flats, Marshes and Coast (Phase 1)	3,207	<0.1	0.6	1.3
Lough Foyle	1,694	<0.1	8.5 (Ire)	1.3
Lough Neagh and Lough Beg	5,256	0.1	26.3 (Ire)	1.3
Lower Derwent Valley	2,625	<0.1	0.5	1.3
Martin Mere	3,109	<0.1	0.6	1.3
Morecambe Bay	3,237	0.1	0.6	1.3
Ouse Washes	4,123	<0.1	0.8	1.3
Severn Estuary	3,154	<0.1	0.6	1.3
Strangford Lough	1,633	<0.1	8.2 (Ire)	1.3
The Dee Estuary	2,014	<0.1	0.4	1.3
The Wash	3,357	<0.1	0.7	1.3
Upper Solway Flats and Marshes	2,566	<0.1	0.5	1.3
TOTALS	29,137 (in December)	0.6%	4.9% 9.5% (Ire)	

A6.32 Pintail *Anas acuta* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(2) Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	27,800	280	18,879 (67% of GB total)
Ireland	6,000	60	142 (2% of all-Ireland total)
Biogeographic population	60,000	600	19,021 (32% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Pintail has a widespread global distribution across North America and north Eurasia, breeding mainly in tundra and taiga zones at 60° to 70°N (Scott & Rose 1996). Three subspecies are recognised: the nominate subspecies is highly migratory, breeding in the areas described above and wintering in temperate and tropical regions of North America, Europe, Africa and Asia. *A. a. eatoni* and *A. a. drygalskii* (often considered a separate species) are restricted to Kerguelen Island and Crozet Island respectively (del Hoyo *et al*. 1992).

In Europe, as in the UK, Pintail is a rare breeding bird, occurring in a few suitable wetland areas. Most birds occurring in winter migrate from more northern and eastern breeding areas in Fennoscandia and Russia. European distribution in winter is predominantly coastal, and Pintail form large flocks on brackish coastal lagoons, in estuaries and deltas, and on large inland lakes (Scott & Rose 1996). They avoid fast-flowing rivers and deep, oligotrophic waterbodies, however (Berndt & Kauppinen 1997).

Pintail concentrate in large numbers at a small number of sites, much more so than many other non-breeding ducks. Indeed, half the north-west European population is confined to just thirteen sites, along North Sea, Irish Sea and Atlantic coasts (Scott & Rose 1996). Principal sites in the UK are estuaries in north-west England and north Wales, which hold three times the non-breeding numbers occurring in east-central England, the second most important area (Pollitt *et al*. 2000).

Pintail are extremely mobile during the winter, taking advantage of habitats which are only temporarily available through flooding. This mobility causes local changes in distribution and changes to the

relative importance of individual sites through the winter (Owen *et al.* 1986). Numbers of birds at individual sites in the UK and the Republic of Ireland also fluctuate markedly between years indicating a low degree of site fidelity (Pollitt *et al*. 2000; Colhoun 2000).

Pintail feed on seeds, tubers and vegetative parts of aquatic plants and sedges, and, in summer, aquatic invertebrates, amphibians and small fish (del Hoyo *et al*. 1992). In the UK, they have been found to depend largely on small snails of the genus *Hydrobia* in estuarine habitats, but on inland grazing marshes seeds were by far the most important food (Olney 1965; Owen *et al*. 1986).

4. Population structure and trends

Although there is a considerable amount of overlap on the breeding grounds between all wintering groups, and no discrete populations are identifiable, for practical reasons three biogeographic populations are recognised in Eurasia: a north-west European wintering group (60,000 individuals); a north-east Europe, Black Sea, Mediterranean, west African wintering group (1,200,000); and a south-west Asian and east African wintering group (700,000) (Rose & Scott 1997). A further four populations occur in other regions.

The population wintering in north-west Europe is distributed primarily through Scandinavia and countries bordering the North Sea (Scott & Rose 1996). Great Britain and Ireland are of great importance to this population, with between 27,800 and 32,200 (46–54%) wintering here (Kirby 1995a; Kershaw 1998).

Individual local populations of Pintail tend to fluctuate significantly in number due to the ephemeral nature of their preferred breeding habitat – shallow, open waters close to grassland or other open habitats. These areas tend to dry out easily and are easily drained or otherwise changed. Declines in numbers of breeding Pintails have been recorded from Russia, Finland, Estonia, Denmark, Poland and Ukraine (Berndt & Kaupinnen 1997). Of the three European wintering populations of this species, the north-west European is the smallest, and has shown a pattern of slow decline over the past twenty years (Scott & Rose 1996). Indeed, none of the European populations of Pintail increased over the period 1974–1996 (Delany *et al.* 1999). Recent declines in the north-west European population have been attributed primarily to habitat loss and degradation in both breeding and wintering areas (Scott & Rose 1996).

In the UK, numbers of non-breeding Pintail increased by *c.* 3.5% between 1966 and 1995, but within these years there were four periods where trends in numbers were relatively consistent, the most recent of which was a slight, non-significant decline from 1980–1995 (Kershaw 1998a). Large numbers in some years are the result of influxes from mainland Europe during harsh weather conditions (Ridgill & Fox 1990; Berndt & Kaupinnen 1997; Scott & Rose 1996). Nevertheless, trends in wintering numbers have varied both between regions and between habitats in the UK. Numbers have increased most in east and central England, south-east England, south-west England and south Wales, while they have stabilised in most of the more important regions for the species. Furthermore, numbers have increased most on reservoirs, mineral workings, and rivers, while those on estuaries and coastal sites have stabilised, suggesting a spread onto less traditional habitat types (Kershaw 1998).

There is evidence for a decline in numbers wintering in the Republic of Ireland since the mid-1990s (Colhoun 2000).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Pintail supports, on average, 19,021 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 67% of the British population, about 2% of the all-Ireland population, and about 32% of the international flyway population. The suite comprises 25 sites where Pintail has been listed as a qualifying species (Table 6.32.1).

Other measures

The UK has contributed to the development of a European Union Management Action Plan for Pintail as part of the Ornis Committee's initiative to develop such plans for a number of Annex II species with unfavourable conservation status. Although these action plans are advisory rather than legally

binding, the UK will be seeking to implement the recommended actions of the plan as specified for the period 1999–2002. As one example of the implementation of recommended actions, JNCC and other organisations are currently developing an Integrated Monitoring Programme related to UK waterbird monitoring. As indicated by the Pintail Action Plan (Operational Objectives 2.4.1 & 2.4.2), this aims to develop a better understanding of the factors influencing Pintail population dynamics through integrating results from separate programmes which currently collect data and information on parameters such as population sizes, distribution, productivity, mortality and dispersal.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the international population were considered under Stage 1.2, and all 17 were selected after consideration of Stage 2 judgements. A further eight sites were considered and selected under Stage 1.3 (see section 5.3), with Pintail identified as an important component of a non-breeding waterbird assemblage.

The sites are distributed throughout the full range of the population in the UK, from the Cromarty Firth in north-east Scotland, to Strangford Lough in Northern Ireland and sites on the south and east coasts of England. All these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Pintail in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Pintail SPA suite

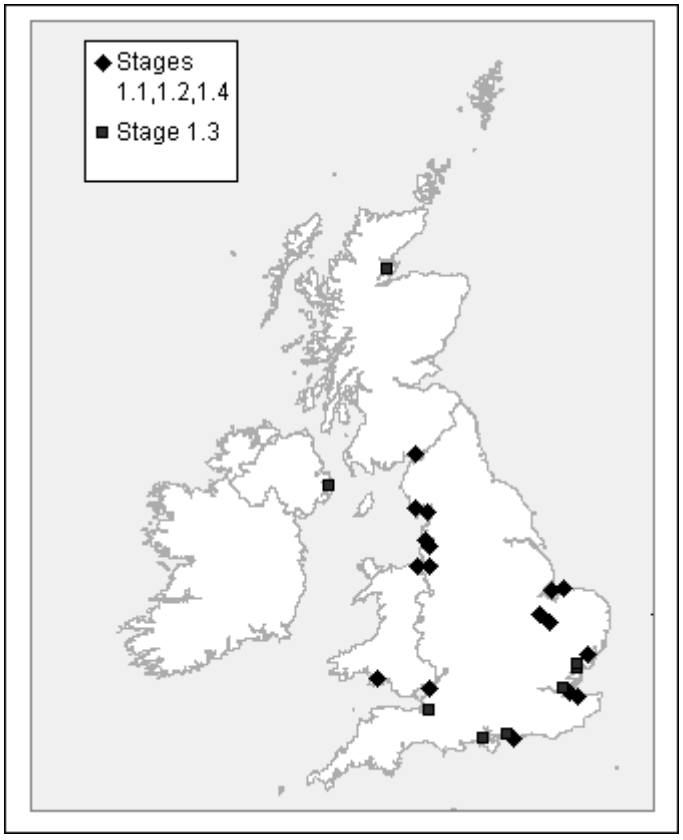


Table 6.32.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	323	0.5	1.2	1.3
Blackwater Estuary	358	0.6	1.3	1.3
Burry Inlet	1,772	3.0	6.4	1.2
Chichester and Langstone Harbours	330	0.6	1.2	1.3
Cromarty Firth	266	0.4	1.0	1.3
Duddon Estuary	1,636	2.7	5.9	1.2
Martin Mere	978	1.6	3.5	1.2
Medway Estuary and Marshes	697	1.2	2.5	1.2
Mersey Estuary	2,744	4.6	9.9	1.2
Morecambe Bay	2,804	4.7	10.1	1.2
Nene Washes	1,435	2.4	5.2	1.2
North Norfolk Coast	1,139	1.9	4.1	1.2
Ouse Washes	1,755	2.9	6.3	1.2
Pagham Harbour	628	1.1	2.3	1.2
Ribble and Alt Estuaries (Phase 2)	3,333	5.6	12.0	1.2
Severn Estuary	599	1.0	2.2	1.2
Solent and Southampton Water	282	0.5	1.0	1.3
Somerset Levels and Moors	322	0.5	1.2	1.3
Stour and Orwell Estuaries	878	1.5	3.2	1.2
Strangford Lough	209	0.4	3.5 (Ire)	1.3
Thames Estuary and Marshes	282	0.5	1.0	1.3
The Dee Estuary	6,498	10.8	23.2	1.2
The Swale	966	1.6	3.5	1.2
The Wash	923	1.5	3.3	1.2
Upper Solway Flats and Marshes	2,253	3.8	8.1	1.2
TOTALS	19,021 (in January)	31.7%	67.4% 2.4% (Ire)	

A6.33a Shoveler *Anas clypeata* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,000	10	155 (16% of GB total)
Ireland	100	1	No SPAs selected in Northern Ireland
Biogeographic population	13,300	133	155 (2% of biogeographic population)

GB population source: Gibbons et al. *1993*
Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The monotypic Shoveler has an extensive global distribution, breeding at northern latitudes throughout both Eurasia and North America. In the Palearctic, its range extends between 45° and 70°N, from Iceland in the west, to the Lena Delta in the eastern Russia Arctic (c. 162°E). It is absent as a breeding bird from southern Europe and the Mediterranean basin. It breeds across most of North America, from Alaska southwards to the Prairie Pothole region (Cramp & Simmons 1977). In the Palearctic, most Shovelers breed in Russia.

In Europe, the breeding distribution is scattered and discontinuous. Most breed in The Netherlands, with significant numbers in southern Scandinavia and around the Baltic (Hagemeijer & Blair 1997).

Within Britain the breeding strongholds are the Norfolk Broads, the north Kent Marshes and the East Anglian fens, with birds widely scattered elsewhere in eastern and central England, becoming scarcer in upland areas and the south-west. In Scotland, birds breed in lowland areas between the Forth and the Grampians, as well as on the lochs of the Uists, Tiree and Orkney. They inhabit freshwater wetlands, typically nesting in sparse cover near to shallow eutrophic still waters (Gibbons *et al.* 1993).

4. Population structure and trends

A population decline has been evident in much of the NW European range (Gibbons *et al.* 1993) although there has been some expansion in the range itself, possibly linked with an increase in summer temperatures (Voous 1960). The latest biogeographic population estimate is around 13,300 pairs (Rose

& Scott 1997). However, trend analysis is difficult because of the tendency of Shovelers to breed in areas subject to rapid natural change, with flooding and fluctuating water tables resulting in large year-to-year variation in numbers.

During the 1930s, Shovelers bred in all but eight English counties and the species' range continued to increase until the early 1950s (Holloway 1996), with local increases in the Shropshire meres and at Chew Valley Lake (Parslow 1973). There has also been a decline in numbers associated with loss of wetland habitat, which is already restricted because of its specialised method of feeding. Between the 1968–72 and the 1988–91 breeding bird atlases, there was a 12% reduction in the number of 10 km squares from which birds were recorded and a 39% reduction in squares with actual breeding evidence (Mitchell 1994). The drainage of wetlands earlier in the 20th century resulted in the collapse of the Trent Valley population around Nottingham, where numbers fell from 47 pairs in 1947 to just five or six pairs by the late 1960s (Dobbs 1975).

The current UK population is estimated at about 1,000 pairs (Gibbons *et al*. 1993) with a large proportion of this concentrated at a relatively small number of key sites.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Shovelers supports, on average, 155 pairs. This amounts to about 16% of the British breeding population, and about 2% of the international population. In an all-Ireland context, no sites have been selected in Northern Ireland. The SPA suite total is contained within a single site (Ouse Washes – Table 6.33a.1) where Shoveler has been listed as a qualifying species.

6. Classification criteria

The single site (Ouse Washes) in the UK supporting more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements.

There is a long history of occupancy by Shovelers at the Ouse Washes (Thomas 1978; 1980) which is a multi-species wetland site supporting many other qualifying species. It is a high-quality semi-natural habitat with lowland wet grassland, specifically managed by maintenance of appropriate water levels and grazing, for the benefit of breeding waterbirds.

It was not considered necessary to select additional sites using Stage 1.4, as Shovelers are widely, though thinly, dispersed elsewhere in the UK and in Europe.

Distribution map for breeding Shoveler SPA suite

Table 6.33a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ouse Washes	155	1.6	15.5	1.2
TOTALS	155	1.6%	15.5%	

A6.33b Shoveler *Anas clypeata* (non-breeding)

1. Status in UK

See section 6.33a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	10,000	100	3,461 (35% of GB total)
Ireland	6,500	65	120 (2% of all-Ireland total)
Biogeographic population	40,000	400	3,582 (9% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global breeding distribution of the monotypic Shoveler is summarised in section A6.33a. Birds from the extensive breeding areas throughout the taiga and steppe regions of Ukraine and Russia migrate south and west to winter in western Europe (Scott & Rose 1996). Here, the distribution is predominantly coastal, although Shovelers also occur inland along major river systems and elsewhere where they can find suitable wetland habitats.

Shovelers winter from Britain (which is the most northerly part of the winter range), south though France and Spain, to the Mediterranean and Black Seas. Those that winter in Britain originate from Russia, the Baltic States, Fennoscandia and Iceland, and are widely distributed across central and southern England. In north-west and south-west England they are more localised as suitable habitat is less widespread. Shovelers inhabit reservoirs, natural lakes, flooded mineral workings, coastal wetlands and flooded grasslands (Lack 1986).

4. Population structure and trends

Seven biogeographic populations of Shovelers are recognised (Rose & Scott 1997). Of these, two occur within Europe, birds wintering (and breeding) in the UK being part of the North-west/Central Europe population. This is currently estimated at 40,000 individuals (Rose & Scott 1997). A further 450,000 birds spend the winter around the Mediterranean and Black Seas.

Knowledge of international trends in European populations is poor – partly because of the complex migrations that can vary in intensity between years (Delany *et al.* 1999; see below). Such information that does exist indicates that the North-west European population has probably been stable over the last 23 years, although the trend is poorly defined statistically (Delany *et al.* 1999).

There is a complex movement of Shovelers through Britain after the end of the breeding season (Kirby & Mitchell 1993). Those birds that have bred in the UK move south to France, Spain and Northern Italy in early autumn. Continental birds arriving from breeding grounds in Russia, the Baltic States and Fennoscandia arrive in September, temporarily joining British breeding birds and their young. Most British breeding birds have left by the end of October.

Total numbers peak in the north of Britain earlier than in the south and west (Kirby & Mitchell 1993). There is a peak of occurrence again in spring as birds that have wintered in continental Europe migrate back through Britain at around the same time as returning local breeders (Cramp & Simmons 1977).

As with many migratory birds, there is a high turnover of birds passing through Britain, with the overall number likely to be more than the estimated British population of 10,000 (Kirby 1995a). In

1989/90 non-breeding birds were split between the following habitat types: 17–39% on reservoirs, 18–30% on natural lakes, 13–23% on flooded mineral workings, 7–22% on coastal wetlands and 6–19% on flooded grasslands (Kirby & Mitchell 1993). Numbers vary considerably from year to year. However, the Ouse Washes and Abberton Reservoir are consistently the most important sites, with peak counts regularly in excess of 600 and occasionally over 1,000. The Ouse Washes holds the record count of 1,443 in March 1988, accounting for one-third of the estimated British non-breeding total at that time.

During colder weather, Shovelers will move from Britain south and westwards to Ireland, France and the Iberian Peninsula. Britain also receives birds from the international Wadden Sea, when shallow waters there freeze (Ridgill & Fox 1990). Numbers of both breeding and non-breeding birds are affected in the longer-term by such severe weather, and there was a sharp decline during the period of frequent cold winters in the early 1960s. Numbers have subsequently recovered and there has been a steady increase in the non-breeding numbers since (Kirby *et al.* 1995) reaching a record British count of 12,153 birds in November 1995.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Shoveler supports, on average, 3,582 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 35% of the British population, about 2% of the all-Ireland population, and about 9% of the international flyway population. The suite comprises 26 sites where Shoveler has been listed as a qualifying species (Table 6.33b.1).

6. Classification criteria

All sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and all 12 were selected after consideration of Stage 2 judgements. A further 14 sites were considered and selected under Stage 1.3 (see section 5.3), with Shoveler being identified as an important component of the non-breeding waterbird assemblages at these sites.

The sites comprising the SPA suite for Shoveler are distributed through most of the population's UK range, from Loch Leven in eastern Scotland, to Lough Neagh and Lough Beg in Northern Ireland, sites in south Wales, and on the south and east coasts of England as well as in the Midlands. All these sites are multi-species SPAs, of importance for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Shoveler in the UK, and as the species is otherwise widely dispersed, it was not considered necessary to select additional sites using Stage 1.4. Indeed, most sites holding Shoveler in the non-breeding season support fewer than 50 birds (Kirby & Mitchell 1993).

Distribution map for non-breeding Shoveler SPA suite

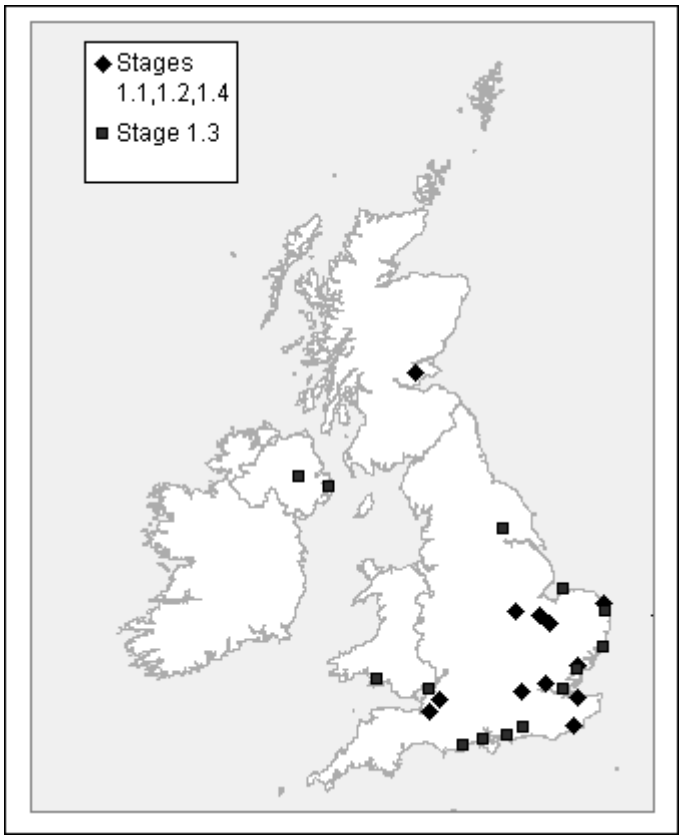


Table 6.33b.1 – SPA suite

	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	654	1.6	6.5	1.2
Alde – Ore Estuary	106	0.3	1.1	1.3
Arun Valley	199	0.5	2.0	1.3
Blackwater Estuary	132	0.3	1.3	1.3
Breydon Water	140	0.4	1.4	1.3
Broadland	401	1.0	4.0	1.2
Burry Inlet	356	0.9	3.6	1.3
Chew Valley Lake	503	1.3	5.0	1.2
Chichester and Langstone Harbours	100	0.3	1.0	1.3
Dungeness to Pett Level	419	1.0	4.2	1.2
Lee Valley	748	1.9	7.5	1.2
Loch Leven	520	1.3	5.2	1.2
Lough Neagh and Lough Beg	148	0.4	2.3 (Ire)	1.3
Lower Derwent Valley	109	0.3	1.1	1.3
Nene Washes	413	1.0	4.1	1.2
North Norfolk Coast	180	0.5	1.8	1.3
Ouse Washes	681	1.7	6.8	1.2
Poole Harbour	154	0.4	1.5	1.3
Rutland Water	526	1.3	5.3	1.2
Severn Estuary	153	0.4	1.5	1.3
Solent and Southampton Water	212	0.5	2.1	1.3
Somerset Levels and Moors	501	1.3	5.0	1.2
South-West London Water Bodies	1,075	2.7	10.8	1.2
Strangford Lough	147	0.4	2.3 (Ire)	1.3
Thames Estuary and Marshes	165	0.4	1.7	1.3
The Swale	471	1.2	4.7	1.2
TOTALS	3,582 (in January)	9.0%	34.6% 1.9% (Ire)	

A6.34 Pochard *Aythya ferina* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	43,700	440	8,645 (20% of GB total)
Ireland	40,000	400	23,845 (60% of all-Ireland total)
Biogeographic population	350,000	3,500	32,489 (9% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The monotypic Pochard is widespread over most of temperate Europe and Asia, breeding from Iceland eastwards through central Asia to south-east Russia (Scott & Rose 1996; del Hoyo *et al*. 1992). It is resident in western and southern Europe, but northern populations are highly migratory, wintering southwards to west and east Africa (Scott & Rose 1996), with the main wintering areas in north-west Europe, the eastern Mediterranean, the Black and Caspian Seas, and north Africa (Fox & Stawarczyk 1997). The north-west European wintering population originates from as far east as 120°E (Scott & Rose 1996). Counts in winter in various parts of the species' range suggest a global population of *c.* 2,000,000 individuals (del Hoyo *et al*. 1992).

Pochard breeding in the UK are resident, but additional numbers in winter come from Scandinavia, northern Germany, Poland, the Baltic States and Russia east to 70°E (Fox & Stawarczyk 1997; Scott & Rose 1996). They are widespread in the UK in winter, often forming large flocks on lakes, reservoirs, brackish coastal lagoons, tidal estuaries and inshore coastal waters (Scott & Rose 1996).

Principal wintering sites are widely scattered throughout the UK, though Lough Neagh in Northern Ireland, with over 7% of the north-west European population, holds the most significant numbers. The Ouse Washes, in eastern England is the only other UK site to support internationally important

numbers (Pollitt *et al*. 2000). Pochard reach their UK wintering quarters by November but ringing recoveries indicate that some subsequently move to sites further south during the winter.

Pochard prefer waterbodies less than 3 m deep, diving to the bottom to forage (Owen *et al*. 1986). They feed on seeds, roots, grasses, sedges and aquatic plants, as well as invertebrates, amphibians and small fish (Olney 1968; Phillips 1991).

4. Population structure and trends

Discrete populations of Pochard are not generally identifiable, due to considerable overlap in non-breeding distribution, and no subspecies are recognised (del Hoyo *et al*. 1992). Five biogeographic populations are recognised (Rose & Scott 1997), of which two occur in Europe: north-west Europe (350,000 individuals), and central Europe/Black Sea/ Mediterranean (1,000,000). There is, however, some exchange of birds between central and north-west Europe (Scott & Rose 1996; Rose & Scott 1997). Those wintering in Britain form part of the north-west European population and comprise 12.5% of the biogeographic population (Kirby 1995a).

After a long period of expansion throughout Europe which began in the 1850s (Fox & Stawarczyk 1997), the north-west European population increased sharply from the mid 1960s to the mid 1970s, a trend that was echoed in the numbers wintering in the UK during this period (Kershaw 1998b). Although causes for the early range expansion are not clear, increases since the 1960s are believed to be largely due to a greater availability of suitable habitat, particularly through increased mineral extraction, reservoir construction and, in parts of eastern Europe (*e.g.* Poland), fish pond creation (Fox & Stawarczyk 1997). However, over the next two decades, the north-west European population was thought to have declined by around 30% (Scott & Rose 1996). More recent international trend analysis shows that this decline has now levelled out and reversed. Overall trends in the north-west European population have been stable over 23-year (1974–1996) and ten-year (1987–1996) periods (Delany *et al*. 1999). In the UK numbers decreased slightly in the 1970s, but have been generally stable since, with some fluctuations (Kershaw 1998). In comparison, numbers have fluctuated markedly in the Republic of Ireland through the 1990s (Colhoun 2000).

Changes in non-breeding numbers within the UK have neither been consistent between regions nor between habitats (Kershaw 1998). South-east Scotland has shown a significant decline since the late 1970s, whilst in all other regions of importance for Pochard, numbers have generally increased. Closures of sewage outfalls in the Forth of Firth, which reduced food sources (Campbell 1984), are thought to have contributed to the decline in numbers in south-east Scotland during the 1970s (Fox & Salmon 1988). Since 1960, numbers have increased on mineral workings, rivers, freshwater marshes, estuarine and coastal sites, while those on natural waters and reservoirs have fluctuated in line with national trends.

Ringing recoveries indicate that Pochard show low fidelity to UK sites between winters. Co-ordinated counts in the Republic of Ireland also indicate interchange of birds between sites possibly because of between-year changes in food availability and levels of disturbance (Colhoun 2000). Furthermore, the species makes large-scale cold-weather movements (Ridgill & Fox 1990); there is evidence that large numbers move to and from the UK and the continent during hard weather (Fox & Salmon 1988).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Pochard supports, on average, 32,489 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 20% of the British population, about 60% of the all-Ireland population, and about 9% of the international flyway population. The suite comprises 12 sites where Pochard has been listed as a qualifying species (Table 6.34.1).

6. Classification criteria

Both sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and both (Lough Neagh and Lough Beg; and Ouse Washes) were selected after consideration of Stage 2 judgements. A further ten sites were considered and selected under Stage 1.3 (see section

5.3), with Pochard identified as an important component of the non-breeding waterbird assemblages at these localities.

The sites are distributed through most of the range of the population in the UK, from Loch Leven in eastern Scotland, to Lough Neagh and Lough Beg in Northern Ireland, and sites on the south and east coasts of England. All these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Pochard in the UK, and the species is otherwise widely dispersed, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Pochard SPA suite

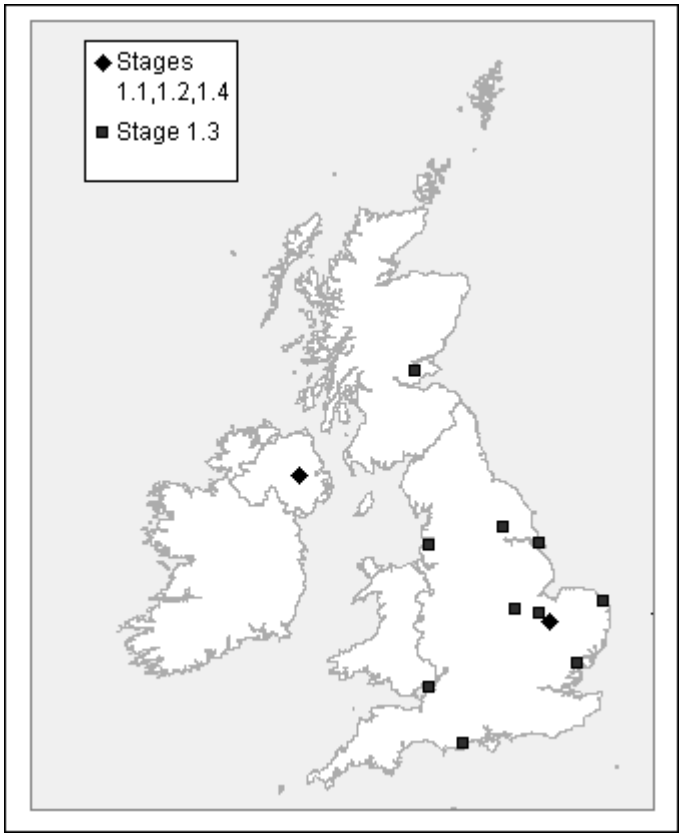


Table 6.34.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	1,901	0.5	4.4	1.3
Broadland	1,230	0.4	2.8	1.3
Humber Flats, Marshes and Coast (Phase 1)	1,009	0.3	2.3	1.3
Loch Leven	1,050	0.3	2.4	1.3
Lough Neagh and Lough Beg	26,341	7.5	65.9 (Ire)	1.2
Lower Derwent Valley	1,628	0.5	3.7	1.3
Martin Mere	516	0.2	1.2	1.3
Nene Washes	1,079	0.3	2.5	1.3
Ouse Washes	3,590	1.0	8.2	1.2
Poole Harbour	691	0.2	1.6	1.3
Rutland Water	1,112	0.3	2.5	1.3
Severn Estuary	1,622	0.5	3.7	1.3
TOTALS	32,489 (in January)	9.3%	19.6% 59.6% (Ire)	

A6.35 Tufted Duck *Aythya fuligula* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	60,600	600	4,476 (7% of GB total)
Ireland	40,000	400	20,471 (51% of all-Ireland total)
Biogeographic population	1,000,000	10,000	24,947 (3% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The monotypic Tufted Duck has a wide global breeding distribution across northern Eurasia from Iceland to the Bering Sea, generally between 45° and 70°N (Scott & Rose 1996). It is resident on the breeding grounds in temperate regions of western Europe, but continental northern populations are highly migratory. These birds winter in temperate, western Europe, sub-Saharan Africa, around the Black and Caspian Seas, and eastwards through the Indian subcontinent to southern China and Japan (Scott & Rose 1996).

Tufted Ducks occur across much of central and north-western Europe in winter, although the distribution is more discontinuous in Iberia and the Mediterranean basin. Large numbers of birds wintering in the Baltic may move to The Netherlands, Britain and Ireland in hard winters (Durinck *et al*. 1984; Ridgill & Fox 1990).

In winter, Tufted Ducks are highly gregarious, preferring large, freshwater lakes, ponds and reservoirs, though they are also found in estuaries, along sheltered seacoasts and on brackish inland seas in winter (Scott & Rose 1996). They feed by diving, with 80% of the diet consisting of animal material, particularly the exotic Zebra Mussel *Dreissena polymorpha,* but also feed on seeds and green parts of aquatic plants, aquatic insects and crustaceans (Olney 1963; Owen *et al*. 1986).

Although Tufted Ducks are found in flocks of several thousand birds in parts of Europe in winter, numbers in the UK rarely reach these levels. Instead, the species is widely distributed in smaller aggre-

gations (Scott & Rose 1996). Nevertheless, large numbers (>20,000) occur at Loughs Neagh and Beg in Northern Ireland, and about ten sites, mainly gravel pit complexes and reservoirs, support about 1,000 or more birds each.

Within-winter ringing recoveries indicate that Tufted Ducks move only short distances. Colour-marking studies in north-east England indicate that more than 40% utilise more than one site within the region during the course of a winter (J. Coleman pers. comm.)

4. Population structure and trends

Five biogeographic populations of Tufted Duck are recognised (Rose & Scott 1997), of which two occur in Europe: north-west Europe (numbering *c.* 1,000,000 individuals); and central Europe, Black Sea, Mediterranean (*c.* 600,000) (Rose & Scott 1997). Numbers wintering in Britain amount to about 60,600 individuals (Kirby 1995a) which constitutes approximately 6% of the north-west European population.

The population trend of non-breeding Tufted Duck in north-west Europe has been stable over the 23-year period from 1974–1996 (Delany *et al.* 1999), although looking at only the last ten years (*i.e.* 1987–1996) an increasing trend is apparent. In Britain, monitoring has shown the population trend over the last two decades to be amongst the most stable of all waterbirds (Pollitt *et al.*2000). In contrast, numbers wintering in the Republic of Ireland have fluctuated markedly through the 1990s (Colhoun 2000). The recent increase in north-west European wintering numbers may be a result of interchange between the central European, north-west European and western Mediterranean populations. However, it has also been attributed to the species' adaptability to new habitats artificially created by man and the colonisation of north-west Europe by Zebra Mussels (Scott & Rose 1996). Tufted Ducks are believed to be particularly adept at exploiting this food resource, and high mussel densities may increase winter survival rates (Mednis & Zomerdijk 1997).

Ringing recoveries from one winter to another indicate that the majority of birds use sites less than 50 km apart. Colour-marking studies in north-east England have shown that at least 50% of Tufted Ducks return to the same site each winter (J. Coleman pers. comm.). However, Tufted Ducks demonstrate cold weather movements, often on a large scale, and influxes into northern England from continental Europe occur regularly (Ridgill & Fox 1990).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Tufted Ducks supports, on average, 24,947 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 8% of the British population, about 51% of the all-Ireland population, and about 3% of the international flyway population. The suite comprises seven sites where Tufted Duck has been listed as a qualifying species (Table 6.35.1).

6. Classification criteria

The single site (Lough Neagh and Lough Beg) in the UK supporting more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. A further six sites were considered and selected under Stage 1.3 (see section 5.3) with Tufted Ducks identified as an important component of a wider non-breeding waterbird assemblage.

The sites are distributed through most of the range of the population in the UK, from Loch Leven in eastern Scotland, to Lough Neagh and Lough Beg in Northern Ireland, and sites on the east coast of England. All these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which includes the main population centres of non-breeding Tufted Duck in the UK, and as the species is otherwise widely dispersed, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Tufted Duck SPA suite

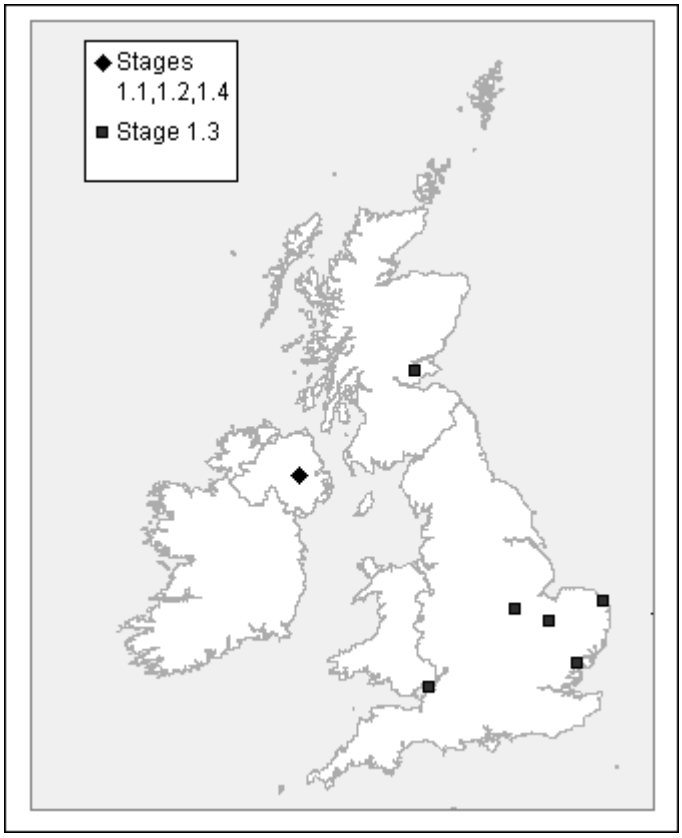


Table 6.35.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	1,864	0.2	3.1	1.3
Broadland	1,336	0.1	2.2	1.3
Loch Leven	3,362	0.3	5.6	1.3
Lough Neagh and Lough Beg	22,372	2.2	55.9 (Ire)	1.2
Ouse Washes	986	0.1	1.6	1.3
Rutland Water	2,289	0.2	3.8	1.3
Severn Estuary	796	0.1	1.3	1.3
TOTALS	24,947 (in January)	2.5%	7.5% 51.2% (Ire)	

A6.36 Scaup *Aythya marila*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 3 (winter)** Unfavourable conservation status (**localised in winter**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	11,000	110	1,671 (15% of GB total)
Ireland	3,000	50 (see section 5.1.2 for rationale)	1,558 (52% of all-Ireland total)
Biogeographic population	310,000	3,100	3,229 (1% of biogeographic population)

GB population source: Kirby et al. *1993*
Ireland population source: Delany 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Scaup is the most northerly distributed of the *Aythya* species. It breeds at high latitudes across northern Eurasia and North America, and winters in temperate coastal waters along both coasts of North America, north-west Europe, the Black and Caspian Seas and east Asia (Scott & Rose 1996; del Hoyo *et al*. 1992). In Europe, it winters especially on Atlantic and North Sea coasts as well as in large numbers in western parts of the Baltic. Two sub-species are recognised, the nominate race (*A. m. marila*) of north Eurasia from Iceland east to central Siberia, and *A. m. mariloides* from central Siberia to the Bering Sea and North America (del Hoyo *et al*. 1992). Ringing recoveries indicate that birds wintering in the UK come from Iceland, Fennoscandia and Russia (Campbell 1986c).

In the UK, Scaup are sparsely but widely distributed, except in north-west Scotland and south-west England (Kirby *et al*. 1993). The single UK site holding more than 1% of the international population is Lough Neagh and Lough Beg in Northern Ireland. In Scotland, smaller, although still notable, concentrations are found in the Solway Firth, Loch Indaal on Islay, Loch Ryan in south-west Scotland, and Largo Bay in the Firth of Forth. In north-east Scotland there are regular concentrations on the Loch of Stenness in Orkney and in the Cromarty Firth. In England and Wales, the Dee Estuary holds the only major concentration of Scaup, although this is small in comparison with Scottish flocks (Kirby *et al*.

1993). Co-ordinated counts indicate that there may be some redistribution of birds between UK sites within winters, especially between the Scottish firths (Pollitt *et al.* 2000).

In winter, Scaup are found mainly in areas of soft-shore coastlines, often in brackish areas (Kirby *et al*. 1993). They are also found on lagoons, estuaries, sheltered bays and shallow marine waters, as well as inland seas, and – infrequently – large lakes (Scott & Rose 1996). Scaup feed at night, their diet consisting mainly of the Blue Mussel *Mytilus edulis,* although some feed on waste grain or artificially high densities of marine worms, such as those found around sewage outfalls (Kirby *et al*. 1993).

In severe winters, it is estimated that over 90% of the European population is concentrated at fewer than ten sites, mostly on the Baltic coast of Denmark, Germany and Poland (Scott & Rose 1996).

4. Population structure and trends

Two populations of the nominate sub-species are recognised in western Eurasia. The north-west European population is the larger, estimated at 310,000, while that of western Siberia/Black and Caspian Seas numbers 100,000–200,000 (Rose & Scott 1997). The British non-breeding total is estimated at 11,000 (Kirby *et al.* 1993), representing 3.5% of the north-west European biogeographic population.

Numbers of Scaup wintering in Europe were poorly known until the late-1980s, so overall trends in both the north-west European population and that wintering in the Black and Caspian Seas are unclear (Scott & Rose 1996; Delany *et al.* 1999). Increases in non-breeding numbers had been noted during the mid-1970s in The Netherlands, along the German and Polish Baltic coasts, while wintering numbers in the 1980s were reported to be declining in Britain, Ireland and Denmark (Kirby *et al*. 1993).

The most recent British peak count represents a continued increase in numbers since effective monitoring of the species began in the late 1980s, although numbers in Northern Ireland may be declining (Cranswick *et al*. 1999). Numbers wintering in the Republic of Ireland have remained relatively stable throughout the 1990s (Colhoun 2000). Large fluctuations in the west European breeding population since the mid-1960s may have been due to the species' susceptibility to oil pollution and hunting (Campbell *et al.* 1978; Haldin 1997). Waste grain and the super-abundance of worms originally attracted these large flocks of Scaup to distillery and sewage outfalls in Scotland. However, reductions in grain discharges and the introduction of new sewage treatment procedures during the 1970s resulted in lower numbers of birds using some sites in Scotland, especially in the Firth of Forth (Campbell 1984).

In Britain and Ireland, numbers at most important sites peak in late December or early January and decline rapidly thereafter (Owen *et al.* 1986; Thom 1986). This pattern changes somewhat during severe winters when large numbers of birds arrive from the Baltic (Salmon 1988). The paucity of ringing recovery data makes it impossible to assess whether birds wintering in the UK return to the same sites each year.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Scaup supports, on average, 3,229 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 15% of the British population, about 52% of the all-Ireland population, and about 1% of the international flyway population. The suite comprises six sites where Scaup has been listed as a qualifying species (Table 6.36.1).

6. Classification criteria

The single site (Lough Neagh and Lough Beg) in the UK supporting more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. A further four terrestrial sites (Belfast Lough, Cromarty Firth, Firth of Forth and Upper Solway Flats and Marshes) were considered and selected under Stage 1.3 (see section 5.3), with Scaup identified as an important component of the non-breeding waterbird assemblages at these localities.

The Inner Moray Firth was selected under Stage 1.4 on the grounds of providing additional population coverage at one of the main centres for UK wintering birds, and also in view of the close association of birds using this Firth and those in the adjacent Cromarty Firth. These areas together provide the largest concentration of Scaup in northern Scotland.

The sites include the main terrestrial centres of the population in the UK, especially in Northern Ireland and Scotland. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

Distribution map for Scaup SPA suite

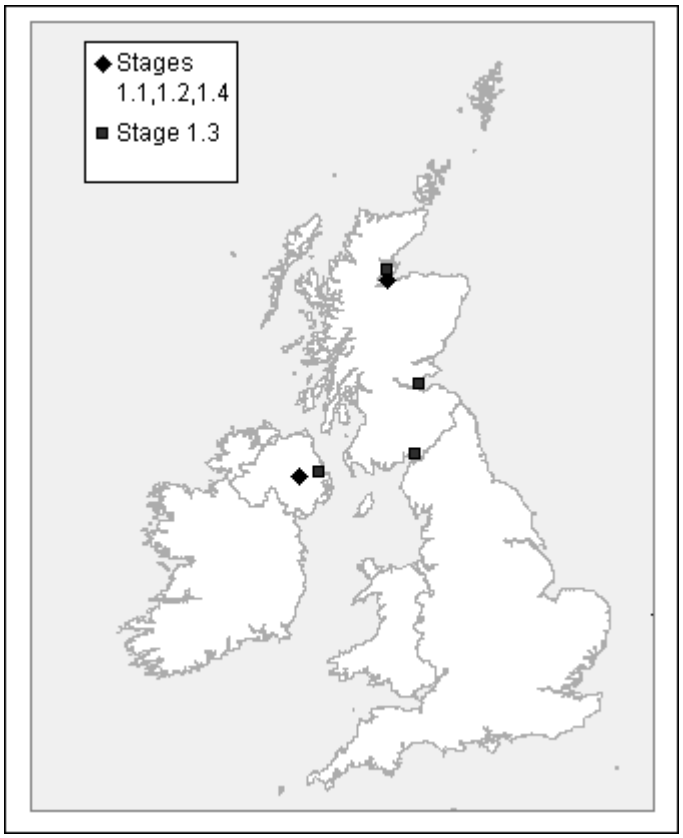


Table 6.36.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	146	<0.1	4.9 (Ire)	1.3
Cromarty Firth	302	0.1	2.8	1.3
Firth of Forth	220	<0.1	2.0	1.3
Inner Moray Firth	97	<0.1	0.9	1.4
Lough Neagh and Lough Beg	3,798	1.2	100 (Ire)	1.2
Upper Solway Flats and Marshes	1,544	0.5	14.0	1.3
TOTALS	3,229 (in January)	1.0%	15.2% 51.9% (Ire)	

A6.37 Eider *Somateria mollissima* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	77,500	750	6,657 (12% of GB total)
Ireland	2,000	50 (see section 5.1.2 for rationale)	366 (18% of all-Ireland total)
Biogeographic population	1,500,000	20,000	9,023 (0.5% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Eider has a circumpolar distribution, breeding into the high Arctic (up to 80ºN) across northern Eurasia and North America and wintering mainly within the breeding range (Scott & Rose 1996). Six sub-species have been identified. Of those which occur in western Eurasia, the nominate form (*S. m. mollissima*) occurs across north-west Europe east to Novaya Zemlaya, *S. m. faroeensis* occurs in the Faeroe Islands, and *S. m. borealis* occurs across north-east Canada through Greenland, Iceland and Svalbard to Franz Josef Land. Of the nominate race, approximately 1,500,000 occur in the discrete Baltic, Denmark, Netherlands, Britain and Ireland population. A further three sub-species occur in the Nearctic.

The European non-breeding distribution is along Atlantic and North Sea coasts, with major concentrations in the western Baltic.

Eiders breeding in Britain and Northern Ireland are sedentary or dispersive, undergoing relatively short movements of less than 200 km outside the breeding season (Baillie & Milne 1989). Migratory influxes by birds of continental origin add to this resident population during the winter (Baillie & Milne 1989). The non-breeding distribution is predominantly coastal in the UK; large flocks occur at the mouths of estuaries and along sandy or rocky coasts with shallow waters. Sheltered coastlines are preferred, where favoured foods (Blue Mussel *Mytilus edulis*, other molluscs and crustaceans) are abundant (Player 1971).

Non-breeding Eiders have a northerly distribution in Britain and Ireland (Baillie 1986; Hutchinson 1989). Major concentrations occur in Shetland, south-east Scotland (especially the Firths of Tay and Forth), Cumbria and eastern Britain, with smaller numbers in sheltered locations in western Scotland. The Forth and Tay estuaries are collectively of significance, gathering birds from both further north and further south on the east coast of Britain under adverse conditions. Northern Ireland, Belfast Lough and Lough Foyle play host to the largest concentrations.

Ringing recoveries indicate that most juvenile birds from the Sands of Forvie remain close to their natal colony during the winter whereas adults tend to move to the Firths of Tay and Forth (Baillie & Milne 1989). The birds which remain at Forvie and Loch Fleet in the early winter tend to disperse subsequently (Mudge & Allen 1980). In contrast, most birds from colonies in Northumberland remain close to the breeding colonies during the winter, with only 32% of birds moving to the Forth and Tay.

4. Population structure and trends

Scott & Rose (1996) have suggested that European non-breeding Eiders are best considered as a number of smaller population units – including a separate Shetland and Orkney population of the *S. m. faroeensis* sub-species. However, there is little evidence to support these population delimitations, and until there is stronger evidence (preferably based on ringing analyses) for these proposals, they have not currently been adopted. Accordingly, Eiders occurring in Britain and Ireland are treated here as belonging to one biogeographic population comprising all *S. m. mollissima* wintering in Britain, Ireland, the Baltic, and The Netherlands.

Since the 1950s, the breeding range of the Eider throughout western Eurasia has extended progressively southwards. Numbers of the nominate race are thought to be stable in Russia (Flint & Krivenko 1990) yet have increased in Sweden, Denmark, Estonia, France and Germany (Koskimies 1993; Keller & Hario 1997). Much of this increase is probably due to improved feeding conditions in the Baltic largely because of eutrophication. Other factors underlying the increases may be greater refuge provision, bans on egg-collecting and a reduction in spring hunting (Keller & Hario 1997). Hunting pressure on juveniles in Denmark has also remained stable allowing population growth in productive years (Hario & Selin 1988). In contrast, in Finland, there has been an annual 6–10% decline in numbers in recent years, which has been linked to poor recruitment resulting from heavy duckling mortality. There is some evidence that the entire north-west European population has now stabilised (Wetlands International Seaduck Specialist Group unpublished data).

Breeding and non-breeding numbers in most parts of Britain and Northern Ireland have increased markedly over the past 200 years (Kirby *et al.* 1993). Eiders now breed and overwinter in many areas where once they were absent (Baillie 1986; Thom 1986). The population has stabilised since the early 1990s and remains stable at present (Pollitt *et al.* 2000). Relatively few birds are recorded in the Republic of Ireland (Colhoun 2000).

A cause for concern is the dramatic decline in numbers in Shetland where numbers fell from 16,500 to 6,000 during the 20-year period between 1977 and 1997 (Cranswick *et al.* 1999). Reasons for this decline are, as yet, unknown.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Eider supports, on average, 9,023 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 12% of the British population, about 18% of the all-Ireland population, and about 0.5% of the international flyway population. The suite comprises eight terrestrial SPAs where Eider has been listed as a qualifying species (Table 6.37.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Eider population in winter (Stage 1.2). However, eight sites in the suite were identified under Stage 1.3 (see section 5.3), given that Eider is an important component of the wider non-breeding waterbird assemblages at these localities. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, of

importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a terrestrial SPA suite which includes the main population centres of non-breeding Eider in the UK, and as the species is otherwise widely dispersed, it was not considered necessary to select additional terrestrial SPAs using Stage 1.4.

Distribution map for non-breeding Eider SPA suite

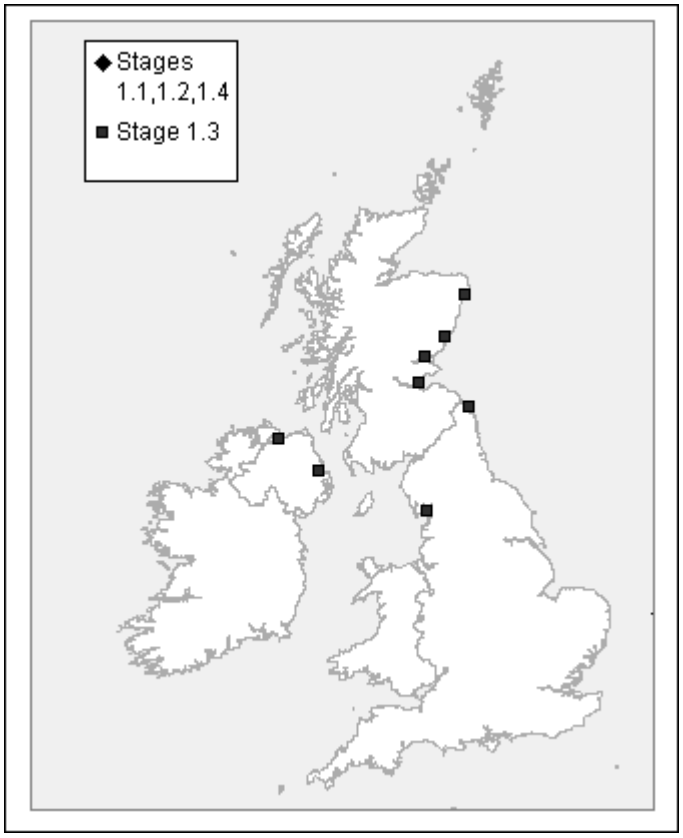


Table 6.37.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	685	<0.1	34.3 (Ire)	1.3
Firth of Forth	7,887	0.5	10.2	1.3
Firth of Tay and Eden Estuary	2,061	0.1	2.7	1.3
Lindisfarne	1,568	0.1	2.0	1.3
Lough Foyle	50	<0.1	2.5 (Ire)	1.3
Montrose Basin	1,794	0.1	2.3	1.3
Morecambe Bay	6,400	0.4	8.3	1.3
Ythan Estuary, Sands of Forvie and Meikle Loch	1,778	0.1	2.3	1.3
TOTALS	9,023 (in January)	0.5%	11.5% 18.3% (Ire)	

A6.38 Long-tailed Duck *Clangula hyemalis*

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	23,500	230	796 (4% of GB total)
Ireland	Unknown	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	150,000	1,500	796 (<0.1% of biogeographic population)

GB population source: Kirby et al. *1993*
All-Ireland population source: Delany 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

The monotypic Long-tailed Duck has an extensive circumpolar breeding range across northern Eurasia and North America (Scott & Rose 1996). In western Eurasia, the breeding distribution of Long-tailed Ducks extends from the core range in western Russia, though northern Finland and montane areas of Sweden and Norway, as far as Iceland (Berndt & Skov 1997).

Long-tailed Ducks move to the coast in the non-breeding season, although the distribution remains relatively northerly. In Europe, the species winters mainly in the Baltic and along the coasts of Norway, the southern North Sea and Iceland. The Baltic holds about 90% of the wintering birds in north-west Europe with major concentrations in the Gulf of Riga and adjacent Irbe Strait, the Hoburgs Bank to the south of Gotland, and Pomeranian Bay (Scott & Rose 1996). The relatively small number of birds which reach Britain and Northern Ireland during the winter are at the south-western limit of their range (Kirby *et al.* 1993).

In Britain and Northern Ireland, most of the wintering population occurs along the east coast of mainland Scotland, Shetland, Orkney and the Outer Hebrides (Campbell 1986). Large concentrations are limited to the east coast firths of Scotland. However, because flocks of this species loaf several kilometres offshore, many large concentrations may be overlooked. Much smaller flocks are distributed around other British and Irish coasts, with north-east England and the Norfolk coast being the only areas in England that regularly hold good numbers during the winter (Pollitt *et al.* 2000). Movements of birds between UK sites during the winter are unknown but the results of studies in the south-west Baltic indicate that many birds make large-scale movements through the winter, probably

in response to changes in food supply (Bräger *et al.* 1995). Scottish birds have been shown to move on a daily basis up to 12 km from feeding areas inshore to night-time roost sites in much deeper waters (Hope Jones 1979).

During the non-breeding season, this species favours exposed offshore waters and is the only species of seaduck that regularly occurs in waters deeper than 20 m (Booth *et al.* 1984). It generally occurs in small flocks during the winter but may occur at high densities in favoured feeding areas. The winter diet is composed of small fish, marine crustaceans and molluscs (Campbell 1986).

4. Population structure and trends

Five biogeographic populations of Long-tailed Duck are recognised (Scott & Rose 1997), two of which occur in Europe. The Iceland/Greenland breeding population comprises some 150,000 birds, and winters around Iceland as well as northern and western Britain and Ireland. The western Siberia/ north-west Europe population numbers approximately 4,600,000 individuals (Rose & Scott 1997; Pihl & Laursen 1996) and winters primarily in the Baltic. There is some evidence to suggest that the non-breeding ranges of these two populations may overlap. Therefore, it is possible that birds from both of these populations overwinter in Britain and Northern Ireland, although for the purposes of this review, and until further information is available, UK wintering birds are treated as belong to the Iceland/ Greenland population.

Due to the species' dispersed distribution, extensive breeding range and the absence of regular and systematic surveys of the winter population, trends in the core breeding areas in western Russia over recent decades remain unknown (Berndt & Skov 1997). Oil pollution has been identified as the most probable cause of the decline in the relatively small Fennoscandian population (Risberg *et al.* 1990; Thingstad 1994). This may impact on wintering numbers in Britain and Ireland, but the extent to which this population occurs in UK and Irish waters is unknown.

In the absence of detailed data for this species, there is little reason to suppose that non-breeding numbers have declined around Britain and Ireland since the 1950s (Cranswick *et al.* 1999). The number of birds wintering in the UK as a whole tends to fluctuate in line with changes in the most important Scottish firths (Kirby *et al.* 1993). In the outer, offshore parts of the Moray Firth, numbers have remained relatively stable at around 10,000, but were considerably higher during the 1980s (Mudge & Allen 1980; Kirby *et al.* 1993). Numbers have increased on the Firth of Forth, whilst there has been little change in the numbers of birds overwintering at Lindisfarne (Cranswick *et al.* 1999). The paucity of ringing recoveries and lack of reliable co-ordinated offshore counts means that little is known about site fidelity in this species between winters.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's terrestrial SPA suite for Long-tailed Duck supports, on average, 796 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 3.5% of the British wintering population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The suite supports less than 0.1% of the international flyway population. The suite comprises three terrestrial SPAs where Long-tailed Ducks have been listed as a qualifying species (Table 6.38.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Long-tailed Duck population in winter (Stage 1.2). However, three sites in the terrestrial SPA suite were identified under Stage 1.3 (see section 5.3), given that Long-tailed Duck forms an important component of the non-breeding waterbird assemblages at these localities. The sites thus identified (Firth of Forth; Firth of Tay and Eden Estuary; and the Moray and Nairn Coast) were included within the suite. By definition, these three sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a terrestrial suite which includes the main population centres of non-breeding Long-tailed Duck in the UK, it was not considered necessary to select additional terrestrial SPAs using Stage 1.4.

Distribution map for Long-tailed Duck SPA suite

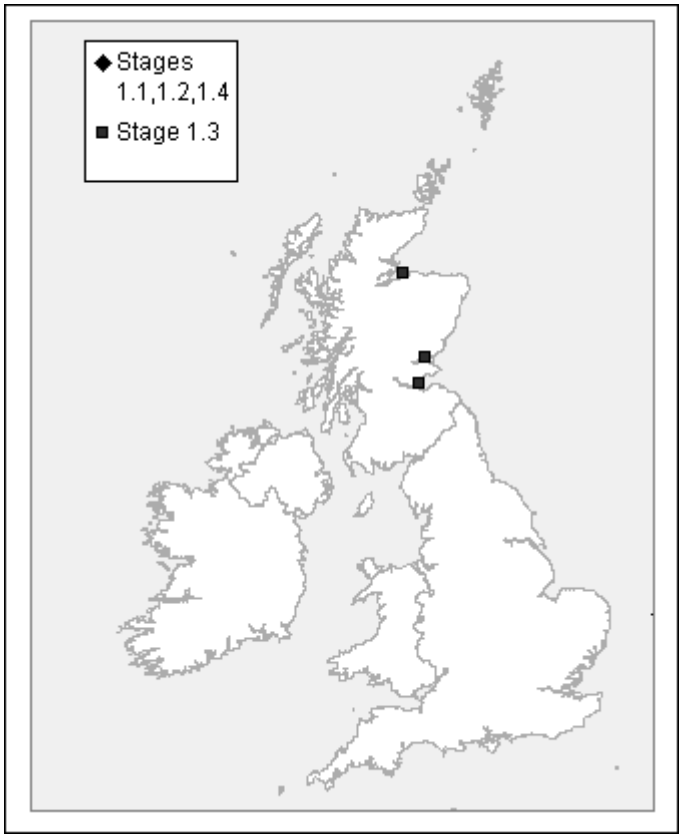


Table 6.38.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Firth of Forth	716	0.5	3.1	1.3
Firth of Tay and Eden Estuary	560	0.4	2.4	1.3
Moray and Nairn Coast	277	0.2	1.2	1.3
TOTALS	796 (in January)	<0.1%	3.5%	

A6.39a Common Scoter *Melanitta nigra* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (females)	Selection thresholds	Totals in species' SPA suite
GB	75	1	37 (49% of GB population)
Ireland			
Biogeographic population	530,000	5,300	37 (<0.1% of biogeographic population)

GB population source: Underhill et al. *1998*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global range of the Common Scoter extends from western Alaska, westwards across Arctic Russia to Iceland, Britain and Scandinavia. The species has a low Arctic breeding range, being found between about 60°–70°N. There are a few localised and isolated breeding areas in Arctic Canada in the regions of Hudson Bay, Labrador and Newfoundland (Snow & Perrins 1998).

Two sub-species are recognised. The nominate race (*M. n. nigra*) occurs throughout northern Europe eastwards to the Olenek River (*c.* 120°E), whilst *M. n. americana* occurs in northern Russia east of the Yana River (*c.* 134°E) and in North America (Cramp & Simmons 1977). The nominate sub-species comprises a single biogeographic population which migrates westwards to winter mainly in the Baltic (where about 75% of the population occurs), as well as along the Atlantic and North Sea coasts of Europe, where smaller numbers occur (Cramp & Simmons 1977; Scott & Rose 1996).

The UK breeding distribution is concentrated in western Northern Ireland, western Scotland and the extreme north of Scotland (Gibbons *et al*. 1993; Underhill *et al.* 1998). The preferred breeding habitats range from remote lochans in the Scottish Flow Country (Stroud *et al.* 1987; Fox *et al.* 1989) to (formerly) limestone lakes in Northern Ireland. The habitat in the Flow Country resembles the tundra that characterises most of the world breeding range, whilst the former habitat in Northern Ireland is atypical (Gibbons *et al.* 1993). Studies in Caithness and Sutherland in late summer have shown a strong preference for waterbodies with high pH and conductivity within these oligotrophic peatland ecosystems (Fox *et al.* 1989).

4. Population structure and trends

The UK breeding population is a component of the western Siberia/western and northern Europe/north-west Africa population, which comprises 1,600,000 individuals (equating to 530,000 pairs – see Appendix 4) (Rose & Scott 1997; Pihl & Laursen 1996).

Overall breeding distribution within the UK changed little between the periods of the two Breeding Bird Atlases (1968–72 and 1988–91) but there were significant changes in local populations (Gibbons *et al.* 1993). The population on Lower Lough Erne in Northern Ireland was once the UK stronghold but has suffered a severe decline due to deterioration of water quality reducing invertebrate food availability (Partridge 1989). The most recent surveys have shown that the species no longer occurs at this site (Gittings & Delany 1996; Underhill *et al.* 1998). Predation by Mink and competition for food with coarse fish have also been highlighted as reasons for local declines in numbers (Underhill *et al.* 1998).

In Scotland, the Flow Country population is now the most important in the UK with approximately 55 pairs. In the absence of monitoring, are poorly known, although Underhill *et al.* (1998) have suggested that there have been declines here in recent decades.

Another important area in Scotland includes the foothills and glens north of Fort William (35 pairs), where the population is thought to have increased slightly since 1968–72 (Gibbons *et al.* 1993). The most recent estimate suggests a UK breeding population of 76–89 pairs in 1995 (Underhill *et al*. 1998). The European breeding population has been stable at 100,000–120,000 pairs since the mid 1960s (Hagemeijer & Blair 1997).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for breeding Common Scoter supports an average of about 37 pairs. This amounts to about 49% of the British breeding population. Common Scoters no longer breed in Northern Ireland (Gittings & Delany 1996). The UK suite of two sites (Table 6.39a.1) contains less than 0.1% of the international population (numbers breeding in the UK are very small in comparison to those in Scandinavia and Russia).

Other measures

A Biodiversity Action Plan has been drafted for this species (Biodiversity Steering Group 1998) and is being implemented as part of the UK's national response to the Biodiversity Convention. Additionally, birds breeding within the Flow Country will benefit from an EU LIFE-Nature project and SNH's Peatland Management Scheme.

6. Classification criteria

No site in the UK supports more than 1% of the international population of Common Scoters. The UK Biodiversity Action Plan for this species plan highlights the need (action 5.2.2) to designate breeding, moulting and wintering sites as SSSI/ASSIs and SPAs. Accordingly, sites were considered under Stage 1.4.

Two sites, identified under Stage 1.4 as regularly supporting 1% or more of the Great Britain population, were selected after consideration of Stage 2 judgements. The sites are both in Scotland, one in the extreme north of the Scottish mainland (Caithness and Sutherland peatlands), the other in the Inner Hebrides (Rinns of Islay). The principal habitats within both are blanket bog and small bodies of open water. Most importantly, they are largely free from disturbance. There is a long history of occupancy by Common Scoters at both sites, both of which are multi-species SPAs.

Significant numbers of Common Scoters still occur in Ross-shire north of the Great Glen (Underhill *et al.* 1998), but it was not possible to identify a discrete site for these birds.

Distribution map for breeding Common Scoter SPA suite

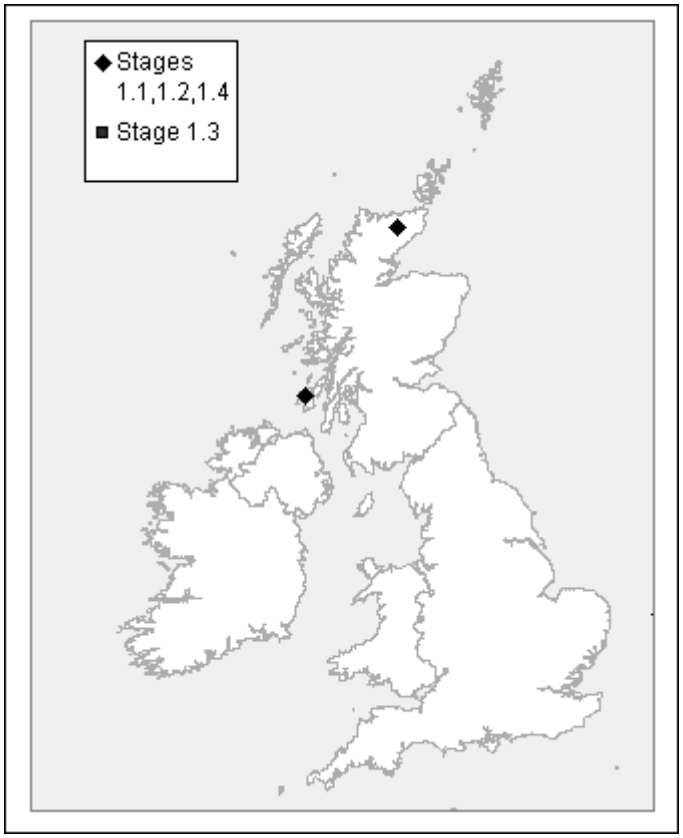


Table 6.39a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	27	<0.1	36	1.4
Rinns of Islay	10	<0.1	13	1.4
TOTALS	37	<0.1%	49%	

A6.39b Common Scoter *Melanitta nigra* (non-breeding)

1. Status in UK

See section A6.39a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	27,350	275	3,422 (12% of GB total)
Ireland	4,000	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	1,600,000	16,000	3,422 (0.2% of biogeographic population)

GB population source: Kirby et al. *1993*
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global non-breeding range of the Common Scoter includes the Atlantic, North Sea and Baltic coasts of north-west Europe and north Africa, with very limited areas in the Adriatic and northern Mediterranean (Snow & Perrins 1998). It additionally occurs in eastern Asia and North America (Rose & Scott 1997). Common Scoters wintering in UK waters are from the single biogeographic population (western Siberia/ western and northern Europe/north-west Africa) of the nominate sub-species.

Non-breeding Common Scoters can be found around most of the UK shoreline, with concentrations around the Moray Firth, Firth of Forth, north-east England, East Anglia, Carmarthen Bay, Cardigan Bay, north Wales, and north-west England (Lack 1986; Kirby *et al.* 1993).

The preferred non-breeding habitat comprises shallow offshore areas with sandy seabeds (Lack 1986).

4. Population structure and trends

There is generally poor monitoring at international level. Extensive surveys within the Baltic in 1993 led to a re-estimation of the size of the population of the nominate sub-species (1,600,000 individuals: Pihl & Laursen 1996). Lack of annual monitoring of the major centre of wintering Common Scoter in the Baltic (where 75% of the population occur) means that there is no information about annual or long-term trends (Delany *et al.* 1999). The best information available suggests that the biogeographical population is probably stable (Rose & Scott 1997).

Estimates of the UK non-breeding numbers have varied but the population appears to be stable, with 25,000–30,000 in the early 1980s (Lack 1986) and 27,350[14] from 1986–1991 (Kirby *et al.* 1993). The generally offshore occurrence of Common Scoters in British and Irish waters means that, as elsewhere, monitoring of this seaduck is poorer than for other non-breeding waterbirds.

Individual areas have suffered declines, notably Carmarthen Bay following the major *Sea Empress* oil spill in 1996 (Cranswick *et al.* 1999), although numbers here have since recovered following the initial significant mortality (Pollitt *et al.* 2000). The number of birds using the Moray Firth has also declined from around 10,000 individuals in the early 1970s to less than 3,000 by the mid 1990s (Owen *et al.* 1986; Kirby *et al.* 1993).

14 Note that the British total of 34,500 published by Kirby *et al.* (1993) erroneously includes birds wintering at Irish sites. These have been excluded to give a revised total of 27,350.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Common Scoter supports, on average, 3,422 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 12% of the British population and about 0.2% of the international flyway population. In an all-Ireland context, no sites have been selected in Northern Ireland. The suite comprises six sites at which Common Scoter has been listed as a qualifying species (Table 6.39b.1).

6. Classification criteria

No terrestrial site in the UK supports more than 1% of the international population of non-breeding Common Scoters as most of this large population spends the non-breeding season in the Baltic and off Denmark. Thus, no sites could be selected using Stage 1.2. Six terrestrial SPAs for Common Scoters were identified under Stage 1.3, given that the species is an important component of the non-breeding waterbird assemblages at these localities. All these sites (Lindisfarne; North Norfolk Coast; Firth of Forth; Firth of Tay and Eden Estuary; Ribble and Alt Estuaries; and Moray and Nairn Coast) were selected after consideration of Stage 2 judgements.

The sites within the suite include some of the main non-breeding areas for Common Scoters in the UK (Kirby *et al*. 1993), from the Moray and Nairn Coast in the north, to sites on the west and east coasts of England. Further important areas lie offshore and have not been considered by this review of terrestrial SPAs (section 2.3). All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at all of these sites (Boyd in Atkinson-Willes 1963; Kirby *et al.* 1993).

Distribution map for non-breeding Common Scoter SPA suite

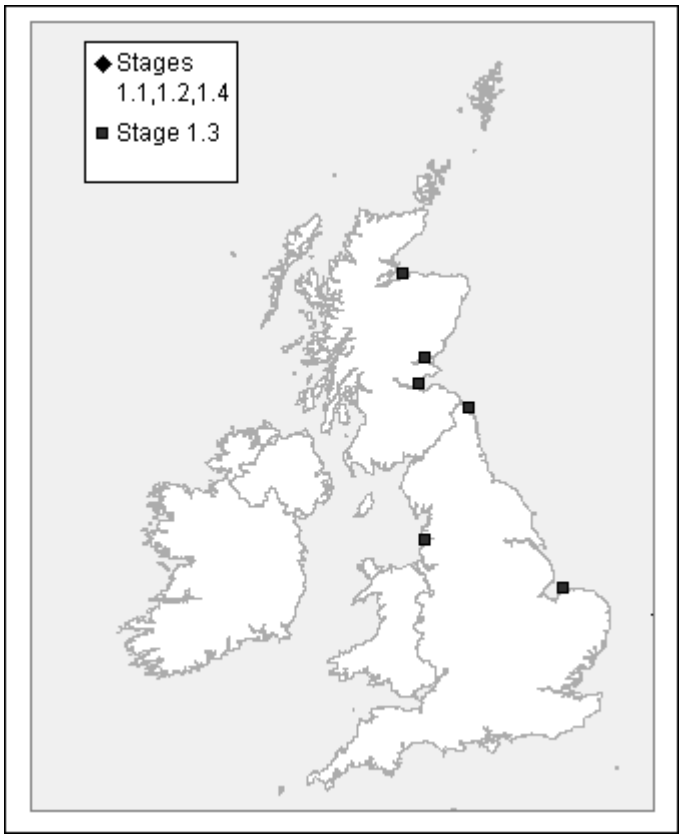


Table 6.39b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Firth of Forth	2,653	0.2	9.6	1.3
Firth of Tay and Eden Estuary	1,444	0.1	5.3	1.3
Lindisfarne	654	<0.1	2.4	1.3
Moray and Nairn Coast	531	<0.1	1.9	1.3
North Norfolk Coast	2,909	0.2	10.6	1.3
Ribble and Alt Estuaries	582	<0.1	2.1	1.3
TOTALS	3,422 (in January)	0.2%	12.4%	

A6.40 Velvet Scoter *Melanitta fusca*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3 (winter)** Unfavourable conservation status (**localised in winter**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	3,000	50 (see section 5.1.2 for rationale)	639 (21% of GB population)
Ireland			
Biogeographic population	1,000,000	10,000	639 (<0.1% of biogeographic population)

GB population source: Kirby et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global breeding distribution of the Velvet Scoter extends, at northern latitudes (50°–68°N), across most of northern Eurasia, as well as western and central North America. There is a very isolated population in the Caucasus (Scott & Rose 1996; Berndt & Hario 1997). There are three sub-species, two of which occur in Europe: the nominate (*M. f. fusca*) occurs eastwards from Scandinavia to the Yenisey River, whereas *M. f. stejnegeri* replaces it further east in northern Russia (Scott & Rose 1996).

In Europe, Velvet Scoters breed in montane and northern areas of Norway, Sweden and Finland, as well as in coastal zones around the Baltic (Berndt & Hario 1997). They migrate south and west from these areas to winter mainly in the Baltic and along the coast of Norway, as well as more locally along other Atlantic and North Sea coasts. Most overwinter in Danish waters, but other important wintering sites have recently been located in the Gulf of Pommern (approximately 285,000) and in the Gulf of Riga (*c.* 137,000). Danish waters also hold a significant number of the north-west European moulting flock during the autumn (Joensen 1976).

In Britain and Northern Ireland, this is the least abundant non-breeding seaduck, with peak annual totals largely dependent on the numbers wintering in the Moray Firth and St. Andrews Bay (Kirby *et al.* 1993). Birds wintering in Britain and Northern Ireland are thought to originate from Scandinavian and Siberian breeding grounds although precise locations remain to be identified (Campbell 1986). Only

0.3% of the biogeographic population overwinter in Britain. The species frequently mixes with flocks of Common Scoter *M. nigra*.

In Britain, Velvet Scoter is most numerous along North Sea coasts and generally has a more northerly distribution than Common Scoter (Campbell 1986). Flocks of more than 50 birds are unusual away from the large non-breeding concentrations in the eastern Scottish firths and coastal bays. Only small numbers occur in Ireland (Colhoun 2000). Movements between sites within winters are unknown because of the paucity of ringing recovery data and the lack of detailed co-ordinated counts in many areas.

The species favours shallow sandy coastal waters in which to feed on sandeels *Ammodytes* sp. and small invertebrates (predominantly molluscs; Durinck *et al.* 1993). Although normally coastal, many hundreds of birds occasionally reach the interior of central Europe during cold winters (Aubrecht *et al.* 1990).

4. Population structure and trends

A single population has been identified in western Siberia and north-west Europe which comprises of some 1,000,000 birds (Rose & Scott 1997; Pihl & Laursen 1996). Elsewhere, in southern Europe, a small (*c.* 1,500), discrete population has been identified, breeding in the Caucasus and wintering in the Black Sea (Rose & Scott 1997). Lack of annual monitoring in the Baltic (where most of the population occurs in winter) means that there is no information about annual or long-term trends at an international scale (Delany *et al.* 1999). The best available information suggests that the biogeographical population is probably stable (Rose & Scott 1997).

The northern Scandinavian breeding population has declined since the early 1900s, largely due to spring hunting in the Finnish Åland Islands, the annual bag averaging 25,000 (Berndt & Hario 1997). In other parts of the Baltic, numbers are declining locally as a consequence of poor breeding success (Berndt & Hario 1997). This reduced breeding success may be due, in part, to inclement weather conditions or recreational disturbance on the brood-rearing areas (Mikola *et al.* 1994; Berndt & Hario 1997).

In Britain, non-breeding numbers fluctuate markedly between years at the most important sites with numbers relatively stable overall (Kirby *et al.* 1993; Cranswick *et al.* 1999). Numbers in the Moray Firth increased during the early 1970s and were regularly between 2,500 and 5,000 during the period 1973/74 to 1983/84, with a peak of 8,000 in April 1983, before declining in recent years (Kirby *et al.* 1993). Numbers in the Tay/St. Andrews Bay area have increased since the early 1970s (Kirby *et al.* 1993). High counts in this area have coincided with low numbers in the Moray Firth suggesting interchange between these two important sites between years. Reasons for this possible interchange remain unclear but may be linked to changes in food supply. Numbers of birds on the Firth of Forth, the other key site in Scotland, have fluctuated greatly in recent decades with no obvious trend.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Velvet Scoter supports, on average, 639 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 21% of the British wintering population. The species does not regularly occur in winter in Northern Ireland. The suite holds less than 0.1% of the international flyway population at four sites where Velvet Scoter has been listed as a qualifying species (Table 6.40.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Velvet Scoter population in winter (Stage 1.2). However, four sites in the suite were identified under Stage 1.3 (see section 5.3) where Velvet Scoter is an important component of non-breeding waterbird assemblages. The sites thus identified (Firth of Forth; Firth of Tay and Eden Estuary; the Moray and Nairn Coast; and the North Norfolk Coast) were included within the suite. By definition, these sites are multi-species SPAs, of importance also for other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a terrestrial suite that includes the main population centres of non-breeding Velvet Scoter in the UK, it was not considered necessary to select additional terrestrial sites using Stage 1.4.

Distribution map for Velvet Scoter SPA suite

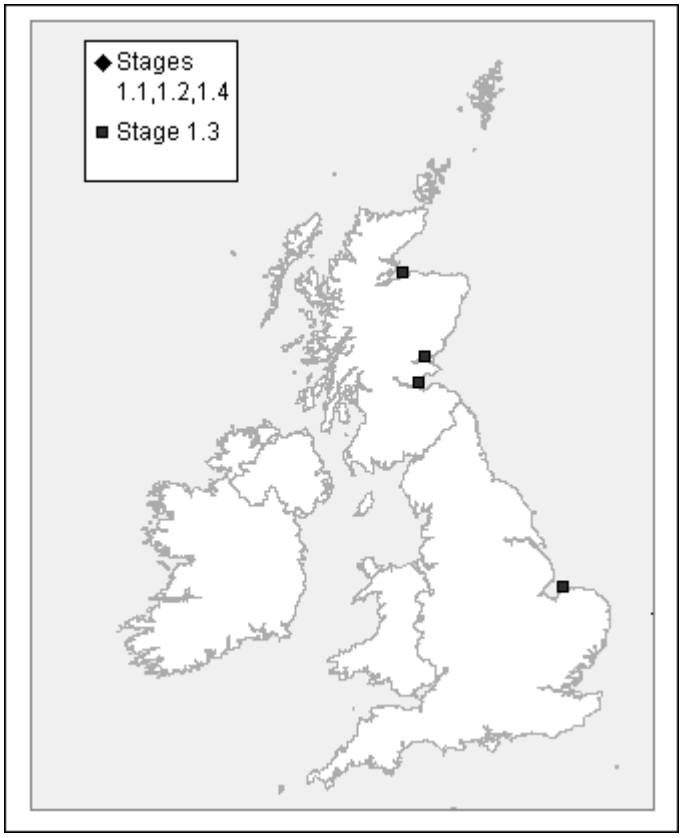


Table 6.40.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Firth of Forth	356	<0.1	11.9	1.3
Firth of Tay and Eden Estuary	256	<0.1	8.5	1.3
Moray and Nairn Coast	133	<0.1	4.4	1.3
North Norfolk Coast	78	<0.1	2.6	1.3
TOTALS	639 (in January)	<0.1%	21.3%	

A6.41 Goldeneye *Bucephala clangula* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(2) Schedule 2(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	17,000	170	4,352 (26% of GB population)
Ireland	11,000	110	8,436 (77% of all-Ireland population)
Biogeographic population	300,000	3,000	12,788 (4% of biogeographic population)

GB population source: Kirby et al. *1993*
Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Goldeneye has a wide breeding distribution across northern Eurasia and North America, mainly within the taiga zone (Scott & Rose 1996). The non-breeding range extends south to the Mediterranean, Black and Caspian Seas, China, Japan and the southern USA. Two subspecies have been identified: the nominate form occurs in Eurasia, whilst the form *B. c. americana* occurs in North America.

During the winter, this species favours coastal areas in the northern part of its range and large rivers, lakes, reservoirs and coastal lagoons further south (Scott & Rose 1996). In Europe, Goldeneyes migrate south and west from their northern breeding areas in continental Eurasia to winter on the southern coasts of Norway, the western Baltic, and the southern North Sea. They occur inland in central Europe as well as on many of the major European river systems.

Non-breeding Goldeneyes are widespread through Britain and Northern Ireland (Campbell 1986; Pollitt *et al.* 2000). At some coastal locations and along many rivers in the north of Britain, distribution is more local and wintering flocks are far smaller. Patterns of movements between sites during the winter are unclear although there is some indication that during periods of harsh weather birds move from frozen inland waters to the coast (Campbell 1986).

In Britain and Northern Ireland, Goldeneyes winter in both freshwater and coastal habitats where the species feeds predominantly on small invertebrates (including crabs and bivalves), small fish and some plant material (Campbell 1986; Owen *et al.* 1986). Limited ringing information suggests that the majority of non-breeding birds in Britain and Northern Ireland originate from breeding grounds in Scandinavia and western Russia (Campbell 1986). A small population also breeds in Scotland and may

winter on nearby lochs and rivers (Campbell 1986), although movements of ringed birds to Northern Ireland have been shown (Buxton unpublished).

4. Population structure and trends

Five biogeographic populations of the nominate sub-species are recognised, of which four occur in Europe. Non-breeding Goldeneyes in Britain and Northern Ireland form part of the north-west and central European biogeographic population, the majority of which winter in the Baltic (Owen *et al.* 1986).

The number of Goldeneyes wintering in north-west Europe has increased by approximately 50% since the mid-1980s (Rose 1995; Delany *et al.* 1999). This is largely due to an increase in the breeding populations in Finland, Sweden, Denmark, Estonia and Poland (Dennis & Pöysä 1997). In contrast to the situation in north-west Europe, numbers wintering in central Europe have remained stable over the last 20 years (Delany *et al.* 1999).

The Goldeneye is a hole-nesting duck and many of the increases in north-west Europe have, in part, been attained through programmes of nest-box erection (del Hoyo *et al.* 1992), even in areas rich in natural breeding habitat (Dennis & Pöysä 1997).

Non-breeding numbers in Britain have remained relatively stable since the 1950s (Owen *et al.* 1986; Pollitt *et al.* 2000). Numbers have declined markedly in Northern Ireland however, at least since the 1980s, when co-ordinated monitoring began (Cranswick *et al.* 1999). In contrast, numbers wintering in the Republic of Ireland have remained relatively stable, during the 1990s at least (Colhoun 2000). The number of Goldeneyes crossing the North Sea to Britain and Northern Ireland each winter is dependent on weather conditions in north-west Europe; the majority of birds arriving in late winter (Owen *et al.* 1986). As Northern Ireland is at the western limit of their wintering range (Scott & Rose 1996), it is possible that the lower numbers of recent years reflect a series of mild winters. Alternatively, it is possible that birds have moved from key sites, *e.g.* Loughs Neagh and Beg, to other habitats such as rivers, which are poorly monitored at present (Cranswick *et al.* 1999). Reduced food availability at these important sites may have precipitated this switch in habitats or even countries.

The Goldeneye has been shown to be strongly attracted to sewage outfalls and discharges of waste from breweries and food processing plants, especially in Scotland (Pounder 1976). Birds appear to be attracted to grain and vegetable waste in particular (Campbell 1978). During the 1960s and 1970s it was not unusual for peak numbers in excess of 3,000 individuals to occur at outfalls on the south side of the Forth in Edinburgh (Owen *et al.* 1986). Improved sewage treatment procedures have led to major reductions in numbers of Goldeneye using these areas in recent decades (Campbell 1986). However, these localised reductions appear to have had little effect on the total number of Goldeneye in Britain.

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Goldeneye supports, on average, 12,788 individuals (calculated using WeBS February site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 26% of the British wintering population, and about 77% of the all-Ireland population. The suite holds about 4% of the international flyway population on 15 sites where Goldeneye has been listed as a qualifying species (Table 6.41.1).

6. Classification criteria

The single site (Lough Neagh and Lough Beg) in the UK supporting more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. A further 14 sites were considered and selected under Stage 1.3 (see section 5.3), given that Goldeneye was identified as an important component of wider non-breeding waterbird assemblages at these localities.

The sites include the main terrestrial centres of the population in the UK, spread throughout Northern Ireland, Scotland and England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a terrestrial SPA suite which includes the main population centres of non-breeding Goldeneye in the UK, it was not considered necessary to select additional terrestrial sites using Stage 1.4.

Distribution map for non-breeding Goldeneye SPA suite

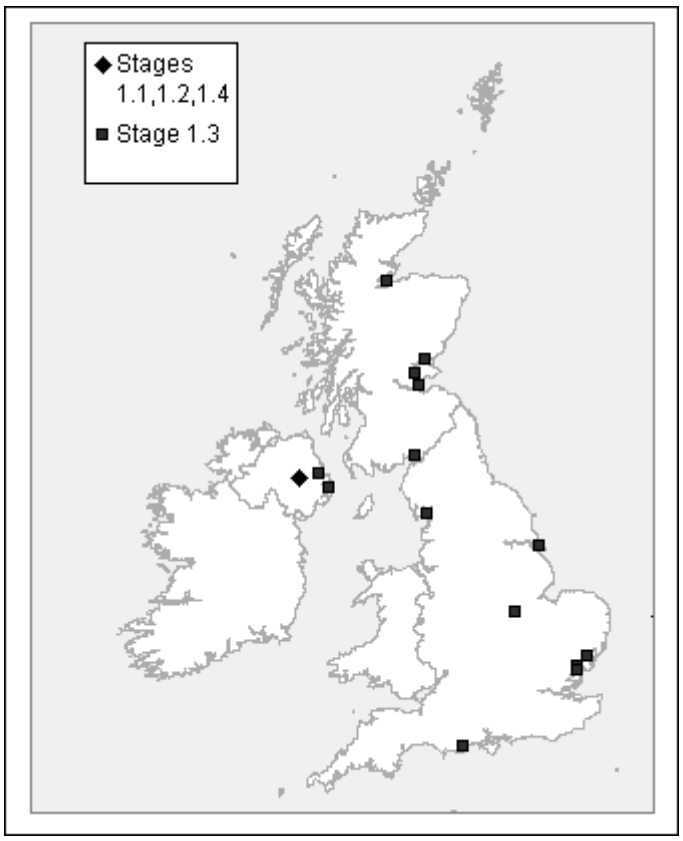


Table 6.41.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	463	0.2	2.7	1.3
Belfast Lough	540	0.2	4.9 (Ire)	1.3
Blackwater Estuary	391	0.1	2.3	1.3
Firth of Forth	2,267	0.8	13.3	1.3
Firth of Tay and Eden Estuary	255	<0.1	1.5	1.3
Humber Flats, Marshes and Coast (Phase 1)	272	<0.1	1.6	1.3
Inner Moray Firth	199	<0.1	1.2	1.3
Loch Leven	338	0.1	2.0	1.3
Lough Neagh and Lough Beg	10,776	3.6	98.0 (Ire)	1.2
Morecambe Bay	445	0.1	2.6	1.3
Poole Harbour	195	<0.1	1.2	1.3
Rutland Water	399	0.1	2.3	1.3
Stour and Orwell Estuaries	215	<0.1	1.3	1.3
Strangford Lough	335	0.1	3.1 (Ire)	1.3
Upper Solway Flats and Marshes	190	<0.1	1.1	1.3
TOTALS	12,788 (in February)	4.3%	25.6% 76.7% (Ire)	

A6.42 Red-breasted Merganser *Mergus serrator* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	10,000	100	1,936 (19% of GB population)
Ireland	2,000	50 (see section 5.1.2 for rationale)	243 (12% of all-Ireland population)
Biogeographic population	125,000	1,250	2,177 (2% of biogeographic population)

GB population source: Kirby 1995a
Ireland population source: Pollitt et al. *2000*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Red-breasted Mergansers are globally distributed at northern latitudes (mainly between 50°–70°N) across northern Eurasia, Greenland and North America. In winter, birds migrate to coastal waters in the North and Baltic Seas, along Atlantic coasts, as well as further south to the Mediterranean, Black and Caspian Seas. In the Pacific, Red-breasted Mergansers winter off the coasts of China, Japan and Russia, as well as off the southern USA and Mexico (Scott & Rose 1996). Two sub-species have been identified. In western Europe, the nominate sub-species (*M. s. serrator*) occurs from east Greenland, Iceland, the Faeroes, Britain and Ireland, and from Denmark and northern Germany eastwards (as well as in North America). The sub-species *M. s. schioleri* breeds in the west of Greenland and overwinters on the south-west coast.

The species occurs widely but discontinuously around the coasts of the Atlantic, North Sea, Mediterranean and Black Seas. Large numbers also occur in the Baltic (Pihl & Laursen 1996).

In Britain and Northern Ireland, winter flocks are usually small (Chandler 1986). Large concentrations occur around the low-lying coasts of Scotland (especially along the east coast), north-west England and Wales, close to breeding areas (Gregory *et al.* 1997). Birds also concentrate along the coast of south-east England, from The Wash southwards, and may originate from mainland Europe (Chandler 1986; Robinson 1999). The results of a wing-tagging study in north-east England indicated that Red-breasted Mergansers tend to be faithful to wintering sites both within and between winters (Wernham *et al.* 1999).

During the winter, this species favours brackish or saline waters, preferring shallow, protected coasts, estuaries, bays and lagoons with an abundance of small fish and aquatic invertebrates (Berry 1936; Chandler 1986; Aspinall & Dennis 1988). Red-breasted Mergansers occasionally use inland sites in Britain and Northern Ireland, but usually only during periods of harsh weather conditions (Chandler 1981).

4. Population structure and trends

Scott & Rose (1996) described five populations of the nominate Red-breasted Merganser breeding in northern Eurasia. They recommended that the north-west and central European population should be considered separate from that in east Greenland, Iceland, Britain and Ireland. This was accordingly reflected by Rose & Scott (1997) with a recommended 1% threshold of 200. A recent examination of the distribution and movements of this species suggests that the majority of the individuals in the latter group are dispersive within their natal countries during the non-breeding season or move south to coastal regions in Britain, Ireland and Iceland (Robinson 1999). However, ringing recoveries also indicate that there may be some interchange between the north-west European and the Greenland, Iceland, Britain and Ireland groups. Therefore, population delimitation remains unclear and Robinson (1999) highlighted the lack of sound data and information to support this proposal. In the light also of a similar conclusion reached by the first Meeting of Parties of the African-Eurasian Waterbird Agreement in November 1999, we have followed the earlier treatment of Rose & Scott (1994) which groups British Red-breasted Mergansers with others from north-west and central Europe giving a 1% threshold of 1,250.

The breeding range of this species has remained largely unchanged in Europe since the nineteenth century (Lammi 1997). There have been slight increases in the number of breeding pairs in Denmark and south-west Netherlands in recent decades (SOVON 1987; Meininger & de Kraker 1992). In the Baltic, there has been a slight decline recently, but in the main breeding areas of Russia and Fennoscandia, numbers have remained stable (Lammi 1997). The underlying reasons behind breeding population trends in Europe remain unclear but may be linked to the increase in reservoir construction and changes in the intensity of hunting (Lammi 1997).

Delany *et al.* (1999) reported a marked increasing trend of winter numbers of Red-breasted Mergansers in north-west and central Europe since 1974 (although in other European areas numbers have declined recently).

In Britain and Northern Ireland, there was a marked southward movement in the breeding distribution and an increase in numbers of breeding pairs between the 1950s and early 1980s, despite the impacts of killing under derogation and illegal persecution (Russell *et al.* 1996; Wernham *et al.* 1999). Non-breeding numbers also increased by around 5% per year during this period, probably reflecting the spread of the species as a breeding bird (Kirby *et al.* 1993; Kershaw & Hughes 1997). Numbers have remained relatively stable in the UK since 1979–1980 (Pollitt *et al.* 2000; Wernham *et al.* 1999).

Numbers fluctuate markedly between years in the Republic of Ireland resulting in no clear trend being identified over the past decade (Colhoun 2000). In Scotland, non-breeding numbers in the Moray Firth, the key resort for this species during the winter, increased dramatically during the early 1980s when large shoals of Sprat *Sprattus sprattus* and Herring *Clupea harrengus* were present after the introduction of a fisheries ban in 1979 (Thom 1986; Aspinall & Dennis 1988). In the 1990s, however, numbers in the Moray Firth have declined (Cranswick *et al.* 1999), with the exception of extremely large numbers in winter 1993–1994 (3,500 individuals) which were thought to be taking advantage of large Sprat shoals in the area (Stenning 1994).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Red-breasted Merganser supports, on average, 2,179 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 19% of the British non-breeding population, and about 12% of the all-Ireland population. Overall, the suite holds about 2% of the international flyway population, and comprises 15 sites where Red-breasted Merganser has been listed as a qualifying species (Table 6.42.1).

6. Classification criteria

The single site (Inner Moray Firth) in the UK supporting more than 1% of the international population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. A further 14 sites were considered and selected under Stage 1.3 (see section 5.3) as Red-breasted Merganser was identified as an important component of the non-breeding waterbird assemblages at these localities.

The sites include the main terrestrial centres of the population in the UK, spread through Northern Ireland, Scotland and England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stages 1.2 and 1.3 resulted in a terrestrial suite which includes the main population centres of non-breeding Red-breasted Mergansers in the UK, it was not considered necessary to select additional terrestrial sites using Stage 1.4.

Distribution map for non-breeding Red-breasted Merganser SPA suite

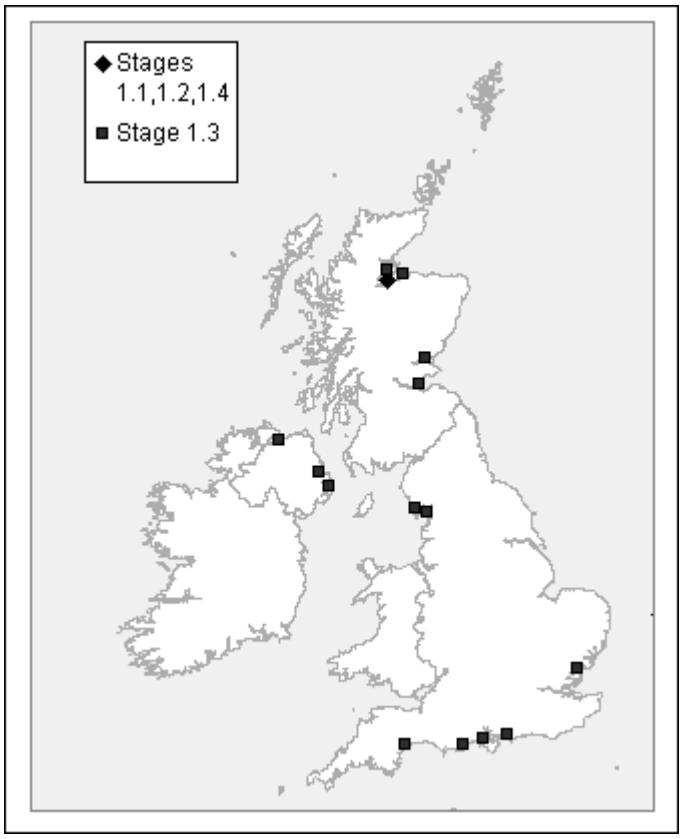


Table 6.42.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	175	0.1	8.8 (Ire)	1.3
Blackwater Estuary	114	0.1	1.1	1.3
Chichester and Langstone Harbours	297	0.2	3.0	1.3
Cromarty Firth	194	0.2	1.9	1.3
Duddon Estuary	342	0.3	3.4	1.3
Exe Estuary	128	0.1	1.3	1.3
Firth of Forth	650	0.5	6.5	1.3
Firth of Tay and Eden Estuary	470	0.4	4.7	1.3
Inner Moray Firth	1,731	1.4	17.3	1.2
Lough Foyle	73	0.1	3.7 (Ire)	1.3
Moray and Nairn Coast	216	0.2	2.2	1.3
Morecambe Bay	292	0.2	2.9	1.3
Poole Harbour	381	0.3	3.8	1.3
Solent and Southampton Water	128	0.1	1.3	1.3
Strangford Lough	328	0.3	16.4 (Ire)	1.3
TOTALS	2,177 (in January)	1.7%	19.3% 12.2% (Ire)	

A6.43 Goosander *Mergus merganser* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	
Wintering	✔	EC Birds Directive 1979	**Annex II/2 (Ireland) Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	8,900	90	75 (1% of GB population)
Ireland	20	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	200,000	2,000	75 (<0.1% of biogeographical population)

GB population source: Kirby 1995
All-Ireland population source: Whilde 1993
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Goosander has a Holarctic breeding distribution, occurring mainly between 40°–75°N and absent only from Greenland and several of the more northerly island groups. Three sub-species have been identified: the nominate sub-species, *M. m. merganser*, which breeds from Western Europe, including Iceland, through to the Pacific coast of Russia; *M. m. orientalis* which breeds in the highlands of central Asia; and, *M. m. americanus* which breeds across North America from coast to coast (Cramp & Simmons 1977; Scott & Rose 1996).

The majority of the *M. m. merganser* population is migratory. Birds originating in eastern and central Russian winter along the eastern Asian seaboard and around the Black and Caspian Seas. Those from northern Europe and western Russia migrate west to winter around the Baltic and across central Europe into Great Britain. However, Goosanders breeding in Iceland are non-migratory and may typically move only short distances to wintering grounds (Cramp & Simmons 1977; Scott & Rose 1996). Those breeding in Britain are partially migratory and generally move only short distances to wintering grounds. However, males from the British population (possibly the majority) migrate to northern Norway in late summer to moult, returning to Britain in October/November (Cramp & Simmons 1977; Little & Furness 1985).

In Britain, wintering Goosanders are widespread forming small aggregations on both inland and coastal waters throughout the country, although they show a preference for freshwater habitats. Most birds wintering in Wales, Northern England and Scotland are likely to have originated from Britain's breeding population as these birds typically move only short distances from breeding to wintering

areas. Whereas, most birds wintering in central and southern England may be of northern European and western Russian origins (Lack 1986; Owen *et al.* 1986; Wernham *et al.* 1999). Very few reach Ireland during the winter (Sheppard 1993; Colhoun 1998).

Goosanders are fish-eating specialists, taking small to medium fish, and only rarely invertebrate prey. A wide range of fish species is taken, with major prey species influenced by availability in different habitats (Cramp & Simmons 1977; Holmes & Clement 1996). There is conflict between fishing interests and the conservation of fish-eating bird species, including Goosander, with a perception that Goosanders seriously affect fish stocks in rivers, especially salmonids. However, there is no conclusive evidence and further research is required (Holmes & Clement 1996).

4. Population structure and trends

Within a European context, four discrete populations of the nominate subspecies are recognised by Scott & Rose (1996): Icelandic, Balkans, Black Sea, and Northwest and Central European. It is the Northwest and Central European population that includes British birds, and this is estimated at 200,000 individuals (Rose & Scott 1997). The majority of birds within this population winter around the Baltic (170,000 individuals), with the Low Countries, Germany and France supporting another 15,000 individuals. Three thousand birds winter along the Norwegian coast, and 10,000 elsewhere in central Europe. The British wintering population is estimated at 8,900 individuals (Kirby 1995).

The Northwest and Central European wintering population is currently considered to be stable or increasing slightly (Scott & Rose 1996; Delany *et al.* 1999). Since the 1850s the species has extended its breeding range south into central Europe, with the first breeding record for Britain in 1871. More recent trends vary across the region. The Fennoscandian population is increasing as a result of eutrophication of freshwaters and the resultant improvement in food stocks, and an increase in nest site availability. The British population has expanded since the first breeding records, but the recent trend has been of range contraction possibly as a result of persecution. Numbers breeding in northern Germany and the Baltic States are also declining, while those in central Europe are increasing, probably as a result of protection, water eutrophication and nestbox schemes (Hagemeijer & Blair 1997). Numbers of wintering birds have recently increased in Germany and the Baltic States, while those in The Netherlands have decreased and the wintering population of central Europe has remained stable (Scott & Rose 1996). Overall, the wintering population is currently considered to be stable or increasing slightly (Scott & Rose 1996; Delany *et al.* 1999).

The WeBS annual index for Goosander numbers wintering in Britain showed a steady increase between the mid-1960s and mid-1980s. In the latter part of the 1980s, the population declined and has remained stable since then. The long-term trend is heavily influenced by numbers in the Inner Moray Firth, where the population has shown a considerable decline since the mid-1980s, possibly due to declining fish stocks, and from which some redistribution has taken place (Waters *et al.* 1998; Cranswick *et al.* 1999; Wernham *et al.* 1999). The number of Goosanders wintering in Britain each year is influenced by weather conditions, with fewer migrants arriving from continental Europe in mild winters (Cranswick *et al.* 1999; Wernham *et al.* 1999).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Goosander supports, on average, 75 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 1% of the British wintering population, and <0.1% of the international flyway population on two sites where Goosander has been listed as a qualifying species (Table 6.43.1).

In Northern Ireland, no sites have been selected in an all-Ireland context.

6. Classification criteria

The British breeding population of Goosander is non-migratory, although these birds are joined in winter by others regularly migrating from Scandinavia (Boyd 1959; Owen *et al.* 1986). Accordingly, SPAs have been selected to cover aggregations in the non-breeding season, but not the breeding period.

No sites in the UK regularly support more than 1% of the international Goosander population in winter (Stage 1.2). However, two sites were identified under Stage 1.3 (see section 5.3), with Goosander an important component of a non-breeding waterbird assemblage. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

Distribution map for Goosander SPA suite

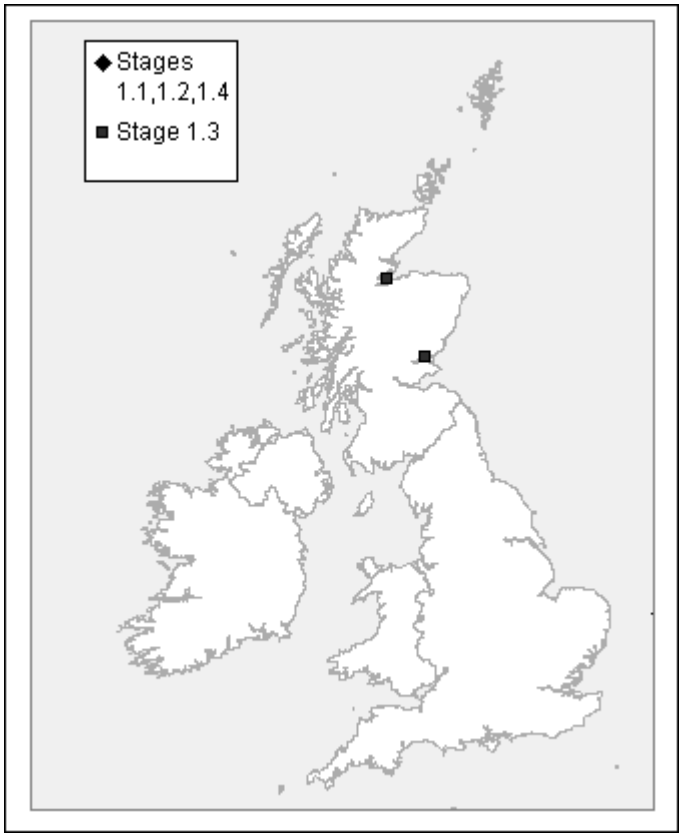


Table 6.43.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Inner Moray Firth	397	0.2	4.4	1.3
Firth of Tay and Eden Estuary	195	0.1	2.1	1.3
TOTALS	75 (in January)	<0.1%	0.8%	

A6.44 Honey Buzzard *Pernis apivorus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	16	1	2 (c. 13% of GB population)
Ireland			
Biogeographic population	41,200	412	2 (<0.1% of biogeographic population)

GB population source: DETR/JNCC Raptor Working Group 2000
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global breeding distribution of the monotypic Honey Buzzard is largely restricted to the Western Palearctic. The species breeds from Iberia in the west, discontinuously across boreal and temperate Europe into central Asia. It is a long-distance migrant and birds move south and east from the breeding areas to overwinter in west, central and southern Africa (Cramp & Simmons 1980; Hagemeijer & Blair 1997).

The Honey Buzzard breeds in most European countries, although it generally has a southerly distribution, being absent from northern Fennoscandia. Across much of its range, its distribution is rather patchy.

In the UK, the Honey Buzzard is one of the most poorly known of raptors (DETR/JNCC Raptor Working Group 2000; Roberts *et al*. 1999). Fear of illegal persecution and egg collecting leads many birdwatchers to withhold the provision of information on breeding Honey Buzzards, and accordingly population estimates are based on informed guesses. It is nowhere abundant, but thought to be most common in southern counties of England. There are, nonetheless, frequent records from Scotland.

In the UK, Honey Buzzards occur in three broad habitat types: high-quality mixed deciduous forests in the lowlands of southern England, central hill country with mixed farmland/woodland, and upland, even-aged coniferous plantations (Roberts *et al*. 1999). These habitats are also preferred elsewhere in Europe. Beech *Fagus* sp. forests with sandy, light soils have been favoured in the New Forest, traditionally regarded as the species stronghold, largely thought to be due to the association of this habitat with an abundance of social wasps on which the species selectively feeds its young (Roberts *et al*.

1999). However, breeding performance is not adversely affected by the temporary unavailability of wasps, as amphibians, and pigeon and passerine nestlings are taken in inclement weather (Hagemeijer & Blair 1997).

4. Population structure and trends

The European population is estimated at 41,200–48,677 breeding pairs with a further 70,000–100,000 breeding in Russia east to the Urals (Hagemeijer & Blair 1997).

In Europe, the species is stable, widespread and relatively abundant, although few long-term studies are available (Hagemeijer & Blair 1997). Finland and Germany hold significant populations which have experienced decline (Tucker & Heath 1994).

Historic information on Honey Buzzard breeding numbers in the UK is incomplete. The UK is at the edge of the European breeding range and the species has probably always been a rare, but scattered breeder. Honey Buzzard may have been extinct between 1900 and 1910 due to illegal killing, but has recovered to a population of about 10–30 pairs due to increased protection (DETR/JNCC Raptor Working Group 2000). Its exact population size and distribution in the UK is unknown, not only because of the inconspicuous nature of the species' behaviour, but also because of a reluctance to publicise details of nest sites, given the threat from egg collectors. There has also been a previous belief that the species was highly sensitive to human disturbance (Roberts *et al.* 1999; Gibbons *et al.* 1993). Recent information (Roberts *et al.* 1999) shows that the Honey Buzzard is not unusually sensitive to disturbance at the nest. Accordingly, the Rare Breeding Birds Panel and supporting organisations co-ordinated an UK census in 2000 (RBBP 1999). It is thought that the population may be as large as 50–60 pairs (Roberts *et al.* 1999).

5. Protection measures for population in the UK

SPA suite

In the breeding season, the UK's SPA suite for Honey Buzzard supports, on average, two pairs. This amounts to about 13% of the British breeding population and less than 0.1% of the international population (the UK lies at the very edge of the range of the species in Europe). The species does not regularly occur in Northern Ireland. The SPA suite total is contained within a single site (Table 6.44.1) where Honey Buzzard has been listed as a qualifying species.

6. Classification criteria

The single site in the UK (New Forest), known to support more than 1% of the national breeding population of Honey Buzzard on a regular basis, was considered under Stage 1.1, and was selected after consideration of Stage 2 judgements. It is a multi-species SPA of European importance for a number of other breeding and non-breeding birds.

Distribution map for Honey Buzzard SPA suite

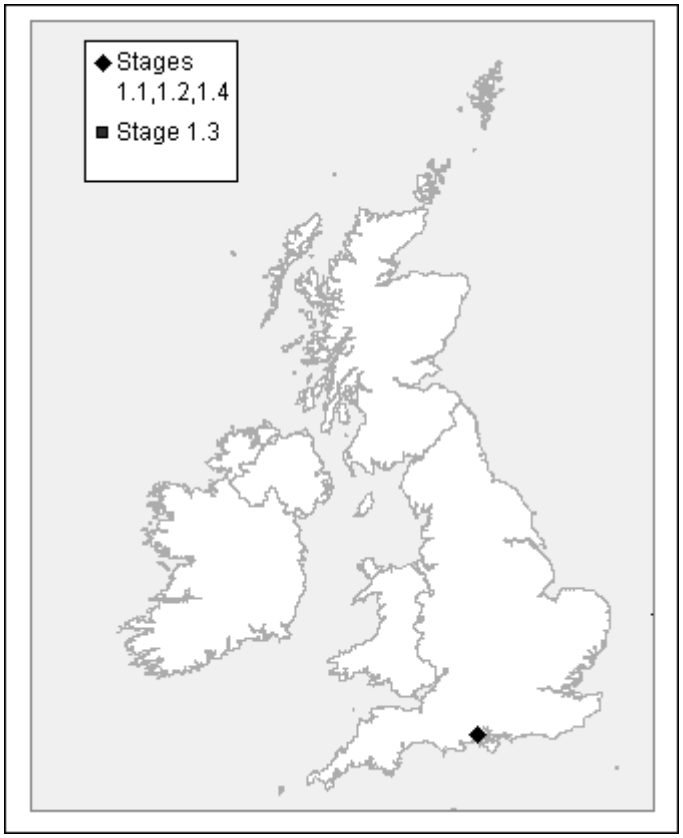


Table 6.44.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
New Forest	2	<0.1	13%	Stage 1.1
TOTALS	2	<0.1%	13%	

A6.45 Red Kite *Milvus milvus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	161	2	15 (9% of GB population)
Ireland			
Biogeographic population	17,400	174	15 (<0.1% of biogeographical population)

GB population source: DETR/JNCC Raptor Working Group 2000
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Red Kite is globally confined almost to Europe. Remnant populations in western Asia and North Africa are virtually extinct, while populations in south and east Europe are also declining and fragmented. It is only in north-west and central Europe that numbers are stable or recovering (Evans & Pienkowski 1991). In the northern and eastern parts of the range (Sweden, Poland, Germany, Belarus and Ukraine) the Red Kite is a migrant, moving south and west to winter in southern Europe – especially around the Mediterranean Basin (Cramp & Simmons 1980).

Within the UK, Red Kites were once widely distributed, but persecution, especially in the 19th century, led to the native breeding population being restricted to central Wales. More recently, because of intensive protection measures in the 20th century, Red Kites are slowly expanding through Wales again. Recent and ongoing re-establishment programmes have resulted in new populations in southern England, and northern Scotland (Evans *et al.* 1997, 1999) and more recently in central and northern England and central Scotland.

4. Population structure and trends

The European population is currently estimated at 17,394–28,185 pairs (Hagemeijer & Blair 1997). Other than a few in the Canary Islands, the Cape Verde Islands, in north-west Africa, and possibly in western Transcaucasia, this amounts to the whole of the world population. Throughout Europe, Red Kite populations showed declines during the 20th century, with a 20% decrease from 1970 to 1990. This decline, resulting from human pressure and changes in land use (Evans & Pienkowski 1991; Evans

et al. 1997) is continuing in south-west and eastern Europe. However, populations in central and north-western Europe have been showing signs of recovery.

The decline in the European population has been reflected within the UK where intense persecution over the past two hundred years led to extinction of the majority of the population. Since the 1960s, when the UK population was restricted to only about 20 pairs in central Wales, the introduction of protective legislation and focused conservation action have led to an increase of 6.9% per annum during the 1980s and 11.0% per annum from 1994–1997, (Welsh Kite Trust/Kite Watchers' Group *in litt*.). This resulted in an estimated Welsh breeding population of 161 pairs by 1998 (Welsh Kite Trust/ Kite Watchers' Group unpublished). The successful implementation of protective legislation and other conservation measures for the Red Kite is very apparent from the dramatic increase observed in the Welsh population over the last thirty years.

Re-establishment programmes in other parts of the UK were initiated in 1989 (Evans *et al*. 1999) and by 1998 the re-established populations in southern England and northern Scotland had reached approximately 100 pairs (DETR/JNCC Raptor Working Group 1998). This re-established population is increasing more rapidly than the Welsh population, and is now being enhanced by additional re-establishments in central and northern England, and central Scotland. The re-establishment programmes have, however, been jeopardised by continued illegal poisoning of Red Kites (DETR/JNCC Raptor Working Group 2000), as well as possible effects of secondary poisoning from second-generation rodenticides (Carter & Burn 2000).

The species' range outside the native Welsh localities is currently determined by the location of release sites rather than by redistribution of released birds and this has consequences for the determination of locations of possible protected areas for Red Kites.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Red Kite supports 15 pairs. This amounts to about 9% of the British breeding population and less than 0.1% of the international population. The species does not currently occur in Northern Ireland. The SPA suite total is contained within a single site (Table 6.45.1) where Red Kite has been listed as a qualifying species.

Other measures

Within Wales, the Red Kite has been the focus of local tourist initiatives. These have led to the establishment of winter feeding stations, and video-camera coverage of nest sites during the breeding season, both of which have contributed to greater public understanding and support for the conservation of this species. This understanding has been further enhanced by the Welsh Kite Trust; a charity set up to ensure continued monitoring of and conservation action for Red Kite in Wales.

6. Classification criteria

The selection of Elenydd – Mallaen represents the core of the distribution of the Welsh breeding population. The site supports more than 1% of the national breeding population of Red Kite on a regular basis, was considered under Stage 1.1, and selected after consideration of Stage 2 judgements. Berwyn also supports more than 1% of the national breeding population of Red Kite on a regular basis. It was considered under Stage 1.1, but not selected after consideration of Stage 2 judgements since, as a site at the periphery of the species' core Welsh range, it is not the best example of a breeding site for Red Kite. The species occurs in greater numbers and at higher densities in more southerly parts of its range (for example on the Elenydd – Mallaen SPA), and in other areas of Wales where wider countryside measures are a more appropriate mechanism for the conservation of the species.

Outside the SPA suite, the Welsh population is now widespread and scattered, with the breeding range slowly increasing to many parts of Wales. The scattered distribution of breeding pairs makes selection of appropriate site boundaries difficult. Elenydd – Mallaen is a site of high naturalness, is a multi-species site, and has a long history of occupancy by breeding Red Kites.

The recently re-established populations in England and Scotland are still expanding, and selection of SPAs for these populations is not appropriate at this stage (section 4.7.2) owing to an active increase in

numbers and range. This means that the identification of "most suitable" territories is currently not possible, although it may be possible at an appropriate future time.

Distribution map for breeding Red Kite SPA suite

Table 6.45.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Elenydd – Mallaen	15	<0.1	9.32	1.1
TOTALS	15	<0.1%	9.3%	

A6.46 Marsh Harrier *Circus aeruginosus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (females)	Selection thresholds	Totals in species' SPA suite
GB	157	2	116 (74% of GB population)
Ireland			
Biogeographic population	25,955	259	116 (0.4% of biogeographic population)

GB population source: Stone et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Marsh Harrier has a wide breeding distribution throughout temperate regions of the Palearctic, from western Europe and the tip of northern Africa throughout Asia to Pacific coasts on Sakhalin and northern Japan. The species is highly migratory, and outside the breeding season, it moves south to winter in Africa, India and south-east Asia. There are sedentary populations in parts of New Guinea, Australia and New Zealand, as well as on Madagascar (Cramp & Simmons 1980). The species is polytypic: the nominate race *C. a. aeruginosus* occurs throughout the western Palearctic east to northern Mongolia, whilst *C. a. harterti* breeds in northern Africa and possibly into the extreme southern part of Spain. A further six races occur in eastern Asia, New Guinea, Australasia and the Pacific region.

Marsh Harriers occur throughout Europe, discontinuously in the west, but with larger numbers and a more continuous distribution in eastern and central Europe. The population and distribution is especially patchy in southern European countries. Birds breeding in eastern and central Europe are migratory, whilst those occurring in the west (France, Spain, Portugal and the Mediterranean tend to be sedentary).

In Britain, most breeding Marsh Harriers occur in England, with the main concentrations in the coastal areas of Norfolk and Suffolk as well as the Broads, and north Kent. Smaller numbers are present in Lincolnshire, Humberside, Lancashire and at several localities in southern and eastern Scotland.

Marsh Harriers require open freshwater wetlands with dense, tall vegetation (particularly reedbeds) for nesting. They favour brackish or freshwater equally and occur on marshes, ponds, lakes, lagoons and riverbanks. In some locations, they have adapted to drier habitats and breed in hedges and fields

(Hagemeijer & Blair 1997). In England and Scotland they breed in reedbeds and – increasingly – in intensive arable farmland, with 21% of the total population nesting in winter cereals in 1995 (Gibbons *et al.* 1993; Underhill-Day 1998).

Marsh Harriers hunt over many types of open areas, including reedbeds, grazing and saltmarshes, heathlands and farmland. They prey on a wide range of small birds and mammals when hunting over farmland (Underhill-Day 1985). Most of the British population is migratory and, apart from small numbers in Broadland, Suffolk and Kent, most birds move to winter in southern Europe and Africa.

4. Population structure and trends

Between 25,955 and 34,675 pairs breed in Europe, with more than 5,000 pairs breeding in each of Ukraine, Poland and Germany (Hagemeijer & Blair 1997).

Historically, Marsh Harriers were much more widespread in Britain, occurring widely throughout Britain and Ireland (Holloway 1996). They were adversely affected by prolonged persecution and wetland destruction during the late eighteenth and nineteenth centuries. However, Marsh Harrier numbers began to increase in the 1970s throughout much of Europe, particularly in the Baltic States, Fennoscandia, Denmark, The Netherlands and Britain. The increase is largely attributed to the banning of pesticides such as DDT that allowed populations in north, east and western Europe to recuperate, as well as a lessening of levels of former persecution (in the UK) and reduced hunting pressure in southern Europe. This increase was further encouraged by the development of huge reedbeds in the polders of The Netherlands. The deliberate flooding of large coastal areas in eastern England for defensive purposes during World War II created extensive areas of reedbed. Along with other species, Marsh Harriers benefited significantly from the creation of this wetland habitat. However, there is still a general decline in the south of the species' European range, including Spain (Hagemeijer & Blair 1997).

In Britain, although once almost certainly a widespread and perhaps even locally numerous breeding bird, the Marsh Harrier has been scarce or absent for much of the last 200 years. It was extinct as a breeding species between 1899 and 1911 when recolonisation occurred (Holloway 1996). The recent population increase elsewhere in Europe, especially in The Netherlands, has almost certainly assisted the current increase in Britain. Following an average annual increase of 19.6% from 1971 (when just one pair bred) to 1991, the British population is currently estimated to be about 157–160 breeding females. However, breeding Marsh Harrier numbers still remain far below historic levels in Britain. They have been extinct in Ireland and Northern Ireland since at least 1917, although were formerly abundant there (Holloway 1996).

Current threats to the European population include the loss of wetland habitats in eastern Europe and the drying out of wetlands generally, as well as lead poisoning in France due to the ingestion of spent lead gunshot (Pain *et al.* 1993).

Marsh Harriers depend on well-managed and scrub-free reedbeds and the species has benefited from reedbed enhancement and creation schemes organised by a partnership of conservation organisations in Norfolk and Suffolk. As an increasing proportion of the population nests on arable farmland outside protected areas, in the future the attitudes of farmers may become a critical factor. Although indications show that Marsh Harriers and modern farming can co-exist, with most young fledging before crops are harvested, more active conservation is required in some years and in certain circumstances. For example, the RSPB and English Nature have employed a warden in one important arable area to locate nests, alert farmers to their presence, deter egg collectors and limit disturbance. Further wardening schemes may be required elsewhere if the species continues its expansion into arable areas. Continuing illegal persecution is also being addressed.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Marsh Harrier supports, on average, 116 females. This amounts to about 74% of the British breeding population. Marsh Harriers do not breed any longer in Northern Ireland. The suite contains about 0.4% of the international population (numbers in the UK are very small in comparison to those elsewhere in Europe). This total is contained within 10 sites (Table 6.46.1) where Marsh Harriers have been listed as a qualifying species.

As males commonly pair with more than one female, the UK SPA population is expressed as number of females.

6. Classification criteria

All sites for breeding Marsh Harriers in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. The sites are concentrated in coastal areas of Norfolk, Suffolk, North Kent and the Norfolk Broads with outlying sites on the Humber Estuary and in Lancashire and eastern Scotland. The distribution of SPAs closely matches the distribution of the main breeding concentrations. There is a very long recorded history of occupancy at many of these sites: breeding was known in the late 18th and early 19th century (Holloway 1996), although by the end of the 19th century intense persecution had resulted in extinction at most locations. Since the 1950s, these sites have been recolonised. Away from the SPA suite, the species' distribution in Britain is mostly scattered and consists of isolated pairs associated with small fragmented reedbeds and intensively managed arable crops.

In recent years, Marsh Harriers have remained in Broadland during the winter, with birds hunting throughout the SPA and roosting in Horsey Mere, as well as at Breydon Marshes in the Thurne Valley. No specific winter suite of SPAs has been identified.

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Indeed, most are in the ownership of nature conservation organisations and are subject to active conservation management.

Distribution map for Marsh Harrier SPA suite

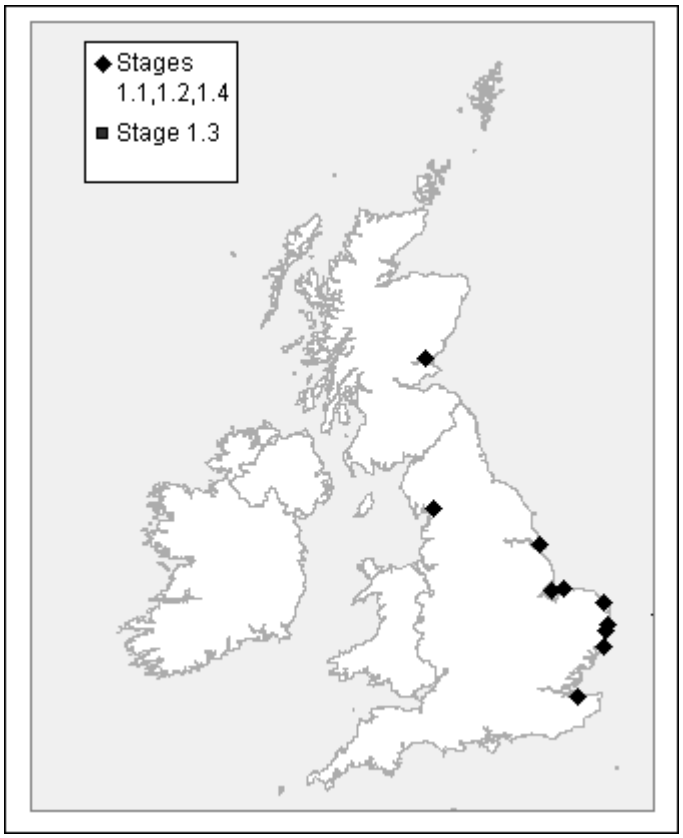


Table 6.46.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	3	<0.1	1.9	1.1
Benacre to Easton Bavents	6	<0.1	3.8	1.1
Broadland	21	<0.1	13.4	1.1
Firth of Tay and Eden Estuary	4	<0.1	2.6	1.1
Humber Flats, Marshes and Coast	11	<0.1	7.0	1.1
Leighton Moss	2	<0.1	1.3	1.1
Minsmere – Walberswick	16	<0.1	10.2	1.1
North Norfolk Coast	14	<0.1	8.9	1.1
The Swale	24	<0.1	15.3	1.1
The Wash	15	<0.1	9.6	1.1
TOTALS	116	0.4%	74%	

A6.47a Hen Harrier *Circus cyaneus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Endangered**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	483	5	229 (47% of the GB population)
Ireland	180	2	No SPAs selected in Northern Ireland
Biogeographic population	8,332	83	229 (3% of biogeographical population)

GB population source: Sim et al. *in press*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

Hen Harriers have a widespread global distribution, occurring in both North and South America as well as through temperate and boreal regions of the Palearctic, from the Atlantic coasts of western Europe to Kamchatka and Sakhalin (Potts 1998). Across much of this range, Hen Harriers are migratory, moving south from northerly breeding areas outside the nesting period. In the Palearctic, migrants winter in southern parts of Europe, the Middle East and through southern areas of central and eastern Asia. In North America, migrants move from boreal breeding areas in the northern parts of the USA and Canada to winter in central America, Mexico and the southern USA. Hen Harriers breeding in South America as well as in western Europe tend to be more sedentary, although they disperse locally outside the nesting period (Cramp & Simmons 1980). The species is polytypic, with the nominate race *C. c. cyaneus* occurring throughout the Palearctic. Two other races occur in North and South America respectively.

The distribution of breeding Hen Harriers in Europe shows distinct north/south, east/west contrasts. In northern and eastern Europe (Russia Ukraine, the Baltic States and Fennoscandia, breeding distribution is more continuous. In southern and western Europe, however, the species has a scattered breeding distribution – probably reflecting past and current patterns of persecution and land-use change. Its principal western European range embraces the UK, France and northern Spain (Cramp & Simmons 1980; Hagemeijer & Blair 1997).

In the UK, breeding is now confined to Northern Ireland, and northern and western Britain, especially Scotland, where strongholds include Orkney, the eastern Highlands, and Strathclyde. The species also breeds in the Isle of Man. It occurs sparsely in northern England, and is considered to be under threat of extinction in this region (Holmes *et al.* 2000).

Preferred breeding habitat is moorland with a high percentage of heather cover, but birds may colonise young plantations if there is suitable ground (Bibby & Etheridge 1993; Potts 1998).

4. Population structure and trends

Between 8,332 and 10,840 pairs breed in Europe, with the largest numbers (more than 1,000 pairs each) breeding in France, Finland and Sweden (Hagemeijer & Blair 1997).

The species was formerly widespread in the UK but was virtually eliminated in the 19th century due to heavy human persecution, particularly from game managers (Watson 1977; Booth *et al.* 1984; Holloway 1996). Small numbers remained in Orkney and the Outer Hebrides and these provided a nucleus for the recovery of the population and range that has occurred since the 1940s (Sim *et al*. 1999, in press).

Upland afforestation between the 1940s and 1970s favoured Hen Harrier recolonisation of mainland Britain and the population increased to an estimated 500 breeding pairs with a further 250–300 pairs in the island of Ireland by the mid 1970s (Watson 1977). The Scottish population was estimated at 377–451 pairs (Thom 1986), rising to between 479 and 594 pairs at the time of the 1988–1989 Scottish survey. At that time, the UK and Isle of Man breeding population was estimated at between 578 and 700 pairs (Bibby & Etheridge 1993).

The DETR/JNCC Raptor Working Group survey reported an estimated 570 territorial pairs in UK and the Isle of Man in 1998 (Sim *et al*. 1999). Numbers in mainland Scotland and Wales have remained virtually unchanged since 1988–1989, but a decline of about 50% has occurred in England (since 1994) and Orkney (Sim *et al.* 1999, in press; Meek *et al.* 1998), with a substantial increase recorded in Northern Ireland (51 pairs). Population decreases have been linked to habitat loss and deterioration (notably in Orkney), nest destruction and the killing of Hen Harriers on grouse moors (Etheridge *et al.* 1997; Scottish Raptor Study Groups 1998; Holmes *et al.* 2000).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for breeding Hen Harriers supports, on average, 229 pairs. This amounts to about 47% of the British breeding population and about 3% of the international population. In an all-Ireland context, no sites have been selected for breeding Hen Harriers in Northern Ireland. The SPA suite contains 14 sites (Table 6.47a.1) where Hen Harrier has been listed as a qualifying species.

Other measures

The distribution and population size of the Hen Harrier in the UK is currently constrained by a significant extent of illegal killing and other persecution. The DETR/JNCC Raptor Working Group (which met between 1995 and 2000) recently made a series of positive recommendations aiming to eliminate the causes of conflict between grouse moor managers and protected birds of prey (DETR/JNCC Raptor Working Group 2000). These recommendations are being taken forward by government departments and their agencies, in collaboration with a number of organisations representing sporting, landowning and nature conservation interests. The government-led Campaign Against the Illegal Poisoning of Wildlife seeks to eliminate illegal killing and other persecution through enhanced education and public awareness.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1 and all were selected after consideration of Stage 2 judgements. Special attention was given to the Stage 2 factors of population size, breeding density and range. The six sites (Orkney Mainland Moors; Muirkirk and North Lowther Uplands; Forest of Clunie; Arran Moors; Glen App – Galloway Moors and Langholm – Newcastleton Hills) supporting the largest and densest

breeding populations were included to give comprehensive coverage of the species' population and the most suitable habitat. The remaining seven Stage 1.1 sites were included either because of their importance to maintaining range (Rinns of Islay; North Pennine Moors; Bowland Fells; Migneint – Dduallt; and Berwyn) or habitat (Ladder Hills), or because of the additional range and population coverage provided by a large, multi-species site (the Caithness and Sutherland Peatlands).

An additional site (Glen Tanar) was considered under Stage 1.4, on the grounds of its additional coverage of range (it is the most easterly SPA for Hen Harriers in Scotland) and to a lesser extent, numbers. It was accordingly selected after consideration of Stage 2 judgements.

The sites within the suite are distributed through the breeding range of the population in Britain, and cover all current population centres, including localities in Orkney, throughout Scotland, northern England and northern Wales. Most sites are multi-species SPAs, of importance also for a range of other breeding birds, with the exception of Arran Moors, Glen App – Galloway Moors, Ladder Hills and Langholm – Newcastleton Hills which have been selected solely for their importance for breeding Hen Harriers. There is a very long recorded history of occupancy at many of these sites (e.g. for Orkney see Watson 1977; Booth *et al.* 1984; Holloway 1996). At other sites, although Hen Harriers were present formerly, they were persecuted to local extinction in the 19th century. Since then, the species has become re-established in the areas concerned.

Distribution map for breeding Hen Harrier SPA suite

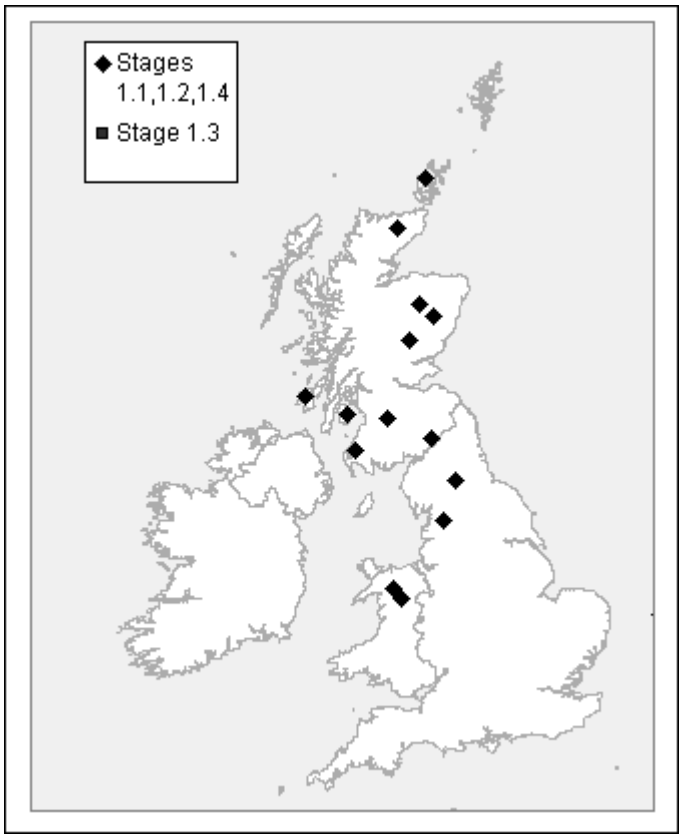


Table 6.47a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Arran Moors	24	0.3	5.0	1.1
Berwyn	14	0.2	2.9	1.1
Bowland Fells	13	0.2	2.7	1.1
Caithness and Sutherland Peatlands	14	0.2	2.9	1.1
Forest of Clunie	28	0.3	5.8	1.1
Glen App – Galloway Moors	20	0.2	4.1	1.1
Glen Tanar	2	<0.1	1.2	1.4
Ladder Hills	9	0.1	2.3	1.1
Langholm – Newcastleton Hills	17	0.2	3.5	1.1
Migneint – Dduallt	10	0.1	2.1	1.1
Muirkirk and North Lowther Uplands	30	0.4	6.2	1.1
North Pennine Moors	11	0.1	2.3	1.1
Orkney Mainland Moors	30	0.4	6.2	1.1
Rinns of Islay	7	<0.1	1.5	1.1
TOTALS	229	2.8%	47.4%	

A6.47b Hen Harrier *Circus cyaneus* (non-breeding)

1. Status in UK

See section A6.47a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	750	8	244 (33% of GB total)
Ireland	540	5	No SPAs selected in Northern Ireland
Biogeographic population	24,996	249	244 (1% of the biogeographic population)

GB population source: Lack 1986
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global and European distribution of Hen Harriers is described in section A6.46a.

The winter distribution of Hen Harriers in the UK significantly differs from that during the breeding season (section 6.46a). In autumn, birds disperse from many moorland nesting areas and move to winter in lowlands, especially around the coast (Watson 1977; Lack 1986). There are significant concentrations on the south and east coast of England, especially within the East Anglia estuaries, the Greater Thames estuary and Solent area (Lack 1986). In these regions, Hen Harriers hunt especially over salt-marshes taking small passerines, small mammals and waders. Hen Harriers also occur in lowland heaths and on chalk downland, with significant winter concentrations in Hampshire and Dorset, on downland in Oxfordshire, Berkshire and Wiltshire, as well as in the East Anglia Brecks (Lack 1986).

A proportion of the adult birds that nest on moorlands are resident throughout the year, although there may be dispersal away from the immediate vicinity of the breeding territories. In these areas, birds can be present year-round. Most young birds, especially those from the Scottish Highlands and Wales, disperse widely (Etheridge in press).

During winter, Hen Harriers gather at communal roost sites at night. These can hold significant numbers of individuals (sometimes over 20) and are usually located in wetlands such as carr woodland, marshes and reedbeds, although they sometimes occur on heather moorland, lowland heath and conifer plantations.

There is some southward movement in winter to the European continent and Ireland, with birds ringed in the breeding season in Scotland and Wales having been recovered in France and Iberia as well as in England (Lack 1986). Breeding Hen Harriers ringed in The Netherlands and Scandinavia have also been recovered in the UK during the winter months.

4. Population structure and trends

There is little good information on numbers of Hen Harriers in Britain outside the breeding season and there is no national monitoring scheme that assesses either numbers or trends. However, numbers at certain roost sites are monitored annually (Clarke & Watson 1990, 1997).

Based on breeding estimates in the mid-1980s (adjusted for mortality and partial emigration), Clarke (in Lack 1986) estimated that Scotland held about 400 non-breeding birds, Ireland less than 150 and Wales about 50. England was estimated to hold about 300 individuals. Numbers will be greater than this in periods of severe winter weather when Hen Harriers move to Britain from continental Europe. Davenport (1982) estimated a total of 753 in England following a severe winter weather influx in early 1979.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Hen Harriers supports, on average, 244 individuals. This amounts to about 33% of the British winter total and about 1.0% of the international population. In an all-Ireland context, no sites have been selected for non-breeding Hen Harriers in Northern Ireland. The SPA suite total is contained within 20 sites (Table 6.47b.1) where Hen Harrier has been listed as a qualifying species.

Other measures

See section A6.46a.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the total national non-breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. In addition, four sites were considered and selected under Stage 1.4 (Blackwater Estuary, Colne Estuary, Dengie and Foulness), on the grounds of range coverage and because the four adjacent sites support a large population that is likely to use the region as an ecological unit, although more data are required to clarify this.

The sites within the suite are distributed throughout the winter range of the population in Britain, covering all current population centres, from sites in Orkney, through Scotland, to coastal strongholds in eastern and southern England. All sites are multi-species SPAs, of European importance also for a range of other birds. There is a long recorded history of occupancy at many of these sites (e.g. for Orkney see Watson 1977; Booth *et al.* 1984; Holloway 1996), although following persecution to local extinction in the 19th century, Hen Harriers have become re-established at some of the sites relatively recently.

Distribution map for non-breeding Hen Harrier SPA suite

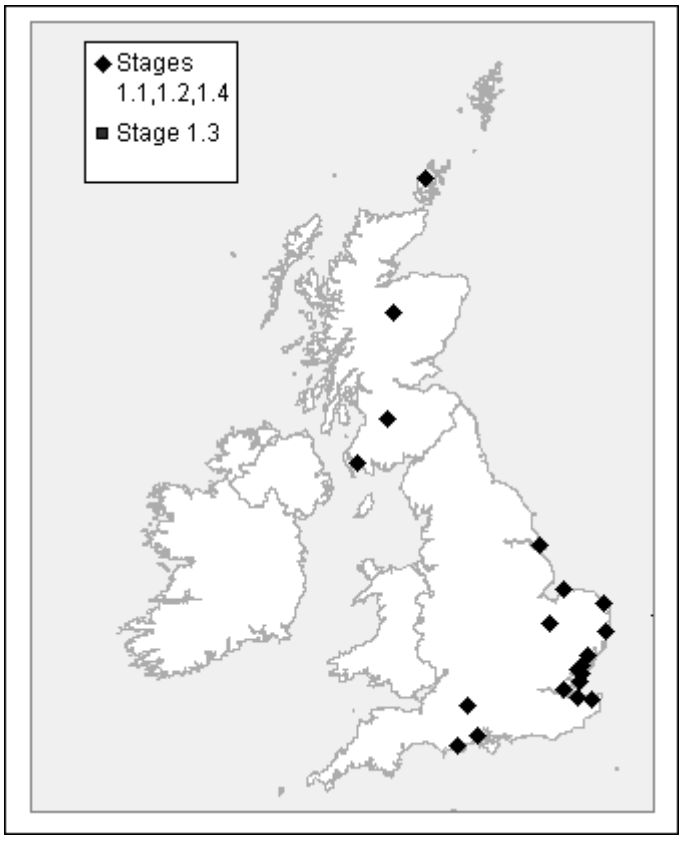


Table 6.47b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Blackwater Estuary	4	<0.1	0.5	1.4
Broadland	22	<0.1	2.9	1.1
Colne Estuary	4	<0.1	0.5	1.4
Dengie	5	<0.1	0.7	1.4
Dorset Heathlands	20	<0.1	2.7	1.1
Foulness	6	<0.1	0.8	1.4
Humber Flats, Marshes and Coast	20	<0.1	2.7	1.1
Loch of Inch and Torrs Warren	8	<0.1	1.1	1.1
Minsmere – Walberswick	15	<0.1	2.0	1.1
Muirkirk and North Lowther Uplands	10	<0.1	1.3	1.1
New Forest	15	<0.1	2.0	1.1
North Norfolk Coast	16	<0.1	2.1	1.1
Orkney Mainland Moors	13	<0.1	1.7	1.1
Ouse Washes	12	<0.1	1.6	1.1
River Spey – Insh Marshes	11	<0.1	1.5	1.1
Salisbury Plain	14	<0.1	1.9	1.1
Stodmarsh	9	<0.1	1.2	1.1
Stour and Orwell Estuaries	10	<0.1	1.3	1.1
Thames Estuary and Marshes	7	<0.1	1.0	1.1
The Swale	23	<0.1	3.1	1.1
TOTALS	244	1.0%	32.5%	

A6.48 Golden Eagle *Aquila chrysaetos*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**rare**) but not concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	400	4	60 (15% of GB population)
Ireland			
Biogeographic population	5,239	52	60 (1% of biogeographic population)

GB population source: DETR/JNCC Raptor Working Group 1998
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Golden Eagle has a northern global breeding distribution that includes the Palearctic (as far south as northern Africa and south-east Asia), as well as North America. It occurs in a wide range of biotopes from the low Arctic, through boreal and temperate regions, to the deserts and semi-deserts of the tropics. Golden Eagles occur principally in mountainous regions, occupying most areas where woodland cover is not continuous, including, in North America, extensive grasslands. The species is polytypic with a number of sub-species. Two races occur in Europe: the nominate *A. c. chrysaetos*, which is found through western Eurasia east to western Siberia, and *A. c. homeyeri* which occurs in Iberia and North Africa, east to the Middle East, the Caucasus and Iran. A further four races are found in other parts of the world (Cramp & Simmons 1980)

All European countries with suitable mountainous habitat support breeding populations, although many birds in the Baltic countries breed in lowland peatlands. Golden Eagles thus occur in the mountains of Scotland, Fennoscandia, France and Spain, as well as widely through the Carpathian uplands (Hagemeijer & Blair 1997).

In the UK, the species is resident and sedentary, occurring primarily in uplands although there are several pairs that exploit coastal habitats. The vast majority of the population is found in the Scottish Highlands (Dennis *et al.* 1984; Green 1996b; Watson 1997).

4. Population structure and trends

The world population has been estimated at 50,000 to 100,000 pairs, the wide range reflecting the degree of uncertainty over the size of the eastern Palearctic population (Watson 1997). The population in Europe is estimated at 5,239 to 5,616 pairs (Hagemeijer & Blair 1997). Spain holds the largest proportion, followed by Norway, Sweden and the UK. Other European countries supporting at least 200 pairs are Austria, Finland, France, Italy, Russia and Switzerland (Watson 1997 and references therein).

Population trends in about 80% of the European population appear to be stable or increasing, although declines are most evident and continuing in the eastern Baltic (Poland, Belarus) and in south-east Europe (Greece, FYR of Macedonia, Romania). Numbers in Spain, whilst now stable, are 30% lower than in the early 1960s. A decline has also been reported from Portugal. Populations in the Alps (Germany, Austria) and Finland have increased in recent decades. Population trends are unknown in a small number of European countries, including Italy (except Sicily where a decline has been reported) (Watson 1997 and references therein). Habitat destruction is probably responsible for declines in the Baltic lowlands, and human persecution and disturbance is the likely cause of declines in south-east Europe, Sicily and Portugal. The increase in alpine populations has come about primarily through greater protection from persecution and disturbance in these areas (Watson 1997 and references therein).

The British population is approximately 400 pairs (Green 1996b). Densities are highest in the western Highlands and Islands, but breeding success is greater in the eastern Highlands, although there are also highly successful pairs on the Hebridean islands (Green 1996; Watson *et al.* 1992; Watson 1997). High densities are related to a high availability of red deer and sheep carrion, and high breeding success is related to higher live prey availability (Watson *et al.* 1992). Prior to 1800, there were possibly 500 pairs in Scotland and at least 50 pairs in England and Wales (Brown 1976; Holloway 1996).

The UK population was reduced through persecution in the 18th and 19th centuries to a low point of only 80 regularly used eyries in the Scottish Highlands around 1870. The species was exterminated through persecution in Ireland, with the last bird killed in 1926 (Kennedy *et al.* 1954).

Population recovery in Britain began with a decline in persecution in the 1870s (Holloway 1996). The British population is thought to have increased since the 1950s following introduction of protective legislation, notably the Protection of Wild Birds Act 1954. Overall, the similarity of the national survey estimates in 1982 and 1992 masks localised changes in numbers (Dennis *et al.* 1984; Green 1996). Since the 1950s, a small number of former breeding sites in southern Scotland and northern England have been re-occupied, but recently the southern Scottish population has contracted and there is no evidence of any marked further expansion in England (Watson 1997; Whitfield 2000). Commercial afforestation appears to be responsible for losses of several breeding pairs in Argyll and Kintyre (Watson 1992; Gregory 1996) as well as southern Scotland (Marquiss *et al.* 1985), and can reduce breeding success (Watson 1997; Whitfield 2000). However, illegal killing is thought to be the main factor preventing population expansion in Britain (Watson 1997; DETR/JNCC Raptor Working Group 2000).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Golden Eagles supports, on average, 60 pairs. This amounts to about 15% of the British breeding population, and about 1% of the international population. Golden Eagles do not regularly occur in Northern Ireland and no longer breed there. The SPA suite contains eight sites (Table 6.48.1) where Golden Eagle has been listed as a qualifying species.

6. Classification criteria

All ten sites in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and of these, eight were selected after consideration of Stage 2 judgements. Special attention was given to the Stage 2 factors of population size, breeding density, multi-species interest and range. The Cairngorms was included as the site supporting the largest single population and because it lies at the eastern edge of the species' range in Britain. Cuillins, Rum, Cnuic agus Cladach Mhuile (Mull Coast and Hills), Caenlochan and North Harris were included as they

support large, and/or high-density populations. North Harris also lies at the western edge of the range in Britain. Lewis Peatlands and the Caithness and Sutherland Peatlands were included as they support low-density populations important to the range; both are multi-species sites.

Central Highland Hills and Glens was not selected as an SPA as it holds only small numbers and does not contribute significantly to maintenance of range. Sutherland Montane Plateaux was not selected as the small population supported by this site was not considered to add significantly to the coverage already provided by the Caithness and Sutherland Peatlands.

All the sites are of high naturalness and have a long history of occupancy by Golden Eagles. Five of the sites (Cairngorms, Lewis Peatlands, Caenlochan, Caithness and Sutherland Peatlands, Rum) are also multi-species sites.

Distribution map for Golden Eagle SPA suite

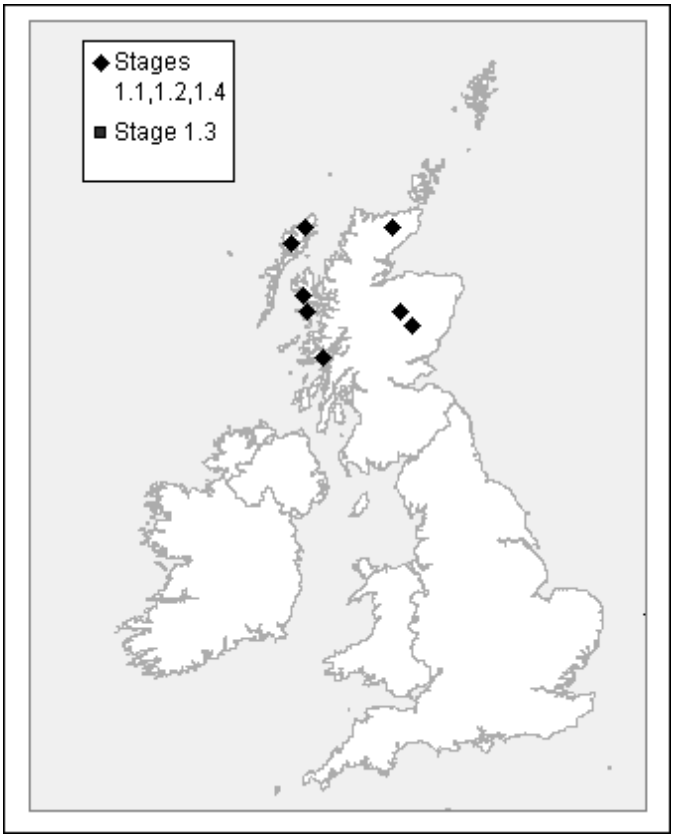


Table 6.48.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caenlochan	6	0.1	2	1.1
Cairngorms	12	0.2	3	1.1
Caithness and Sutherland Peatlands	5	0.1	1	1.1
Lewis Peatlands	6	0.1	2	1.1
Cnuic agus Cladach Mhuile (Mull Coast and Hills)	9	0.2	2	1.1
North Harris Mountains	7	0.1	2	1.1
Rum	4	0.1	1	1.1
Cuillins	11[15]	0.2	3	1.1
TOTALS	60	1.2%	15%	

15 Site boundaries still to be determined and thus total may change.

A6.49 Osprey *Pandion haliaetus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**rare**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	99	1	39 (39% of GB population)
Ireland			
Biogeographic population	4,732	47	39 (1% of biogeographic population)

GB population source: Stone et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Osprey is a cosmopolitan species, with a wide global distribution. Through much of its range it is highly migratory. It breeds in boreal and temperate areas throughout the Palearctic region (Poole 1989; Cramp & Simmons 1980), from Europe to the Pacific coast. These birds move south to winter in Africa, India and south-east Asia. Ospreys that breed across much of North America migrate to winter in South America. Non-migratory populations are resident along the coasts of much of south-east Asia, New Guinea and Australia. Ospreys are polytypic: the nominate race *P. h. haliaetus* occurs through the Palearctic from Europe to Japan, whilst a further four sub-species occur in other parts of the world.

In Europe, the distribution of Ospreys is largely northern and eastern. Over 90% of the breeding population occurs in Sweden, Finland and Russia, but small numbers also occur in neighbouring countries, and remnant populations are found throughout southern Europe (Hagemeijer & Blair 1997).

In the UK, the breeding range is entirely within Scotland although an active re-establishment programme is under way in England. As elsewhere in the world, the species' UK distribution is limited by the availability of good fishing waters (Cramp & Simmons 1980; Gibbons *et al*. 1993). Preferred nest sites in Scotland are mature conifers, especially Scots Pine *Pinus sylvestris*, although the species occasionally uses other trees and man-made structures (Thom 1986).

4. Population structure and trends

The total European population is estimated to be 4,732–5,249 pairs, with most birds occurring in Sweden and Finland (Hagemeijer & Blair 1997).

Throughout much of its distribution, the Osprey has suffered historical population declines due to persecution by man. In Europe, localised extinctions occurred in the late 1800s and early 1900s (Cramp & Simmons 1980; Hagemeijer & Blair 1997). With protection, recovery in parts of the former breeding range occurred in the early part of the 20th century, but from the 1950s to the 1970s widespread use of persistent organochlorine pesticides lowered reproductive success and slowed the spread of re-colonising birds in many countries (Hagemeijer & Blair 1997; Poole 1989). Widespread restrictions on pesticide use have allowed many populations to begin recovery since the early 1980s, aided in some countries by artificial nest construction (Hagemeijer & Blair 1997).

Ospreys in Britain are thought to have become extinct in 1916, due to persecution and egg collecting. Despite regular records, no further nesting is known to have taken place until the 1950s, when one pair nested successfully in 1954 (Brown & Waterston 1962; Dennis 1987). A range of recently collected evidence, however, suggests that Ospreys may never have become completely extinct in Scotland. They are thought to have remained in very small numbers between 1916 and 1954 (Dennis unpublished). Intensive protection since the 1950s has led to an increase in numbers and 111 pairs nested in Scotland in 1997 (Ogilvie & the Rare Breeding Birds Panel 1996).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Osprey contains the nesting sites or the feeding areas[16] used by, on average, 39 pairs. This amounts to about 39% of the British breeding population. The suite contains about 0.8% of the international population (numbers in the UK are very small in comparison to those in Scandinavia and eastern Europe). The species does not breed in Northern Ireland. This total is contained within nine sites (Table 6.49.1) where Osprey has been listed as a qualifying species.

6. Classification criteria

All nesting sites in natural (*i.e.* non-plantation) woodlands, and all feeding sites, in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. Given that the selection of sites under Stage 1.1 resulted in a suite which gives good coverage of the Osprey population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

The distribution of SPAs closely matches the core range of the species in Scotland. Many of the current nest sites were amongst the first to be occupied following re-colonisation in the 1950s. Indeed, several of these sites were traditionally used prior to the human-induced extinctions of the late 19th century.

Dornoch Firth and Loch Fleet is included as the most important feeding area for Ospreys in Scotland, lying at the northern edge of the species' British range. The other Moray Basin estuaries are also included as multi-species sites important also for feeding Ospreys.

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Indeed, many are in the ownership of nature conservation organisations and are subject to active conservation management.

16 Ospreys generally nest in woodland distant from their wetland feeding areas and only a few sites contain both requirements for the species.

Distribution map for Osprey SPA suite (which includes both feeding and nesting sites)

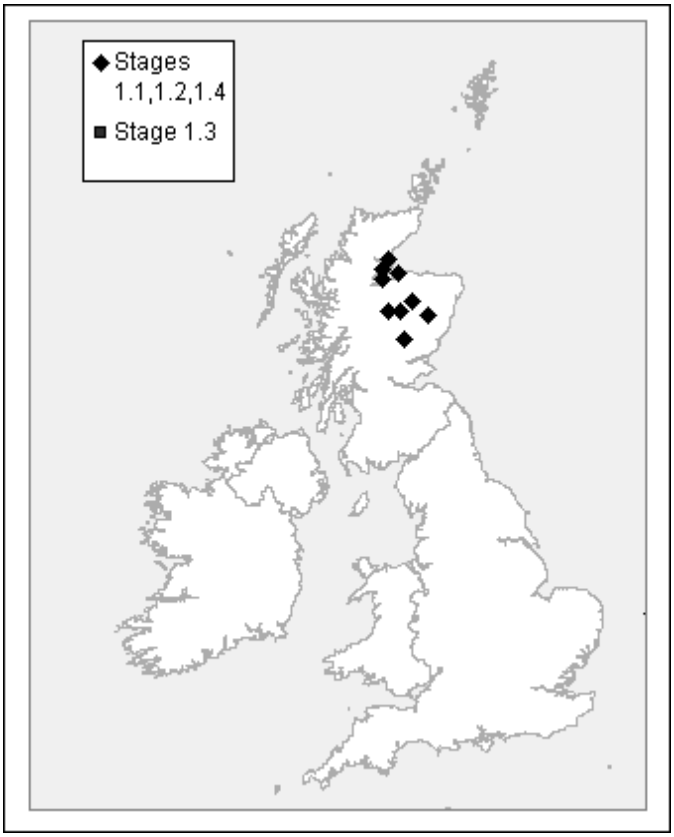


Table 6.49.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abernethy Forest	2	<0.1	2	1.1
Cairngorms	2	<0.1	2	1.1
Cromarty Firth	1	<0.1	1	1.1
Dornoch Firth and Loch Fleet	10	<0.1	10	1.1
Forest of Clunie	7	<0.1	7	1.1
Glen Tanar	2	<0.1	2	1.1
Inner Moray Firth	4	<0.1	4	1.1
Moray and Nairn Coast	7	<0.1	7	1.1
River Spey – Insh Marshes	4	<0.1	4	1.1
TOTALS	39	0.8%	39%	

A6.50a Merlin *Falco columbarius* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,300	13	426 (33% of GB population)
Ireland	110	1	No SPAs selected in Northern Ireland
Biogeographic population	10,200	102	426 (4% of biogeographical population)

GB population source: Rebecca & Bainbridge 1998
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Merlin has a circumpolar breeding range occurring in northern temperate, sub- and low- Arctic regions. Through most of its range, it is migratory. Birds that breed in the Palearctic move south after breeding to winter in temperate Europe, the Mediterranean Basin, the Middle East and south-east Asia. In North America, birds move from northerly breeding areas to the southern parts of the USA, central America and northernmost parts of South America. The species is polytypic, with ten races described. Two of these (*F. c. aesalon* and *F. c. subaesalon*) occur in Europe. British-breeding Merlins are of the race *F. c. aesalon,* and form the western extremity of a range that extends through northern Europe east to central Siberia (Cramp & Simmons 1980; del Hoyo *et al.*1994). Hagemeijer & Blair (1997), however, regard British birds as belonging to *F. c. subaesalon*, with a breeding range of Iceland, the Faeroes and Britain and Ireland.

In Europe, Merlins have a northern distribution, from Iceland through Fennoscandia to Russia. Those breeding in Britain and Ireland are the most southerly in Europe.

In the UK, Merlin is confined as a breeding species to heather moorland areas, mainly in the uplands of Northern Ireland, Scotland, Wales and northern England, with small numbers in south-west England. The range extends into lowland moorland particularly around the north and west coasts of Scotland and on the Scottish islands. There has been an increase in the last 20–30 years of breeding in conifer plantations, particularly where these border moorland. The highest densities occur in north Yorkshire, the north Pennines and Lake District, and east Scotland (Rebecca & Bainbridge 1998).

4. Population structure and trends

In Europe there are an estimated 10,166–16,612 pairs, with the largest numbers occurring in Sweden, Norway and Finland – each of which holds more than 2,000 pairs (Hagemeijer & Blair 1997).

The Great Britain population was estimated at 1,300 pairs (± 200 pairs) following a survey in 1993 and 1994 (Rebecca & Bainbridge 1998). The population of Northern Ireland was not surveyed at the same time, but is probably around 50% of the all-Ireland estimate of 110–130 pairs in 1988–91 (Gibbons *et al.* 1996).

The British breeding population was thought to have declined from the 1950s until the early 1990s, initially as a result of organochlorine and other pesticide contamination, and more recently through habitat loss (Gibbons *et al.* 1996). The only survey prior to that in 1993–1994 was a partial one in 1983–84, which found 550–650 pairs. However, the 1993–94 survey was more complete because of much better knowledge of Merlin distribution in the intervening period, through the activities of Raptor Study Groups. In all areas where direct comparison was possible, Merlins had increased or remained stable (Rebecca & Bainbridge 1998).

There is little evidence for change in other European populations (Hagemeijer & Blair 1997). The British breeding population appears to be more or less self-contained, with very limited emigration of birds in winter, though many Icelandic breeders winter in Britain (Cramp & Simmons 1980).

Organochlorine and mercury residues, coupled with widespread eggshell-thinning, were identified in the 1970s as serious problems affecting Merlin numbers and breeding success (Newton *et al.* 1982). Despite progressive reductions in the use of the pesticides, residues remained worryingly high for some years afterwards (Newton & Haas 1988).

Habitat loss, especially the conversion of heather moorland to grass moorland, has been identified as the main reason for former areas of the breeding range remaining unoccupied, e.g. parts of Scotland, Wales and the Lake District (Rebecca & Bainbridge 1998). In Wales, breeding success has been directly related to vegetation quality (Bibby 1986). Only the switch from nesting on moorland to nesting in conifer plantations, which ultimately involved over 50% of breeding pairs, effectively allowed the population to remain stable over the period 1970 to 1991 (Parr 1994).

5. Protection measures for population in the UK

SPA suite

In the breeding season, the UK's SPA suite for Merlin supports, on average, 426 pairs. This amounts to about a third of the British breeding population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland, and the overall suite of 14 sites (Table 6.50a.1) contains about 4% of the international population.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population of Merlins were considered under Stage 1.1, and all (Berwyn, Bowland Fells, Cairngorms, Caithness and Sutherland Peatlands, Lewis Peatlands, North Pennine Moors, North York Moors, and South Pennine Moors) were selected after consideration of Stage 2 judgements (in particular, population size, breeding density and range). As the UK holds a significant proportion of the European population of this Annex 1 species at the southern edge of its European range, and as the species regularly occurs within SPAs selected for other species, additional coverage of population size and range was sought using Stage 1.4.

Accordingly, a further six sites (Drumochter Hills, Elenydd – Mallaen, Forest of Clunie, Migneint – Dduallt, Muirkirk and North Lowther Uplands, and Ronas Hill – North Roe and Tingon) were identified and selected after consideration of Stage 2 judgements. Elenydd – Mallaen provides additional coverage of range in central Wales (approximately the southern edge of the UK range); Muirkirk and North Lowther Uplands provides additional coverage of range in the Southern Uplands of Scotland, whilst Ronas Hill – North Roe and Tingon contributes to range coverage in the northernmost part of the UK range. The Drumochter Hills, Forest of Clunie, and Migneint – Dduallt include significant additional coverage of breeding populations in the main upland parts of the range.

The sites within the suite are distributed through the breeding range of the population in the UK, and cover all population centres, from northernmost parts of Scotland to the southern edge of the breeding range in Wales, including the English uplands. All sites are multi-species SPAs, of importance also for a range of other breeding birds. There is a very long recorded history of occupancy at many of these sites with records from the 19th century for many sites (Harvie-Brown & Buckley 1887, 1888; Holloway 1996).

Distribution map for breeding Merlin SPA suite

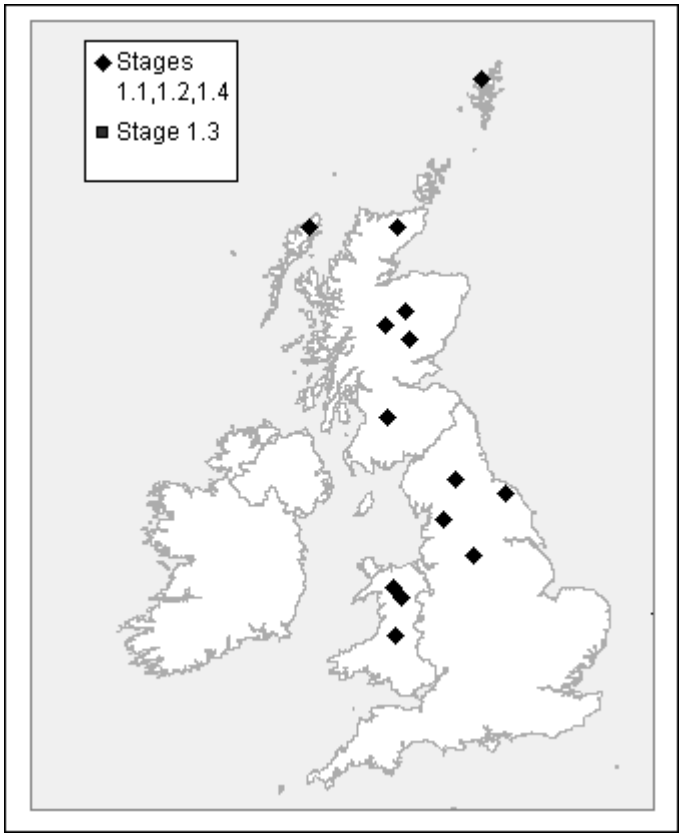


Table 6.50a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Berwyn	14	<0.1	1.1	1. 1
Bowland Fells	20	0.2	1.5	1. 1
Cairngorms	14	<0.1	1.1	1. 1
Caithness and Sutherland Peatlands	54	0.5	4.2	1. 1
Drumochter Hills	7	<0.1	0.5	1. 4
Elenydd – Mallaen	7	<0.1	0.5	1. 4
Forest of Clunie	12	<0.1	0.9	1. 4
Lewis Peatlands	20	0.2	1.5	1. 1
Migneint – Ddduallt	7	<0.1	0.5	1. 4
Muirkirk and North Lowther Uplands	12	<0.1	1.0	1. 4
North Pennine Moors	136	1.3	10.5	1. 1
North York Moors	40	0.4	3.1	1. 1
Ronas Hill – North Roe and Tingon	6	<0.1	0.5	1. 4
South Pennine Moors	77	0.8	5.9	1. 1
TOTALS	426	4.2%	32.8%	

A6.50b Merlin *Falco columbarius* (non-breeding)

1. Status in UK

See section A6.50a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	1,500	15	15 (1% of GB population)
Ireland	416	4	No sites selected in Northern Ireland
Biogeographic population	30,600	306	15 (<0.1% of biogeographical population)

GB population source: Stroud et al. *1990a*
Biogeographic population source: derived from Hagemeijer & Blair 1997

3. Distribution

The global and European breeding distribution of Merlins is described in section A6.50a. Merlins winter in almost any type of open country in the northern and southern temperate zones of Eurasia and the Americas. Birds breeding in northern Europe migrate south and west in autumn to winter across west and central Europe, including north-west Africa and the Mediterranean basin.

Ringing has shown that the British breeding population is either sedentary or moves from upland to lowland areas, including coasts. British birds are joined in winter by at least a proportion of the Icelandic breeding population (Lack 1986).

Non-breeding Merlins in Britain are found widely scattered in lowland areas at low densities, mainly 1–3 birds/10 km square (Lack 1986). They hunt singly or sometimes in pairs (and occasionally with other species) over open farmland and coastal habitats, probably attracted by flocks of finches and small waders, particularly in Scotland and south-east England (Lack 1986). Winter roosts may be communal and are often shared with Hen Harriers (Elliott *et al.* 1991). Roost sites known to have held two or more Merlins occur on heaths, dunes , bogs and in reedbeds (Lack 1986).

4. Population structure and trends

Knowledge of trends is poor (Elliott *et al*. 1991) and there is no monitoring of numbers in winter. Given the British and – to a lesser extent – Icelandic origin of non-breeding Merlins in the UK, their numbers can be assumed to have fluctuated over the last 50 years in a similar fashion, and for the same reasons, as the breeding populations.

Lack (1986) estimated the midwinter total in Britain and Ireland at 2,000–3,000 birds, although the population wintering in Great Britain is currently estimated at 1,300 individuals (Stroud *et al.* 1990).

5. Protection measures for population in the UK

SPA suite

In winter, the UK's SPA suite for Merlin supports, on average, 15 individuals. This amounts to about 1% of British non-breeding numbers. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland, and the suite contains less than 0.1% of the international population. This total is contained within a single site (Table 6.50b.1) for which Merlin has been listed as a qualifying species.

6. Classification criteria

The only site (Dorset Heathlands) in the UK known to support more than 1% of the national total of non-breeding Merlins was considered under Stage 1.1, and was selected after consideration of Stage 2 judgements. Away from the Dorset Heathlands, the species' winter distribution in Britain is mostly scattered and consists of isolated individuals associated with coastal and other wetlands.

Dorset Heathlands is a multi-species SPA, of European importance also for a range of other breeding and non-breeding birds.

Distribution map for non-breeding Merlin SPA suite

Table 6.50b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Dorset Heathlands	15	<0.1	1.2	1.1
TOTALS	15	<0.1%	1.2%	

A6.51 Peregrine *Falco peregrinus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**rare**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,167	12	103 (9% of GB population)
Ireland	365	4	6 (2% of all-Ireland population)
Biogeographic population	5,663	56	109 (2% of biogeographical population)

GB population source: DETR/JNCC Raptor Working Group 2000
Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Peregrine has a wide global distribution, being absent as a breeder from only a few regions of the world, these being a large part of South America, the desert and equatorial regions of Africa, the Persian Gulf region, south-central Asia, New Zealand, Antarctica, Iceland and the high Arctic (Cramp & Simmons 1980; Ratcliffe 1993). Many races of Peregrine have been described, of which three occur in Europe. The nominate *F. p. peregrinus* occurs widely in the western Palearctic south to the Mediterranean and Ukraine; *F. p. calidus* occurs on Eurasian tundra east to the Lena River; whilst *F. p. brookei* occurs in the southern part of the western Palearctic east to south Crimea. At least 12 further races occur in other parts of the world (Camp & Simmons 1980).

Peregrines occur widely throughout Europe, although they are generally highly dispersed and nest at low densities. As elsewhere in the species' global range, breeding distribution is determined by the availability of suitable nest sites (usually cliffs, or other habitats to which the Peregrine has adapted locally).

In the UK, the Peregrine occurs in all areas where suitable nesting habitat can be found, together with the availability of food. Thus, while absent from much of central and eastern England, the species can be found at low densities in large parts of the remainder of the UK, particularly in coastal and upland areas. Approximately 95% of the Peregrine's potential UK breeding range is now occupied (Newton 1994), although there has also been some limited spread into a few urban areas. Where this has occurred Peregrines have locally started to nest on man-made structures.

4. Population structure and trends

The European population is estimated at 5,633–6,075 pairs. This represents approximately one-fifth of the world population (Hagemeijer & Blair 1997).

Widespread contamination by persistent toxic chemicals, particularly organochlorine pesticides, caused severe declines in the Peregrine population throughout Europe in the late 1950s and early 1960s (Ratcliffe 1993; Tucker & Heath 1994). The British population reached its lowest point in 1963 when only *c.* 360 pairs bred (Ratcliffe 1972). Subsequent withdrawal of the usage of these environmental pollutants, and greater species protection, led to a substantial recovery of the population. By 1991, the UK population had reached 1,263 breeding pairs (Crick & Ratcliffe 1995), and the national population is now at its highest known level, especially in southern Scotland, northern England and Wales and Northern Ireland. In the north and west Highlands, the Hebrides and the Northern Isles, the species remains below pre-1940 numbers. Declines in these populations, and in some other areas of Scotland, over the last ten years are probably due to illegal killing, the continued impacts of environmental pollutants, and habitat deterioration through overgrazing (Scottish Raptor Study Groups 1998; DETR/JNCC Raptor Working Group 2000).

The recovery in the Peregrine population over the last 30 years is largely attributable to the application of stringent controls on the use of organochlorine pesticides and other persistent toxic chemicals (Ratcliffe 1993).

Despite these measures, the Peregrine is still under threat in some parts of the UK, particularly as a result of conflicts with some game management and pigeon-racing interests. This can result in illegal killing (DETR/JNCC Raptor Working Group 2000; Holmes *et al.* 2000). Egg collectors, and the illegal supply of wild birds to the falconry trade (RSPB 1999) are also important conservation threats.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Peregrine contains the nesting sites used by, on average, 109 pairs. This amounts to about 8.8% of the British breeding population, and 1.6% of the all-Ireland population. The suite contains about 1.9% of the international population. This total is contained within ten sites (Table 6.51.1) where Peregrine has been listed as a qualifying species.

Other measures

The species' recovery has been enhanced also by the successful implementation of protective legislation, which has ensured greater protection for breeding Peregrine. In some areas of the UK, Peregrine breeding sites are on recognised routes for rock climbers. Potential disturbance at these sites is avoided by the implementation of voluntary climbing restrictions during the Peregrine breeding season.

Several positive measures have been recommended with the aim of resolving existing conflicts and thus reduce illegal activities (DETR/JNCC Raptor Working Group 2000).

6. Classification criteria

The generally low densities and widespread distribution of Peregrines in the breeding season mean that identification of significant numbers of key sites is problematic. Where high-density sites amenable to site-based conservation occur, these have been selected. Thus, six sites throughout the UK (North Pennine Moors, South Pennine Moors, Rathlin Island, Cairngorms, Berwyn, and Elenydd – Mallaen) have been identified under Stage 1.1 as these localities each support 1% or more of the national breeding population. A further four sites (East Caithness Cliffs, Hoy, Muirkirk and North Lowther Uplands, and North Caithness Cliffs) which each hold less than 1% of the national population have also been identified under Stage 1.4. Together, the ten sites comprise the UK SPA suite for Peregrine.

All the sites are of high naturalness, are multi-species sites and have a long history of occupancy by Peregrines. The selection of the four sites under stage 1.4 enhances the range coverage of sites for Peregrine through the inclusion of sites in northern Scotland as well as south-central Scotland.

Distribution map for breeding Peregrine SPA suite

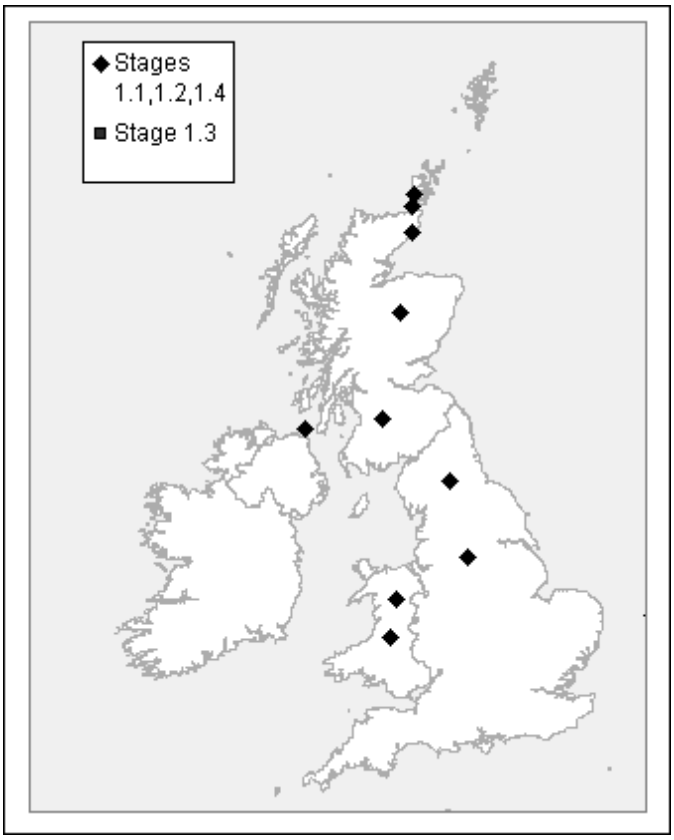


Table 6.51.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Berwyn	18	0.3	1.5	1.1
Cairngorms	12	0.2	1.0	1.1
East Caithness Cliffs	6	0.1	0.5	1.4
Elenydd – Mallaen	15	0.3	1.3	1.1
Hoy	6	0.1	0.5	1.4
Muirkirk and North Lowther Uplands	9	0.2	0.8	1.4
North Caithness Cliffs	6	0.1	0.5	1.4
North Pennine Moors	15	0.3	1.3	1.1
Rathlin Island	6	0.1	1.6 (Ire)	1.1
South Pennine Moors	16	0.3	1.4	1.1
TOTALS	109	1.9%	8.8% 1.6% (Ire)	

A6.52 Capercaillie *Tetrao urogallus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 9(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985		(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I Annex II/2 Annex III/2**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (individual adults)	Selection thresholds	Totals in species' SPA suite
GB	2,200	22	364 (17% of GB population)
Ireland			
Biogeographic population	419,000	4,190	364 (<0.1% of biogeographical population)

GB population source: Catt et al. *1994, 1998*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global range of Capercaillie extends through northern temperate and boreal forests from Britain and Spain in the west, across the taiga of northern Eurasia to about 120°E (roughly as far as the Lena River in Russia). Its range in the west (Europe) has decreased and become highly fragmented owing to forest loss and degradation, especially in lowland areas. The species is polytypic with four sub-species described, all of which occur in Europe. The nominate sub-species *Tetrao u. urogallus* occurs in Europe from Britain, Scandinavia and central Europe east to north-west Siberia north of about 60°N. *T. u. rudolfi* occurs in the southern and eastern Carpathians, *T. u. aquitanicus* occurs in the Pyrenees and north-west Spain, whilst *T. u. taczanowskii* occurs in Russia to the south of the nominate race (Cramp & Simmons 1980).

In Europe, Capercaillie occurs generally in montane and upland forest areas, including the mountains of northern Spain, Pyrenees, Alps and Carpathians and the Scottish Highlands. The distribution in Fennoscandia is more continuous and extends eastward to Siberia (Rogačeva 1992). Over 90% of the European population is found in Scandinavia, but other important concentrations are found in forests from the Baltic to the Pyrenees (Batten *et al*. 1990; Hagemeijer & Blair 1997).

Within the UK, Capercaillie breeds only within Scotland, with highest densities in east Highland, Grampian and Tayside (Gibbons *et al*. 1993). Its range is linked closely to mature coniferous woodland, especially native Scots Pine *Pinus sylvestris* woodland, in which there is a well-developed Bilberry *Vaccinium myrtillus* field layer (Gibbons *et al*. 1993).

Throughout its range, the Capercaillie is a largely sedentary species, although there are sometimes local movements, exceeding 25 km, in the non-breeding season.

4. Population structure and trends

The Capercaillie has declined throughout its world range, particularly since the 1960s (Batten *et al*. 1990; Moss 1994). In Siberia, Capercaillie populations have been described as "greatly decimated" owing to the effects of excessive shooting through most of its range (Rogačeva 1992). In Norway and Finland, declines are reflected in annual shooting bags, with drops of over 67% in numbers in both countries in the 1980s (Batten *et al*. 1990). The most recent estimate of the European population is 209,405–296,085 pairs (Hagemeijer & Blair 1997).

Throughout Europe, declines have been attributed mainly to habitat loss owing to forestry practices, but also to hunting, disturbance, predation, habitat degradation, and climatic fluctuation (Cramp & Simmons 1980; Hagemeijer & Blair 1997; Moss *et al.* 2000). The original UK population became extinct in the late 18th century, possibly due to habitat loss and hunting, but was re-established through re-introductions of Swedish birds in the 1830s (Thom 1986). Extensive tree felling during the first half of the 20th century again resulted in a decline, but subsequent recovery led to a peak in population size and range in the early 1970s.

Since the 1970s, there has been a further decline in both numbers and range, with a loss of birds in 64% of previously occupied 10 x 10 km squares between 1968–1972 and 1988–1991 (Gibbons *et al*. 1993; Moss 1994), and a decrease in numbers in 80% of woods which previously held Capercaillie (Batten *et al*. 1990).

The estimate of the Scottish population used for this review was made in 1992–1994, is of 2,200 individual adults (Catt *et al*. 1998). However, additional data, currently unpublished, suggest that this decline continued through the late 1990s. The species is widely dispersed within Scotland and occurrence at low densities means there are few areas supporting large concentrations of birds. Causes of the UK decline are complex, involving habitat loss, changes in forestry practice (leading to loss of the Bilberry *Vaccinium* field layer and altered tree species composition), climate change, changes in land management practices, excessive shooting and increased mortality due to deer fence strikes. The most recent analysis of the Scottish population (Moss *et al.* 2000) indicates that poor productivity, exacerbated by mortality from deer fence strikes, is probably the main cause of the decline.

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for Capercaillie contains the range of habitats used throughout the year by, on average, 364 individual adults. This amounts to about 17% of the British breeding population (although given the rapid current population decline this possibly under-estimates population coverage within the suite as the figure for the national population used is likely to over-estimate current numbers). The suite contains about 0.1% of the international population (numbers in the UK are small in comparison to those in Scandinavia and eastern Europe). This total is contained within six sites (Table 6.52.1) where Capercaillie has been listed as a qualifying species. The species not longer occurs in Northern Ireland, having become extinct in the eighteenth century.

Other Measures

A Biodiversity Action Plan has been published for this species (Biodiversity Steering Group 1995) and is being implemented as part of the UK's national response to the Biodiversity Convention.

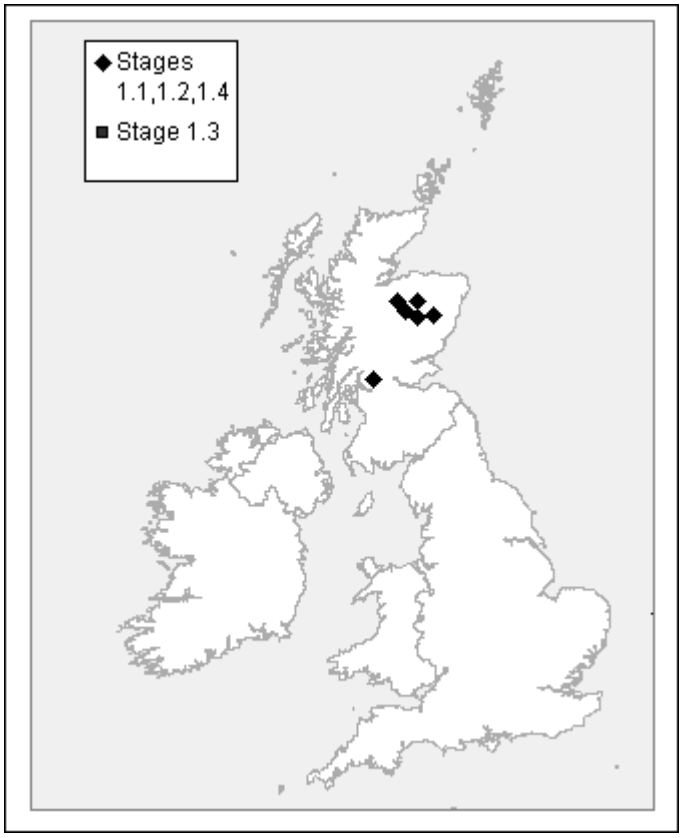
Since 1982, the rights to shoot Capercaillie on Forestry Authority lands have not been let (Batten *et al*. 1990). In 1991, a voluntary ban on shooting was initiated by the UK government, and has largely been honoured (Catt *et al*. 1998). Advice is available for general management of forests for Capercaillie (Moss & Picozzi 1994). Recommendations for further conservation measures have been detailed in the Species Action Plan (Biodiversity Steering Group 1995), including proposals that would reduce mortality from deer fence strikes (Andrew & Baines 1997; Baines & Summers 1997).

6. Classification criteria

All sites in the UK in natural or semi-natural habitats[17] that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. The distribution of SPAs closely matches the core range of the species in Scotland. The Caledonian pinewood sites in Deeside and Speyside support large, high-density populations in a natural habitat. Loch Lomond supports a very dense population at the edge of the British range of this species and at the western limit of the European range. Many sites have a very long history of occupation, indeed, Ballochbuie is the site of the shooting of the last remaining native British Capercaillie in 1785 (Holloway 1996).

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Many are in the ownership of nature conservation organisations and are subject to active conservation management.

Distribution map for Capercaillie SPA suite



17 The 1992–1994 national survey of breeding Capercaillie identified additional breeding locations, but most of these are in plantation woodlands with no specific population estimates (Catt *et al.* 1998). They have been excluded from the current SPA review until clearer population data are available. Further investigations of these and other areas are currently being undertaken.

Table 6.52.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abernethy Forest	45	<0.1	2.1	1.1
Ballochbuie	36	<0.1	1.6	1.1
Cairngorms	125	<0.1	5.7	1.1
Glen Tanar	85	<0.1	3.9	1.1
Kinveachy	40	<0.1	1.8	1.1
Loch Lomond	33	<0.1	1.5	1.1
TOTALS	364	<0.1%	16.5%	

A6.53 Spotted Crake *Porzana porzana*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (calling males)	Selection thresholds	Totals in species' SPA suite
GB	50	1	42 (84% of GB population)
Ireland			
Biogeographic population	48,800	488	42 (<0.1% of biogeographic population)

GB population source: JNCC unpublished
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global breeding range of the monotypic Spotted Crake extends from western Europe to central Russia, largely in the boreal and temperate zones east to about 100°E in central Asia. The species also nests sporadically within the Mediterranean basin (Cramp & Simmons 1980; Hagemeijer & Blair 1997). Spotted Crakes are migratory, and in the non-breeding season breeding birds from the west of the range (Europe) move to spend the winter months in sub-Saharan, east and south-east Africa. Birds from the eastern part of the breeding range move south to over-winter in Pakistan and northern India (Cramp & Simmons 1980).

In Europe, Spotted Crakes are absent from Iceland, and the species is highly local throughout much of its range, becoming more abundant only in the continental boreal and temperate zones of Eastern Europe and Russia (Cramp & Simmons 1980; Hagemeijer & Blair 1997).

In Britain, Spotted Crakes breed in a few widely dispersed locations from Shetland in the north to the south and east coasts of England (Ogilvie and the Rare Breeding Birds Panel 1999). In 1997, birds were recorded at 13 localities, of which nine were in Scotland and four in England, but in past years between five and 19 localities have been occupied (Ogilvie and the Rare Breeding Birds Panel 1999). Other than one nesting record in 1851, Spotted Crakes appear always to have been absent from Ireland (Holloway 1996).

Throughout its global range, the Spotted Crake breeds on lowland fen-like habitats with very shallow fresh water interspersed with extensive stands of low plant cover, rich in invertebrates (Cramp & Simmons 1980). Most of the British sites are extensive fens or marshy wetlands dominated by sedge

Carex spp. beds and scattered willows *Salix* spp. (Francis & Thorpe 1999). Spotted Crakes are secretive and difficult to census, with singing males often the only sign of birds being present at a site, and breeding very difficult to prove and rarely confirmed through sightings of young birds (Francis & Thorpe 1999). As far as is known, few localities are used regularly, and the core of the species' range in Britain is largely defined by the SPA suite described below.

4. Population structure and trends

The European population is estimated to be 48,786–67,083 pairs (Hagemeijer & Blair 1997), principal populations being found in Belarus (26,000 pairs), Romania (10,000 pairs), Ukraine (4,500 pairs), France (3,250 pairs), and Poland (3,000 pairs), with smaller populations in most other parts of Europe (Hagemeijer & Blair 1997). Populations throughout Fennoscandia increased in the 19th century, but have decreased since, except in Sweden and Finland. Here there have been recent and continuing increases in both numbers of birds and range continuing from the early 1960s (Cramp & Simmons 1980; Hagemeijer & Blair 1997). Numbers are known to fluctuate, and the species is vulnerable to changes in water levels brought about by drainage and climate change. There have undoubtedly been increases in effort by observers over the last decade in locating this cryptic bird, and this further confuses interpretation of historical trends.

Prior to the mid-19th century, Spotted Crakes were locally common in many counties of Britain, but declines owing to extensive drainage of wetlands and agricultural intensification of other habitats in the 18th and early 19th centuries have made the species a sporadic breeder since 1900 (Alexander & Lack 1944; Parslow 1967; Holloway 1996; Batten *et al*. 1990). No formal surveys were carried out before the 1970s, but some information on distribution and numbers is collated in Parslow (1973). There is evidence that some sites have remained in regular use by the species since 1900, especially in southern and eastern England, and northern Scotland. Spotted Crakes may have been more numerous between 1926 and 1937, with four or five pairs breeding in Somerset alone in 1930, and again through the 1960s (Parslow 1973).

The first national population estimate in the late 1970s recorded six males at six locations in 1978 (Batten *et al*. 1990). Throughout the 1980s and 1990s, British numbers fluctuated without trend (Ogilvie and the Rare Breeding Birds Panel 1999) between three and 31 singing males at between two and 19 localities, but breeding success was inconclusive (Batten *et al.* 1990; Ogilvie and the Rare Breeding Birds Panel 1999; Francis & Thorpe 1999). Due to census difficulties, the species it is likely to be under-recorded, but the estimated national population of Spotted Crake in Britain is at least 50 singing males (JNCC unpublished).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for Spotted Crake supports, on average, 42 pairs. This amounts to about 84% of the British breeding population. The suite contains less than 0.1% of the international population (numbers in the UK are very small in comparison to those elsewhere in Europe). The species does not occur in Northern Ireland. The SPA suite contains four sites (Table 6.53.1) where Spotted Crakes have been listed as a qualifying species.

Other measures

The use by Spotted Crakes of successional fen habitat will require active management of key sites to sustain their currently favourable status. In particular, there is a need to extend and re-wet fens that are drying out, and create new wetlands liable to be colonised by *Carex* spp. to ensure that adequate future habitat is maintained (Francis & Thorpe 1999).

6. Classification criteria

All sites in the UK in natural or semi-natural habitats that were known to support more than 1% of the national breeding population of Spotted Crake were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs.

Distribution map for Spotted Crake SPA suite

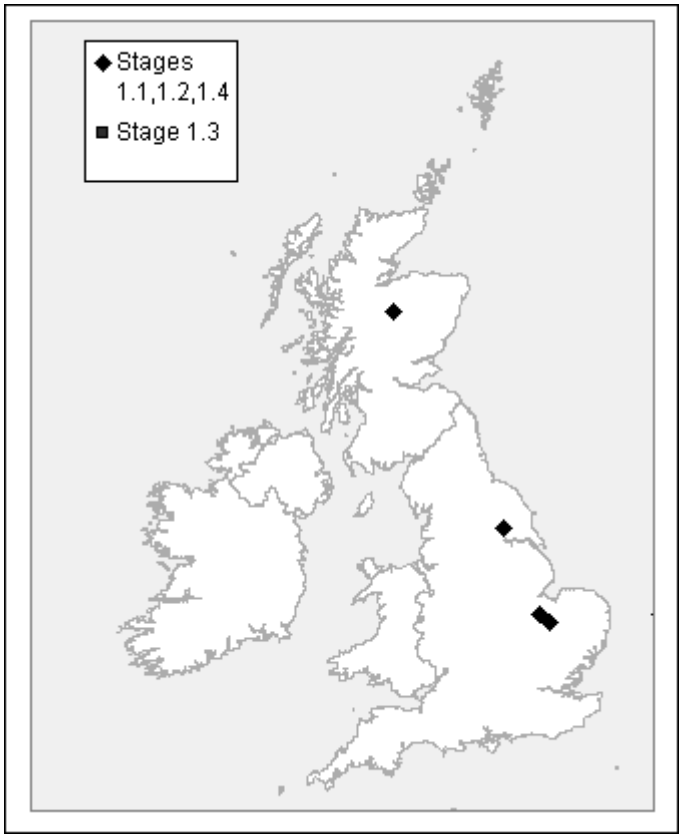


Table 6.53.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Lower Derwent Valley	31	<0.1	62	1.1
Nene Washes	5	<0.1	10	1.1
Ouse Washes	3	<0.1	6	1.1
River Spey – Insh Marshes	3	<0.1	6	1.1
TOTALS	42	<0.1%	84%	

A6.54 Corncrake *Crex crex*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 1** Global conservation concern (**vulnerable**)
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 1**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Endangered**

2. Population data

	Population sizes (calling males)	Selection thresholds	Totals in species' SPA suite
GB	480	5	204 (43% of GB population)
Ireland	173	2	No SPAs selected in Northern Ireland
Biogeographic population	87,500	875	204 (0.2% of biogeographic population)

GB population source: Green 1995
All-Ireland population source: Green et al. *1997a*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

Britain and Ireland are at the western limit of the Corncrake's global breeding range which extends through temperate regions of central Europe and Russia to the upper reaches of the Lena River at about 120°E. In winter, Corncrakes migrate through the Middle East and north Africa to the grasslands and savannahs of central and southern Africa (Green & Riley 1999). The species is monotypic.

In Europe, the range is highly discontinuous within most of the European Union, reflecting effects of habitat change consequent on agricultural intensification. Further east, and in parts of Fennoscandia, breeding distribution is more continuous, reflecting less intensive agricultural management.

Typical Corncrake breeding habitat in the UK comprises agricultural grassland grown for hay or silage in areas where tall vegetation cover (*e.g.* marshy areas or un-grazed fields and field margins) is available when the birds begin to arrive in spring, and where mowing does not take place until late summer (Stowe *et al.* 1993; Green 1996a; Green *et al.* 1997b). Over 90% of Corncrakes breeding in the UK are now concentrated in the western and northern islands of Scotland, with occasional scattered records from the Scottish mainland, England and Wales (Green 1995; Green & Gibbons 2000).

4. Population structure and trends

Corncrakes are difficult to survey and population data throughout their breeding range are incomplete. The best available estimate of the world population is about 3 million calling males, based on counts published in Green *et al.* (1997a) and unpublished data.

European Corncrake populations have generally declined in range and numbers over the last 100–150 years, reflecting similar trends, and for similar reasons as the declines documented in Britain and Ireland (Green *et al.* 1997a). The current European estimate is 87,470–96,920 calling males (Hagemeijer & Blair 1997).

Corncrakes once bred throughout Britain and Ireland (Holloway 1997), but have undergone a long-term and rapid decline in both numbers and range which began in Britain towards the end of the 19th century. The first survey of Corncrakes in Britain was carried out in 1938–1939 (Norris 1945, Norris 1947). No attempt was made to estimate actual numbers but questionnaires were circulated to obtain information on relative abundance in different parts of the country. This showed that Corncrakes were numerous only in the western and northern islands of Scotland; local and declining in mainland Scotland, northern England and north Wales, and irregular or absent in the south of England and Wales. A similar pattern was revealed by field surveys for the first breeding atlas between 1968–1972 (Sharrock 1976) at which time the total number of Corncrakes in Britain and Ireland was estimated at 5,000 pairs.

Subsequent national surveys of Corncrakes in Britain in 1978–79 (Cadbury 1980); 1988 (Hudson *et al.* 1990) and 1993 (Green 1995) showed a progressive decline from 746 to 480 calling males, of which over 90% were confined to the Scottish Islands. The 1993 national survey provided a baseline for this review and so the national population of 480 calling males has been used. However, since 1993, the British Corncrake population has undergone a modest overall increase with a total of 589 calling males recorded during the 1998 national Corncrake survey (Green & Riley 1999; Green & Gibbons 2000).

Corncrakes in Ireland have also undergone a long-term decline in numbers and range, starting in the early years of the 20th century (O'Meara 1979, 1986; Williams *et al.* 1997; Whilde 1993). Although the 1998 national census of Ireland indicated that the overall decline of Corncrakes may have halted, numbers are still declining in some areas of the Republic of Ireland and records of calling males in Northern Ireland have been sporadic since a count of just nine males in 1993. Regular breeding ceased in 1996, although confirmed breeding occurred on Rathlin Island in 2000 (RSPB unpubl.).

Corncrake declines in Britain and Ireland have been linked with intensification of agriculture, in particular the introduction of machines which allow mowing to be completed earlier in the summer and hayfields to be cut more rapidly than they were once by hand (Norris 1947). Under these circumstances Corncrakes and their chicks often suffer mortality through a reluctance to move from long vegetation and also lose this habitat earlier in the season (Green *et al.* 1997b). Further developments in agricultural practice have contributed to the long-term decline. These include an increased proportion of grass grown for silage; the use of fertilisers and faster-maturing varieties of grass; a decrease in the area devoted to grass crops; and extensive drainage of marshy areas of tall vegetation (Green 1995).

Although there are signs that the overall long-term decline of Corncrakes in the UK has halted, the population is still very small, vulnerable and concentrated in the Scottish Islands. The recovery has been attained through implementation of targeted species recovery measures involving delayed cutting of grass and Corncrake-friendly mowing methods. The species' future is very much dependent on appropriate farming practices which remain vulnerable to wider changes in crofting and the beef economy.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Corncrakes supports, on average about 204 calling males. This amounts to about 43% of the British breeding population. Since the mid-1990s, Corncrake no longer regularly breed in Northern Ireland. The suite contains about 0.2% of the international population in ten sites (Table 6.54.1) spread throughout the Western Isles of Scotland (the core range of Corncrakes in the UK), as well as the Lower Derwent Valley in Yorkshire.

Other measures

UK conservation for Corncrakes is co-ordinated through the Steering Group for the Corncrake Biodiversity Action Plan which aims to facilitate further increases in numbers as well as re-establishment of Corncrakes in parts of their former UK range (Green & Riley 1999).

A number of Corncrake Management Schemes, which provide payments for farmers and crofters to adjust their agricultural management for the benefit of Corncrakes are available. These include the RSPB/Scottish Natural Heritage/Scottish Crofters' Union Corncrake Initiative and Agri-environment Schemes run by Government. In Scotland, the Government schemes comprise Environmentally Sensitive Areas and the Countryside Premium Scheme (soon to be replaced by the Rural Stewardship Scheme) which have grassland bird prescriptions aimed at Corncrakes, while in Northern Ireland the Environment and Heritage Service and RSPB are initiating recovery measures on Rathlin Island. Scottish Natural Heritage has also operated a Corncrake SPA Management Scheme since October 1998.

In addition, voluntary conservation bodies such as RSPB, the Scottish Wildlife Trust and the National Trust for Scotland are undertaking intensive Corncrake conservation work on a number of nature reserves or recovery areas with suitable habitat.

A Biodiversity Action Plan has been drafted for this species (Biodiversity Steering Group 1995) and is being implemented as part of the UK's national response to the Biodiversity Convention. The Steering Group for the Corncrake Biodiversity Action Plan will co-ordinate the future development of Corncrake conservation measures in the UK.

6. Classification criteria

All nine sites in the UK that support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements (especially population size, breeding density and range). In order to provide for additional range coverage, the Rinns of Islay was selected under Stage 1.4, in light of the small, but long-established population there (Stroud 1985).

Four of the selected sites (Lower Derwent Valley, North Uist Machair and Islands, the Rinns of Islay, and South Uist Machair and Lochs) are multi-species SPAs, although the remaining six sites (Aird & Borve, Benbecula; Coll (corncrake); Eoligarry, Barra; Kilpheder to Smerclate, South Uist; Ness & Barvas, Lewis; and Tiree (corncrake) have been selected solely because of their importance for Corncrakes. The sites are distributed throughout the current range of Corncrakes in the UK and all have a very long recorded history of occupancy – lying within areas where Corncrakes were identified as 'abundant' between 1875 and 1900 (Holloway 1996).

Distribution map for Corncrake SPA suite

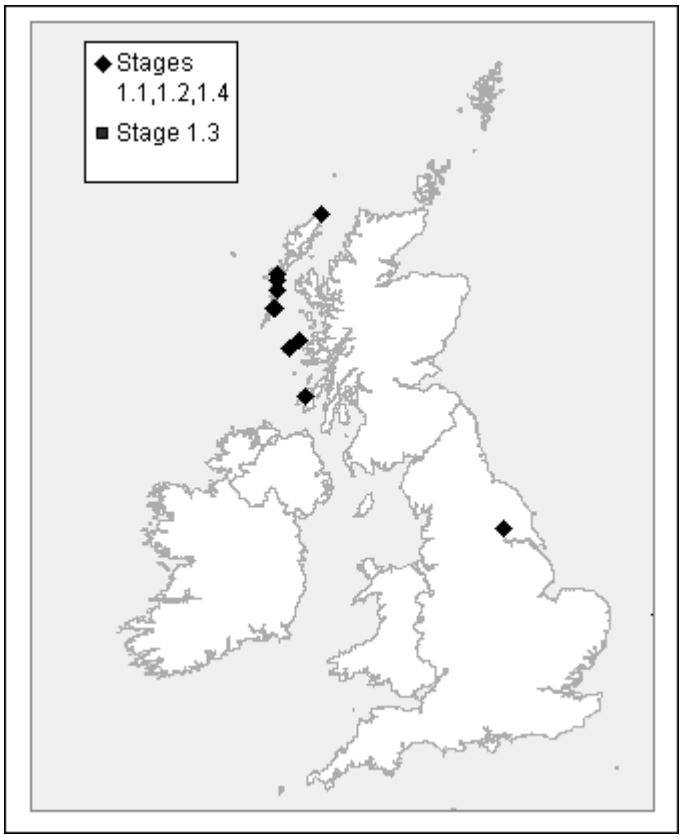


Table 6.54.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Aird & Borve, Benbecula	19	<0.1	4.0	1.1
Coll (corncrake)	24	<0.1	5.0	1.1
Eoligarry, Barra	28	<0.1	5.8	1.1
Kilpheder to Smerclate, South Uist	20	<0.1	4.2	1.1
Lower Derwent Valley	6	<0.1	1.3	1.1
Ness & Barvas, Lewis	18	<0.1	3.8	1.1
North Uist Machair and Islands	25	<0.1	5.2	1.1
Rinns of Islay	2	<0.1	0.4	1.4
South Uist Machair and Lochs	15	<0.1	3.1	1.1
Tiree (corncrake)	47	<0.1	9.8	1.1
TOTALS	204	0.2%	42.5%	

A6.55 Coot *Fulica atra* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	114,100	1,100	15,070 (14% of GB total)
Ireland	25,000	250	3,980 (16% of all-Ireland total)
Biogeographic population	1,500,000	15,000	19,050 (1% of biogeographic population)

GB population source: Kirby 1995
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Coots have a wide global distribution, occurring from Europe and northern Africa in the west, through the Middle East, and across Eurasia, east to the Pacific coasts of China and Japan. The species also occurs in India, south-east Asia and Australasia (Taylor & van Perlo 1998). It is polytypic and four sub-species are recognised. The nominate race *F. a. atra* occurs through Eurasia and northern Africa. In temperate and sub-tropical regions, Coots are resident, but populations in northern and eastern Europe move south to winter from the North Sea south to the Middle East, as well as in parts of North Africa (del Hoyo *et al*. 1996).

Coots have a wide breeding range in Europe, occurring in lowland areas of all countries in the region.

Coots are widespread in the UK in both winter and summer; a fact reflected in the small number of sites holding more than 1% of the biogeographical population. The non-breeding distribution shows a close similarity to that in summer (Horsfall 1986). Abberton Reservoir in eastern England holds by far the largest non-breeding numbers of this species – approximately double that of any other UK site (Pollitt *et al*. 2000). Colour-marking studies have indicated that individual Coots may move large distances between sites in the UK during the course of a winter, although breeding birds may be more site faithful (Horsfall 1986).

Coots generally favour large, still or slow-moving eutrophic or mesotrophic waterbodies, such as lakes, ponds, gravel pits, canals, slow-moving rivers, open marshes, and lagoons (Horsfall 1986; del Hoyo *et al*. 1996; Taylor & van Perlo 1998). They also exploit temporary waterbodies both when breeding and in winter (Taylor & van Perlo 1998). They feed primarily on vegetation, such as algae and other aquatic

plants, as well as occasionally on terrestrial plants (del Hoyo *et al*. 1996), and favour fairly shallow waters with deeper water for diving, and aquatic vegetation cover (Taylor & van Perlo 1998). In many parts of Europe the Zebra Mussel *Dreissena polymorpha* is a particularly important source of food during the winter (Horsfall 1986).

4. Population structure and trends

In Europe, two populations are recognised, one in north-west Europe, numbering *c.* 1,500,000 birds, and one in the Black Sea and Mediterranean, numbering *c.* 2,500,000 (Rose & Scott 1997). Numbers wintering in Britain are estimated at 114,100, representing 7.6% of the biogeographic population (Kirby 1995a).

Populations of Coot in many areas of Europe have shown marked fluctuations due to hard weather, but overall the species has expanded its range since the late 19th century. The main reasons for this increase are believed to be eutrophication, the creation of new habitats by man and adaptation to urban environments (del Hoyo *et al*. 1996; Gorban & Stanevicius 1997). The overall trend between 1974 and 1996 in the Northwest and Central Europe was of stability, although numbers in the Baltic and Nordic areas have declined very significantly (Delany *et al.* 1999). In large part this seem to be due to the failure of numbers to recover in Sweden following a major population crash in 1978–1979 (caused by a very severe winter). There also appear to have been decreases in the West Mediterranean (Delany *et al.* 1999).

In the UK, overall numbers have varied little over the last 15 years, with declines at particular sites attributed to the redistribution of birds (Cranswick *et al*. 1999). Numbers at sites in Ireland have fluctuated markedly through the 1990s, further supporting the idea that Coots show low site fidelity between winters (Colhoun 2000). There are no indications from count data of hard weather movements of Coots to the UK, yet there may be some movements at a more local scale within the UK (Ridgill & Fox 1990).

5. Protection measures for population in the UK

SPA suite

In the non-breeding season, the UK's SPA suite for Coot supports, on average, 19,050 individuals (calculated using WeBS November site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 14% of the British non-breeding population, and about 16% of the all-Ireland population. The suite holds about 1% of the international flyway population at six sites where Coots have been listed as a qualifying species (Table 6.55.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Coot population in winter (Stage 1.2). However, six sites in the suite were identified under Stage 1.3 (see section 5.3), with Coot an important component of the non-breeding waterbird assemblages at these localities. The sites thus identified (Abberton Reservoir; Broadland; Ouse Washes and Rutland Water in England; and Strangford Lough, and Lough Neagh and Lough Beg in Northern Ireland) were included within the suite. By definition, these sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at most of these sites (Boyd in Atkinson-Willes 1963).

As the selection of sites under Stage 1.3 resulted in a suite which includes the main population centres of non-breeding Coot in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Coot SPA suite

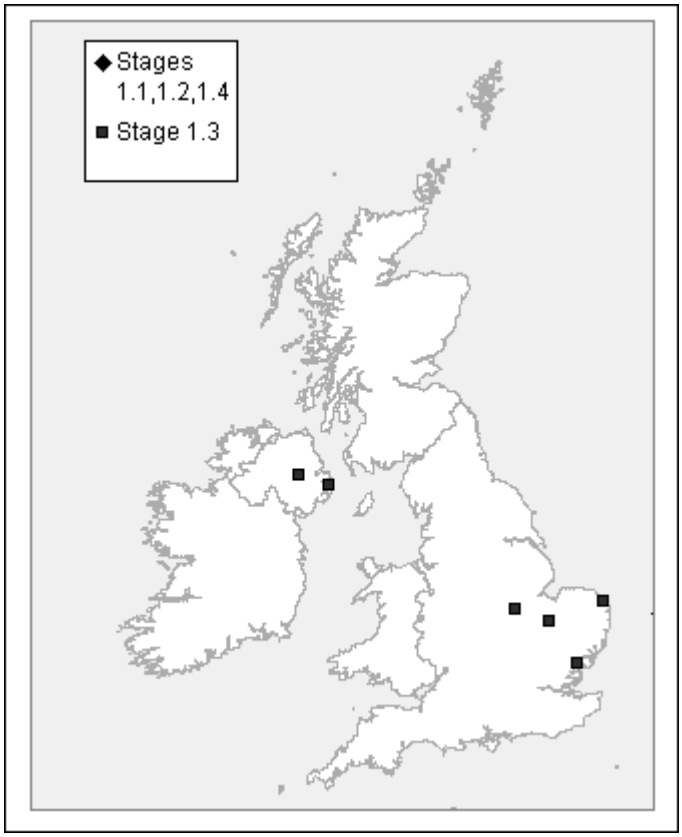


Table 6.55.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	12,602	0.8	11.0	1.3
Broadland	5,747	0.4	5.2	1.3
Lough Neagh and Lough Beg	6,993	0.5	28.0 (Ire)	1.3
Ouse Washes	2,201	0.2	1.9	1.3
Rutland Water	3,962	0.3	3.5	1.3
Strangford Lough	392	<0.1	1.6 (Ire)	1.3
TOTALS	19,050 (in November)	1.3%	13.7% 15.9% (Ire)	

A6.56a Oystercatcher *Haematopus ostralegus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	33,000	330	1,367 (4% of GB population)
Ireland	3,000	30	No SPAs selected in Northern Ireland
Biogeographic population	290,000	2,900	1,367 (0.5% of biogeographic population)

GB and all-Ireland population source: Piersma 1986
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution of Oystercatchers is quite discontinuous. In Iceland and northern Europe, they breed largely in coastal areas, while occurrence is more continuous in lowland areas of Ukraine and Russia, extending to parts of central Asia. Separate populations breed in coastal Kamchatka as well as the Far Eastern Russian Pacific coast. These birds migrate south to winter on the coast of China, whilst Oystercatchers breeding in Europe and central Asia generally move south to winter in coastal areas elsewhere in Europe, the Middle East, and east and west Africa (Cramp & Simmons 1983; Smit & Piersma 1989).

Three sub-species have been described. The nominate race *H. o. ostralegus* has a European breeding distribution from Iceland, the Faeroes and much of northern Europe to western Russia (Colston & Burton 1988). *H. o. longipes* occurs in east and southern Russia, east to western Siberia. Birds breeding in eastern Asia belong to *H. o. osculans*.

Within Europe, Oystercatchers breed more or less continuously around north-western coasts from the White Sea to Brittany. Additionally, there are significant inland breeding populations in Scotland and the Low Countries. There are small, more local breeding groups in the north-western Mediterranean, north-eastern Adriatic, northern Greece and the Aegean coasts of Turkey.

Within the UK, breeding Oystercatchers are concentrated in coastal and inland areas of Scotland, but also occur at inland sites in northern England, as well as at coastal sites throughout much of the rest of the UK. More recently they have spread into areas of intensive arable farming in lowland England (particularly East Anglia and the Vale of York) and north-east Wales (Gibbons *et al*. 1993).

4. Population structure and trends

Three biogeographic populations are recognised globally, comprising each of the three sub-species. Those occurring in Britain and Ireland thus comprise all of the nominate sub-species, amounting to 874,000 individuals (and about 290,000 pairs; Rose & Scott 1997). Of this total, approximately 20% occur in the UK.

Whilst the European breeding population appears to be stable or increasing, in The Netherlands, there has been a recent, rapid increase in numbers. The overall European trend, however, is reflected in the UK, which has seen an increase of approximately 50% between the 1960s and 1980s, to give an estimated population of 33,000–43,000 pairs by the mid-1980s (Piersma 1986). The main reason for this population increase is thought to be behavioural, as Oystercatchers have adapted their use of habitat to allow the exploitation of inland areas (Gibbons *et al*. 1993).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Oystercatcher supports, on average, 1,367 pairs. This amounts to about 4% of the British breeding population. The suite contains about 0.5% of the international population. Within an all-Ireland context, there have been no SPAs selected for Oystercatchers in Northern Ireland. The SPA suite total is contained within three sites (Table 6.56a.1) where Oystercatcher has been listed as a qualifying species.

6. Classification criteria

No sites in the UK hold more than 1% of the international population of Oystercatchers (2,900 pairs). As the UK supports a significant proportion of the European population of this species (22%), known areas of high density were assessed under Stage 1.4. Three sites were selected (North Uist Machair and Islands, South Uist Machair and Lochs, and Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)) by virtue of their high population densities (Fuller *et al.* 1986; Shepherd & Stroud 1991), and as a contribution to the maintenance of their European range. All have a long recorded history of occupation.

Each of these sites is a multi-species site, and each is of significance for holding a diverse assemblage of breeding waterbirds, the composition of which is unique to the machair habitats of western Scotland and western Ireland.

Distribution map for breeding Oystercatcher SPA suite

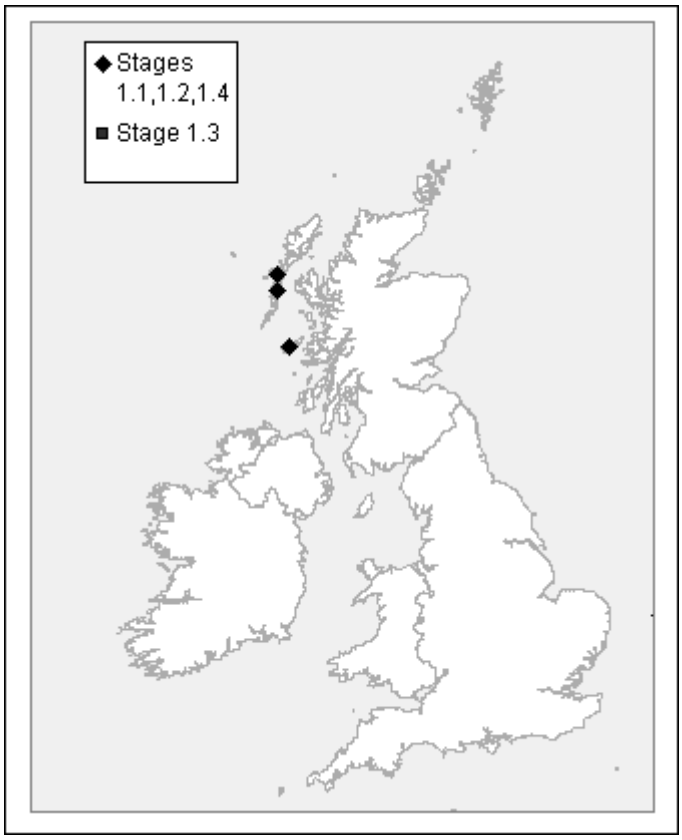


Table 6.56a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
North Uist Machair and Islands	630	0.2	1.9	1.4
South Uist Machair and Lochs	577	0.2	1.8	1.4
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	160	<0.1	0.5	1.4
TOTALS	1,367	0.5%	4.1%	

A6.56b Oystercatcher *Haematopus ostralegus* (non-breeding)

1. Status in UK

See section A6.56a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	359,000	3,600	183,049 (51% of GB total)
Ireland	50,000	500	11,849 (24% of all-Ireland total)
Biogeographic population	874,000	9,000	194,898 (22% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.56a outlines the global distribution and taxonomy of Oystercatchers.

Non-breeding Oystercatchers are found exclusively in coastal habitats and, within the East Atlantic Flyway, most are concentrated around the North and Irish Seas. There are wintering areas as far south as the coasts of West Africa, which probably hold birds from the most northerly breeding areas in the north of Norway and around the White Sea.

In Britain, resident birds are joined in winter by birds mainly from Iceland, the Faroes and Norway (Smit & Piersma 1989). An estimated 45% of the European breeding population is thought to winter in Great Britain, where birds are found at many coastal sites, albeit concentrated on estuaries (Piersma 1986). In contrast to their dispersed nature in the breeding season, wintering Oystercatchers usually occur in high densities at a small number of key sites (often associated with estuaries with high productivity of shellfish – especially Cockles *Cerastoderma edule* and Mussels *Mytilus edulis*).

4. Population structure and trends

The biogeographic population of Oystercatcher is that of the East Atlantic Flyway (which also comprises the whole of the nominate sub-species). This population is currently increasing (Rose & Scott 1997), especially since the mid-1980s (Davidson 1998). Results from the International Waterbird Census show that almost exactly a third of the north-west European population occur in the UK (Delany *et al.* 1999).

Within the UK, despite between-year fluctuations (Cranswick *et al.* 1999), the trend has been a substantial increase in non-breeding numbers over the last decade. The estuarine population has increased by 24% between 1981–1985 and 1987–1992, and the non-estuarine population by 43% between 1984–1985 and 1987–1992 (Cayford & Waters 1996). Both the long-term increase and short-term fluctuations have been linked to recent climatic improvement and changes in the density of prey during winter and in the breeding season (Hagemeijer & Blair 1997). This is partly manifest in the UK by the behavioural adaptation of breeding Oystercatchers to lowland agricultural habitats (Gibbons *et al.* 1993).

Local declines in numbers of Oystercatcher have been linked to low food abundance particularly in areas where Cockles *Cerastoderma edule*, a major prey item, are commercially farmed (Cranswick *et al.* 1999). Norris *et al.* (1998) found a positive correlation between the number of Oystercatchers in the spring and the biomass of cockles at the start of winter. Conversely, Oystercatcher numbers were negatively correlated with the amount of cockles landed by the fishery during the winter. Studies into the interaction of Oystercatchers and their principal prey (Goss-Custard *et al.* 1998) are ongoing and

will contribute to a greater understanding of the impact of commercial interests, such as Cockle fishing, on Oystercatcher populations.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Oystercatcher supports, on average, 194,898 individuals (calculated using WeBS November site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 51% the British population, about 24% of the all-Ireland population, and about 22% of the international flyway population. The suite comprises 30 sites at which Oystercatcher has been listed as a qualifying species (Table 6.56b.1).

6. Classification criteria

All seven sites in the UK that were known to support more than 1% of the international population of Oystercatcher were considered under Stage 1.2. All were selected after consideration of Stage 2 judgements (Burry Inlet; Foulness; Morecambe Bay; Ribble and Alt Estuaries; the Dee Estuary; The Wash; and the Upper Solway Flats and Marshes). A further 22 sites were considered and selected under Stage 1.3 (see section 5.3), with Oystercatcher forming an important component of the non-breeding waterbird assemblages at these localities.

One additional site, Traeth Lafan/Lavan Sands was considered and selected under Stage 1.4 because of the important role that the site plays as a cold weather refuge for major concentrations of Oystercatchers from the nearby Dee Estuary. In severe winter weather conditions, the Dee can freeze, displacing birds to feed on the milder, open coast of Traeth Lafan/Lavan Sands.

The sites within the suite are distributed throughout the range of the population in the UK, from Northern Ireland and Wales, to the Dornoch Firth in northern Scotland, and sites on the English south coast. Most sites are multi-species SPAs, of importance also for a range of other waterbirds, although Traeth Lafan/Lavan Sands was selected solely for this species. There is a long recorded history of occupancy at most of these sites (Prater 1981).

Distribution map for non-breeding Oystercatcher SPA suite

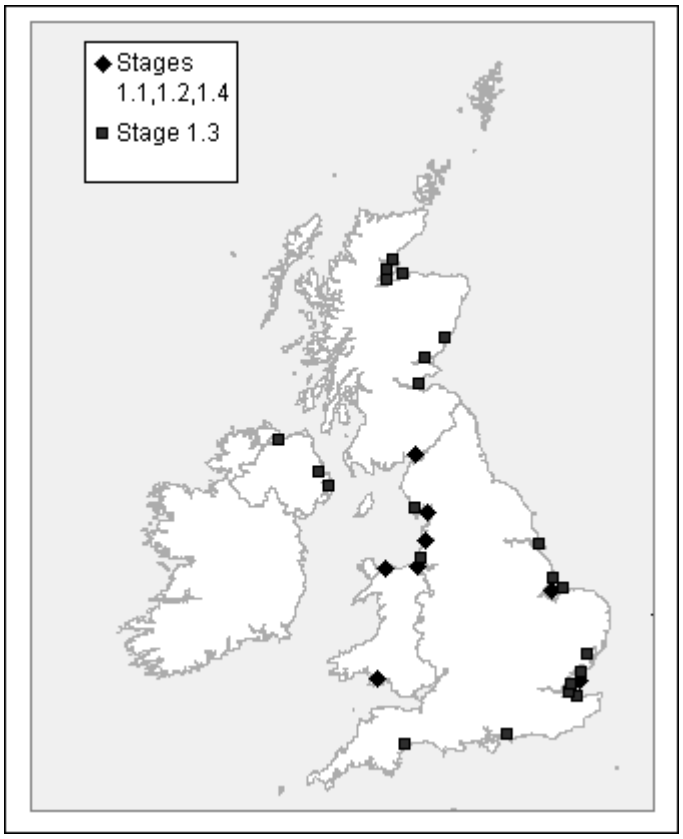


Table 6.56b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	5,963	0.7	11.9 (Ire)	1.3
Benfleet and Southend Marshes	2,484	0.3	0.7	1.3
Burry Inlet	13,590	1.6	3.8	1.2
Chichester and Langstone Harbours	2,595	0.3	0.7	1.3
Cromarty Firth	2,509	0.3	0.7	1.3
Dengie	2,193	0.3	0.6	1.3
Dornoch Firth and Loch Fleet	3,270	0.4	0.9	1.3
Duddon Estuary	6,463	0.7	1.8	1.3
Exe Estuary	4,265	0.5	1.2	1.3
Firth of Forth	8,931	1.0	2.5	1.3
Firth of Tay and Eden Estuary	4,215	0.5	1.2	1.3
Foulness	11,756	1.4	3.3	1.2
Gibraltar Point	3,951	0.5	1.1	1.3
Humber Flats, Marshes and Coast	5,149	0.6	1.4	1.3
Inner Moray Firth	3,063	0.4	0.9	1.3
Lough Foyle	2,028	0.2	4.1 (Ire)	1.3
Medway Estuary and Marshes	3,672	0.4	1.0	1.3
Mersey Narrows and North Wirral Foreshore	3,452	0.4	1.0	1.3
Montrose Basin	2,368	0.3	0.7	1.3
Moray and Nairn Coast	2,171	0.3	0.6	1.3
Morecambe Bay	47,572	5.4	13.3	1.2
North Norfolk Coast	3,048	0.4	0.9	1.3
Ribble and Alt Estuaries	16,159	1.9	4.5	1.2
Stour and Orwell Estuaries	2,176	0.3	0.6	1.3
Strangford Lough	5,243	0.6	10.5 (Ire)	1.3
The Dee Estuary	28,434	3.2	7.9	1.2
The Swale	3,731	0.4	1.0	1.3
The Wash	25,651	2.9	7.2	1.2
Traeth Lafan/Lavan Sands, Conway Bay	4,931	0.6	1.4	1.4
Upper Solway Flats and Marshes	34,694	4.0	9.7	1.2
TOTALS	194,898 (in November)	21.7%	50.8% 23.7% (Ire)	

A6.57a Avocet *Recurvirostra avosetta* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3 (wintering)** Unfavourable conservation status **(localised in winter)** but not concentrated in Europe **SPEC 4 (breeding)** Favourable conservation status but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	592	6	549 (93% of GB population)
Ireland			
Biogeographic population	26,800	268	549 (2% of biogeographic population)

GB population source: Ogilvie & RBBP 1996
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global range of the Avocet is quite discontinuous, with a series of isolated breeding areas extending south from western Europe, through the Mediterranean to eastern and southern Africa, and east through the Black Sea and southern Asia to eastern Asia (Cramp & Simmons 1983; del Hoyo *et al.* 1996). In Africa, the Avocet is sedentary, but other populations are migratory. North-west European breeding birds move south-west to winter mainly on the coasts of Iberia, (although some remain on the estuaries of eastern and southern England) whilst other European birds move to North Africa and the Arabian Gulf. Central Asian breeding birds move south to wintering grounds in Pakistan and the coast of China. The species is monotypic.

In Europe, breeding occurs around the southern coasts of the North Sea (the most northerly breeding area in the world – Fleet *et al.* 1994), on the west coast of France, and locally along the north coast of the Mediterranean Sea, from Portugal in the west to Turkey in the east. Inland breeding occurs in Spain, Austria and Yugoslavia, whilst Avocets also breed along the north coast of the Black Sea, from Bulgaria to the Gulf of Sivash.

In the UK, the breeding population is concentrated on the coasts of East Anglia and north Kent, where the preferred habitat is shallow, brackish coastal lagoons with bare or sparsely vegetated low islands (Gibbons *et al.* 1993). Principal breeding concentrations are found along the north coast of Norfolk, the Suffolk coast and the north Kent coast. In recent years, nesting has occurred on the coasts of Lincolnshire, Yorkshire and Sussex, and attempted breeding has occurred inland in the London area, at Rutland Water and on the Ouse Washes (Cambridgeshire/Norfolk). This indicates a continuing range expansion (Ogilvie & RBBP 1999).

The species does occasionally use alternative habitats when competition for nest sites is high. At Old Hall Marshes RSPB reserve in Essex, several pairs have nested successfully along the margins of borrow dykes in which the water level has been artificially raised, and in wet fields grazed by sheep.

4. Population structure and trends

Two of the six biogeographical populations of Avocet occur in Europe: the Black Sea and Eastern Mediterranean population, and the Western Europe/Western Mediterranean population – of which UK birds are a component (Rose & Scott 1997). Numbers breeding in Europe are currently estimated at between 26,762–29,435 pairs (Hagemeijer & Blair 1997). Numbers in Europe have increased markedly over the course of the last century, notably since the 1940s (Fleet *et al.* 1994; Hötker in prep).

Having been absent from the UK as a breeding species for 100 years, Avocets became re-established in Suffolk in 1947 and bred regularly in that county alone for the next 20 years (Cadbury & Olney 1978; Cadbury *et al.* 1989). During World War II, human disturbance in coastal areas was much reduced and many areas of the claimed coast were re-flooded for defence purposes. Avocets began to breed on the resulting brackish lagoons, free from human disturbance (Sharrock 1976).

There has been considerable range expansion and population increase since the mid 1970s and the species now breeds regularly in Norfolk, Suffolk, Essex and Kent (Gibbons *et al.* 1993). The 1996 breeding population was estimated to be 592 pairs (Ogilvie & RBBP 1998), representing a 374% increase since 1974 when there were 125 pairs (Sharrock & RBBP 1975). The principal reasons for the increase are reduced human disturbance and appropriate habitat management at key breeding sites (Gibbons *et al.* 1993). Similarly, a large increase has also occurred in The Netherlands, where the breeding population doubled in 15 years, probably as a result of eutrophication in the Wadden Sea, which increased the food supply, and the creation of artificial breeding sites in the Delta area (Hagemeijer & Blair 1997).

It is likely that the considerable population growth and range expansion witnessed in England has been supplemented by immigration from The Netherlands and Denmark, where large increases were noted during the same period (Sharrock 1976; Hagemeijer & Blair 1997). Research shows that pairs breeding at newly colonised sites have a higher level of productivity than those at established sites, where occupancy of breeding habitat has reached 'pair carrying capacity' (Hill 1988). This process is likely to stimulate continuing range expansion and, possibly, use of alternative breeding habitat.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Avocets supports, on average, 549 pairs. This amounts to about 93% of the British breeding population. The suite contains about 2% of the international population. The species does not breed in Northern Ireland. The SPA suite total is contained within six sites (Table 6.57a.1) where Avocets have been listed as a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national Avocet breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. As the selection of sites under Stage 1.1 resulted in a suite giving comprehensive coverage of the Avocet population and range in England, it was not considered necessary to select additional sites using Stage 1.4.

Some of the sites have a long history of occupancy, although other sites have been more recently colonised. The Alde – Ore Estuary contains Havergate Island, where Avocets first re-established themselves as a British breeding species in 1947 (Cadbury *et al.* 1989).

Most of the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Many of the areas used by Avocets are in the ownership of nature conservation organisations and are subject to active conservation management so as to facilitate the specific habitat requirements of this species.

Distribution map for breeding Avocet SPA suite

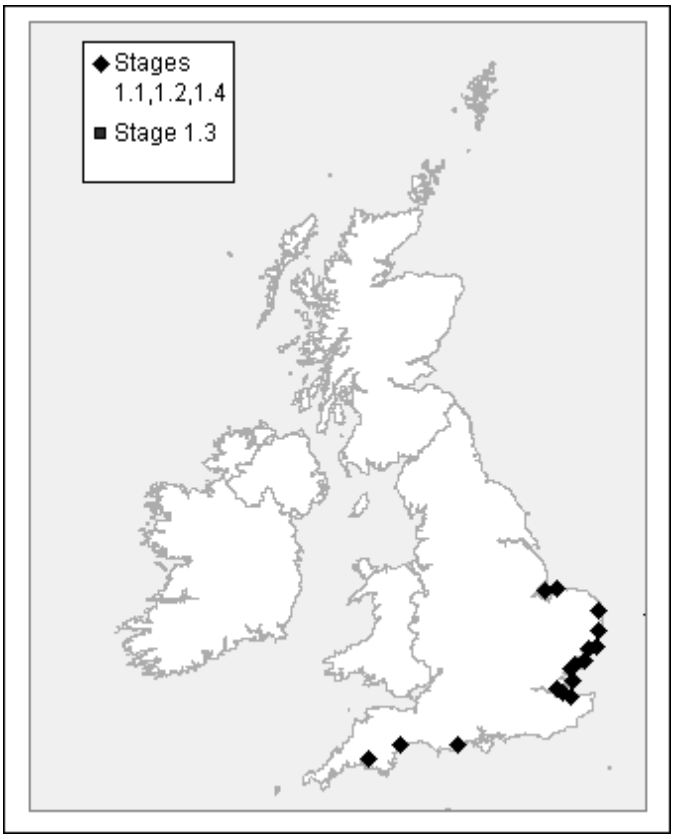


Table 6.57a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	104	0.4	17.6	1.1
Foulness	46	0.2	7.8	1.1
Medway Estuary and Marshes	28	0.1	4.7	1.1
Minsmere – Walberswick	91	0.3	15.4	1.1
North Norfolk Coast	177	0.7	29.9	1.1
The Swale	103	0.4	17.4	1.1
TOTALS	549	2.1%	92.7%	

A6.57b Avocet *Recurvirostra avosetta* (non-breeding)

1. Status in UK

See section A6.57a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	1,270	50 (see section 5.1.2 for rationale)	2,225 (*c.* 100% of GB total)[18]
Ireland			
Biogeographic population	67,000	700	2,225 (3% of biogeographic population)

GB population source: Cayford & Waters 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global range of the Avocet is outlined in section A6.57a.

In Europe, birds breeding in the Wadden Sea move south and west to the coasts of western France, Spain and Portugal. Birds breeding in Britain stay within the country in winter. There is, however, movement from breeding areas in East Anglia, to the estuaries along the Channel and southern North Sea coasts of England, where there are concentrations in Devon/Cornwall and Suffolk (Lack 1986; Cadbury *et al.* 1989; Pollitt *et al.* 2000). The preferred non-breeding habitat is estuaries where the substrate is largely composed of fine silt (Lack 1986).

4. Population structure and trends

Those Avocets wintering in the UK are a component of the Western Europe/Western Mediterranean biogeographical population, currently estimated to number 67,000 individuals (Rose & Scott 1997).

Avocets began wintering in the UK regularly in 1947, the same year that the species recolonised as a regular breeder (Lack 1986). Until the mid-1970s, the majority of the UK breeding population had left the country by the end of October, leaving only a few to overwinter (Lack 1986). Since then, an increasing proportion of what is presumably the UK breeding population has over-wintered, with 385 birds in winter 1983/1984 (Lack 1986). Subsequently, the population has increased more rapidly with a maximum of 3,859 recorded in December 1997. There has been a 99% increase in the annual index value between 1976/77 and 1997/98 (Cranswick *et al.* 1999).

These population increases have been mirrored in other European countries including Belgium and Italy where, as in the UK, the increases are related to better protection, extension of breeding habitat and improved feeding conditions (Tucker & Heath 1994). However, one of the largest wintering populations in France is reported to be in decline (Tucker & Heath 1994), with no obvious cause identified.

The species is susceptible to cold winter weather, and those wintering on the east coast of England are the most northerly wintering Avocets in the world. Accordingly, they are susceptible to prolonged periods of freezing conditions that can cause substantial mortality. This appears to have been the cause of declines in a variety of European countries following the cold weather of winter 1996 (Delany *et al.* 1999).

18 Numbers of Avocets wintering in the UK continue to increase (Pollitt *et al.* 2000); hence, the more contemporary estimate of numbers within the SPA suite exceeds the national population estimate used for this review.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Avocet supports, on average, 2,225 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to substantially all the British, and about 3.2% of the international flyway populations. Avocets do not regularly occur in winter in Northern Ireland. The suite comprises 16 sites at which Avocet has been listed as a qualifying species (Table 6.57b.1).

6. Classification criteria

All 16 sites in the UK that were known to support more than 50 Avocets were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite are distributed throughout the range of the population in the UK, from The Wash and the North Norfolk Coast in the north-east to the Tamar and Exe estuaries in the south-west. Most sites are multi-species SPAs, of importance also for a range of other waterbirds, although the Deben Estuary was selected solely for this species. There is a relatively long recorded history of occupancy at most of these sites, with birds having wintered at the Tamar Estuary since the recolonisation of Britain by this species in 1947 (Prater 1981). On the Exe Estuary wintering commenced in 1973/4 (Cadbury & Olney 1978).

As the selection of sites under Stage 1.1 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Avocet in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Avocet SPA suite

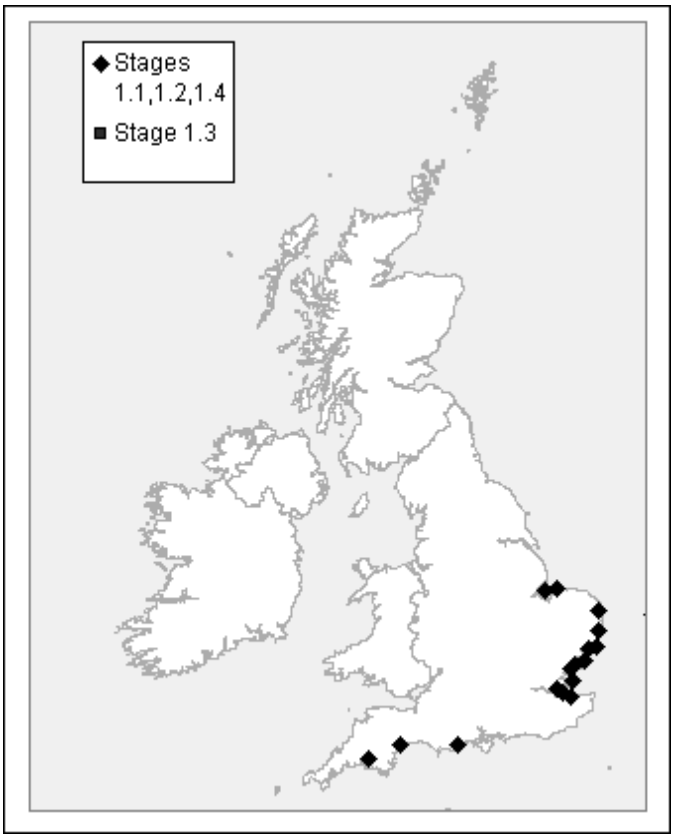


Table 6.57b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	766	1.1	60.3	1.1
Blackwater Estuary	76	0.1	6.0	1.1
Breydon Water	33	<0.1	2.6	1.1
Colne Estuary	75	0.1	5.9	1.1
Deben Estuary	95	0.1	7.5	1.1
Exe Estuary	359	0.5	28.3	1.1
Foulness	100	0.2	7.9	1.1
Hamford Water	317	0.5	25.0	1.1
Medway Estuary and Marshes	314	0.5	24.7	1.1
Minsmere – Walberswick	278	0.4	21.9	1.1
North Norfolk Coast	153	0.2	12.1	1.1
Poole Harbour	459	0.7	36.1	1.1
Tamar Estuaries Complex	201	0.3	15.8	1.1
Thames Estuary and Marshes	276	0.4	21.7	1.1
The Swale	89	0.1	7.0	1.1
The Wash	110	0.2	8.7	1.1
TOTALS	2,225 (in January)	3.2%	*c.* 100%	

A6.58 Stone Curlew *Burhinus oedicnemus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status **(vulnerable)** but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 2**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	188	2	184 (98% of GB population)
Ireland			
Biogeographic population	32,690	327	184 (0.6% of biogeographic population)

GB population source: English Nature unpublished (1998)
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

Between a quarter and a half of the global breeding range of the Stone Curlew occurs in Europe. The global range extends from North Africa and Iberia, east through southern Europe to central Asia, India and south-east Asia (Cramp & Simmons 1983). Northern populations are migratory, whereas more southerly, tropical and sub-tropical birds are sedentary. The species is polytypic with six sub-species recognised. Of these, three occur in Europe: the nominate race *B. o. oedicnemus* which occurs through most of Europe other than the smaller Mediterranean islands and Greece; *B. o. saharae* which occurs in North Africa, Greece and the smaller Mediterranean islands; and *B. o. harterti* which breeds in south-east Russia eastwards.

The species breeds in much of southern and central Europe from southern England to east Poland and Russia, and from Iberia to Italy, the Balkans and Caucasus. Together the Iberian Peninsula, France and Russia hold around 95% of the European population, which is estimated at between 32,690–45,704 breeding pairs (Hagemeijer & Blair 1997).

In Britain, the species is confined to central southern England and East Anglia. The two main strongholds are the Breckland of Norfolk and Suffolk, and on or near Salisbury Plain in Wiltshire and Hampshire. Very small populations are also present in Berkshire, north Norfolk, south Cambridgeshire and on the Suffolk coast.

Stone Curlews breed exclusively on habitats with free-draining stony soils, good all-round visibility and bare ground or short vegetation grazed by livestock or rabbits. The favoured habitats in Europe are

heaths, dry grasslands, sand dunes and stony plains. Recently they have taken to using a variety of spring-sown crops on well-drained farmland and even vineyards, orchards and young forestry plantations (Hagemeijer & Blair 1997). In Britain, they breed on grass heaths, chalk downland and in one or two areas of arable farmland, notably spring-sown crops, *e.g.* sugar beet and carrots (Gibbons *et al.* 1993).

4. Population structure and trends

The Stone Curlew has undergone a widespread decline in Europe during the twentieth century, especially in the period after the Second World War, with particularly heavy losses in western and central areas. During 1970 to 1990, numbers fell in nearly all countries in the European range and the species is now absent from The Netherlands. It was last proven to breed in Germany in 1987 (Hagemeijer & Blair 1997). In eastern Europe, the species is now scarce, local and declining, with population crashes occurring in Poland and Bulgaria.

In Britain, although formerly widespread with birds breeding on all light soils north to the Yorkshire Wolds, the species has suffered long-term decline in both numbers and range owing to habitat destruction and conversion of heathland for agriculture and forestry. By the late 1930s the population was thought to be only 1,000–2,000 pairs (Batten *et al.* 1990) and the species was already extinct in Yorkshire and Lincolnshire by the middle of the twentieth century. The population was later estimated at 200–400 pairs in the 1960s (Parslow 1973) and 300–500 pairs in the early 1970s (Sharrock 1976). The decline continued to the early 1990s when 150–160 pairs were present (Gibbons *et al.* 1993). The population then stabilised and there has been a significant upturn since 1994, with the numbers of proven breeding pairs reaching 188 by 1998. However, the Stone Curlew remains one of the rarest and most vulnerable bird species in Britain.

The decline in Europe has been attributed to the replacement of dry grassland with intensively managed arable land. In Britain, there has been a significant loss of semi-natural habitats (chalk grassland and grass heaths) and there has been a similar move from low-intensity mixed farming to intensive arable farming which has resulted in the loss of permanent pastures rich in invertebrate prey – an important food source for birds nesting on adjacent tilled land. Additionally, a reduction in livestock grazing, along with reduced rabbit populations caused by myxomatosis, has resulted in the loss of preferred short-sward grasslands in favour of taller vegetation and invasive scrub. Birds nesting on arable areas are also threatened by mechanised farming activities such as the rolling of cereals and inter-row hoeing of root crops. They are also threatened by changes in agriculture. Spring-sown crops have traditionally been common on the lighter land throughout the Stone Curlew's range but these have declined over the last 50 years and been replaced by autumn-sown crops which are too dense for Stone Curlews by the time they arrive on their breeding grounds in early spring. In addition, improvements in the varieties of crops grown have resulted in spring crops being drilled earlier, while more intensive husbandry means quicker-growing and more vigorous plants. This has meant that the time available for ground-nesting birds in general to rear a brood has been reduced to such an extent that many cannot do so. Stone Curlews take about ten weeks for a successful breeding attempt during which time they require relatively short vegetation with an open structure.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Stone Curlew supports, on average, 184 pairs. This amounts to about 98% of the British breeding population. The suite contains about 0.6% of the international population. The species does not breed in Northern Ireland. The SPA suite total is contained within three sites (Table 6.58.1) where Stone Curlews have been listed as a qualifying species.

Much of the semi-natural grassland and grass heath within the core breeding areas is on land managed by the Ministry of Defence, although only a small proportion of this land is managed specifically for Stone Curlews. MAFF agri-environment schemes have a major role in securing management of many heathland and arable sites in Breckland and provide incentives for special nesting plots in Wessex (Berkshire, Hampshire and Wiltshire). Some areas of semi-natural habitat are also managed within NNRs. A joint RSPB/EN Stone Curlew Species Recovery Project monitors the population and, with essential co-operation from site owners, ensures the protection of nests and young from potentially damaging agricultural operations (this has a significant positive effect on productivity).

Other Measures

A UK Biodiversity Action Plan has been agreed and published for this species (Biodiversity Steering Group 1995) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population of Stone Curlews were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. Given that the selection of sites under Stage 1.1 resulted in a suite which gives comprehensive coverage of the Stone Curlew population and range in England, it was not considered necessary to select additional sites using Stage 1.4. Indeed, outside the SPA suite, Stone Curlews breed only at low densities or on arable land.

The suite comprises sites in the two remaining centres of population – the chalk grasslands of Salisbury Plain and the heaths and arable farmland of Breckland. Breckland and Salisbury Plain are multi-species SPAs, although Porton Down has been selected solely for Stone Curlews. Birds ringed at Porton Down have been recovered on Salisbury Plain and elsewhere, suggesting it may be an important source of birds for other populations. All three sites have a very long history of occupancy; the species is known to have been present in these areas since at least the 1850s (Holloway 1996).

Distribution map for Stone Curlew SPA suite

Table 6.58.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Breckland	142	0.4	75	1.1
Porton Down	20	<0.1	11	1.1
Salisbury Plain	22	<0.1	12	1.1
TOTALS	184	0.6%	98%	

A6.59a Ringed Plover *Charadrius hiaticula* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	8,500	85	1,102 (13% of GB population)
Ireland	1,250	12	No SPAs selected in Northern Ireland
Biogeographic population	16,000	160	1,102 (7% of the biogeographic population)

GB population source: Prater 1989
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Ringed Plover is an arctic and northern temperate breeding wader. Its breeding range extends around much of the Arctic, from the east coast of Baffin island and Greenland, across the Russian tundra to the coasts of the Bering Sea in northern Chukotka. Through much of its range it is an essentially high Arctic breeding bird, but the range extends to the temperate coasts of north-western Europe as well as a few inland areas of Europe. There are two sub-species: the nominate race *C. h. hiaticula* which breeds from western Arctic Canada, through Greenland and Iceland to southern Scandinavia and the Baltic and south to France; and *C. h. tundrae* which breeds from northern Scandinavia and Finland east across northern Russia to the Bering Strait (Cramp & Simmons 1983; Smit & Piersma 1989; del Hoyo *et al*.1996).

In Europe, some Ringed Plovers breed inland in Iceland, northern and central Scandinavia, as well as locally in Britain and Ireland. They also breed along some of the major river systems of Poland, Ukraine and Belarus. Elsewhere, the distribution is entirely coastal with a wide distribution in the Baltic, Denmark and along the coasts of the Wadden Sea (Fleet *et al.* 1994). England is towards the southern edge of the world breeding range, although a small number of pairs are found in north-west France.

Ringed Plovers have a wide breeding distribution around the coast of Britain and Ireland. In England, the extensive sandy and shingle beaches between the Thames and the Humber hold most of the population, but the islands off western Scotland are also very important for the population. According to Prater (1989) the Outer Hebrides, Orkney and Shetland hold over 40% of the population in Britain

and Ireland. The Southern Isles of the Outer Hebrides are alone estimated to support approximately one quarter of the British population (Fuller *et al*. 1986).

Southerly populations, such as those in Britain and Ireland, breed mainly on coastal sand, gravel and shingle beaches, upper saltmarshes and artificial habitats such as the shores of gravel pits and reservoirs; although short-grazed coastal pastures, Outer Hebridean machair (Fuller 1978) and arable fields in eastern England may also be frequently used (Prater 1989). Breeding Ringed Plovers are highly site faithful (Pienkowski 1984; Jackson 1994).

4. Population structure and trends

There are three biogeographical populations of Ringed Plover (Rose & Scott 1997), although there is considerable mixing at some times of the year (Smit & Piersma 1989). These are European breeding *C. h. hiaticula* that winter as far south as northern Africa; the high Arctic-breeding *C. h. hiaticula* from Baffin island, Greenland, Iceland and Svalbard that migrate to west and southern Africa (these are sometimes considered as the separate sub-species *C. h. psammodroma*); and the single population of *C. h. tundrae* that breeds in the Russian Arctic and migrates to the Arabian Gulf, east and southern Africa. Ringed Plovers that breed in Britain belong to the European/North African population.

The total of Ringed Plover breeding in geographical Europe is estimated at between 82,724–105,757 (Hagemeijer & Blair 1997). This total, however, includes a significant proportion of the population of *C. h. tundrae* nesting in northern Scandinavia. Accordingly, for this review, an estimate of 16,000 pairs has been derived from winter estimates for the European breeding population of *C. h. hiaticula* (Rose & Scott 1997; see Annex 4).

In Britain and Ireland, an overall estimate of slightly less than 10,000 pairs (8,500 pairs in Britain, Stone *et al*. 1997, based on Prater 1989; 1,250 pairs in Ireland, Gibbons *et al*. 1993), represents almost 80% of the temperate breeding population of the nominate sub-species (Gibbons *et al*. 1993) and 63% of the biogeographic population.

Overall, the large European breeding population has remained reasonably stable in recent decades. The situation is complicated, however, with increases reported in Britain, Denmark and Germany, stability in Iceland, Sweden and Norway and decreases in Finland (Hagemeijer & Blair 1997). In the Wadden Sea, habitat change has caused some populations to increase and others to decrease (Fleet *et al*. 1994).

In the UK, breeding range has increased in England and Wales, remained stable in Scotland, and contracted in Ireland (Gibbons *et al*. 1993). Presumably this implies equivalent changes in population size, although there are no good quantitative data. Although the vast majority of pairs breed at the coast, an increasing number have bred at inland sites in England since the mid-1970s (Prater 1989). This tendency is also shown in northern Germany, where the inland birds often have higher reproductive success than those on the coast (Briggs 1983; Holz 1987). In Scotland, Ringed Plovers have long nested inland (Sharrock 1976). In 1988–91, this inland population in Britain was approximately double that in 1968–1972. Within the same period, numbers declined in many coastal areas, with breeding productivity at times falling below self-sustaining levels, due to increasing human presence on beaches and intense pressure from predators (Pienkowski 1984; Prater 1989).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Ringed Plovers supports, on average, 1,102 pairs. This amounts to about 13% of the British breeding population. The suite contains about 7% of the international population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The SPA suite contains five sites (Table 6.59a.1) where Ringed Plovers have been listed as a qualifying species.

6. Classification criteria

The four UK sites (North Norfolk Coast, North Uist Machair and Islands, South Uist Machair and Lochs, and Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) known to support more than 1% of the international breeding population were considered under Stage 1.2, and all were selected

after consideration of Stage 2 judgements. Additional coverage using Stage 1.4 was assessed, given that the UK holds about 35% of the European population of Ringed Plover. Accordingly, Papa Stour was selected as having the next largest breeding population. Papa Stour contributes a large population to the species' suite as well as range coverage in the north of Scotland.

The sites are located throughout the UK range of this species, with representation of most of the main centres of occurrence. All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs of importance for other breeding birds. Outside the network, Ringed Plovers have a wide breeding distribution around the UK coastline as well as inland.

Distribution map for breeding Ringed Plover SPA suite

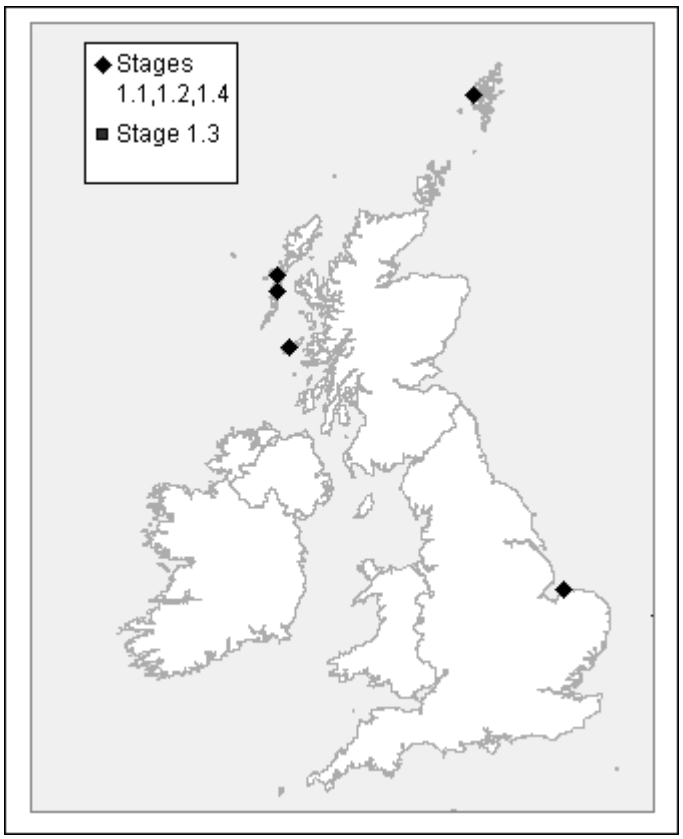


Table 6.59a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
North Norfolk Coast	220	1.4	2.6	1.2
North Uist Machair and Islands	240	1.5	2.8	1.2
Papa Stour	89	0.6	1.0	1.4
South Uist Machair and Lochs	393	2.5	4.6	1.2
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	160	1.0	1.9	1.2
TOTALS	1,102	6.9%	13.0%	

A6.59b Ringed Plover *Charadrius hiaticula* (non-breeding)

1. Status in UK

See section A6.59a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	28,600 (winter period) 30,000 (passage period)	290 (winter period) 300 (passage period)	6,169 (21% of GB population in winter) 14,199 (47% of GB population in passage periods)
Ireland	12,500	125	643 (5% of all-Ireland population in winter and in passage periods)[19]
Biogeographic population	47,500	500	6,812 (14% of the biogeographic population in winter) 14,842 (30% of biogeographic population in passage periods)

GB population source: Cayford & Waters 1996
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution, taxonomy and population structure of Ringed Plovers is outlined in section A6.59a.

Birds from all three biogeographical populations of Ringed Plovers actually or potentially migrate through Britain and Ireland in spring and autumn. At these times of year, Ringed Plover populations in Britain and Ireland clearly include both birds that stay to winter, as well as those on passage to or from breeding grounds in Canada, Greenland, Iceland and Fennoscandia, or more southerly wintering locations. Many birds that breed in north-western Europe are known to winter close to their breeding grounds. Autumn movement occurs mainly in August–September, with the return to the breeding grounds occurring mainly during March–May. Nearctic breeders use staging points in Iceland, then north-west Europe (including Britain and Ireland) en route to their wintering grounds, mainly in West Africa. Icelandic breeders move through Britain, Ireland and the southern North Sea to winter from France south to North Africa (Cramp & Simmons 1983; Smit & Piersma 1989).

Some *C. h. tundrae* from northern Scandinavia and Finland also pass through staging areas in western Europe. Birds breeding in southern Scandinavia and the Baltic winter from Britain and Ireland to northern Africa and some British birds move south to Europe.

The European winter distribution of *C. h. hiaticula* extends from the coasts of the western Mediterranean (where it is locally found in North Africa and from the Adriatic westwards), around the coasts of Iberia to the Wadden Sea (Meltofte *et al.* 1994).

Ringed Plovers are found on almost all the coasts of Britain and Ireland, with small numbers found on a few inland wetlands. Cayford & Waters (1996) estimated that over 66% of the Ringed Plovers counted on British coasts were in non-estuarine areas. Some continental European birds, mainly from the Wadden Sea and Baltic coasts, also winter in Britain and Ireland, whilst some British birds move south to mainland Europe (Lack 1986). There is evidence that Ringed Plovers show fidelity to their wintering

19 Data were unavailable for passage periods at all sites in Ireland, hence, the passage population is taken to be the same as the winter population in calculating the UK passage period total.

sites on British estuaries (Spencer & Hudson 1979), as well as visiting the same sites during successive migrations (Insley & Young 1981).

On migration, and in wintering areas, Ringed Plovers feed on invertebrates on sand and shingle shores, sandbanks and mudflats, as well as on saltmarshes, short grassland, flooded fields and shores of artificial habitats (del Hoyo *et al.* 1996). They roost communally, close to feeding sites along the shoreline, on sandbanks or bare arable fields, and in low vegetation.

4. Population structure and trends

Trends in numbers of those birds that breed in Canada/Greenland and winter in western and southern Africa, or those that breed in the Russian high Arctic and winter in south-west Asia and East Africa are poorly known. Overall increases in breeding populations have been reported in Britain, Denmark and Germany, whilst populations in Iceland, Sweden and Norway have remained stable (Hagemeijer & Blair 1997). Finland is the only country to have shown decreases.

The Wetland Birds Survey (WeBS) 1997/98 autumn peak count of 23,000 was substantially higher than peak of the previous two years of 18,000–19,000, but numbers fell again in 1998/99 to around 21,000 (Cranswick *et al*. 1999; Pollitt *et al*. 2000). However, the WeBS autumn peak count is unlikely to represent the passage population in its entirety, because of the turnover of birds on migration (see Moser & Carrier 1983) and because of a potential mismatch between the timing of WeBS counts and the period of peak passage.

The European and North African wintering population of the nominate race is estimated at 47,500 individuals (Rose & Scott 1997, based on Smit & Piersma 1989), although numbers wintering in Europe and North Africa have increased considerably since the 1980s (Davidson 1998). Between 1981–1985 and 1988–1992 there was a 24% increase in numbers wintering in Britain, from 23,040 to 28,630 (Cayford & Waters 1996), which may reflect a documented increase in the breeding populations of Britain, Denmark and Germany. Since the early 1990s, evidence suggests that numbers wintering in Britain have continued to increase.

Current estimates of the British wintering total can be assessed by adding January 1998 WeBS counts (Cranswick *et al.* 1999) to non-estuarine winter counts of the same year and period (BTO unpublished). The total in Britain in 1997/98 was estimated at 44,000 (83% on non-estuarine coast). Although these new estimates are not directly comparable to the estimates of Cayford & Waters (1996) because of different assumptions, they are comparable to a combination of the 1984/5 Birds of Estuaries Enquiry (Salmon & Moser 1985) and the 1984/5 Winter Shorebird Count (Moser & Summers 1987), using the same calculation methods used for 1997/8 data. The total in Britain in 1984/85 was estimated at 35,000 (79% on non-estuarine coasts). Further investigation reveals that the considerable increase in the British wintering total from 1984/85 to 1997/98 is due to an increase in the use of non-estuarine coast from around 28,000 to 36,000 (22%). The increase in estuarine use has been minimal by comparison. Indeed, according to Cranswick *et al.* (1999) populations on estuaries have remained constant since at least the 1970s. All-Ireland January counts in 1997/8 were similar to the previous two years (Colhoun 2000).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Ringed Plover supports, on average, 6,812 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 21% of British wintering numbers, about 5% of the all-Ireland population and 14% of the international flyway population. In passage periods, the SPA suite supports, on average, 14,842 individuals (calculated using WeBS August site totals for the period 1992/93 to 1996/97, except for Ireland where passage data are poor and WeBS January site totals for the period 1992/93 to 1996/97 have been used). This total amounts to about 47% of numbers passing through Britain and about 12% of the international flyway population. The suite comprises 28 sites where Ringed Plover has been listed as a qualifying species (Table 6.59b.1).

6. Classification criteria

All 24 sites in the UK that support more than 1% of the international population of Ringed Plover in either the passage or winter periods were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. A further four sites were considered and selected under Stage 1.3, with Ringed Plover being identified as an important component of the non-breeding waterbird assemblages at these localities.

The sites within the suite are distributed throughout the range of the non-breeding population in the UK, including Northern Ireland, the Outer Hebrides, and sites along the south, east and west coasts of England, and South Wales. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of numbers and range of passage and non-breeding Ringed Plover in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Ringed Plover SPA suite

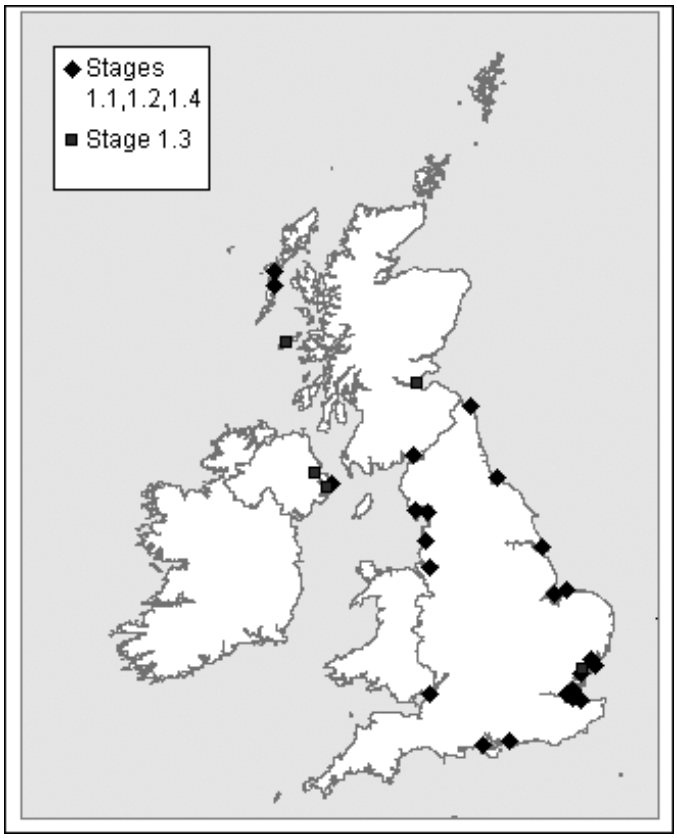


Table 6.59b.1 – SPA suite

Site name	Season of peak use	Site total[20]	% of biogeographical population	% of national population	Selection stage
Belfast Lough	Winter	148	0.3	1.2 (Ire)	1.3
Benfleet and Southend Marshes	Passage	800	1.6	2.7	1.2
Blackwater Estuary	Passage	955	2.0	3.2	1.2
Chichester and Langstone Harbours	Passage	2,471	4.9	8.2	1.2
Colne Estuary	Winter	370	0.8	1.3	1.3
Duddon Estuary	Passage	628	1.3	2.1	1.2
Firth of Forth	Winter	413	0.9	1.4	1.3
Hamford Water	Passage	1,572	3.1	5.2	1.2
Humber Flats, Marshes and Coast	Passage	762	1.5	2.5	1.2
Lindisfarne	Winter	527	1.0	1.8	1.2
Medway Estuary and Marshes	Passage	1,337	2.7	4.5	1.2
Mersey Estuary	Passage	1,453	2.9	4.8	1.2
Morecambe Bay	Passage	693	1.4	2.3	1.2
North Norfolk Coast	Passage	1,256	2.5	4.2	1.2
North Uist Machair and Islands	Winter	590	1.2	2.1	1.2
Outer Ards	Winter	545	1.1	4.4 (Ire)	1.2
Ribble and Alt Estuaries	Passage	995	2.0	3.3	1.2
Severn Estuary	Passage	655	1.3	2.2	1.2
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	Winter	475	1.0	1.6	1.2
Solent and Southampton Water	Winter	552	1.1	1.9	1.2
South Uist Machair and Lochs	Winter	490	1.0	1.7	1.2
Stour and Orwell Estuaries	Winter	578	1.2	2.0	1.2
Strangford Lough	Winter	291	0.6	2.3 (Ire)	1.3
Teesmouth and Cleveland Coast	Passage	634	1.3	2.1	1.2
Thames Estuary and Marshes	Passage	559	1.1	1.9	1.2
The Swale	Passage	683	1.4	2.3	1.2
The Wash	Passage	1,185	2.4	4.0	1.2
Upper Solway Flats and Marshes	Passage	729	1.5	2.4	1.2
JANUARY TOTALS		6,812	13.6%	21.3% 5.1% (Ire)	
AUGUST TOTALS		14,842	29.7%	47.3% 5.1% (Ire)	

20 Data in site total column relate to season of peak use.

A6.60 Dotterel *Charadrius morinellus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**Schedule 1(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	840	8	469 (56% of GB population)
Ireland			
Biogeographic population	17,922	179	469 (3% of biogeographic population)

GB population source: Galbraith et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global distribution of Dotterel is restricted to limited montane areas within Eurasia, from Britain in the west to Chukotka in the east. The breeding distribution is highly localised, with a number of discrete and widely separated areas occupied. The largest continuous breeding area extends across the eastern Arctic of Russia, from the Taimyr to the Bering Sea. There are a number of discrete areas occupied in the mountains of central Asia (Cramp & Simmons 1983). The species is monotypic.

The species is highly migratory, and outside the breeding season moves south and west to winter in local areas of North Africa and the Middle East.

Most of the European population breeds in northern Russia, Norway, Sweden, Finland and Britain, with much smaller breeding groups in other major mountain ranges (Hagemeijer & Blair 1997). In Britain, by far the majority of the population is found in the Highlands of Scotland with small numbers in northern England and southern Scotland. Highest densities and numbers are in the central and eastern Highlands (Galbraith *et al.* 1993; Gibbons *et al.* 1993).

Throughout its breeding range, the Dotterel is principally an alpine species, even within its Arctic distribution (*e.g.* Morozov 1998). Breeding habitat is typically short arctic/alpine heaths, mosses and grasslands. The British population lies at the north-western extremity of the global breeding range (Cramp & Simmons 1983).

4. Population structure and trends

The remoteness of its arctic/alpine breeding habitat and the difficulties in undertaking census of Dotterels means that there is very little information on population trends and most estimates of population levels have a low degree of precision. The European population is estimated at 17,922–39,136 pairs (Hagemeijer & Blair 1997).

There is some evidence to suggest that numbers breeding in south Finnish Lapland and Austria have declined since the 1970s (Pulliainen & Saari 1992; Sackl 1993). Saari (1995) reported that the Finnish population is now at a level that is only 1–10% of the numbers in the mid-nineteenth century (although there has been no range contraction).

The most recent British population estimate of 840 pairs was derived in the late1980s (Galbraith *et al*. 1993). In Britain, there are indications that numbers may have increased since the 1950s (Galbraith *et al*. 1993; Strowger 1998). Watson (1989) suggested that there had been little change in breeding numbers since the 1960s at three sites in the Scottish Highlands. Results from the second national survey of Dotterel in 1999 (Whitfield in press) suggests that British numbers are now lower, at around 630 pairs, than found in the first national survey of 1987/88. In northern England, a historical decline since the mid-nineteenth century has been attributed to overgrazing by sheep causing a degradation in the quality of breeding habitat, although pollution and human recreational disturbance may also be involved in preventing a recovery (Galbraith *et al*. 1993). Similar factors, as well as the effects of possible over-hunting and use of anti-locust pesticides on the North African wintering grounds, have been cited as possible causes of more recent declines (Hable 1980; Sackl 1993; Whitfield *et al*. 1996; Hagemeijer & Blair 1997). However, there is little good information from the wintering grounds and studies of the effects of these factors are needed.

Attributing a cause to short-term changes in population levels is complicated by high itinerancy of breeding birds (Whitfield in prep.) causing mixing of populations across national boundaries and potential population fluctuations within national boundaries. The international mixing of breeding birds suggests that population monitoring would be best undertaken on an international basis.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Dotterel supports, on average, 469 pairs. This amounts to about 56% of the British breeding population. The suite contains about 3% of the international population. Dotterels do not breed in Northern Ireland. The SPA suite total is contained within eight sites (Table 6.60.1) where Dotterels have been listed as a qualifying species.

6. Classification criteria

All 12 sites in the UK that were known to support more than 1% of the breeding population of Dotterel were considered under Stage 1.1, and, of these, eight were selected after consideration of Stage 2 judgements. Cairngorms, Caenlochan and Drumochter Hills were selected on the basis of their large population size. Of the remaining sites, Lochnagar, Ben Alder and Creag Meagaidh were included as the largest, highest density (highest quality habitat) populations in the Grampians, and Ben Wyvis and Ben Dearg were included as valuable to range coverage by supporting the two largest populations outside the Grampians. The remaining four sites qualifying under Stage 1 (Monadhliath, Central Highland Hills and Glens, Beinn a'Ghlo – Glas Tulaichean, and Sutherland Montane Plateaux were not selected as they represent either smaller, low-density Grampian populations, or very small populations contributing to range. The distribution of the selected SPAs closely matches the core range of the species in Scotland and includes the most important breeding areas in the UK.

Three potential sites were assessed against Criterion 1.4 using the Stage 2 factors of population size, population density and range, but none significantly improved the coverage of these factors within the suite and so were not selected.

All sites are of high naturalness and have a long history of occupancy. Three sites (Cairngorms, Drumochter Hills, Caenlochan) are multi-species SPAs, whilst Lochnagar, Ben Alder, Creag Meagaidh, Beinn Dearg, and Ben Wyvis have been selected as SPAs solely on the basis of their importance for Dotterels.

Distribution map for Dotterel SPA suite

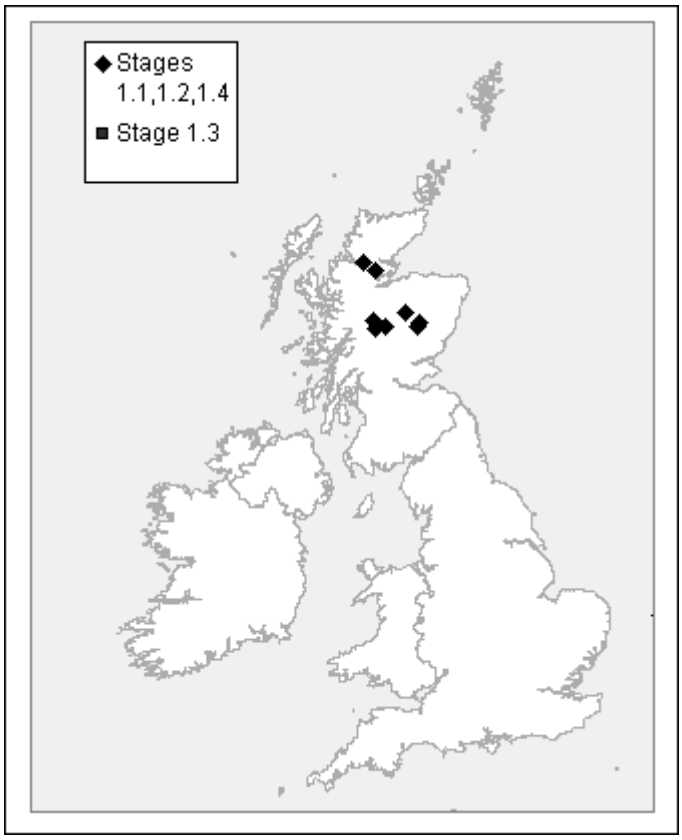


Table 6.60.1 – SPA suite

Site name	Site total (pairs)	% of biogeographical population	% of national population	Selection stage
Beinn Dearg	22	0.1%	2.6%	1.1
Ben Alder	26	0.1%	3.1%	1.1
Ben Wyvis	20	0.1%	2.4%	1.1
Caenlochan	40	0.2%	4.8%	1.1
Cairngorms	240	1.3%	28.6%	1.1
Creag Meagaidh	23	0.1%	2.7%	1.1
Drumochter Hills	70	0.4%	8.3%	1.1
Lochnagar	28	0.2%	3.3%	1.1
TOTALS	469	2.6%	55.8%	

A6.61a Golden Plover *Pluvialis apricaria* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2) Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Annex II/2 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Vulnerable**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	22,600	226	5,895 (26.1% of GB population)
Ireland	400	4	12 (3.0% of all-Ireland population)
Biogeographic population	474,900	4,749	5,907 (1.2% of biogeographical population)

GB population source: Stroud et al. *1987*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global distribution of Golden Plovers is very much restricted to boreal regions of the western Palearctic, with only a small extension further east. The western limit of the range is in eastern Greenland, and breeding extends eastwards more or less continuously to the southern regions of the Taiymyr peninsula (*c.* 100°N). Golden Plovers generally breed between 60°–70°N, although nesting occurs significantly further south in Britain and Ireland (being the southernmost extent of the global range). Generally, within southern parts of the range (Britain and Ireland, southern Scandinavia and the Baltic States), the distribution is discontinuous. In winter, birds migrate south and westwards, with localised wintering occurring from North Africa and Iberia, east through the Mediterranean Basin to the Middle East and the shores of the Caspian Sea. Large numbers winter in Britain and Ireland, France and the Low Countries (Cramp & Simmons 1983; Byrkjedal & Thompson 1998).

The taxonomy of Golden Plovers is complex, with considerable geographic variation in size and plumage occurring within the species' range. The degree to which this variation can be considered racial, remains the subject of active debate. Cramp & Simmons (1983) and Byrkjedal & Thompson (1998) conclude that the species is monotypic. However, Rose & Scott (1993,1997) and Wetlands International (1999) assign birds breeding at high latitudes to *P. apricaria altifrons*, whilst those occurring further south (in Britain, Ireland, Denmark and Germany) are considered as the nominate *P. a. apricaria*.

In Europe, breeding occurs through Iceland, Scandinavia, and the Baltic States, northern Russia and in northern/upland parts of Britain and Ireland. In Britain, the species is distributed widely throughout upland areas, with concentrations in northern and western Scotland and the north and south Pennines, and smaller outlying groups breeding in Wales and south-west England (Ratcliffe 1976; Gibbons *et al.* 1993). In Ireland, the species breeds mainly in the northern and western uplands. Two-thirds of the British and Irish breeding population occur in Scotland. The English and Welsh populations breed at the southern edge of the species' global range (Gibbons *et al.* 1993; Byrkjedal & Thompson 1998).

Golden Plovers breed on heather moorland, blanket bog, acidic grasslands and montane summits, where they prefer to nest on high, flat or gently sloping plateaux, away from the moorland edge. Adjacent pastures with abundant earthworms and tipulid larvae are important for feeding adults, and chicks may be moved up to 2 km or more to feed in marshy areas rich in invertebrate food (Byrkjedal & Thompson 1998). Breeding densities generally vary from 2–7 pairs/km^2, but exceptionally have been recorded at 16 pairs/km^2 (Ratcliffe 1976). Densities in Great Britain are some of the highest within the range (Byrkjedal & Thompson 1998).

4. Population structure and trends

Rose & Scott (1997) distinguish two biogeographical populations (*P. a. altifrons* and *P. a. apricaria* – see above). Wetlands International (1999) note a number of other populations, although consider that mixing occurs. Numbers breeding in Europe are estimated to be between 440,000–785,000 breeding pairs (Hagemeijer & Blair 1997), and this is taken as the reference population for this review.

The core population in northern Europe was relatively stable between 1970 and 1990, although the smaller southern populations have continued to decline since the 19th century (Tucker & Heath 1994). Numbers in Britain during the 1980s were estimated at 22,600 pairs (Stroud *et al.* 1987), compared with 29,400 during 1968–1972 (Sharrock 1976). In Ireland, the population was estimated at 400 pairs, compared with 600 during the earlier period.

Substantial range contractions and declines in breeding numbers in Britain and Ireland have, as elsewhere in Europe, been attributed to afforestation (especially in Scotland), the agricultural intensification of permanent pastures and overgrazing by sheep (Thom 1986; Lovegrove *et al.* 1994; Boobyer 1992; Byrkjedal & Thompson 1998; Fuller & Gough 1999). Losses in the uplands of Britain have further been attributed to a reduction of moorland burning, resulting in the development of tall vegetation that is avoided by breeding birds, and reduced predator control due to a decline in game-keepering (Gibbons *et al.* 1993).

Many of these factors interact, with for example, loss of game management and keepering on moorland (which appear to provide beneficial conditions – Tharme *et al.* in press), leading to sale for afforestation which in turn results in greater predator pressure on Golden Plovers nesting on adjacent moorland (Parr 1992, 1993). This has resulted in the extinction of some local populations (Parr 1992).

Effects of grazing are complex. Some of the highest densities of Golden Plover in the UK occur in the South Pennines (Brown 1993), where there are high levels of moorland grazing (Anderson & Yalden 1981). Whittingham *et al.* (2000) found equivalent densities on grazed blanket bog and heather moorland, and suggested grazing can be important to prevent heather becoming rank, as breeding Golden Plovers appear to favour short heather. Whilst severe overgrazing leading to conversion of heather to grass is likely to be detrimental to Golden Plovers, high grazing levels of in-bye pasture close to moorland edges may be important to maintain areas of short sward used by feeding birds during the breeding season.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Golden Plovers supports, on average, 5,907 pairs. This amounts to about 26% of the British breeding population, and 3% of the all-Ireland population. The suite contains about 1.2% of the international population. The SPA suite contains seven sites (Table 6.61a.1) where Golden Plovers have been listed as a qualifying species.

Moorland habitats are maintained and enhanced in the North Pennine Moors SPA by English Nature's Wildlife Enhancement Scheme and by the Countryside Stewardship Scheme run by MAFF. Habitat management within these schemes that may benefit Golden Plovers includes modifications to sheep-grazing, blocking of grips (drainage ditches) to restore natural hydrology and sympathetic heather burning. Additionally, Environmentally Sensitive Area schemes in the South Pennine Moors SPA are helping to control problems of over-grazing on moorland. The Moorland Regeneration Scheme in the North York Moors SPA is similarly promoting traditional moorland management, including sympathetic burning and legal predator control by gamekeepers, and the restoration of natural flushes to provide food for feeding birds and their chicks.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the relevant national breeding population of Golden Plover were considered under Stage 1.1, and all within Britain were selected after consideration of Stage 2 judgements. In Northern Ireland, although Pettigoe Plateau was selected after Stage 2 considerations, the Antrim Plateau and Cuilcagh were not selected because of their small population size and low density of breeding birds. In Britain, Muirkirk and North Lowther Uplands was additionally included under Stage 1.4 as a site contributing a large population to the species' suite as well as additional range coverage in the Southern Uplands of Scotland. The sites are located throughout the UK range of this species, with representation of most of the main centres of occurrence.

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs, with the exception of Pettigoe Plateau in Northern Ireland, which has been selected solely for this species. Many sites have a very long history of occupation (Ratcliffe 1976; Stroud *et al.* 1987, 1988; Holloway 1996).

Distribution map for breeding Golden Plover SPA suite

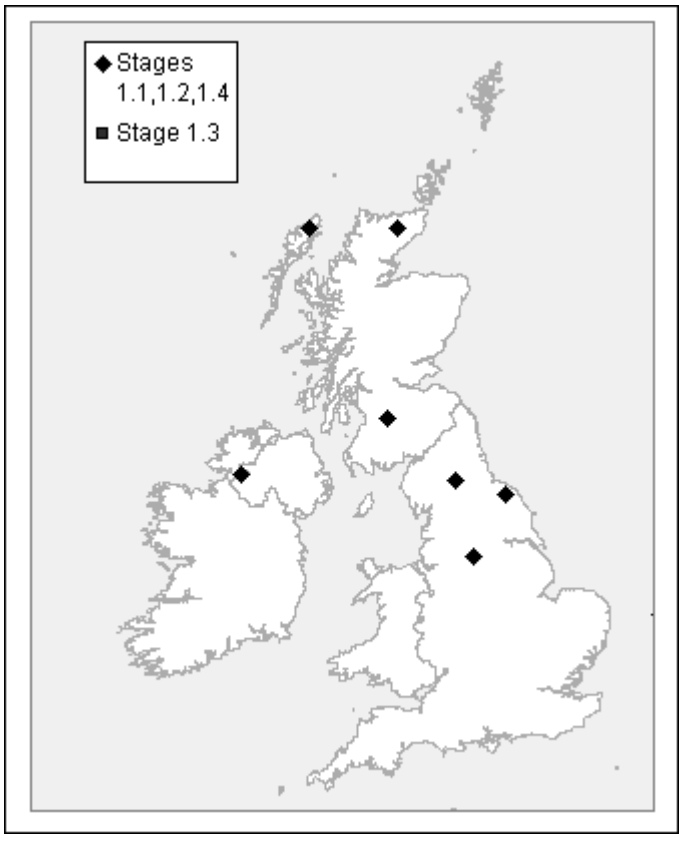


Table 6.61a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	1,064	0.2	4.7	1.1
Lewis Peatlands	1,978	0.4	8.8	1.1
Muirkirk and North Lowther Uplands	175	<0.1	0.8	1.4
North Pennine Moors	1,400	0.3	6.2	1.1
North York Moors	526	0.1	2.3	1.1
Pettigoe Plateau	12	<0.1	3.0 (Ire)	1.1
South Pennine Moors	752	0.2	3.3	1.1
TOTALS	5,907	1.2%	26.1% 3.0% (Ire)	

A6.61b Golden Plover *Pluvialis apricaria* (non-breeding)

1. Status in UK

See section A6.61a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	250,000	2,500	54,439 (22% of GB total)
Ireland	200,000	2,000	12,794 (6% of all-Ireland total)
Biogeographic population	1,800,000	18,000	67,233 (4% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global distribution, taxonomy and population structure of Golden Plovers is outlined in section A6.61a.

The Golden Plover is partially migratory in Britain and Ireland and wholly migratory elsewhere in its range. In winter, Golden Plovers are found in the western maritime parts of Europe, especially Britain, Ireland, France and Iberia, with smaller numbers in the Mediterranean basin. Non-breeding birds occur as far east as Turkey and the southern Caspian, and south to north and north-west Africa (Cramp & Simmons 1983). Flocks occur throughout much of lowland Britain and Ireland, although England is the main wintering ground for north European birds, with British breeding birds being joined by immigrants from Scandinavia, Iceland and western Siberia (Byrkjedal & Thompson 1998).

Concentrations occur from the Firth of Forth south to Tyneside, between Morecambe Bay and the Dee across to the Humber, in Lincolnshire and in Fenland, and on the south-west England peninsula. In Ireland, the major wintering grounds are in the north-east and along the south coast. In extreme weather, birds move south-westwards and may even leave Britain and Ireland altogether (Kirby 1995b). Most large flocks are found close to, or on the coast, with relatively few occurring inland, apart from some significant numbers in central England, East Anglia and the Shannon lowlands (Lack 1986). Golden Plovers occur at traditional wintering grounds where they are found in particular 'flock ranges'.

Grassland is the most important feeding habitat, with earthworm-rich permanent pastures preferred over leys and arable (Fuller & Youngman 1979), although in Fenland and north Northumberland most winter flocks occur on stubbles, recently ploughed or sown fields. The intertidal zone is also an important feeding habitat, especially in Scotland, Ireland and northern England. Birds roost on arable land, damp grassland and intertidal areas.

4. Population structure and trends

The north-west European Golden Plover wintering population (comprising *P. a. apricaria*) is estimated to be 1.8 million birds (Rose & Scott 1997). This population is declining (Rose & Scott 1997) although it is poorly monitored (Delany *et al.* 1999). Indeed, a decline has been noted in Britain and Ireland since the 1950s for reasons that are unclear. Increased afforestation and predation in the breeding range, and agricultural intensification of both breeding and non-breeding habitats are thought to have been significant contributory factors (Byrkjedal & Thompson 1998).

Totals wintering in Britain and Ireland are estimated to be 250,000 (Cayford & Waters 1996) and 200,000 (Way *et al*.1993) respectively, consisting largely of birds of British, Irish and Icelandic origins, with smaller numbers from Scandinavia and breeding areas further east.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Golden Plovers supports, on average, 67,233 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 22% of the British population, about 6% of the all-Ireland population, and about 4% of the international flyway population. The suite comprises 22 sites at which Golden Plover has been listed as a qualifying species (Table 6.61b.1).

6. Classification criteria

All 22 sites in the UK known to support more than 1% of the national population of Golden Plover were considered under Stage 1.1. All were selected after consideration of Stage 2 judgements.

The suite is distributed throughout the main centres of the winter range of Golden Plovers in the UK, from the Firth of Forth in the north, to sites in Northern Ireland, and on the west and east coasts of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stage 1.1 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Golden Plover in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Golden Plover are monitored where they occur on wetland sites, but due to current reliance on the UK's Wetland Bird Survey (the principle monitoring scheme for non-breeding waterbirds in the UK), some important concentrations regularly occurring on agricultural habitats are not routinely counted. Work is being undertaken to address these monitoring needs.

Distribution map for non-breeding Golden Plover SPA suite

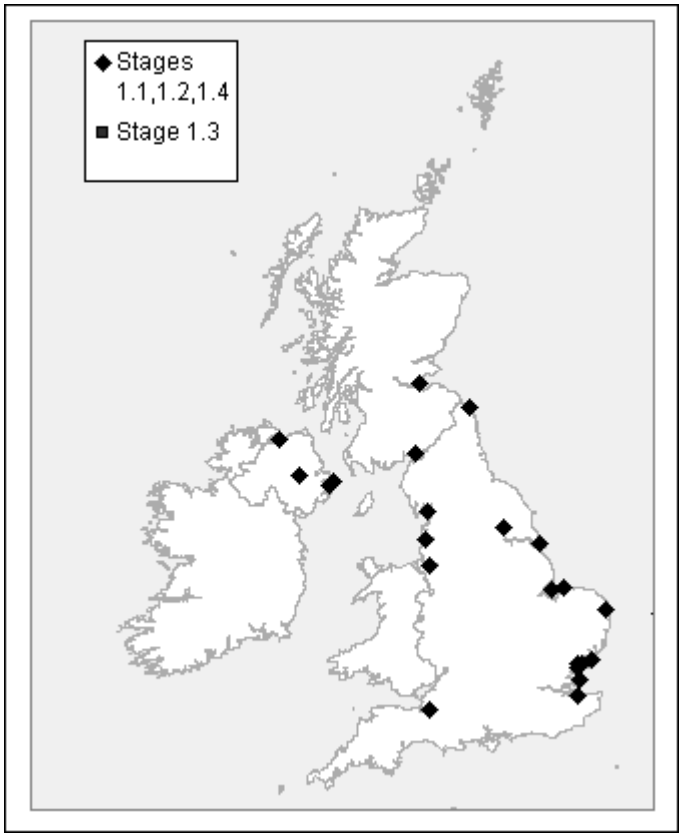


Table 6.61b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	3,714	0.2	1.5	1.1
Blackwater Estuary	7,247	0.4	2.9	1.1
Breydon Water	5,040	0.3	2.0	1.1
Colne Estuary	2,530	0.1	1.0	1.1
Firth of Forth	2,970	0.2	1.2	1.1
Foulness	3,359	0.2	1.3	1.1
Hamford Water	4,118	0.2	1.7	1.1
Humber Flats, Marshes and Coast	29,235	1.6	11.7	1.1
Lindisfarne	5,300	0.3	2.1	1.1
Lough Foyle	4,891	0.3	2.5 (Ire)	1.1
Lough Neagh and Lough Beg	5,298	0.3	2.7 (Ire)	1.1
Lower Derwent Valley	6,000	0.3	2.4	1.1
Mersey Estuary	3,070	0.2	1.2	1.1
Morecambe Bay	4,097	0.2	1.6	1.1
North Norfolk Coast	2,667	0.2	1.1	1.1
Outer Ards	2,079	0.1	1.0 (Ire)	1.1
Ribble and Alt Estuaries	4,277	0.2	1.7	1.1
Somerset Levels and Moors	3,029	0.2	1.21	1.1
Strangford Lough	6,526	0.4	3.3 (Ire)	1.1
The Swale	2,862	0.2	1.1	1.1
The Wash	11,037	0.6	4.4	1.1
Upper Solway Flats and Marshes	6,121	0.3	2.5	1.1
TOTALS	67,233 (in January)	3.7%	21.8% 6.4% (Ire)	

A6.62 Grey Plover *Pluvialis squatarola*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	43,200	430	38,684 (90% of GB total)
Ireland	4,000	50 (see section 5.1.2 for rationale)	158 (4% of all-Ireland total)
Biogeographic population	168,000	1,500	38,842 (26% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Grey Plovers have a very restricted global distribution. They have an almost circumpolar breeding range, occurring in the high Arctic (generally north of about 68°N) from the Kanin Peninsula (c.42°E) east to the Bering Sea. In North America, they occur from Alaska to the western side of Baffin Island. The only region of the high Arctic where breeding does not occur is Greenland (Cramp & Simmons 1983; Byrkjedal & Thompson 1998). The species is monotypic.

The only breeding in Europe occurs in the northern parts of north-western Russia, although here, as elsewhere in the species' breeding range, there are few records and information is poor (Morozov 1998; Byrkjedal & Thompson 1998). Outside the breeding season, birds move south and west to winter on the coasts of north-west Europe, north and west Africa, the Mediterranean and the Middle East. Their distribution is strongly localised to areas holding suitable habitats – principally the larger, muddier, estuaries and other soft-sediment coastlines.

In Britain and Ireland, Grey Plovers occur on most coasts, although they are mainly concentrated in the south-east and north-west of England (Davidson *et al.* 1991; Moser 1988; Tubbs 1991).

4. Population structure and trends

Globally, Rose & Scott (1997) recognise five biogeographic populations. Of these, birds occurring in Europe belong to the East Atlantic Flyway population which comprises those breeding in the western Russian high Arctic (west of c. 85°E). These birds winter from the Wadden Sea, along the Atlantic

coasts of Europe south to West Africa (as far as the Gulf of Guinea) (Wetlands International 1999). The population is currently estimated at 168,000 birds (Smit & Piersma 1989). An estimated 26% of the East Atlantic Flyway population occurs in the UK (Cayford & Waters 1996).

The East Atlantic Flyway population has shown a long-term increase in numbers. Smit & Piersma (1989) reported a significant increase from 19,000 in the 1970s (Prater 1976) to 61,200 in the early 1990s in western Europe. More recent international collation of data (Davidson 1998) indicate that this trend has continued, with a possible 46% increase in the East Atlantic Flyway population since the 1980s. One of the biggest population increases has been in Great Britain where there was an increase of 103% between 1981–1985 and 1987–1992 (Cayford & Waters 1996). This upward trend has been particularly strong on estuarine sites.

The rapid growth of the East Atlantic Flyway population is thought to be a real increase in numbers rather than a reflection of better survey coverage. Possible causes include a shift in winter distribution (Cayford & Waters 1996), or a run of very successful breeding seasons during the 1970s (Moser 1988). However, there is strong circumstantial evidence (Tubbs 1991; 1996) that a significant factor has been reduction of shooting pressure on the wintering grounds – given the status of Grey Plover as a very popular quarry species early in the twentieth century (Byrkjedal & Thompson 1998).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Grey Plover supports, on average, 38,842 individuals (calculated using WeBS February site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 90% of the British population, about 4% of the all-Ireland population, and about 26% of the international flyway population. The suite comprises 28 sites at which Grey Plover has been listed as a qualifying species (Table 6.62.1).

6. Classification criteria

All 15 sites in the UK that were known to support more than 1% of the international population of Grey Plover were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. A further 13 sites were considered and selected under Stage 1.3 (see section 5.3), with Grey Plover an important component of the non-breeding waterbird assemblages at these localities.

The sites within the suite are distributed throughout the range of the population in the UK, from sites in Northern Ireland and Wales, to the Firth of Tay in eastern Scotland, and sites along the English south coast. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at many of these sites (*e.g.* Moser 1988; Prater 1981; Tubbs 1991).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Grey Plovers in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Grey Plover SPA suite

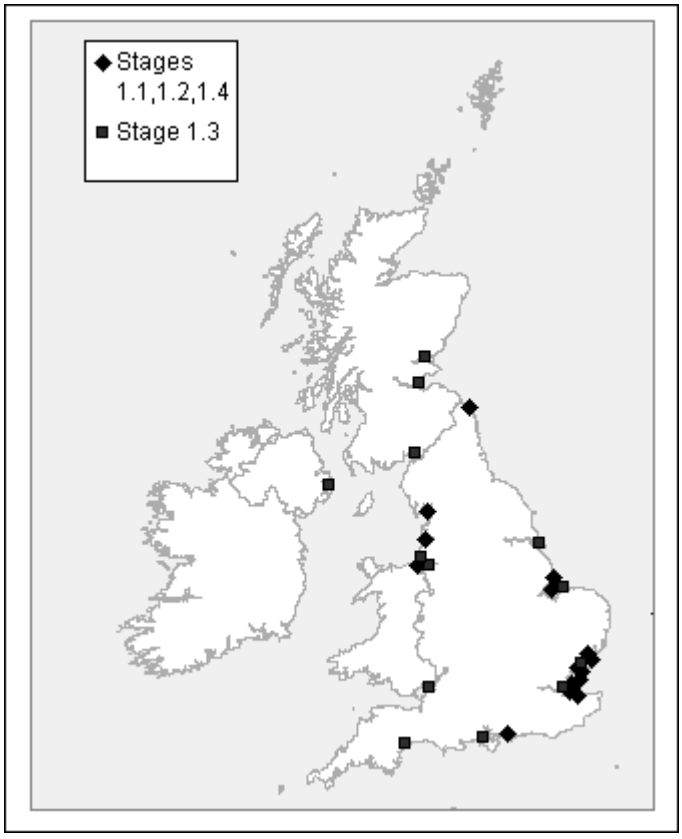


Table 6.62.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Benfleet and Southend Marshes	3,789	2.3	8.8	1.2
Blackwater Estuary	5,090	3.0	11.8	1.2
Chichester and Langstone Harbours	3,825	2.3	8.9	1.2
Colne Estuary	1,100	0.7	2.6	1.3
Dengie	2,411	1.4	5.6	1.2
Exe Estuary	471	0.2	1.1	1.3
Firth of Forth	704	0.4	1.6	1.3
Firth of Tay and Eden Estuary	933	0.6	2.2	1.3
Foulness	4,209	2.5	9.7	1.2
Gibraltar Point	2,017	1.2	4.7	1.2
Hamford Water	3,251	1.9	7.5	1.2
Humber Flats, Marshes and Coast	1,338	0.8	3.1	1.3
Lindisfarne	1,570	0.9	3.6	1.2
Medway Estuary and Marshes	3,406	2.0	7.9	1.2
Mersey Estuary	1,013	0.6	2.3	1.3
Mersey Narrows and North Wirral Foreshore	525	0.4	1.2	1.3
Morecambe Bay	1,813	1.1	4.2	1.2
North Norfolk Coast	1,187	0.7	2.75	1.3
Ribble and Alt Estuaries	6,073	3.6	14.1	1.2
Severn Estuary	625	0.4	1.5	1.3
Solent and Southampton Water	1,426	0.9	3.3	1.3
Stour and Orwell Estuaries	3,660	2.2	8.5	1.2
Strangford Lough	194	0.1	4.9 (Ire)	1.3
Thames Estuary and Marshes	1,245	0.7	2.9	1.3
The Dee Estuary	2,193	1.3	5.1	1.2
The Swale	2,021	1.2	4.7	1.2
The Wash	9,708	5.8	22.5	1.2
Upper Solway Flats and Marshes	1,036	0.6	2.4	1.3
TOTALS	38,842 (in February)	25.9%	90.0% 4.0% (Ire)	

A6.63 Lapwing *Vanellus vanellus* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	1,500,000	20,000	196,995 (10% of GB total)
Ireland	250,000	2,500	15,839 (6% of all-Ireland total)
Biogeographic population	7,000,000	20,000 (for selection of multi-species sites) 70,000 (for calculation of proportional representation)	212,834 (3% of the biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Lapwings have a wide global distribution throughout the temperate regions of Eurasia, from Britain, Ireland and Iberia in the west, to the Pacific coast of Russia at the Sea of Japan in the east (Cramp & Simmons 1983). In Scandinavia, breeding extends north to about 70°N but through most of the range, and especially in the far east, Lapwings breed further south, generally between about 35°–55°N. The species is monotypic. Lapwings breed in all European countries, although within the Mediterranean Basin their distribution is highly localised (Cramp & Simmons 1983).

Across most of the range, Lapwings are highly migratory, moving south at the end of the breeding season to winter in south-east Asia, in Pakistan, and locally through the Middle East and north Africa. Lapwings are widely distributed in winter in the western maritime countries of Europe. Britain and Ireland, representing the northernmost regular wintering areas, also form, together with western France and Iberia, the major European wintering grounds of this species. In these countries, resident breeding birds are joined in winter by birds from breeding areas further east.

Within Britain, the Lapwing is the most widespread non-breeding wader. However, it avoids areas of high ground, and is concentrated in central and southern Britain (Lack 1986; Kirby 1995). Although many British breeding Lapwings are resident, a high proportion of the birds that winter in Britain are of Scandinavian, Danish, Dutch and North German origin (Imboden 1974).

Lapwings respond rapidly to cold weather, and the numbers and distribution of non-breeding birds are strongly influenced by weather patterns in the UK as well as in continental Europe (Kirby & Lack 1993; Kirby 1995). With the onset of severe cold in the Low Countries there can be major influxes of Lapwings into the UK.

4. Population structure and trends

Rose & Scott (1997) define four biogeographical populations of Lapwing. Birds that breed and winter in the UK belong to the European population, currently estimated at 7,000,000 birds (in the non-breeding season).

Tucker & Heath (1994) define the European Lapwing population as secure. However, recent declines in the breeding population have been reported in many parts of north-west Europe, including Britain and Ireland, and these have been attributed to agricultural changes in many of those areas (Snow & Perrins 1998). This trend is reflected in the UK (Hudson *et al.* 1994; Tucker *et al.* 1994; Wilson *et al*. in press).

Despite the declines in the breeding population, numbers of non-breeding Lapwing in Britain have remained relatively stable in recent years (Cranswick *et al.* 1999). Declines in some years can be attributed to short-term southerly or south-westerly movements in response to cold weather (Lack 1986; Pollitt *et al*. 2000). During winter, Lapwings tend to be more concentrated on pasture rather than arable fields (Mason & MacDonald 1999); therefore the population is vulnerable to land use change from pastoral to intensive arable agriculture.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Lapwing supports, on average, 212,834 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 10% of the British population, about 6% of the all-Ireland population, and about 3% of the international flyway population. The suite comprises 38 sites at which Lapwings have been listed as a qualifying species (Table 6.63.1).

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Lapwing population in winter (Stage 1.2). However, 38 sites were identified under Stage 1.3 (see section 5.3) with Lapwing being an important component of the non-breeding waterbird assemblages at these localities. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, of importance also for a range of other waterbirds. There is a very long recorded history of occupancy at many of these sites (Prater 1981).

As the selection of sites under Stage 1.3 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Lapwings in the UK, it was not considered necessary to select additional sites using Stage 1.4. With the exceptions of Abberton Reservoir and Rutland Water, the sites are of high naturalness, and several of them act as severe weather refuges (Kirby 1995).

Lapwings are monitored where they occur on wetland sites, but due to current reliance on the UK's Wetland Bird Survey (the principle monitoring scheme for non-breeding waterbirds in the UK), some important concentrations regularly occurring on agricultural habitats are not routinely counted. Work is being undertaken to address these monitoring needs.

Distribution map for non-breeding Lapwing SPA suite

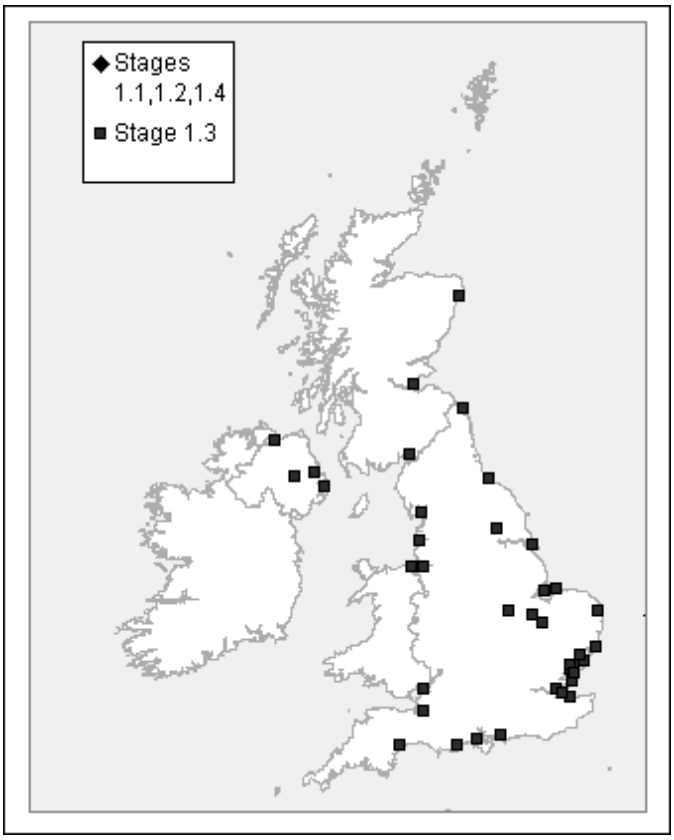


Table 6.63.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	7,295	0.1	0.5	1.3
Alde – Ore Estuary	4,879	0.1	0.3	1.3
Belfast Lough	2,507	<0.1	1.0 (Ire)	1.3
Blackwater Estuary	21,335	0.3	1.4	1.3
Breydon Water	24,940	0.4	1.7	1.3
Chichester and Langstone Harbours	4,510	<0.1	0.3	1.3
Colne Estuary	8,187	0.1	0.6	1.3
Dengie	2,539	<0.1	0.2	1.3
Exe Estuary	2,250	<0.1	0.2	1.3
Firth of Forth	4,148	<0.1	0.3	1.3
Foulness	7,687	0.1	0.5	1.3
Hamford Water	6,367	<0.1	0.4	1.3
Humber Flats, Marshes and Coast	36,403	0.4	2.4	1.3
Lindisfarne	2,148	<0.1	0.1	1.3
Lough Foyle	3,084	<0.1	1.2 (Ire)	1.3
Lough Neagh and Lough Beg	6,899	0.1	2.8 (Ire)	1.3
Lower Derwent Valley	9,711	0.1	0.7	1.3
Medway Estuary and Marshes	5,040	<0.1	0.3	1.3
Mersey Estuary	11,680	0.2	0.8	1.3
Morecambe Bay	17,669	0.3	1.1	1.3
Nene Washes	6,512	<0.1	0.4	1.3
North Norfolk Coast	4,351	<0.1	0.3	1.3
Ouse Washes	8,589	0.1	0.6	1.3
Poole Harbour	5,258	<0.1	0.4	1.3
Ribble and Alt Estuaries	21,674	0.3	1.4	1.3
Rutland Water	3,744	<0.1	0.3	1.3
Severn Estuary	7,953	0.1	0.5	1.3
Solent and Southampton Water	7,768	0.1	0.5	1.3
Somerset Levels and Moors	36,316	0.5	2.4	1.3
Stour and Orwell Estuaries	6,122	<0.1	0.4	1.3
Strangford Lough	8,359	0.1	3.3 (Ire)	1.3
Teesmouth and Cleveland Coast	4,037	<0.1	0.2	1.3
Thames Estuary and Marshes	5,552	<0.1	0.3	1.3
The Dee Estuary	5,478	<0.1	0.4	1.3
The Swale	8,077	0.1	0.5	1.3
The Wash	28,433	0.4	1.9	1.3
Upper Solway Flats and Marshes	8,632	0.1	0.6	1.3
Ythan Estuary, Sands of Forvie and Meikle Loch	2,542	<0.1	0.2	1.3
TOTALS	212,834 (in January)	3.0%	9.8% 6.3% (Ire)	

A6.64 Knot *Calidris canutus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3 (winter)** Unfavourable conservation status (**localised in winter**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	291,000	2,900	242,039 (84% of GB total)
Ireland	37,500	375	3,863 (10% of all-Ireland total)
Biogeographic population	345,000	3,500	245,902 (70% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Knots are found in many regions of the world, although they are highly localised within each region. The breeding distribution is circumpolar, with the species nesting in the high Arctic. After the breeding season, they migrate through temperate coastal regions in the northern hemisphere to wintering grounds in the southern hemisphere. They undertake some of the longest migrations of any bird species (Piersma & Davidson 1992b).

The species is polytypic. Each of the five sub-species occupies discrete breeding and winter areas. The nominate race *C. c. canutus* breeds on the coasts of the Taiymyr peninsula in the central Russian Arctic and migrates along the coast of north-west Europe to overwinter on the coasts of west and southern Africa (Piersma *et al.* 1992; Lappo 1998). *C. c. islandica* breeds in northern Greenland and the east Canadian high Arctic, and migrates through Iceland and northern Norway to overwinter in Britain and around the North Sea (Davidson & Wilson 1992). The three remaining populations of *C. c. rogersi, roselaari* and *rufa* breed respectively in the east Russia Arctic, Alaska and the west Canadian Arctic respectively, wintering in Australasia, central America and the southern part of South America (Piersma & Davidson 1992b).

Europe thus supports two sub-species of Knot. The Afro-Siberian Knot *C. c. canutus* migrates through coastal areas in spring and autumn. The Waddensea is of particular importance as a spring staging area

prior to the flight to the breeding grounds in Siberia (Meltofte *et al.* 1994; Prokosch 1988), and small numbers also occur on southern and eastern British coasts.

The UK is of particular importance in winter for the Canadian/Greenland population of Knot *C. c. islandica*. These birds are concentrated almost wholly at just a few estuaries in the UK and around the southern North Sea, with about 90% occurring in Britain in 1993 (Davidson & Wilson 1992; Tucker & Heath 1994). The single most important site is The Wash holding about a quarter of the whole population of *C. c. islandica*.

Overwintering Knot are almost exclusively estuarine in the UK as elsewhere (Piersma 1994) and at favoured sites they occur at very high densities.

4. Population structure and trends

Although the overall European population of *C. c. islandica* is now defined as stable (Davidson in Tucker & Heath 1994), there was a large decline in the non-breeding population in the 1970s. This was attributed to a series of poor breeding seasons (Boyd 1992), but habitat changes and land claim at wintering sites were also instrumental (Smit & Piersma 1989). Despite subsequent recovery during the 1980s, numbers in the 1990s remain about 40% lower than during the early 1970s (Tucker & Heath 1994). By the end of the 1980s, the European Knot population was estimated at 345,000 birds (Smit & Piersma 1989) compared with 609,000 in the mid-1970s (Prater 1976).

Since the mid 1980s, there has been an increase of approximately 30% in the British non-breeding population of Knot (Cayford & Waters 1996), but this is thought to be largely due to redistribution of birds from The Netherlands and Germany, since the overall European population has remained largely unchanged over this time (Tucker & Heath 1994)

The treatment of counts of Knots in Britain for site identification and monitoring purposes is problematic, owing to the presence of the two separate populations that cannot be distinguished by observation in the field. Thus, counts in the spring and autumn may include birds from both the Canadian/Greenland (*C. c. islandica*) and Russian (*C. c. canutus*) breeding areas. Counts in mid-winter are more reliably attributed solely to *C. c. islandica*.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Knot supports, on average, 245,902 individuals (calculated using WeBS November site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 84% of the British population, about 10% of the all-Ireland population, and about 70% of the international flyway population. The suite comprises 25 sites at which Knot has been listed as a qualifying species (Table 6.64.1).

6. Classification criteria

All 18 sites in the UK that were known to support more than 1% of the international population of Knots were considered under Stage 1.2. All were selected after consideration of Stage 2 judgements. A further seven sites were considered and selected under Stage 1.3 (see section 5.3), with Knot an important component of the non-breeding waterbird assemblages at these localities.

The suite is distributed throughout the range of the population in the UK, from sites in Northern Ireland and Wales, to the Montrose Basin in eastern Scotland, and to sites on the east coast of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Knot in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Knot SPA suite

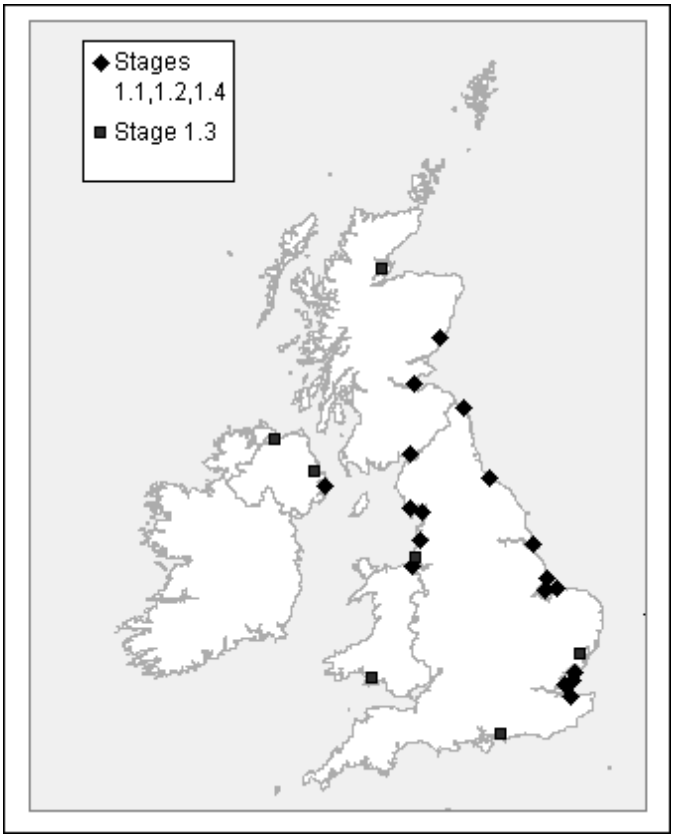


Table 6.64.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	444	0.1	1.2 (Ire)	1.3
Benfleet and Southend Marshes	8,850	2.6	3.0	1.2
Burry Inlet	2,153	0.6	0.7	1.3
Chichester and Langstone Harbours	2,875	0.8	1.0	1.3
Cromarty Firth	3,078	0.9	1.1	1.3
Dengie	8,393	2.4	2.9	1.2
Duddon Estuary	4,495	1.3	1.5	1.2
Firth of Forth	8,013	2.3	2.8	1.2
Foulness	40,429	11.7	13.9	1.2
Gibraltar Point	10,155	2.9	3.5	1.2
Humber Flats, Marshes and Coast	33,848	9.8	11.6	1.2
Lindisfarne	3,827	1.1	1.3	1.2
Lough Foyle	441	0.1	1.2 (Ire)	1.3
Mersey Narrows and North Wirral Foreshore	3,300	0.9	1.1	1.3
Montrose Basin	4,500	1.3	1.6	1.2
Morecambe Bay	29,426	8.5	10.1	1.2
North Norfolk Coast	10,801	3.1	3.7	1.2
Ribble and Alt Estuaries	57,865	16.8	19.9	1.2
Stour and Orwell Estuaries	3,293	1.0	1.1	1.3
Strangford Lough	8,723	2.5	23.3 (Ire)	1.2
Teesmouth and Cleveland Coast	4,190	1.1	1.3	1.2
The Dee Estuary	21,553	6.2	7.4	1.2
The Swale	5,582	1.6	1.9	1.2
The Wash	186,892	54.2	64.2	1.2
Upper Solway Flats and Marshes	12,271	3.6	4.2	1.2
TOTALS	245,902 (in November)	70.3%	83.5% 10.3% (Ire)	

A6.65 Sanderling *Calidris alba*

1. Status in UK

Biological status		Legal status		Conservation status
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	23,200 (winter period) 30,000 (passage period)	230 (winter period) 300 (passage period)	3,535 (15% of GB population in winter) 13,028 (43% of GB population in spring passage period)
Ireland	3,500	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	123,000	1,000	3,535 (4% of biogeographic population in winter) 13,028 (13% of biogeographical population in spring passage period)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Sanderling is a very high-Arctic breeding wader with a circumpolar breeding distribution. Its range extends from the northernmost parts of the Canadian Arctic archipelago, through north and north-eastern Greenland to the Taimyr Peninsula and islands off the north coast of Siberia (Cramp & Simmons 1983; Lappo 1998). In winter, the species occurs on the coasts of North and South America, western Europe, west and south Africa, the Indian subcontinent, southern China, south-east Asia and Australasia. The birds that winter in western Europe are thought to mostly originate from Siberia. Others, from north-east Greenland, occur on passage to and from wintering areas in western Africa (Gudmundsson & Lindström 1992; Prater & Davies 1978; Smit & Piersma 1989). The species is monotypic.

The European distribution of the Sanderling in winter extends from the Atlantic coast of Jutland more or less continuously along the northern and western coasts of France and Iberia, as well as Britain and Ireland. It is found more locally on the coasts of the Mediterranean and Black Seas.

Sanderlings overwinter on estuaries and open coasts all around the UK, with major concentrations in north-west England (including the Ribble, Alt and Duddon Estuaries) and the Outer Hebrides (including the coast of South Uist).

During migration periods (May–June and August–September), Sanderlings are found on most UK coastlines, with large concentrations in north-west England (including the Ribble and Alt Estuaries, and Morecambe Bay) and eastern England (including the Humber Flats, Marshes and Coast, and The Wash). During the autumn and spring migration periods, the Ribble Estuary typically holds peak numbers of Sanderling three times greater than that at any other site. The Ribble, together with the neighbouring Alt Estuary, is the most important area for Sanderlings in the UK at this time. Ferns (1980) noted two peaks in numbers on the Ribble in the spring of 1979, suggesting that the actual numbers passing through the site were considerably higher than that indicated by the peak. As well as these sites, previous studies of the spring migration of Sanderlings through Britain have highlighted the importance of the Tees Estuary, the Solway Firth and the Uists (Clark *et al*. 1982; Ferns 1980; Moser *et al*. 1985; Prŷs-Jones *et al*. 1988). Colour-ringing has demonstrated links between the Wash, the Tees and other sites used on spring and autumn passage.

West-coast sites are used by birds on passage to north-east Greenland. Little is known about the sequential use of these sites: Clark *et al*. (1982) reported that only one of 1,872 Sanderling caught on the Solway Firth in May 1982 had previously been caught during the spring elsewhere (at Walney Island). Both this study and that of Gudmundsson & Lindström (1992) indicate that the species shows a high degree of fidelity to its staging sites.

The species is characteristic of open sandy shores and may move regularly within winter to exploit fluctuating food resources (Evans 1981; Myers 1984; Roberts 1991). In spite of such opportunism, Myers *et al.* (1986) found that only 5% of observations of individual Sanderlings in California in winter were more than 5 km from the centre of their home ranges.

4. Population structure and trends

Five biogeographical populations of Sanderlings have been described (Rose & Scott 1997). Of these, those occurring on the coasts of western Europe belong to the East Atlantic/West and Southern Africa (or East Atlantic Flyway) population. This is currently estimated to comprise 123,000 individuals (Rose & Scott 1997).

Less than 30% of estimated UK numbers of non-breeding Sanderling are monitored by the Wetland Bird Survey (Cayford & Waters 1996) and the most recent British population estimate of 23,200 was obtained from both these data and those of the 1984/85 Winter Shorebird Count (Moser & Summers 1987). This estimate, for 1987/88–1991/92, represented an increase of 69% from the period 1981/82–1985/86 (Cayford & Waters 1996). Since then, Sanderling numbers at the mostly estuarine WeBS sites have fluctuated considerably (Pollitt *et al*. 2000). In contrast, provisional unpublished results from the 1998 Non-estuarine Waterfowl Survey indicate that populations on open coasts may have risen by 6,000 (36%) since 1984/85 to 22,600. This increase has been restricted to Scotland, where numbers have risen (by 52%) from 12,300 birds to 18,800, primarily due to an increase of 4,700 birds in the Outer Hebrides. Non-estuarine numbers in England have fallen by 16% from 4,100 to 3,400, those in Wales by 75% from 200 to 50 and those in Northern Ireland by 71% from 120 to 30.

The reasons for the observed declines are not clear, but may relate to reduced organic inputs from sewage outfalls, or climate change. Short-term fluctuations in the species' numbers have been related to weather and cycles in lemming numbers on their high Arctic breeding grounds. Breeding success amongst Arctic waders may be considerably depressed by increased predation levels in years when lemming numbers are low and this is reflected in winter numbers (Martin & Baird 1988; Summers & Underhill 1987; Summers *et al.* 1987). The 1998 European Non-Estuarine Waterfowl Survey should provide information on population change elsewhere in Europe.

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for non-breeding Sanderling supports, on average, 3,535 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 15% of the British population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The suite holds about 4% of the international flyway population during the non-breeding period.

During the spring passage period, the SPA suite supports, on average, 13,028 individuals (calculated using WeBS May site totals for the period 1992/93 to 1996/97). This total amounts to about 43% of numbers passing through Britain. The suite holds about 13% of the international flyway population during the passage period.

Numbers occurring within the SPA suite during the autumn migration period (August counts) are smaller: an average of 8,615 (29% of the British population and 9% of the international population).

The UK's SPA suite for Sanderling comprises 11 sites where Sanderling has been listed as a qualifying species in the non-breeding period (Table 6.65.1).

6. Classification criteria

The four sites (Humber Flats, Marshes and Coast, Morecambe Bay, Ribble and Alt Estuaries, and The Wash) in the UK supporting more than 1% of the international population in either the passage or non-breeding periods were considered under Stage 1.2, and selected after consideration of Stage 2 judgements. A further six sites (Chichester and Langstone Harbours, Duddon Estuary, Firth of Tay and Eden Estuary, North Norfolk Coast, Teesmouth and Cleveland Coast, and The Dee Estuary) were considered and selected under Stage 1.3 (see section 5.3); at these sites, Sanderling was identified as an important component of non-breeding waterbird assemblages.

South Uist Machair and Lochs regularly supports large numbers of Sanderling, and after the Ribble/Alt, and Duddon Estuaries, is the third most important non-breeding site for Sanderling in the UK. The absence of large numbers of other wintering waterbirds meant that it was not selected under Stage 1.3. Accordingly the site was considered under Stage 1.4 and selected after consideration of Stage 2 judgements. It contributes significantly to both the population and range coverage of the SPA suite.

The selected sites include the main passage and non-breeding areas for Sanderling in the UK, spread from the Outer Hebrides in north-west Scotland to sites on the west, east and south coasts of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

Distribution map for Sanderling SPA suite

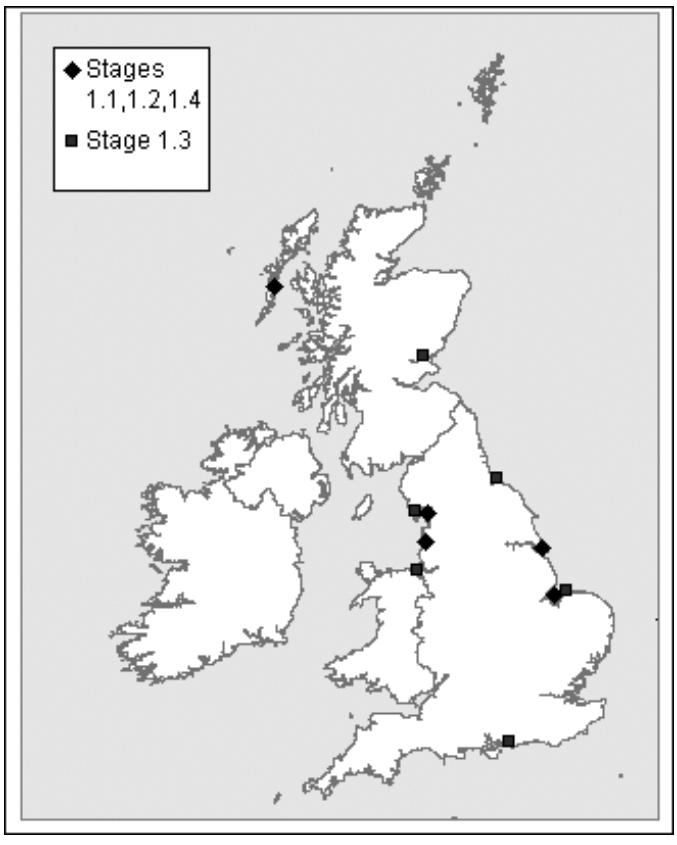


Table 6.65.1 – SPA suite

Site name	Season of peak use	Site total[21]	% of biogeographical population	% of national population	Selection stage
Chichester and Langstone Harbours	Winter	236	0.2	1.0	1.3
Duddon Estuary	Passage	1,055	0.9	3.5	1.3
Firth of Tay and Eden Estuary	Winter	223	0.2	1.0	1.3
Humber Flats, Marshes and Coast	Passage	1,767	1.4	5.9	1.2
Morecambe Bay	Passage	2,466	2.0	8.2	1.2
North Norfolk Coast	Winter	420	0.3	1.8	1.3
Ribble and Alt Estuaries	Passage	6,172	5.0	20.6	1.2
South Uist Machair and Lochs	Winter	700	0.6	3.0	1.4
Teesmouth and Cleveland Coast	Winter	357	0.3	1.5	1.3
The Dee Estuary	Winter	798	0.8	3.5	1.3
The Wash	Passage	1,854	1.5	6.2	1.2
JANUARY TOTALS		3,535	3.5%	15.4%	
MAY TOTALS		13,028	13.0%	43.4%	
AUGUST TOTALS		8,615	8.6%	28.7%	

21 Data in site total column relate to season of peak use.

A6.66 Purple Sandpiper *Calidris maritima*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	21,300	210	1,973 (9% of GB total)
Ireland	1,000	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	50,500	500	1,973 (4% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Purple Sandpipers breed in the western part of the Arctic, being distributed from north-east Canada, Greenland, Iceland, Scandinavia and Spitsbergen to the Taimyr Peninsula and Arctic islands off north Siberia (Cramp & Simmons 1983). In some parts of its distribution (*e.g.* east Greenland, Russia) the species is found nesting in the very high Arctic, whereas in other areas (*e.g.* west Greenland, Iceland and Scandinavia) in nests in low Arctic or sub-Arctic biomes. In winter, birds nesting in the western Arctic migrate to the Atlantic coasts of the United States, Canada and south Greenland, whilst birds nesting in the eastern Arctic overwinter on the coasts of northern Russia and north Norway, south to the north coast of Spain. The species is monotypic.

The Purple Sandpiper is found on most Atlantic open shores in Europe, especially those of an exposed or rocky nature. The species winters on open coasts all around Britain and Ireland, but is found in its greatest numbers in the Outer Hebrides, Orkney, Shetland, north-east Scotland and north-east England (Atkinson *et al*. 1978; Nicoll *et al*. 1988). A long-billed population, thought to originate from Canada or east Greenland, predominates in the north and west, and a short-billed population from southern Norway in the south and east (Buxton *et al.* 1985; Nicoll *et al*. 1988; Rae *et al*. 1986; Summers *et al*. 1992; Summers 1994). The small numbers that breed in the Scottish Highlands have been reported as forming part of the latter population (Dennis 1983).

A small number of Purple Sandpipers from a separate breeding population, possibly from Russia, also winter along the coast of south-east England (Nicoll *et al*. 1988; Summers 1994). Only small numbers

occur in Northern Ireland. The species is characteristic of rocky shores, occurring in high numbers on wave-cut platforms, but may also occur in other intertidal habitats, particularly in the north (Summers *et al*. 1988). Purple Sandpipers are highly faithful to their wintering sites, both within and between years (Burton & Evans 1997; Dierschke 1998; Summers *et al*. 1990).

4. Population structure and trends

Two biogeographical populations of Purple Sandpipers have been described (Rose & Scott 1997). Of these, those occurring on the coasts of western Europe belong to the East Atlantic Flyway population. This is currently estimated to comprise 50,500 individuals (Rose & Scott 1997).

Due to their preference for rocky shores (often in remote areas), Purple Sandpipers are poorly monitored by the Wetland Bird Survey (WeBS). The best recent UK population estimates have been obtained by the 1984/85 Winter Shorebird Count (Moser & Summers 1987) and the 1998 Non-estuarine Waterfowl Survey (NEWS). A British estimate of 21,300 was calculated for the period 1987/88–1991/92, based on data from the former survey, together with recorded population changes from 40 sites covered in both periods, as well as WeBS data (Cayford & Waters 1996). This figure represents 42% of the biogeographic population indicating the particular importance of the UK coastline for this species.

Precise information on wintering numbers outside the UK remains limited, however, and it is possible that numbers on the coast of Norway, and thus the biogeographic population as a whole, may be substantially underestimated (see Summers *et al*. 1990). Results from NEWS are only provisional, but preliminary unpublished analyses indicate that the UK non-estuarine population has risen by 3,800 (15%) since 1984/85 to 25,100. Numbers have increased greatly in the Outer Hebrides (from 5,400 to 14,400) and have also risen in Shetland. Elsewhere, particularly in eastern Scotland and north-east England, there have been substantial declines, which account for the previously reported fall of 44% calculated from a comparison of numbers at sites covered in both surveys (Cranswick *et al*. 1999). The population in Scotland as a whole is estimated to have risen by 23%. Only 1,100 Purple Sandpipers are now estimated to winter in England (a decline of 32%), less than 200 in Northern Ireland (an 84% decline) and just over 100 in Wales (a 36% decline).

The reasons for the observed declines are not clear, but may relate to reduced organic inputs from sewage outfalls, or climate change. Future results from the 1998 European Non-Estuarine Wader Survey (which included Scandinavia) should provide a better estimate of the biogeographic population.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Purple Sandpipers supports, on average, 1,973 individuals. Owing to a lack of January data for these sites, the total comprises the sum of the peak means. This probably slightly overestimates the total for the SPA suite, which amounts to about 9.3% of the British population and about 4% of the international flyway population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The suite comprises three sites where Purple Sandpipers have been listed as a qualifying species (Table 6.66.1).

6. Classification criteria

The two sites in the UK supporting more than 1% of the international population (East Sanday Coast and Northumbria Coast) were considered under Stage 1.2, and both were selected after consideration of Stage 2 judgements. A further site (North Uist Machair and Islands) was considered and selected under Stage 1.4 as a site holding a comparatively large population and contributing significantly to range coverage.

The sites are located in the main wintering areas of Purple Sandpipers in the UK – Orkney, the Outer Hebrides and the north-east coast of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds.

Distribution map for Purple Sandpiper SPA suite

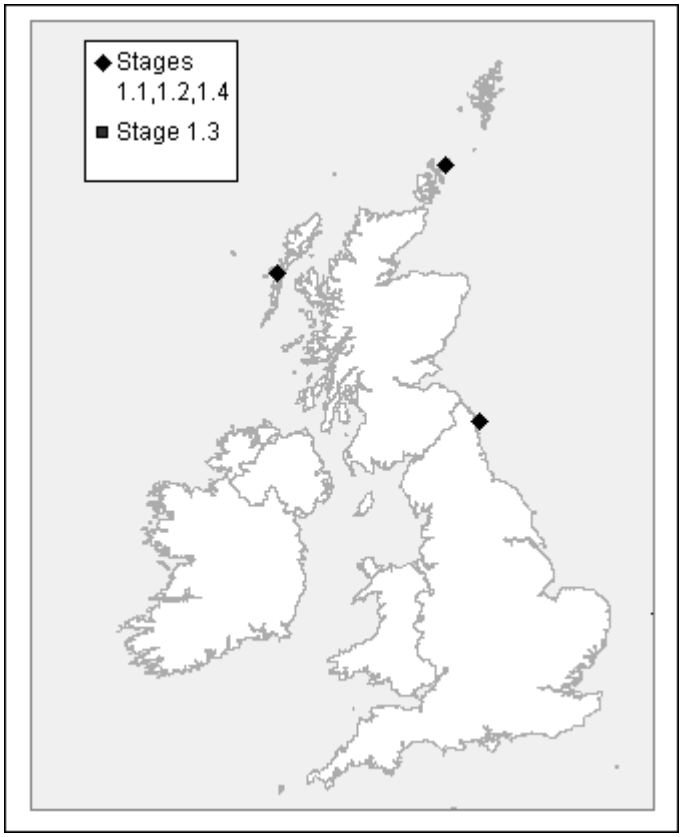


Table 6.66.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
East Sanday Coast	840	1.7	3.9	1.2
North Uist Machair and Islands	370	0.7	1.7	1.4
Northumbria Coast	763	1.5	3.6	1.2
TOTALS	1,973[22]	3.9%	9.3%	

22 Owing to lack of January data for these sites, the SPA suite total comprises the sum of the peak means for the individual sites. This will probably slightly over-estimate the total for the SPA suite.

A6.67a Dunlin *Calidris alpina schinzii* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3 (wintering)** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(2)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	**Vulnerable**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	9150	92	6,812 (74% of GB population)
Ireland	175	2	No SPAs selected in Northern Ireland
Biogeographic population	11000	110	6,812 (62% of the biogeographic population)

GB population source: Reed 1985; Stroud et al. *1987*
All-Ireland population source: Hutchinson 1989
Biogeographic population source: Stroud et al. *1990*

3. Distribution

Dunlin have a wide global distribution around the Arctic, and are found in nearly all Arctic regions. In Europe, they also extend south to temperate regions where they are found in wetland habitats. The breeding population extends from east Greenland, across the Russian Arctic (Lappo & Tomkovich 1998) to the Alaskan coast of the Bering Sea. An isolated population breeds in the east Canadian Arctic (Cramp & Simmons 1983). The species is polytypic, with a high degree of variation in different parts of its range. Three sub-species of Dunlin occur in Europe in the non-breeding season: *Calidris alpina alpina*, *C. a. schinzii* and *C.a. arctica*. Two other sub-species (*articola* and *pacifica*) are largely restricted to North America, whilst *sakhalina* breeds in north-east Siberia and winters in the Pacific Far East. *C. a. actites* breeds on Sakhalin, *kistchinski* on Kamchatka, and *centralis* in central Siberia (Cramp & Simmons 1983; Lappo & Tomkovich 1998; Engelmoer & Roselaar 1998).

Breeding Dunlin are characteristic of moorland and upland habitats and this is reflected in the species' breeding distribution in the UK. Concentrations are found in the Flow Country of Caithness and Sutherland, and peat moors in the Orkneys, Shetland, Grampians, Pennines and Outer Hebrides (Stroud *et al.* 1987, 1988; Gibbons *et al*. 1993). The machair of the Outer Hebrides represents another favoured habitat and up to a third of the British population was formerly estimated to breed here (Fuller *et al*. 1986). Small numbers also breed in the Southern Uplands of Scotland, the hills of central Wales and Dartmoor. Dunlin also breed in some areas of saltmarsh, for example on the Solway Firth. Breeding was only proven in one 10 km square in Northern Ireland during survey work for the 1988-1991 Breeding Bird Atlas (Gibbons *et al*. 1993).

4. Population structure and trends

Dunlin breeding in Britain and Ireland are of the temperate population of *C. a. schinzii* which also occurs in the Baltic region.

The UK breeding population of Dunlin is estimated to be 9,150 pairs (Stone *et al*. 1997, based on Reed 1985), which represents 83% of the biogeographic population. No information is available concerning population change at a national level, but there have been several studies looking at change in key regional areas. In the Flow Country of Caithness and Sutherland, numbers of Dunlin were estimated to have fallen by 17% due to the afforestation that has occurred there since 1945 (Stroud *et al*. 1987; see also Avery & Haines-Young 1990). Afforestation not only resulted in direct habitat loss, but also led to a reduction in numbers up to 800 m from the forest edge – perhaps due to vegetational changes or local increases in predators (Stroud *et al*. 1990).

Although active afforestation has now stopped in the Flow Country, Dunlin numbers have continued to fall. Whitfield (1997) found that numbers fell on five of 12 sites in Caithness and Sutherland surveyed both in the period between 1979 and 1987, and in 1993–1994, and that overall numbers fell by 2.4% per year. Afforestation is also estimated to have resulted in the loss of 400 pairs of Dunlin from Wales, the North York Moors and the Southern Uplands (Stroud *et al*. 1987). Agricultural intensification has caused additional population losses, for example in Orkney (Booth *et al*. 1984; Ratcliffe 1990). In contrast, on peatland sites in Lewis and Harris where there has not been substantial habitat change, numbers of Dunlin showed a slight increase of 1.4% per year between surveys in 1987 and 1994/1995 (Whitfield 1997; see also Stroud *et al*. 1988).

In the southern Outer Hebrides, the large populations that breed on the machair are in decline mainly due to egg predation by introduced Hedgehogs *Erinaceus europaeus* (Jackson & Green 2000). The percentage of first nests hatching fell from 59.6% in the period 1985-1987, when Hedgehogs were absent, to 8.8% in the period 1996-97. Declines have also been recorded in Hedgehog-free areas of North Uist (Fuller & Jackson 1999) and the situation is very complex with a variety of factors probably implicated. Predation of one sort or another is almost certainly involved but changes to the machair land-management systems may be a fundamental reason also.

There are estimated to be about 2,000 pairs of *schinzii* Dunlin breeding in the Baltic area (Thorup 1998). Tucker & Heath (1994) gave figures of just 500-700 pairs in Estonia and 10-15 pairs in Latvia and Lithuania. These Baltic Dunlin are found mostly in wet coastal meadows and river-mouth floodplains, which are threatened by agricultural intensification and the cessation of grazing and increase in nest predation (Jönsson 1988, 1991; Leibak *et al*. 1994; Vīksne 1997).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Dunlin supports, on average, 6,812 pairs. This amounts to about 74% of the British breeding population. The suite contains about 62% of the international population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The SPA suite total is contained within eight sites (Table 6.67a.1) where breeding Dunlin is a qualifying species.

6. Classification criteria

The seven UK sites (Caithness and Sutherland Peatlands; Lewis Peatlands; North Pennine Moors; North Uist Machair and Islands; South Uist Machair and Lochs; Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast); and South Pennine Moors) known to support more than 1% of the international breeding population were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. The potential for additional coverage using Stage 1.4 was assessed given that the UK holds a very high proportion (83%) of the temperate population of *schinzii* Dunlin – a population that is in decline both in the UK and elsewhere in Europe. Fetlar was selected accordingly as having the largest, highest-density population in Shetland. Fetlar contributes a significant population to the species' suite as well as range coverage in the northernmost part of Scotland.

The sites are located throughout the UK range of this species, and represent the main centres of occurrence. All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs of

importance for other breeding birds. There is a very long recorded history of occupancy at all these sites (Harvie-Brown & Buckley 1887, 1888, 1892; Venables & Venables 1955; Holloway 1996).

Outwith the SPA suite breeding Dunlins have a widely scattered distribution in the British uplands often at (very) low density, and identification of key sites is problematic.

Distribution map for breeding Dunlin SPA suite

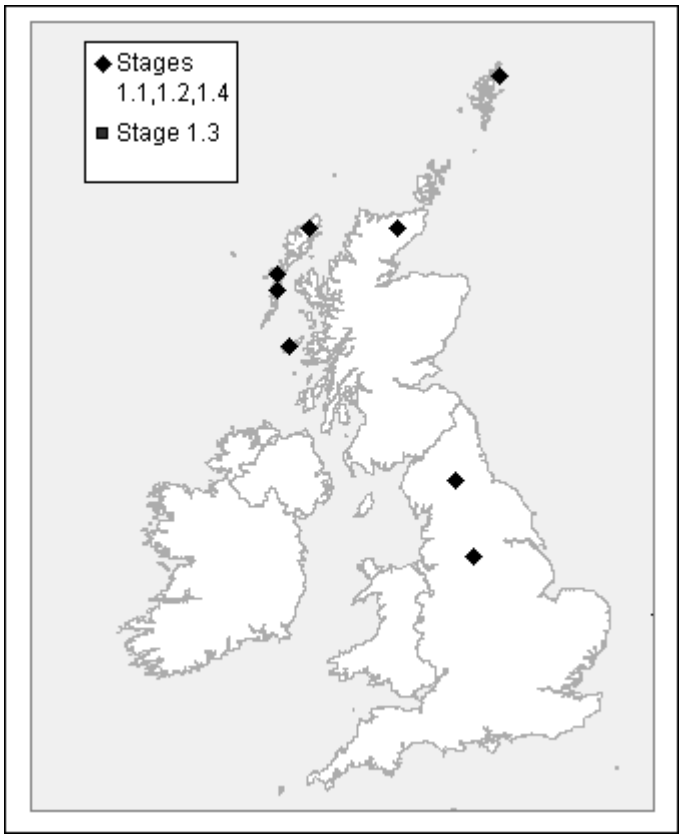


Table 6.67a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	1860	16.9	20.3	1.2
Fetlar	90	0.8	1.0	1.4
Lewis Peatlands	3650	33.2	39.9	1.2
North Pennine Moors	330	3.0	3.6	1.2
North Uist Machair and Islands	260	2.4	2.8	1.2
South Pennine Moors	140	1.3	1.5	1.2
South Uist Machair and Lochs	357	3.2	3.9	1.2
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	125	1.1	1.4	1.2
TOTALS	6812	61.9%	74.0%	

A6.67b Dunlin *Calidris alpina alpina* (non-breeding)

1. Status in UK

See section A6.67a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	532,000	5,300	412,566 (78% of GB total)
Ireland	125,000	1,250	8,192 (7% of all-Ireland total)
Biogeographic population	1,373,000	14,000	420,758 (30% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.67a outlines the global distribution and taxonomy of Dunlin.

Most Dunlin wintering in north-west Europe are of the nominate sub-species *alpina* which breeds in Scandinavia and Russia. Based on biometrics, Clark (1983) considered that at least 98% of Dunlin wintering on the Severn were of this sub-species. The sub-species *schinzii*, from Iceland, Great Britain, Ireland and the Baltic, winters mainly in southern Europe and Africa, whilst *arctica* birds pass through the UK on route between north-east Greenland and Africa (Greenwood 1984; Hardy & Minton 1980; Jönsson 1988; Smit & Piersma 1989; Tucker & Heath 1994).

In Europe, major concentrations are found in winter in the UK, Ireland, France, The Netherlands and Germany (Cramp & Simmons 1983; Tucker & Heath 1994). Their distribution in winter is essentially coastal, but especially in the Mediterranean basin, they also occur at inland wetlands.

After Lapwings, Dunlins are the most numerous wader in the UK in winter and are found on estuaries and open coasts throughout the country. They occur in particularly high densities in estuaries (Davidson *et al.* 1991), and several important sites are on eastern or south-eastern coasts: the Humber Flats, Marshes and Coast, The Wash, the Stour and Orwell Estuaries, the Blackwater Estuary and the Medway Estuary and Marshes. Other sites lie in the north-west of England and eastern Wales: the Dee Estuary, the Mersey Estuary, the Ribble and Alt Estuaries, and Morecambe Bay, the others being the Severn Estuary and Chichester and Langstone Harbours. A peak population of 507,169 Dunlin was recorded in Great Britain in the winter of 1998/99, with a maximum of only 18,883 in Northern Ireland (Pollitt *et al.* 2000).

Dunlin are highly site-faithful and move little between wintering areas either within or between years (Clark 1983; Symonds *et al.* 1984).

4. Population structure and trends

Nine biogeographical populations of Dunlin have been described (Rose & Scott 1997). Of these, four occur in Europe. The North Siberia/Europe/West Africa population of *C. a. alpina* comprises most non-breeding birds in Europe (and UK) and is currently estimated at 1,373,000 individuals. Iceland/Greenland breeding *C.a. schinzii* winter mainly in West Africa, migrating through Britain and Ireland en route, and are estimated to number 800,000 individuals. The temperate population of *C.a. schinzii* breeds in Britain and Ireland (on peatlands) and around the Baltic (on saltmarshes and wet grasslands). The population is estimated at 21,000 individuals. The small north-west Greenland population of *C. a.*

arctica numbers around 15,000 individuals and is believed to winter in West Africa and migrate through Britain and Ireland in spring and autumn.

Over 90% of Dunlin wintering in the UK occur on estuaries (Cayford & Waters 1996) and the species is thus well monitored by the Wetland Bird Survey (WeBS). Long-term indices for the species in the UK indicate that numbers fell by almost 50% between the mid-1970s and mid-1980s, but they have since partially recovered (Pollitt *et al.* 2000; Prŷs-Jones *et al.* 1994). Austin *et al*. (2000) reveal that numbers have increased rapidly in south and south-east England, but that this change has been countered by declines in south-west England, Wales and north-west England.

A British non-breeding total of 532,000 was estimated for the period 1987/88–1991/92 using WeBS data and information from non-estuarine shores from the 1984/85 Winter Shorebird Count amended for probable population change (Cayford & Waters 1996; Moser & Summers 1986). This figure represents 39% of the estimated biogeographic population of *C. a. alpina*. A further 125,000 are estimated to winter in Ireland (9% of the biogeographic population). Peak numbers recorded on sites covered by the Irish Wetland Bird Survey fluctuated between 75,264 and 98,570 in the years between 1994/95 and 1997/98 (Colhoun 2000).

The *C. a. alpina* population as a whole is estimated to have fluctuated between 0.9 and 1.5 million wintering birds since 1970 (Rösner 1997). Fluctuations may be linked to annual changes in breeding productivity (*e.g.* Gromadzka 1998). In the UK, the spread of Common Cord-grass *Spartina anglica* on upper mud-flats has led to a loss of habitat on a number of estuaries and this has been linked to local declines (Goss-Custard & Moser 1988). Because of earlier declines, the wintering populations of Dunlin in Europe are considered vulnerable and the species listed amongst those of European Conservation Concern (Tucker & Heath 1994).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Dunlin supports, on average, 420,758 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 78% of the British non-breeding population, and about 7% of the all-Ireland population. The suite holds about 30% of the international flyway population and comprises 38 sites where Dunlin (non-breeding) has been listed as a qualifying species (Table 6.67b.1).

6. Classification criteria

All 12 sites in the UK that support more than 1% of the international population of Dunlin were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements (Table 6.67b.1). A further 26 sites were considered and selected under Stage 1.3 (see section 5.3), with Dunlin identified as an important component of non-breeding waterbird assemblages.

The sites within the suite are distributed throughout the range of the non-breeding Dunlin population in the UK, from sites in Northern Ireland and south Wales, to the Moray Basin in northern Scotland, to sites along the south, east and west coasts of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Dunlin in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Dunlin SPA suite

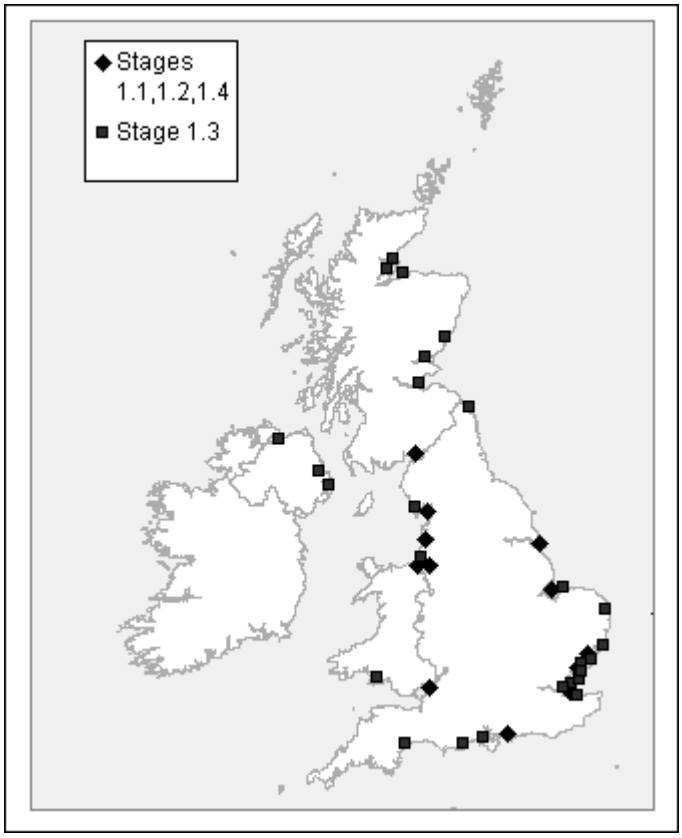


Table 6.67b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	4,371	0.3	0.8	1.3
Belfast Lough	1,619	0.1	1.3 (Ire)	1.3
Benfleet and Southend Marshes	11,372	0.8	2.1	1.3
Blackwater Estuary	33,267	2.4	6.3	1.2
Breydon Water	2,870	0.2	0.5	1.3
Burry Inlet	6,242	0.5	1.2	1.3
Chichester and Langstone Harbours	44,294	3.2	8.3	1.2
Colne Estuary	11,065	0.8	2.1	1.3
Cromarty Firth	3,384	0.3	0.6	1.3
Dengie	7,838	0.6	1.5	1.3
Dornoch Firth and Loch Fleet	4,462	0.3	0.8	1.3
Duddon Estuary	11,216	0.8	2.1	1.3
Exe Estuary	5,740	0.4	1.1	1.3
Firth of Forth	10,033	0.7	1.9	1.3
Firth of Tay and Eden Estuary	5,479	0.4	1.0	1.3
Foulness	9,529	0.7	1.8	1.3
Hamford Water	6,618	0.5	1.2	1.3
Humber Flats, Marshes and Coast	23,605	1.7	4.4	1.2
Lindisfarne	7,703	0.6	1.5	1.3
Lough Foyle	5,606	0.4	4.5 (Ire)	1.3
Medway Estuary and Marshes	25,936	1.9	4.9	1.2
Mersey Estuary	44,300	3.2	8.3	1.2
Mersey Narrows and North Wirral Foreshore	4,069	0.3	0.8	1.3
Montrose Basin	2,244	0.2	0.4	1.3
Moray and Nairn Coast	2,689	0.2	0.5	1.3
Morecambe Bay	52,671	3.8	9.9	1.2
North Norfolk Coast	4,121	0.3	0.8	1.3
Poole Harbour	6,083	0.4	1.1	1.3
Ribble and Alt Estuaries	39,952	2.9	7.5	1.2
Severn Estuary	44,624	3.3	8.4	1.2
Solent and Southampton Water	13,210	1.0	2.5	1.3
Stour and Orwell Estuaries	23,940	1.7	4.5	1.2
Strangford Lough	5,317	0.4	4.3 (Ire)	1.3
Thames Estuary and Marshes	11,184	0.8	2.1	1.3
The Dee Estuary	22,479	1.6	4.2	1.2
The Swale	12,394	0.9	2.3	1.3
The Wash	35,620	2.6	6.7	1.2
Upper Solway Flats and Marshes	14,566	1.06	2.74	1.2
TOTALS	420,758 (in January)	30.1%	77.8% 6.6% (Ire)	

A6.68a Ruff *Philomachus pugnax* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (males)	Selection thresholds	Totals in species' SPA suite
GB	11	1	10 (91% of GB population)
Ireland			
Biogeographic population	105,700	1,056	10 (<0.1% of biogeographic population)

GB population source: Ogilvie & RBBP 1996
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Ruff has a boreal global breeding distribution that extends from Scandinavia and Great Britain in the west, almost to the Bering Strait in the east. Across most of its range the Ruff is an Arctic-breeding wader, occurring mainly north of about 65°N, however in Europe it breeds in more temperate latitudes (to about 65°N) (Cramp & Simmons 1983; Hagemeijer & Blair 1997; van Rhijn 1991). The species is monotypic.

Within Europe, the Ruff has a wide breeding distribution in northern Russia, Finland and northern (and montane) Sweden and Norway. It has a localised breeding distribution in most north-east European countries, from the Baltic states, Poland, Germany and Denmark, through the Low Countries to Britain.

Because Britain is at the extreme western edge of the species' world breeding range, only very small numbers nest in the UK, with none at all in some years. However, several sites have a long history of occupation and previously the species was much more widespread in eastern England (Holloway 1996). All regular breeding sites are in England, with a small cluster in the East Anglian Fens and outlying sites in north and north-west England (Gibbons *et al.* 1993).

Within its temperate European distribution, the Ruff is a highly typical wader of lowland wet grasslands, and its occurrence is a good indicator of farmland with a high nature conservation value (Hötker 1991; Beintema *et al.* 1996).

4. Population structure and trends

Three biogeographical populations of Ruff have been described (Rose & Scott 1997). Of these, only the West African wintering population occurs in Europe. The European component of this population (used as the reference for this review) is estimated to be 105,655–139,209 breeding pairs (Hagemeijer & Blair 1997). Large numbers occur in Sweden (61,000 pairs), Finland (39,000 pairs) and Norway (14,000 pairs), whilst all other national totals comprise fewer than 2,000 pairs (Hagemeijer & Blair 1997). Most of the global numbers occur in Russia (over 3 million pairs in European Russia alone)

In Europe, the largest breeding populations in Russia and Sweden are reported to be stable, whilst numbers in Norway have increased, mostly because of range expansion in the south (Hagemeijer & Blair 1997; Tucker & Heath 1994). Meanwhile, large declines (>50% 1970–1990) have occurred in Finland, Poland, Latvia and The Netherlands (90% decline since the 1950s, only 400–800 pairs left in early 1990s). Although this affects only a small proportion of the biogeographical population, it is a continuation of the marked range contraction that has occurred over the last 200 years (Hagemeijer & Blair 1997; Tucker & Heath 1994). These declines have been variously attributed to drainage, increased fertiliser use, encroachment on – or abandonment of – previously mown or grazed breeding sites, and over-hunting (Hötker 1991; Hagemeijer & Blair 1997; Vīksne 1997; Thorup 1998).

In Britain, the Ruff was a widespread, though only locally common, breeding bird in eastern England until the end of the 18th century. The twin impacts of hunting and the drainage of breeding habitats led to its progressive localisation and then extinction by 1898 (Parslow 1973; Holloway 1996). After sporadic breeding attempts in the 1920s, Ruffs bred again in the UK at the Ouse Washes in 1963 (Cottier & Lea 1969). Numbers at this site increased to a maximum of 21 pairs in 1971 (Sharrock 1976; Taylor *et al.* 1999). Since then, the species has bred regularly at three other sites, but by the early 1990s probably fewer than five females were breeding each year (Gibbons *et al.* 1993). This represents a decline of at least 76% since 1971. As the main sites are all managed as nature reserves, the reasons for this decline are not obvious. One possible cause is the tendency for high water levels on its main breeding sites in recent years (Taylor *et al.* 1999) or it may simply be the result of natural demographic fluctuations on the edge of the species' range.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Ruff supports, on average, 10 pairs. This amounts to about 91% of the British breeding population. The species does not breed in Northern Ireland. The suite contains less than 0.1% of the international population (numbers in the UK are very small compared to the major concentrations that breed in Scandinavia and northern Russia). The SPA suite total is contained within four sites (Table 6.68a.1) where Ruff has been listed as a qualifying species.

It should be noted however, that calculation of site totals and population coverage for Ruffs is problematic. At any site, breeding is often difficult to confirm, and additionally complicated by the fact that birds nesting at a site can be joined in spring by migrants that perform at leks in southerly areas prior to migrating further north to nest (van Rhijn 1983).

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population of Ruff (*i.e.* any site where regular breeding occurs) were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite include the main current centres of occurrence of Ruff. Several of the sites were traditional haunts prior to the persecution to extinction in the nineteenth century (Holloway 1996). The Ouse Washes was the site of the initial re-colonisation of Britain by Ruff in 1963 (Cottier & Lea 1969).

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Most of the areas used by Ruffs within the suite are in the ownership of nature conservation organisations and are subject to active conservation management.

Distribution map for breeding Ruff SPA suite

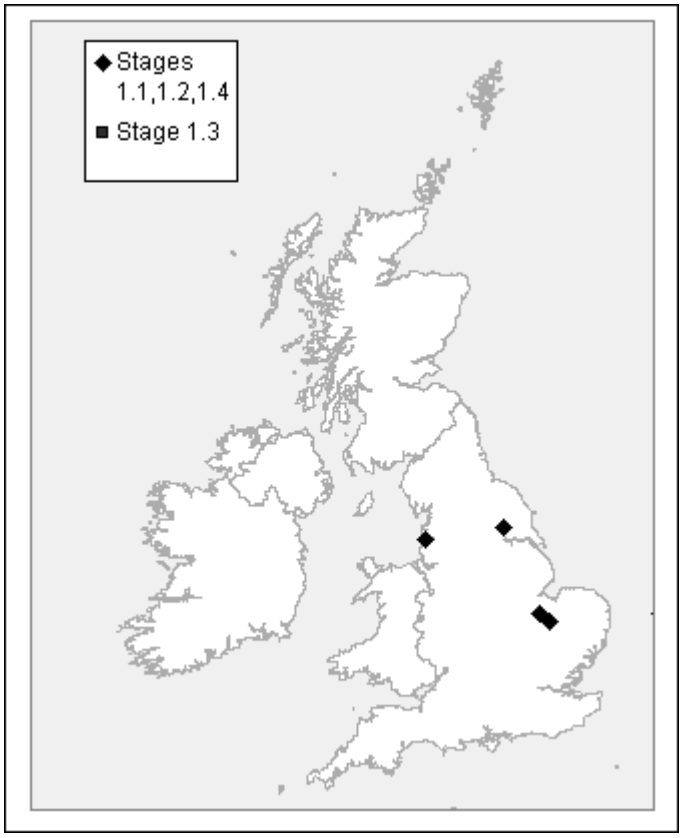


Table 6.68a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Lower Derwent Valley	7	<0.1	64	1.1
Nene Washes	1	<0.1	9	1.1
Ouse Washes	1	<0.1	9	1.1
Ribble and Alt Estuaries	1	<0.1	9	1.1
TOTALS	10	<0.1%	91%	

A6.68b Ruff *Philomachus pugnax* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	700	50 (see section 5.1.2 for rationale)	316 (45% of GB total)
Ireland			
Biogeographic population	1,000,000	10,000	316 (<0.1% of biogeographic population)

GB population source: Cayford & Waters 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.68a outlines the global distribution and taxonomy of Ruff.

In winter, Ruffs migrate south and west to the coasts of India, the Middle East and the Mediterranean Basin (Cramp & Simmons 1983). Most of the population, however, moves to sub-Saharan Africa, where the species is found in very large concentrations during the northern winter. Here they feed on flooded or dry plains, marshes or rice fields (Trolliet & Girard 1991; OAG Münster 1998).

In Europe, Ruffs have a very localised winter distribution, including the Low Countries and Britain, parts of coastal France, Iberia, and locally elsewhere around the Mediterranean basin (Snow & Perrins 1998).

In the UK, the species winters in small numbers both inland and on the coast (Lack 1986). Most sites are on the south and east coasts of Britain, with others in the north-west. Inland, the main areas are in the eastern half of central England (Lack 1986). Notable concentrations occur on the coasts of Dorset and Hampshire, in the Cambridgeshire Fens and on the coasts of Essex and north Kent (Lack 1986).

Ruffs use a wide range of habitats in the winter, including coastal marshes, intertidal zones, inland flooded fields and the muddy margins of lakes and pools (Lack 1986). Small numbers even occur on dry farmland with flocks of Golden Plover and Lapwing.

4. Population structure and trends

The small number of Ruff that winter in the UK are part of the Western Africa wintering population (Rose & Scott 1997), currently estimated at over 1,000,000 individuals, most of which winter in sub-Saharan Africa. The population is reported to be decreasing (Rose & Scott 1997), although rates of decline and causative factors are not known. Indeed, most of the population is very poorly monitored.

The Atlantic coastline of Europe is estimated to hold approximately 2,500 individuals, mostly in the UK and The Netherlands, whilst the Mediterranean supports approximately 3,500 birds (Snow & Perrins 1998), although trends are not apparent for these populations.

Ruffs began regularly wintering in Britain from 1934/35 and numbers have steadily increased since then (Lack 1986). As the UK is on the extreme north-west edge of the Ruff's wintering range, population levels fluctuate markedly from winter to winter depending on the severity of weather conditions (Lack 1986). By 1966–1971, numbers wintering in Britain were estimated at 1,200 (Prater 1973), rising by 17% to an estimated 1,400 in 1981–1984 (Lack 1986). The latter population count was extrapolated from Birds of Estuaries Enquiry results that found 670 birds in winter 1982/83. By 1987/88–1991/92, the number wintering in Britain was estimated at 700 individuals (Cayford & Waters 1996).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Ruff supports, on average, 316 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 45% of the British population and less than 0.1% of the international flyway population. In an all-Ireland context, no sites have been selected in Northern Ireland. The suite comprises eight sites at which Ruffs have been listed as a qualifying species (Table 6.68b.1).

6. Classification criteria

All eight sites in the UK that were known to support more than 50 Ruff, were considered under Stage 1.1 (see section 5.1.2 for explanation of the threshold used). All were selected after consideration of Stage 2 judgements (Pagham Harbour; Ouse Washes; Lower Derwent Valley; Nene Washes; North Norfolk Coast; Hamford Water; Broadland; and Blackwater Estuary).

The sites within the suite are clustered in eastern England, from the Lower Derwent Valley in Yorkshire to the south coast at Pagham Harbour. This reflects the main centres of winter distribution of the species (Lack 1986). All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stage 1.1 resulted in a suite which gives good coverage of the population and range of non-breeding Ruff in the UK, and in view of the very large size of the international population (over a million individuals), it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Ruff SPA suite

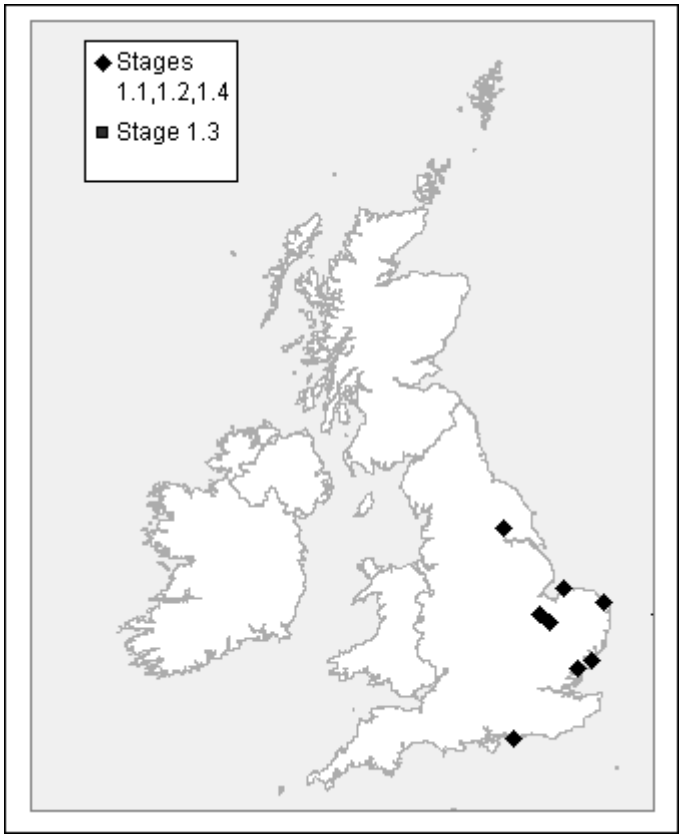


Table 6.68b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Blackwater Estuary	51	<0.1	7.3	1.1
Broadland	96	<0.1	13.7	1.1
Hamford Water	53	<0.1	7.6	1.1
Lower Derwent Valley	133	<0.1	19.0	1.1
Nene Washes	91	<0.1	13.0	1.1
North Norfolk Coast	54	<0.1	7.7	1.1
Ouse Washes	137	<0.1	19.6	1.1
Pagham Harbour	160	<0.1	22.9	1.1
TOTALS	316 (in January)	<0.1%	45.1%	

A6.69 Snipe *Gallinago gallinago* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 2(1) Schedule 3(3)**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex II/1 Annex III/2 Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	100,000	1,000	2,097 (2% of the GB population)
Ireland	Unknown		No SPAs selected in Northern Ireland
Biogeographic population	20,000,000	200,000	2,097 (0.1% of the biogeographic population)

GB population source: Cayford & Waters 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Snipe has an extensive global range that includes northern and central Eurasia from Iceland to the Bering Strait, North America, South America and eastern and southern Africa. There are also disjunct breeding populations in Kashmir and Mongolia. South American and African populations are sedentary. Snipe breeding in temperate and boreal regions of North America and Eurasia, however, move south in winter to milder climates (although also wintering in any part of the breeding range that remains unfrozen – Tuck 1972).

The species is polytypic – nine sub-species having been described. Of these, two occur in Europe: the nominate subspecies *G. g. gallinago* is found throughout the Palearctic except for where the subspecies *G. g. faeroeensis* occurs, *i.e.* Iceland, the Faeroes, Orkney and Shetland (Cramp & Simmons 1983).

In Europe, Snipe winter in small numbers in southern Scandinavia, but occur principally in Britain and Ireland, the Low Countries and south to the Mediterranean basin (Hagemeijer & Blair 1997). Considerable numbers also winter in Africa, south of the Sahara.

The winter distribution of Snipe is determined by availability of suitable habitats, as well as the influence of migration routes and weather. British breeding birds are mainly sedentary, central European populations are partially sedentary, whilst the Russian, Fennoscandian and Icelandic populations are mainly migratory.

Snipe have a widespread winter distribution in Britain and Ireland, resulting from both the southward movements of birds fledged in northern parts of Britain and Ireland, and the arrival of overseas migrants. They have a close association with lowland areas in southern Britain and the bogs of

southern Ireland (Lack 1986). Recoveries of ringed Snipe show a strong loyalty by individuals to particular migration routes and winter quarters (Lack 1986). During periods of frost, birds may shift to milder coastal areas (Snow & Perrins 1998). Prolonged cold spells cause a movement of birds south and west (Lack 1986).

The basic habitat requirement (for both breeding and non-breeding birds) is soft, accessible, organic soil, rich in food organisms just below the surface, with frequent clumps or patches of herbage or shrub cover affording good visibility of approaching danger. Commonly, this equates to marshes, bogs, water-meadows and damp grassland. Outside the breeding season, there is more use of artificial habitats such as sewage farms and rice fields (Snow & Perrins 1998).

4. Population structure and trends

Six biogeographical populations of Snipe have been described (Rose & Scott 1997). Of these, two occur in Europe: the European breeding population of *G. g. gallinago* and the whole population of *G. g. faeroeensis*. Both these populations occur in the UK.

The cryptic nature of Snipe in winter, and their wide, low-density distribution, means that it is very difficult to estimate numbers. There are a wide range of technical problems with designing appropriate surveys for this species, and knowledge of abundance and trends of Snipe (and Jack Snipe *Lymnocryptes minimus*) in winter is accordingly very poor. Reliable estimates of population size are limited as the species commonly occurs inland, and being both secretive and well camouflaged, it is rarely seen unless flushed (Devort 1977). The European breeding (and non-breeding) population has been estimated at >20,000,000 (Rose & Scott 1997, based on Beintema & Müskens 1983). Numbers of *G. g. faeroeensis* are estimated at 750,000 (Rose & Scott 1997), and of these about 6,900 pairs (range 5,300–10,650) are estimated to breed in Orkney and Shetland (BTO unpublished). Although Icelandic Snipe of *G. g. faeroeensis* move south in winter, it is not possible to separate these populations in winter within the UK.

Britain is estimated to support 55,000 breeding pairs with a further 10,000 in Ireland (Gibbons *et al.* 1993; Piersma 1986). There is uncertainty as to the size of non-breeding populations of Snipe; in Britain this is estimated as being significantly greater than 100,000 (Cayford & Waters 1996; Stone *et al.* 1997). According to the last winter atlas (Lack 1986), non-breeding Snipe of Britain and Ireland must number many hundreds of thousands.

In Europe, reliable trends are limited, but Snipe populations are thought to be declining throughout much of Europe, probably through loss of breeding habitat, especially because of drainage (Hötker 1991; Hagemeijer & Blair 1997). Loss of suitable moulting grounds in The Netherlands due to agricultural development and drainage (Beintema & Müskens 1983) is a factor probably affecting many north European populations (Beintema *et al.* 1997). A study in south-west Finland shows a highly significant decrease in the density of breeding birds probably as a result of habitat loss through the cessation of cattle-grazing on shore meadows, allowing the encroachment of reeds and shrubs (Hagemeijer & Blair 1997). Recent decreases in breeding range have been reported in Britain, Ireland, France, Switzerland and Ukraine. Relatively little is known of the large breeding populations in remote areas of Finland and Sweden.

Experimental and large-scale management of wetlands in several countries shows that it is possible to reverse such declines with appropriate hydrological management (Green & Robins 1993; Self *et al.* 1994; Beintema *et al.* 1996).

In Britain and Ireland, there has been a decline in breeding numbers in both the lowlands and margins of uplands (Snow & Perrins 1986). Less is known of trends in the winter populations. However, a decrease in the resident breeding population and an overall reduction of suitable habitat points to a decline in non-breeding populations in Britain and Ireland. The all-Ireland 1997/98 maximum was the lowest yet recorded by the Irish Wetland Birds Survey (Colhoun 2000).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Snipe supports, on average, 2,097 individuals. This total amounts to about 2% of the British non-breeding population. Within an all-Ireland context, there

have been no SPAs selected in Northern Ireland. The suite holds about 0.1% of the international flyway population and is comprised of the single site where non-breeding Snipe has been listed as a qualifying species (Table 6.69.1).

6. Classification criteria

Snipe are widely distributed across the UK in winter. Conservation in winter is thus best effected through a range of wider countryside conservation measures. However, the single UK site (Somerset Levels and Moors) known to support more than 2,000 individuals was considered under Stage 1.3 (since the site supports a multi-species assemblage of more than 20,000 waterbirds), and was selected after consideration of Stage 2 judgements.

Snipe are monitored where they occur on wetland sites, but due to current reliance on the UK's Wetland Bird Survey (the principal monitoring scheme for non-breeding waterbirds in the UK), some important concentrations regularly occurring on agricultural habitats are not routinely counted. Work is being undertaken to address these monitoring needs.

Distribution map for non-breeding Snipe SPA suite

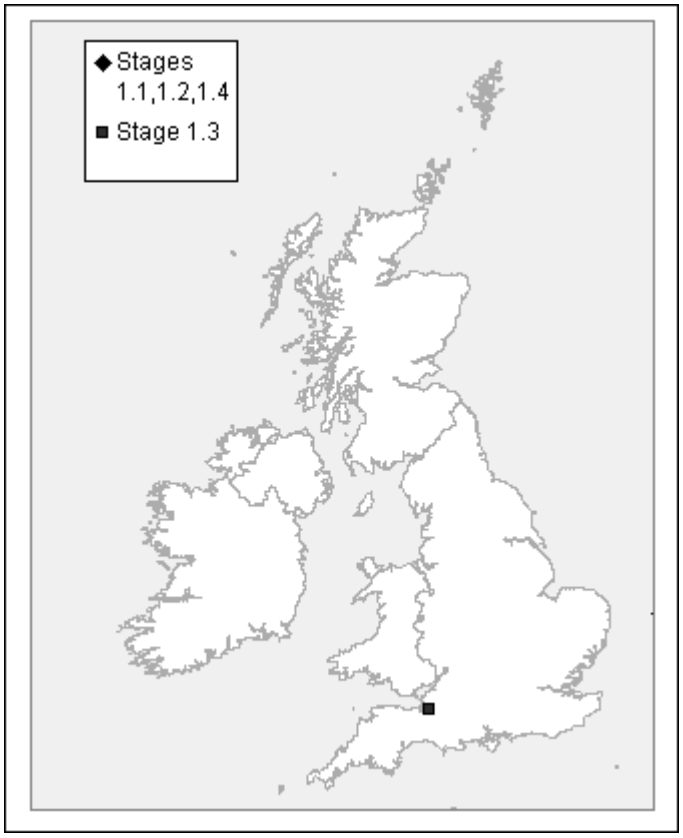


Table 6.69.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Somerset Levels and Moors	2,097	0.1	2.1	1.3
TOTALS	2,097	0.1%	2.1%	

A6.70a Black-tailed Godwit *Limosa limosa* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB (*L. l. limosa* and *L. l. islandica*)	34	1	42 (*c.* 100% of GB population)
Ireland			
Biogeographic population (*L. l. limosa only*)	120,000	1,200	42 (<0.1% of biogeographic population)

GB population source: Ogilvie & RBBP 1996
Biogeographic population source: Rose & Scott 1997

3. Distribution

Black-tailed Godwits have a markedly discontinuous global breeding distribution, restricted to Eurasia. Breeding occurs from Iceland in the west, to central Siberia – mainly south of 60@N. Isolated populations occur in China and the Russian far east (Chukotka) (Cramp & Simmons 1983). The species is migratory, moving at the end of the breeding season to winter locally in the Mediterranean basin, in sub-Saharan Africa, as well as through northern India and coastal areas of south-east Asia and Australia (Cramp & Simmons 1983). The species is polytypic with three sub-species described (Cramp & Simmons 1983). Two of these occur in Europe: the nominate race *L. l. limosa,* which breeds from England across Europe and Russia to the Yenisey, and *L. l. islandica*, which breeds in Iceland, the Faeroes and in small numbers in Shetland and Orkney (Williamson 1958a; Thom 1986; Gibbons *et al.* 1993).

In Europe, nominate-race Black-tailed Godwits breed from England and France in the west, eastwards across Europe at temperate latitudes (generally between 45°–60°N – Snow & Perrins 1998). Breeding sites are highly localised (other than in The Netherlands where the species is widespread). Generally, occurrence reflects the presence of traditionally managed low-intensity wet grasslands and fens. As this habitat has become fragmented, so has the breeding distribution of Black-tailed Godwits. Numbers are smallest in the west, but the species is more widespread in eastern Europe – reflecting the lower levels of agricultural intensification of grassland, as well as the presence of extensive natural wetlands (*e.g.* Kłosowscy *et al.* 1991).

The currently restricted British breeding population of *L. l. limosa* is a relict of a much more extensive distribution. Although now much limited and on the western edge of the species' global breeding range, two sites have a long history of occupation. All currently regular breeding sites are in England with a small cluster in the East Anglian Fens (Gibbons *et al.* 1993). In contrast, *L. l. islandica* appears to have become established as a breeding bird in the 20th century. The first record of breeding *L. l. islandica* is from Caithness in 1946, and small numbers of birds have bred "fairly regularly in Shetland" since 1949 and in Orkney since 1973 (Thom 1986).

Within its temperate European distribution, Black-tailed Godwit is a highly typical wader of lowland wet grasslands and fens, and its occurrence is a good indicator of farmland with a high nature conservation value (Hötker 1991; Kłosowscy *et al.* 1991; Beintema *et al.* 1996; Thorup 1998).

4. Population structure and trends

Six biogeographical populations of Black-tailed Godwit have been described (Rose & Scott 1997). Of these, three occur in Europe: the population of *L. l. islandica*, the western European/west African population of *L. l. limosa*, and the eastern European/east African population of *L. l. limosa* (Rose & Scott 1997; Wetlands International 1999). Of these, the first two populations occur in the UK.

The European component of the *L. l. limosa* population is estimated to be 120,000 breeding pairs, of which approximately 50% occurs in The Netherlands (Rose & Scott 1997; Hagemeijer & Blair 1997). Large numbers also breed in Russia, Belarus, Germany, Poland and Ukraine (Hagemeijer & Blair 1997).

In Europe, the large breeding populations in The Netherlands, Russia, Germany, Poland and Ukraine have all declined between 1970 and 1990, whilst the large population in Belarus has remained stable (Hötker 1991; Tucker & Heath 1994). These declines are considered to be relatively small (Tucker & Heath 1994) and are attributed to drainage of wetlands and intensification of farming practices in the breeding areas, though drought in the West African wintering quarters (Tucker & Heath 1994) may also play a part.

In lowland Britain, Black-tailed Godwits were formerly widespread, but suffered a major decrease and extinction in the early part of the nineteenth century. This was consequent upon widespread drainage of natural wetlands, especially the East Anglian fens (Parslow 1973). Following an absence of over 100 years, Black-tailed Godwits began regular breeding again at the Ouse Washes in 1952. Up to 64 pairs bred here and at the nearby Nene Washes by the mid-1970s (Cottier & Lea 1969; Gibbons *et al.* 1993). Following a series of spring floods in the 1980s which disrupted the main breeding sites (Green *et al.* 1987), the population declined to 40 pairs by the late 1980s (Gibbons *et al.* 1993), after which the population has remained relatively stable (Ogilvie and the Rare Breeding Birds Panel).

Black-tailed Godwits breeding in northern Scotland belong the to separate population of *L. l. islandica*. This population breeds in the Faeroes, Iceland and north Scotland, and is estimated to have a stable size of 5,000–15,000 pairs (Hagemeijer & Blair 1997).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Black-tailed Godwit of the western European/west African population of *L. l. limosa* supports, on average, 42 pairs. This amounts to the great majority of this breeding population in Britain, and less than 0.1% of the international population (numbers in the UK are very small in comparison to the much larger numbers in Belgium, The Netherlands and Germany). The SPA suite total is contained within two sites (Table 6.70a.1) where breeding Black-tailed Godwit has been listed as a qualifying species. No sites have been proposed in the UK for the Icelandic biogeographic population of Black-tailed Godwit as most birds breed in isolated pairs with no significant concentrations.

Other measures

The UK has contributed to the development of a European Union Management Action Plan for Black-tailed Godwit as part of the Ornis Committee's initiative to develop such plans for a number of Annex II species with an unfavourable conservation status. Although these action plans are advisory rather than legally binding, the UK will be seeking to implement the recommended actions of the plan as specified for the period 1999–2002. As one example of the implementation of recommended actions,

JNCC and other organisations are currently developing an Integrated Monitoring Programme related to UK waterbird monitoring. As indicated by the Black-tailed Godwit Action Plan (Operational Objectives 2.4.1 & 2.4.2), this aims to develop a better understanding of the factors influencing Black-tailed Godwit population dynamics through integrating results from separate programmes which currently collect data and information on parameters such as population sizes, distribution, productivity, mortality and dispersal.

6. Classification criteria

No sites in the UK hold more than 1% of the international population in the breeding season. A case for SPA selection using Stage 1.4 was made in the light of:

- the SPEC 2 status of Black-tailed Godwit (globally concentrated in Europe and with an unfavourable conservation status – Tucker & Heath 1994);
- the former wider occurrence of the sub-species *L. l. limosa* in the UK, but subsequent restriction through historic habitat loss and degradation (Parslow 1973; Holloway 1996);
- the viable occurrence in significant numbers at two sites; and
- the fact that East-Anglian strongholds are geographically close to the main European centre of population (The Netherlands) thus potentially providing a focus for recolonisation of England should wet grassland conditions elsewhere in England improve.

The two UK sites (the Nene Washes and the Ouse Washes) that together support the great majority of the national breeding population of *L. l. limosa* was thus considered under Stage 1.4. Both sites were selected after consideration of Stage 2 judgements. These sites are currently the main centres of breeding Black-tailed Godwits. There is a relatively long occupancy at the Ouse Washes (Cottier & Lea 1969; Green *et al.* 1987) where recolonisation of Britain began in 1952, whilst the Nene Washes have been occupied since the late 1970s. Both these SPAs are managed as nature reserves by conservation organisations, primarily to maintain appropriate water levels and grazing regimes, but also to protect against disturbance and egg-collecting.

Distribution map for breeding Black-tailed Godwit SPA suite

Table 6.70a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Nene Washes	16	<0.1	47	1.4
Ouse Washes	26	<0.1	76	1.4
TOTALS	42	<0.1%	100%	

A6.70b Black-tailed Godwit *Limosa limosa islandica* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	7,410	70	8,686 (c. 100% of GB total)
Ireland	9,000	90	287 (3% of all-Ireland total)
Biogeographic population	65,000	700	8,973 (13% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.70a outlines the global distribution and taxonomy of Black-tailed Godwit.

The Icelandic population of Black-tailed Godwit *L. limosa islandica* breeds mainly in Iceland, sporadically in the Faeroes, Britain and Ireland, and may have bred in northern Norway. This sub-species winters mainly in Britain, Ireland and western France, and south to Morocco (Wetlands International 1999). The sub-species *islandica* is comprised of a single population, intermixing throughout the southern part of its non-breeding range with western populations of *L. l. limosa*.

The main concentrations are on the muddy estuaries of the south coasts of Ireland and England, inland in the Shannon valley, on the Stour and Hamford Water in eastern England and on the Ribble and Dee in NW England (Lack 1986). Black-tailed Godwits feed mostly on worms whilst the tide is out and normally roost on damp pasture, often inland. Peak numbers occur in the period from mid August to mid September (Lack 1986).

4. Population structure and trends

Smit & Piersma (1989) considered all birds wintering on the Atlantic coast of Europe and northern Morocco to be *islandica*. However, it is believed that only a small proportion of Black-tailed Godwits in Portugal, Spain and northern Morocco are *islandica*, reducing the estimate of the biogeographic population of that subspecies considerably. Studies of the proportion of colour ringed birds returning

to Iceland to breed suggest a total population more in the order of 35,000–40,000 individuals (J. Gill unpubl.). Thus, an estimate of 65,000 individuals (Rose & Scott 1997) is probably too high, and as such the importance of Britain and Ireland as non-breeding sites for these birds will have been underestimated considerably.

The Icelandic breeding population showed an apparent decline during the 1980s from 10,000–30,000 pairs in the early 1980s (Piersma 1986) to 5,000–15,000 pairs in the late 1980s (Koskimies 1993). Tucker & Heath (1994) suggest that the recent trend is approximately stability, but a re-evaluation of international population sizes suggests a 62% increase in numbers since the mid-1980s (Davidson 1998).

In the UK, numbers have steadily increased since the mid-1970s to an all time high in 1996/7 (Pollitt *et al*. 2000). Between 1981–1982 and 1988–1992, numbers increased from 4,700 to 7,410 – a 55% increase (Cayford & Waters 1996). The 1997/98 peak count of Ireland was the highest count ever recorded by the Irish Wetland Bird Survey and index numbers suggest a general increase over recent years (Colhoun 2000).

The recent evidence presented by Cranswick *et al*. (1999) results in an estimate of the British population that is closer to 12,000 than 7,000. The degree of movement of birds within winters, and site fidelity between winters, appear to vary. Recent colour ringing studies show that birds moulting on The Wash use a number of east coast estuaries in Suffolk and Essex within a winter in a pattern that is repeated from year to year (Gill unpublished). In contrast, studies on Langstone Harbour and nearby estuaries show that birds do not move from this location within a winter but show a high degree of site fidelity between winters (Potts unpublished).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Black-tailed Godwit supports, on average, 8,973 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to substantially all of the British population, about 3% of the all-Ireland population (most Godwits in Ireland winter in the Republic), and about 13% of the international flyway population. The suite comprises 27 sites where Black-tailed Godwit has been listed as a qualifying species (Table 6.70b.1).

Other measures

See section A6.70a.

6. Classification criteria

All 12 sites in the UK supporting more than 1% of the international population were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. A further 15 sites were considered and selected under Stage 1.3 (see section 5.3), with Black-tailed Godwit were identified as an important component of non-breeding waterbird assemblages at these localities.

The sites include all the main non-breeding areas of Black-tailed Godwits in the UK, from the Firth of Tay and Eden Estuary in eastern Scotland, to the main wintering areas on the west, east and south coasts of England, as well as in Northern Ireland. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the population and range of non-breeding Black-tailed Godwits in the UK – indeed holding virtually all those birds that winter in Northern Ireland and Britain – it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Black-tailed Godwit SPA suite

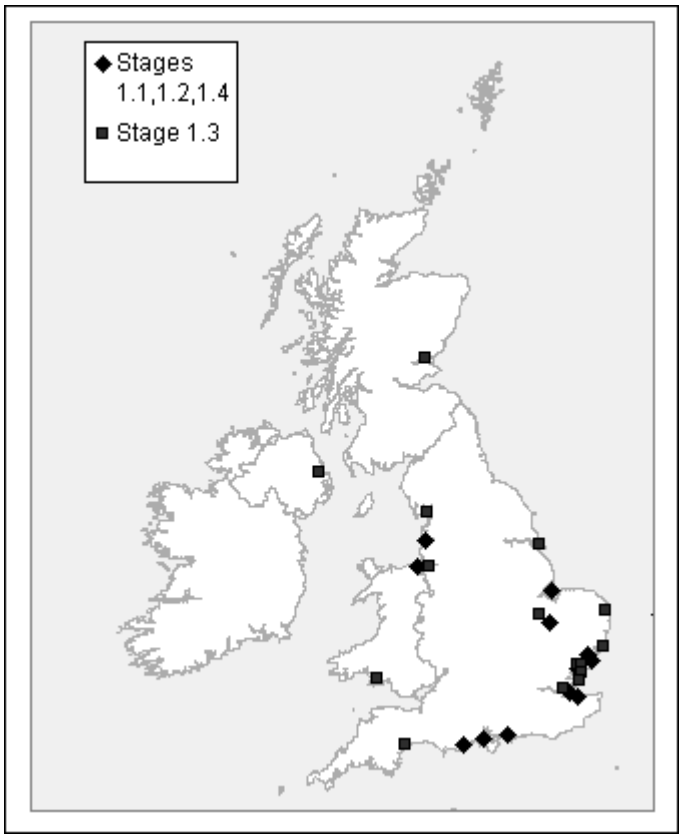


Table 6.70b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abberton Reservoir	294	0.5	4.0	1.3
Alde – Ore Estuary	268	0.4	3.6	1.3
Belfast Lough	316	0.5	3.5 (Ire)	1.3
Blackwater Estuary	1,280	2.0	17.3	1.2
Breydon Water	240	0.4	3.2	1.3
Burry Inlet	83	0.1	1.1	1.3
Chichester and Langstone Harbours	1,003	1.5	13.5	1.2
Colne Estuary	235	0.4	3.2	1.3
Dengie	80	0.1	1.1	1.3
Exe Estuary	533	0.8	7.2	1.3
Firth of Tay and Eden Estuary	150	0.2	2.0	1.3
Foulness	79	0.1	1.1	1.3
Hamford Water	1,121	1.7	15.1	1.2
Humber Flats, Marshes and Coast	71	0.1	1.0	1.3
Medway Estuary and Marshes	957	1.5	12.9	1.2
Mersey Estuary	343	0.5	4.6	1.3
Morecambe Bay	79	0.1	1.1	1.3
Nene Washes	312	0.5	4.2	1.3
Ouse Washes	1,198	1.8	16.2	1.2
Poole Harbour	1,576	2.4	21.3	1.2
Ribble and Alt Estuaries	819	1.3	11.0	1.2
Solent and Southampton Water	1,125	1.7	15.2	1.2
Stour and Orwell Estuaries	2,475	3.8	33.4	1.2
Thames Estuary and Marshes	322	0.5	4.6	1.3
The Dee Estuary	1,739	2.7	23.5	1.2
The Swale	1,755	2.7	23.7	1.2
The Wash	859	1.3	11.6	1.2
TOTALS	8,973 (in January)	12.8%	c. 100% 3.2% (Ire)	

A6.71 Bar-tailed Godwit *Limosa lapponica*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3 (wintering)** Unfavourable conservation status (**localised in winter**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I** **Annex II/2** **Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	52,500	530	37,168 (70% of GB total)
Ireland	16,000	175	2,218 (13% of all-Ireland total)
Biogeographic population	115,000	1,000	39,386 (39% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Bar-tailed Godwit breeds in Arctic regions of Eurasia, from northern Scandinavia, through high latitudes of Russia to the west coast of Alaska. Especially in the Russian far east, The Bar-tailed Godwit is a high-Arctic breeder, although it occurs at lower latitudes in European Russia and Scandinavia. The species is polytypic, with two subspecies described. *L. l. lapponica* breeds in Scandinavia and north-western Russia as far east as the central Taimyr. It winters in north-western Europe south to southern Spain and Portugal. *L. l. baueri* breeds in eastern Russia and in western Alaska.

The European winter distribution of Bar-tailed Godwits is centred on the estuaries of Britain and Ireland, as well as the coasts of the southern North Sea – especially the international Wadden Sea (Prokosch 1988; Meltofte *et al.* 1994). Much smaller numbers winter further west and south.

In Britain they are mostly distributed along the North Sea coast, and from north-west England to the Outer Hebrides. In Ireland the species can be found on both the Atlantic and Irish Sea coasts (Lack 1986; Hutchinson 1989). Numbers are concentrated in the southern and eastern estuaries with only a few birds regularly occurring in north-west Scotland.

Bar-tailed Godwits are almost entirely coastal in their winter habits, feeding mainly on worms both on sandy and muddy shores.

4. Population structure and trends

Four biogeographical populations of Bar-tailed Godwit have been described (Rose & Scott 1997). Of these, two occur in Europe: the Western Palearctic population of *L. l. lapponica* breeds in Scandinavia and north-western Russia (west of the Yamal Peninsula) and winters in north-western Europe. The south-west African wintering population of *L. l. lapponica* breeds in central Russia and migrates through Europe in spring and autumn en route to western and southern Africa. Both populations occur in the UK, although the latter only during migration periods.

Britain supports 46% and Ireland 14% of the biogeographic wintering population of 115,000 individuals (Rose & Scott 1997, based on Smit & Piersma 1989).

As a mid- to high-Arctic nesting species, significant between-year population changes might be expected as a consequence of variation in weather and predation pressures on breeding areas. Overall, the biogeographic population has shown a general increase since at least the mid-1980s from 100,000 individuals (Lack 1986) to 115,000 individuals (Rose & Scott 1997). A decrease has been reported in the number of birds wintering in France (Tucker & Heath 1994), but these birds account for less than 5% of the biogeographic population. Numbers wintering in the UK have been broadly stable since the early 1970s (Prŷs-Jones *et al.* 1994), although there have been significant year-to-year fluctuations – probably reflecting changes in annual breeding success (as for example in 1997; Pollitt *et al.* 2000). Irish populations also show considerable fluctuation (Colhoun 2000).

In addition to those factors affecting breeding success, between-year fluctuations in wintering numbers in Britain and Ireland are at least in part due to weather conditions, with influxes into east-coast estuaries occurring in severe conditions. Many birds use the east coast estuaries, such as The Wash, as moulting and non-breeding sites, whilst others use them as stopping-off points en route to/from the winter quarters (Atkinson 1996).

Bar-tailed Godwits shows a high degree of fidelity to staging and wintering areas in succeeding years (Tucker & Heath 1994; del Hoyo *et al.* 1996). Ringing recovery data provides evidence of some movement between sites within winters (Wernham *et al.* in press).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for Bar-tailed Godwit supports, on average, 39,386 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 70% of the British wintering population, and about 13% of the all-Ireland population. The suite holds about 39% of the international flyway population and is comprised of 23 sites where Bar-tailed Godwits have been listed as a qualifying species (Table 6.71.1).

6. Classification criteria

All sites in the UK that support more than 1% of the international population of Bar-tailed Godwit were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites are distributed throughout the range of the non-breeding population in the UK, from sites in Northern Ireland, to East Sanday Coast in the Orkneys, to sites along the south, east and west coasts of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stage 1.1 resulted in a suite which gives adequate coverage of the population and range of non-breeding Bar-tailed Godwit in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Bar-tailed Godwit SPA suite

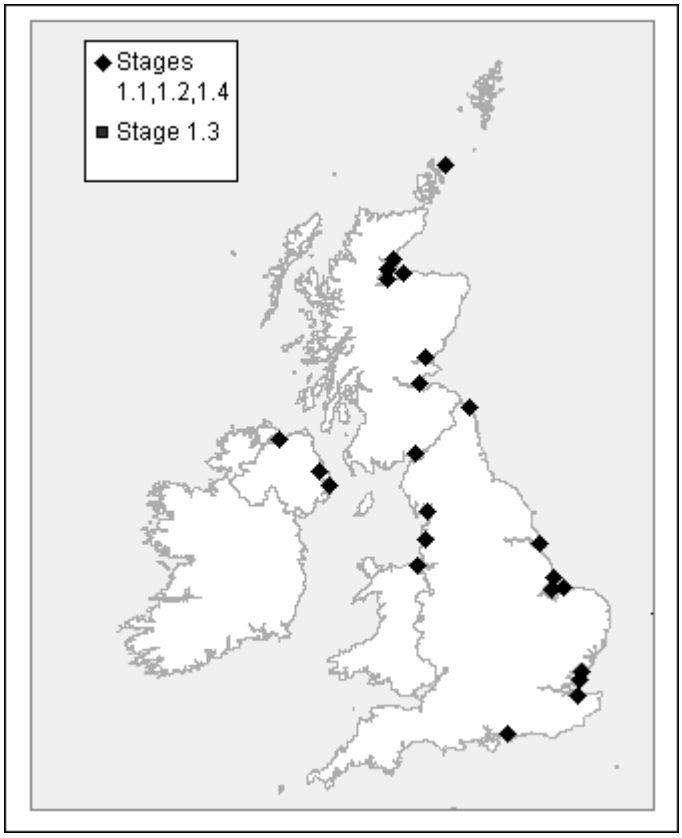


Table 6.71.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	232	0.2	1.5 (Ire)	1.1
Chichester and Langstone Harbours	1,692	1.5	3.2	1.1
Cromarty Firth	1,420	1.2	2.7	1.1
Dengie	1,156	1.0	2.2	1.1
Dornoch Firth and Loch Fleet	1,300	1.1	2.5	1.1
East Sanday Coast	600	0.5	1.1	1.1
Firth of Forth	2,600	2.3	5.0	1.1
Firth of Tay and Eden Estuary	2,400	2.1	4.6	1.1
Foulness	7,639	6.6	14.5	1.1
Gibraltar Point	719	0.6	1.4	1.1
Humber Flats, Marshes and Coast	1,593	1.4	3.0	1.1
Inner Moray Firth	1,155	1.0	2.2	1.1
Lindisfarne	2,946	2.6	5.6	1.1
Lough Foyle	1,896	1.7	11.9 (Ire)	1.1
Moray and Nairn Coast	1,156	1.0	2.2	1.1
Morecambe Bay	2,611	2.3	5.0	1.1
North Norfolk Coast	1,236	1.1	2.4	1.1
Ribble and Alt Estuaries	18,958	16.5	36.1	1.1
Strangford Lough	882	0.8	5.5 (Ire)	1.1
The Dee Estuary	1,013	0.9	1.9	1.1
The Swale	542	0.5	1.0	1.1
The Wash	11,250	9.8	21.4	1.1
Upper Solway Flats and Marshes	2,367	2.1	4.5	1.1
TOTALS	39,386 (in January)	39.4%	70.1% 12.7% (Ire)	

A6.72a Whimbrel *Numenius phaeopus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	530	5	65 (12% of GB population)
Ireland			
Biogeographic population	220,000	2,200	65 (<0.1% of biogeographic population)

GB population source: Dore & Ellis 1994
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Whimbrel has a wide, though highly localised, global distribution. During the breeding season, it occurs primarily in the boreal, sub-Arctic and low Arctic zones of Eurasia and America (Cramp & Simmons 1983). From Iceland in the west, it breeds through northern Europe (generally north of *c.* 60°N) as far as the River Ob. It breeds further east in Russia in a number of small, and localised areas of the Arctic, as well as in western and northern Alaska, and on the west coast of Hudson Bay in Canada (Cramp & Simmons 1983). The Whimbrel is polytypic, with four sub-species described. Of these, only the nominate race *N. p. phaeopus* occurs in Europe, breeding in Iceland, the Faeroes, Fennoscandia, the Baltic States, parts of northern Russia and northern Scotland (Cramp & Simmons 1983).

UK-breeding Whimbrel – at the south-western extremity of the species' Eurasian distribution – are concentrated in Shetland, with a few in Orkney, the Outer Hebrides and scattered pairs on the north Scottish mainland. Whilst Whimbrel are widespread in Shetland, most pairs are concentrated on the islands of Fetlar, Unst and west-central Mainland (Richardson 1990).

Throughout Europe, Whimbrel nest in a wide range of habitats including overgrown lava flows in Iceland, alpine heaths and sparse montane forest. In Scotland, however, the breeding habitat is primarily heathland and bog dominated by heather *Calluna vulgaris* and cotton grass *Eriophorum* spp. or unimproved grassland (Grant 1992; Grant *et al.* 1992a,b).

4. Population structure and trends

Six biogeographical populations of Whimbrel have been described (Rose & Scott 1997). Of these, the only one to occur in Europe is the European/western African population estimated at 600,000–700,000 individuals (Rose & Scott 1997). This comprises about 220,000 breeding pairs.

Iceland holds the highest numbers of breeding Whimbrel in Europe (100,000–200,000 pairs), followed by Fennoscandia (50,000–70,000 pairs) and Russia (10,000–30,000 pairs – although this is almost certainly an under-estimate) (Hagemeijer & Blair 1997).

The current British population is approximately 500 pairs (Dore & Ellis 1994). Records indicate that this population has fluctuated considerably in both numbers and distribution during the last two centuries. Whimbrels have been known to breed in Orkney and Shetland for much of the 19th century (Parslow 1973; Holloway 1996; Richardson 1990) – possibly very commonly in Shetland (Dunn 1837), although its population decreased at both sites during the late 1800s and early 1900s. However, the Shetland population increased to 50–55 pairs by the 1950s, and by the 1960s, many islands had been recolonised (Holloway 1996). Further increase has continued with the Shetland population during the period 1982–1986 being estimated at 413–471 pairs, representing about 95% of the UK population at that time (Richardson 1990). This increase, where records exist, appears to be mirrored in other localities in Europe, *e.g.* Estonia, Finland, over the same period (Hagemeijer & Blair 1997).

The causes of the population fluctuations in Scotland are not known in detail but it has been suggested that local decreases in Shetland have been associated with increases in the populations of large gulls and, historically, possibly even human consumption of eggs (Dunn 1837). More recent increases in the population, and distributional changes have been linked with climatic factors (Richardson 1990). In Shetland, where the species has been studied in some detail, the adults showed a high degree of site fidelity, nested at densities at least as high as elsewhere in their European range, and consistently fledged large numbers of chicks – in excess of that needed to balance adult mortality (Grant 1991, 1992; Grant *et al.* 1992a,b).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Whimbrels supports, on average, 65 pairs. This amounts to about 12% of the British breeding population, and less than 0.1% of the international population. Whimbrels do not breed in Northern Ireland. The SPA suite total is contained at a single site (Table 6.72a.1) where Whimbrel has been listed as a qualifying species.

6. Classification criteria

No site in the UK holds more than 1% of the international population of Whimbrel. No sites were thus selected under Stage 1.2.

Ten sites in the north of Scotland were assessed under Stage 1.4 to provide coverage of population size and range. The Stage 2 judgements of population size, range and multi-species interest were especially used to inform the selection of sites. Following consideration of these judgements, Fetlar was included as the site supporting the largest population within the core distribution in Shetland. This site has a relatively high breeding density of Whimbrel with a good record of breeding success (Grant 1991), and a long history of occupancy. It is a multi-species site. Habitat comprises largely serpentine heath with some mires and reseeded heathland (both new and old).

Distribution map for breeding Whimbrel SPA suite

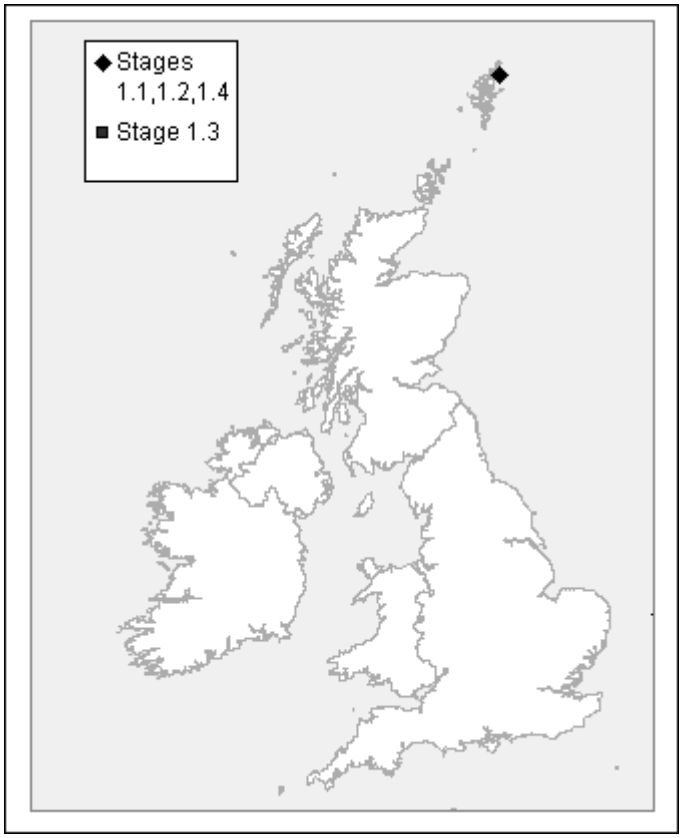


Table 6.72a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Fetlar	65	<0.1	12.3	1.4
TOTALS	65	<0.1%	12.3%	

A6.72b Whimbrel *Numenius phaeopus* (non-breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	5,000	50 (during passage periods)	612 (12% of GB population)
Ireland	unknown	50 (see section 5.1.2 for rationale)	No SPAs selected in Northern Ireland
Biogeographic population	650,000	6,500	612 (<0.1% of biogeographic population)

GB population source: Cranswick et al. *1997*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The global and European distribution of breeding Whimbrel is described in section A6.72a.

Outside the breeding season, Whimbrels are long-distance migrants and occur widely, although thinly, on the coasts of the southern hemisphere during the northern winter. They are distributed from Australasia, through south-east Asia, India and the Middle East, and around most of Africa, South America and the west coast of North America (Cramp & Simmons 1983).

Only very small numbers winter in the UK and Ireland (generally less than 20 in each country) (Cranswick *et al.* 1999; Colhoun 2001). The BTO Winter Atlas showed most winter records along the southern coasts of England and Ireland (Lack 1986).

Most non-breeding Whimbrel occur during the spring and autumn migration periods, in transit through the UK and Ireland to and from their more northerly breeding areas in Iceland, the Faeroes and northern Scotland. Spring passage birds tend to be concentrated on the south coast of England, occurring from mid-April and reaching a peak in late April and early May (Hutchinson 1986). Southward migration in autumn commences in July, peaking in August, and declining in September. At this time, largest numbers occur on the coasts of the North Sea and southern England, whilst in spring, numbers are reported to be greater in western Britain and Ireland (Prater 1981; Hutchinson 1986). However, analyses for this review show that numbers are higher on west compared to east coasts in spring as well as in autumn.

4. Population structure and trends

Whimbrel population structure is described in section 6.72a. Those occurring on migration in the UK belong to the European/western African population estimated at 600,000–700,000 individuals (Rose & Scott 1997), although it is probable that only a proportion of this population (*i.e.* birds breeding in Iceland, the Faeroes and northern Scotland) pass through Britain and Ireland.

There are no good national estimates for numbers of Whimbrel occurring in Britain and Ireland during passage periods. Migration is rapid and there appears to be rapid turnover at staging sites, complicating assessment of total numbers. Very large numbers have been recorded on occasion –for example, up to 3,300 were recorded moving north over Cork Harbour (Pierce & Wilson 1980), whilst Prater (1981) noted a roost of 1,500–2,000 at Steart Island in Somerset, and Ferns *et al.* (1979) noted high numbers on the Gwent and Somerset Levels.

For the purposes of this review, the national estimate of 5,000 adopted by WeBS (Cranswick *et al.* 1997) has been used as the best available figure.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Whimbrels supports, on average, 612 individuals. This amounts to about 12% of numbers occurring on autumn migration in Britain, and less than 0.1% of the international population. In an all-Ireland context, no sites have been selected for migrant Whimbrels in Northern Ireland. The SPA suite total is comprised of 11 sites (Table 6.72b.1) where Whimbrel has been listed as a qualifying species.

6. Classification criteria

No sites in the UK regularly support more than 1% of the international Whimbrel population in the non-breeding period (Stage 1.2). However, 11 sites were identified under Stage 1.3 (see section 5.3), with Whimbrel as an important component of a non-breeding waterbird assemblage. All sites thus identified were included within the suite. By definition, all are multi-species SPAs, of importance also for a range of other waterbirds.

Distribution map for non-breeding Whimbrel SPA suite

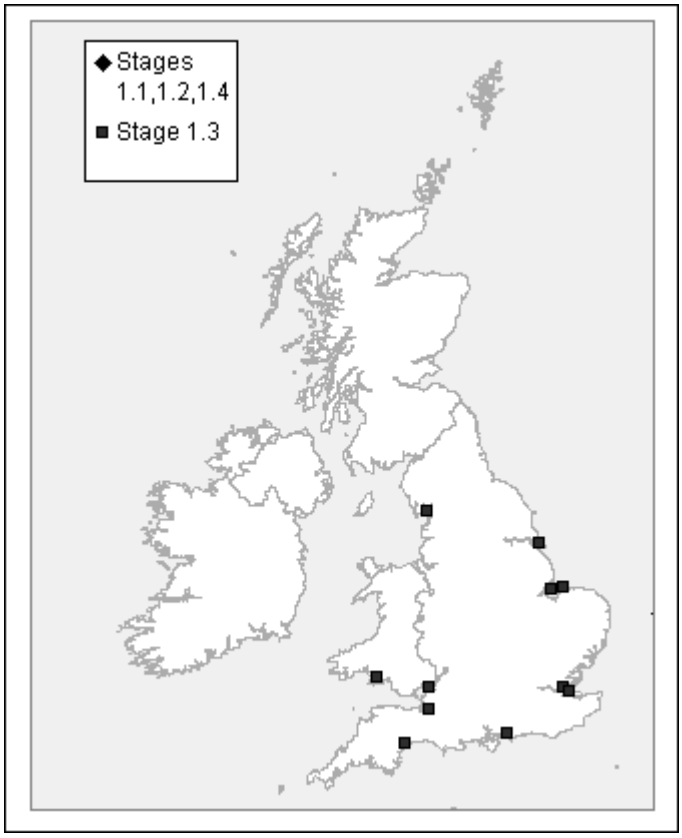


Table 6.72b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Burry Inlet	108	<0.1	2.2	1.3
Chichester and Langstone Harbours	135	<0.1	2.7	1.3
Exe Estuary	75	<0.1	1.5	1.3
Humber Flats, Marshes and Coast	75	<0.1	1.5	1.3
Medway Estuary and Marshes	58	<0.1	1.2	1.3
Morecambe Bay	73	<0.1	1.5	1.3
North Norfolk Coast	58	<0.1	1.2	1.3
Severn Estuary	120	<0.1	2.4	1.3
Somerset Levels & Moors	52	<0.1	1.0	1.3
Thames Estuary and Marshes	101	<0.1	2.0	1.3
The Wash	410	<0.1	8.2	1.3
TOTALS	612 (in August)	<0.1%	12.2%	

A6.73a Curlew *Numenius arquata* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3 (wintering)** Unfavourable conservation status (**declining**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 2(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	33,000	330	3,930 (12% of GB population)
Ireland	12,000	120	No sites selected in Northern Ireland
Biogeographic population	120,000	1,200	3,930 (3% of biogeographic population)

GB population source: Piersma 1986
All-Ireland population source: Reed 1985
Biogeographic population source: Rose & Scott 1997

3. Distribution

The breeding distribution of Curlew is globally restricted to the temperate and boreal regions of Europe and Asia. The species breeds from Ireland and Britain in the west, across continental Europe to the Russian far east. The Asian range narrows eastwards from the Urals through the boreal zone, to reach the upper Amur River at *c.* 125°E (Cramp & Simmons 1983). The species is polytypic with two subspecies described. The nominate race *N. a. arquata* occurs across Europe to western Siberia, where it grades into *N. a. orientalis* which breeds in the eastern part of the range in central Asia (Cramp & Simmons 1983).

In winter, Curlews migrate south from their breeding areas and occur widely, though sparsely on southern hemisphere coasts in the northern winter. They are distributed through south-east Asia, India and the Middle East, and around most of Africa as well as occurring locally in the Mediterranean basin and on the coasts of north-west Europe (Cramp & Simmons 1983).

In Europe, Curlews have an essentially northern temperate distribution, occurring in greatest numbers in Scandinavia, the Low Countries (especially The Netherlands) and in Britain and Ireland (Hagemeijer & Blair 1997). Their distribution becomes thinner and more localised in the south of Europe (France, southern Germany and Hungary).

The Curlew is a widespread breeding species throughout much of Britain, but is absent from most parts of south-east England, and is sporadic in south-west England, north-west Scotland and parts of Ireland. It is most common in the North Pennines, the Southern Uplands of Scotland, parts of the east

Highlands, Caithness, Orkney and Shetland. Smaller areas of high abundance also occur in northern and central parts of Ireland, north and central Wales, and on the west coast of Britain, between Anglesey and Islay.

Despite its recent expansion into lowland agricultural habitats, the species is still more abundant in uplands and northern regions where there are extensive areas of moorland and rough grazing. Variation in breeding densities show that nesting Curlews prefer low intensity agricultural habitats (Gibbons *et al.* 1993).

4. Population structure and trends

Four biogeographical populations of Curlew have been described (Rose & Scott 1997). Of these, the only one to occur in Europe is the European population (amounting to the whole of the nominate subspecies). This is currently estimated at 348,000 individuals (Rose & Scott 1997, comprising about 120,000 breeding pairs, of which the British population amounts to 33,000 pairs (Piersma 1986). However, Hagemeijer & Blair (1997) have recently suggested that the figure published by Rose & Scott is an underestimate.

In Europe, populations have been declining in many countries (Russia, The Netherlands, Finland, Sweden and Norway), generally associated with patterns of agricultural intensification (Henrikson 1991; Tucker & Heath 1994; Samigullin 1998; Lebedeva 1998). Whilst ultimate causes seem to relate to intensification of farming, proximate mechanisms are complex, and include factors such as enhanced predation on nests and young (Grant *et al.* 1999), or increased destruction of nests through use of machinery or trampling by stock (Berg 1992).

In the UK, there has been no further expansion of the breeding range in the last 20 years and the distribution has not altered since 1968–72 (Sharrock 1976). There has been a considerable contraction of breeding range in south and east Ireland, as well as more localised contractions in west Scotland, the English Midlands, Pembrokeshire, Devon and Dorset. Population declines have also been recorded in Northern Ireland and the North Staffordshire Moors (Grant 1998) but not in recent extensive re-surveys of farmland habitats in Scotland and northern England (O'Brien unpubl. data). Declines are likely to be associated with recent agricultural improvements, such as land drainage and re-seeding of moorlands, though increases in nest and chick predation rates are also implicated in causing declines (Grant *et al.* 1999).

Further losses of nesting habitat are likely to have resulted from increased afforestation, which has been cited as a reason for declines in certain parts of Ireland. Nest predation rates are often high and are the likely proximate cause of decline of the species in Northern Ireland (Grant *et al.* 1999).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Curlews supports, on average about 3,930 pairs. This amounts to about 12% of the British breeding population and about 3% of the international population. In an all-Ireland context, no sites have been selected for breeding Curlew in Northern Ireland. The SPA suite total is contained within a single site (Table 6.73a.1) at which breeding Curlew has been listed as a qualifying species.

6. Classification criteria

The single site (North Pennine Moors) in the UK known to support more than 1% of the international breeding population was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. The site has a high degree of naturalness, and is a multi-species SPA of European importance for several other breeding birds.

Outside the SPA suite, breeding Curlews are widely distributed throughout both lowlands and uplands in north and west Britain and Ireland. Accordingly, and given the lack of SPEC status in the breeding season (Tucker & Heath 1994), it was not considered necessary to select further SPAs using Stage 1.4.

Distribution map for breeding Curlew SPA suite

Table 6.73a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
North Pennine Moors	3,930	3.3%	11.9%	1.2
TOTALS	3,930	3.3%	11.9%	

A6.73b Curlew *Numenius arquata* (non-breeding)

1. Status in UK

See section A6.73a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	115,000	1,200	46,008 (38% of GB total)
Ireland	87,500	875	4,198 (5% of all-Ireland total)
Biogeographic population	348,000	3,500	50,206 (14% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.73a outlines the global distribution and taxonomy of Curlew.

The non-breeding range of the Curlew covers most of the Atlantic and Mediterranean coasts of Europe and Africa, as well as the coasts of Arabia, the Indian Ocean, and south-east Asia. In mild, temperate climates (such as parts of Britain and Ireland) Curlews winter at inland wetlands (Smit & Piersma 1989; Cramp & Simmons 1983; Lack 1986).

Within Europe, major concentrations occur on the southern coasts of the North Sea, including the international Wadden Sea (Smit & Wolff 1981; Meltofte *et al.* 1994). These birds breed in northern Scandinavia and western Russia. Numbers and distribution in the Wadden Sea, as elsewhere in Europe, are strongly affected by the severity of winter weather. In periods of prolonged cold, Curlews move further south and west.

Curlews wintering in Britain also originate from Scandinavia, especially Finland and Sweden (Bainbridge & Minton 1978). Curlews are found around most of the coastline of Britain and Ireland in winter (Lack 1986). They also frequent extensive areas of wet grasslands such as valley floodplains (Sheppard 1993).

4. Population structure and trends

The biogeographical population for Curlew in the UK is the European population (amounting to the whole of the nominate sub-species). This is currently estimated at 348,000 individuals (Rose & Scott 1997). Approximately 30% of this population overwinters in the UK, an estimated two-thirds of which are found at estuarine sites, with the remainder on non-estuarine coasts and adjacent farmland (Cayford & Waters 1996).

Although Curlew was classified as being in moderate decline by Tucker & Heath (1994), who reported that 40% of the European breeding population had declined between 1970–1990, subsequent estimates have indicated a more favourable status. Recent international collation of data (Davidson 1998) indicates an increase of 22% in the international population since the late 1980s.

This trend is reflected within Great Britain, where numbers overwintering on estuaries increased by 54% between 1981–1985 and 1987–1992 (Cayford & Waters 1996). There has also been a continuing upward trend in UK annual population indices (Cranswick *et al.* 1999), a trend closely mirrored in Ireland (Colhoun 2000).

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Curlew supports, on average, 50,206 individuals (calculated using WeBS February site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 38% of the British population, about 5% of the all-Ireland population, and about 14% of the international flyway population. The suite comprises 25 sites at which Curlew has been listed as a qualifying species (Table 6.73b.1).

Other measures

The UK has contributed to the development of a European Union Management Action Plan for Curlew as part of the Ornis Committee's initiative to develop such plans for a number of Annex II species with unfavourable conservation status. Although these action plans are advisory rather than legally binding, the UK will be seeking to implement the recommended actions of the plan as specified for the period 1999–2002. As one example of the implementation of recommended actions, JNCC and other organisations are currently developing an Integrated Monitoring Programme related to UK waterbird monitoring. As indicated by the Curlew Action Plan (Operational Objectives 2.4.1 & 2.4.2), this aims to develop a better understanding of the factors influencing Curlew population dynamics through integrating results from separate programmes which currently collect data and information on parameters such as population sizes, distribution, productivity, mortality and dispersal.

6. Classification criteria

All five sites in the UK that were known to support more than 1% of the international population of Curlew were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements (Morecambe Bay; the Severn Estuary; The Dee Estuary; The Wash; and the Upper Solway Flats and Marshes). A further 20 sites were considered and selected under Stage 1.3 (see section 5.3), with Curlew identified as an important component of non-breeding waterbird assemblages at these localities.

The sites within the suite are distributed throughout the range of the population in the UK, from sites in Northern Ireland and Wales, to the Dornoch Firth in northern Scotland, to sites along the south coast of England. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of non-breeding Curlew in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Curlew SPA suite

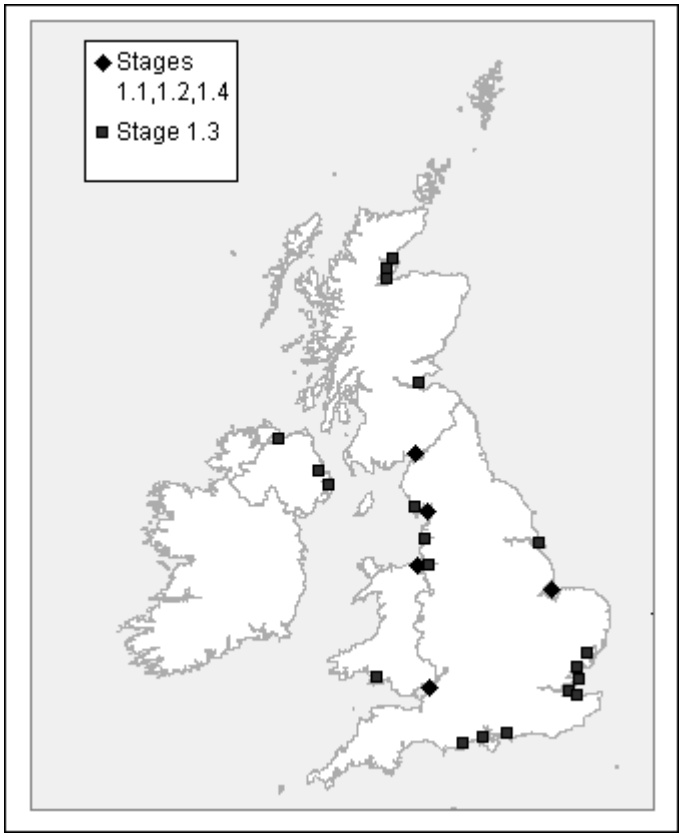


Table 6.73b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	1,031	0.3	1.2 (Ire)	1.3
Blackwater Estuary	2,682	0.8	2.3	1.3
Burry Inlet	1,234	0.4	1.1	1.3
Chichester and Langstone Harbours	1,861	0.5	1.6	1.3
Cromarty Firth	1,475	0.4	1.3	1.3
Dornoch Firth and Loch Fleet	1,366	0.4	1.2	1.3
Duddon Estuary	2,192	0.6	1.9	1.3
Firth of Forth	2,188	0.6	1.9	1.3
Foulness	2,127	0.6	1.9	1.3
Humber Flats, Marshes and Coast	2,423	0.7	2.1	1.3
Inner Moray Firth	1,337	0.4	1.2	1.3
Lough Foyle	2,038	0.6	2.3 (Ire)	1.3
Medway Estuary and Marshes	1,900	0.6	1.7	1.3
Mersey Estuary	1,156	0.3	1.0	1.3
Morecambe Bay	13,620	3.9	11.8	1.2
Poole Harbour	1,726	0.5	1.5	1.3
Ribble and Alt Estuaries	1,798	0.5	1.6	1.3
Severn Estuary	3,903	1.1	3.4	1.2
Solent and Southampton Water	1,877	0.5	1.6	1.3
Stour and Orwell Estuaries	2,153	0.6	1.9	1.3
Strangford Lough	1,911	0.6	2.2 (Ire)	1.3
The Dee Estuary	4,028	1.2	3.5	1.2
The Swale	1,622	0.5	1.4	1.3
The Wash	3,835	1.1	3.3	1.2
Upper Solway Flats and Marshes	5,881	1.7	5.1	1.2
TOTALS	50,206 (in February)	14.3%	38.3% 4.8% (Ire)	

A6.74a Redshank *Tringa totanus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**declining**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex II/2 Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	30,600	306	1,660 (5% of GB population)
Ireland	4,400	44	No SPAs selected in Northern Ireland
Biogeographic population	59,000	590	1,660 (3% of biogeographic population)

GB population source: Piersma 1986
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Redshanks have a wide, albeit fragmented distribution across temperate and steppe Eurasia, from Iceland in the west, through continental Europe and central Russia to the Russian Far East (Smit & Piersma 1989; Cramp & Simmons 1983). Small numbers breed in North Africa and in the Middle East, whilst a separate group breeds from Kashmir, through northern India to Tibet and Tien Shan (Cramp & Simmons 1983). Redshanks are highly migratory; at the end of the breeding season they move south to non-breeding areas. In the western part of their range they occur on most of the coastline of Europe and Africa, whilst in the east they occur around the coasts of India and south-east Asia as well as extensively inland along major river systems (Cramp & Simmons 1983).

Redshanks are polytypic, with six sub-species described by Cramp & Simmons (1983). Of these, two occur in Europe. The nominate race, *T. t. totanus*, occurs throughout north-western Europe, with the UK population representing the north-western edge of this range. *T. totanus robusta* breeds in Iceland and the Faeroes and moves in winter to the UK and the coasts of north-west Europe. The remaining four sub-species occur in Asia west of the Urals. Some authorities (*e.g.* Engelmoer & Roselaar 1998; Wetlands International 1999) consider that those breeding in Britain and Ireland comprise the race *T. totanus britannica*.

In Europe, Redshanks breed in nearly all countries. However, they are most abundant in the countries of eastern Europe, Britain and Ireland, Scandinavia and the Low Countries (Hagemeijer & Blair 1997).

Throughout its European distribution, the species breeds on inland and coastal wet grasslands and coastal saltmarshes.

Redshank breed locally across most of the UK. Highest breeding densities are found on the East Anglian and north-western coasts of England where nesting occurs on saltmarshes and on adjacent wet grassland habitats. Some of the highest breeding densities occur on machair habitats in the Western Isles of Scotland and the Inner Hebrides, as well as on low-intensity agricultural land in Orkney and Shetland (Fuller *et al.* 1986; Davidson *et al.* 1991; Shepherd & Stroud 1991; Brindley *et al*. 1998), and certain areas of managed coastal grassland (Everett 1987; Davidson 1991).

4. Population structure and trends

Seven biogeographical populations of Redshank have been described (Rose & Scott 1997). Of these, two occur in Europe. Both the nominate race *T. t. totanus* and the Icelandic *race T. t. robusta* are considered as separate biogeographical populations. The size of the former is estimated at 177,000 individuals (*i.e.* 59,000 pairs) and the latter at 109,000 individuals (*i.e.* 36,300 pairs) (Rose & Scott 1997). The European breeding population presented by Hagemeijer & Blair (1997) comprises both biogeographical populations and so is not used in this review.

Within Europe, Redshanks have shown a moderate decline in abundance since the 1970s, mainly as a result of agricultural intensification and the loss of important wet grassland breeding sites (Tucker and Heath 1994). In none of the seven EU countries reviewed by Hötker (1991) were Redshank populations considered to be increasing and the species is known to be one of the most sensitive to the effects of agricultural intensification (Bientema *et al.* 1997).

This European trend has been reflected within the UK, with contractions in breeding range being most notable in north-eastern and central Scotland, and inland southern England (O'Brien & Smith 1992; Gibbons *et al*. 1993). Surveys of a number of coastal sites in Wales found a 58% decrease in the breeding population between 1985 and 1991 (Griffin *et al*. 1991), while on saltmarshes in England declines ranging from 20–76% were found over a similar period of time (Cook *et al*. 1994, 1995). There was a 72% decline on Common Birds Census plots between 1972 and 1996, although sample sizes are now low (Crick *et al.* 1998).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Redshank supports, on average, 1,660 pairs. This amounts to about 5% of the British breeding population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The suite contains about 3% of the international population. The SPA suite total is contained within four sites (Table 6.74a.1) where Redshank has been listed as a qualifying species.

6. Classification criteria

The single Redshank breeding site in the UK known to support more than 1% of the international breeding population (North Norfolk Coast) was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. Consideration of additional coverage using Stage 1.4 was made given that the UK holds about 40% of the EU Redshank numbers, that Redshank is a SPEC 2 species (that has an unfavourable conservation status and is concentrated in Europe), and is declining across most of its European range. Accordingly, the three sites with the next largest breeding populations were reviewed against Stage 2 judgements.

These sites (North Uist Machair and Islands, South Uist Machair and Lochs, and Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)) were selected for inclusion by virtue of their high population densities (possibly the highest in Europe – Fuller *et al.* 1986; Shepherd & Stroud 1991), and as a contribution to the maintenance of the European range of Redshank.

All the sites in the suite have a long recorded history of occupation. Each is a multi-species site. The three Stage 1.4 sites are additionally of significance for holding a diverse assemblage of breeding waterbirds, the composition of which is unique to the machair habitats of western Scotland and western Ireland.

Distribution map for breeding Redshank SPA suite

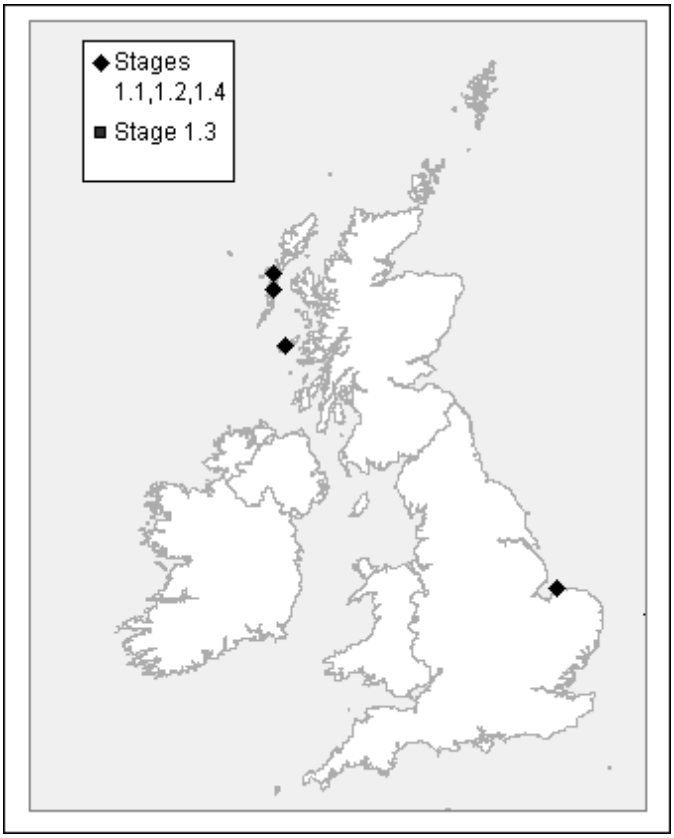


Table 6.74a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
North Norfolk Coast	700	1.2	2.3	1.2
North Uist Machair and Islands	470	0.8	1.5	1.4
South Uist Machair and Lochs	350	0.6	1.1	1.4
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	140	0.2	0.5	1.4
TOTALS	1,660	2.8%	5.4%	

A6.74b Redshank *Tringa totanus* (non-breeding)

1. Status in UK

See section A6.74a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	114,000	1,100 (winter period) 1,200 (passage period)	53,284 (48% of GB total) 54,974 (46% of GB population in passage periods)
Ireland	24,500	245	3,455 (14% of all-Ireland total) 3,193 (13% of all-Ireland population in passage periods)[23]
Biogeographic population	177,000	1,500 (winter period) 1,770 (passage period)	56,739 (38% of biogeographic population) 58,167 (33% of biogeographic population in passage periods)

GB population source: Cayford & Waters 1996
All-Ireland population source: Way et al. *1993*
Biogeographic population source: Rose & Scott 1997

3. Distribution

Section A6.74a outlines the global distribution and taxonomy of Redshank.

The Eastern Atlantic Flyway population of the nominate race of Redshank winters from the North Sea countries through the western part of the Mediterranean to West Africa (Smit & Piersma 1989). Non-breeding areas in north and west Scotland are amongst the most northerly Redshank wintering sites in the world. Almost 80% of this biogeographic population overwinter in the UK, including many of those British and Irish breeding birds that remain resident throughout the year.

Redshank wintering in Britain and Ireland also include birds of the race *T .t. robusta* which breed in Iceland and the Faeroes, as well as locally breeding birds from within the UK.

Non-breeding Redshank occur around most of the coast of the UK, as well as at some inland wet grasslands, with approximately 70% occurring on estuaries (Lack 1986; Cayford & Waters 1996).

4. Population structure and trends

Two populations of Redshank occur in the UK in the non-breeding season: the Icelandic race *T .t. robusta* and the nominate race *T .t. totanus,* which includes both UK breeding birds as well as those from Scandinavia. The two races are indistinguishable in the field, so attribution of counts to one or other race is problematic. It is assumed that most non-breeding birds in the UK are Icelandic *T .t. robusta,* with *T .t. totanus* also occurring during passage periods.

Both *totanus* and *robusta* Redshank populations are classified as declining (Rose & Scott 1997). At least some of this decline is attributable to changes in agricultural practices and loss of important wetland sites, which have impacted on the breeding population (Tucker & Heath 1994). In contrast to this observed decline in the biogeographical population, the UK non-breeding numbers increased by 47% between 1981–1985 and 1987–1992 (estuarine sites) and 63% between 1984–1985 and 1987–1992

23 Data from passage periods were unavailable for some sites in Ireland, hence, winter data have also been used in calculating suite totals.

(non-estuarine coasts) (Cayford & Waters 1996). More recent trends (Pollitt *et al.* 2000) are essentially stable.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Redshank supports, on average, 56,739 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 48% of the British population, 14% of the all-Ireland population and 38% of the international flyway population in the winter period. During passage periods, the SPA suite supports, on average, 58,167 individuals (calculated using WeBS August site totals for the period 1992/93 to 1996/97). This total amounts to about 46% of overall numbers passing through Britain in that month, about 13% of numbers passing through the island of Ireland and about 33% of the international flyway population. The suite comprises 36 sites where Redshanks have been listed as a qualifying species (Table 6.74b.1).

Other measures

The UK has contributed to the development of a European Union Management Action Plan for Redshank as part of the Ornis Committee's initiative to develop such plans for a number of Annex II species which have an unfavourable conservation status. Although these action plans are advisory rather than legally binding, the UK will be seeking to implement the recommended actions of the plan as specified for the period 1999–2002. As one example of the implementation of recommended actions, JNCC and other organisations are currently developing an Integrated Monitoring Programme related to UK waterbird monitoring. As indicated by the Redshank Action Plan (Operational Objectives 2.4.1 & 2.4.2), this aims to develop a better understanding of the factors influencing Redshank population dynamics through integrating results from separate programmes which currently collect data and information on parameters such as population sizes, distribution, productivity, mortality and dispersal.

6. Classification criteria

All 27 sites in the UK supporting more than 1% of the international population in either passage or winter periods were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. A further nine sites were considered and selected under Stage 1.3 (see section 5.3), with Redshank identified as an important component of non-breeding waterbird assemblages at these localities.

The sites include the main wintering areas of Redshank in the UK, and are spread from the Moray Firth in north-east Scotland, to sites on the west, east and south coasts of England, as well as in Northern Ireland. All sites are multi-species SPAs, of importance also for a range of other waterbirds. There is a long recorded history of occupancy at most of these sites (Prater 1981). Some of the sites also act as refuges in periods of severe winter weather.

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and range of passage and non-breeding Redshank in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for non-breeding Redshank SPA suite

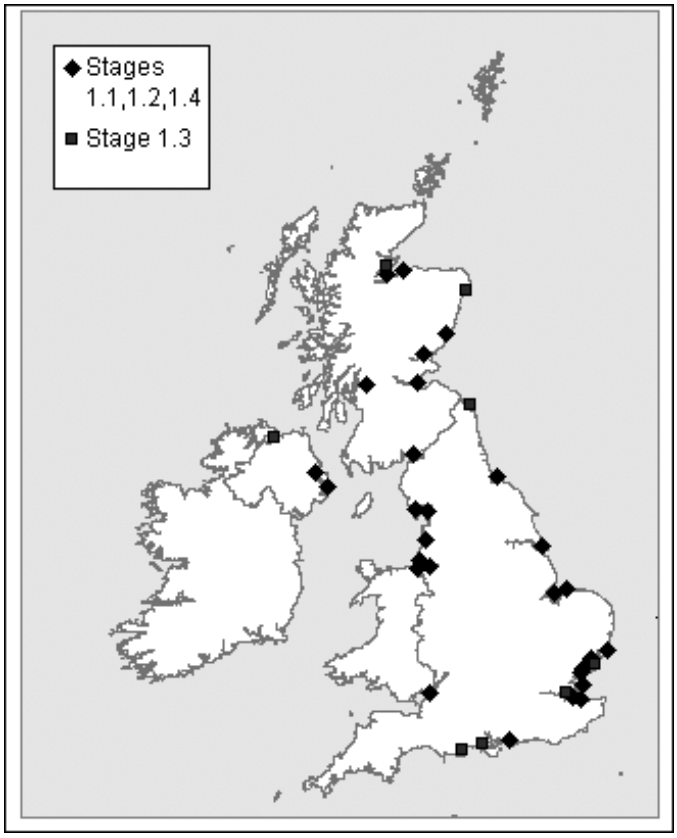


Table 6.74b.1 – SPA suite

Site name	Season of peak use	Site total[24]	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	Winter	1,919	1.1	1.7	1.2
Belfast Lough	Winter	2,466	1.4	10.1 (Ire)	1.2
Blackwater Estuary	Winter	4,015	2.23	3.5	1.2
Chichester and Langstone Harbours	Winter	1,788	1.0	1.6	1.2
Colne Estuary	Winter	2,077	1.2	1.8	1.2
Cromarty Firth	Winter	1,324	0.8	1.2	1.3
Duddon Estuary	Winter	2,289	1.3	2.0	1.2
Firth of Forth	Winter	3,700	2.1	3.3	1.2
Firth of Tay and Eden Estuary	Winter	1,800	1.0	1.6	1.2
Foulness	Passage	2,144	1.2	1.8	1.2
Hamford Water	Winter	1,461	0.8	1.3	1.3
Humber Flats, Marshes and Coast	Passage	5,212	2.9	4.3	1.2
Inner Clyde Estuary	Winter	1,918	1.1	1.7	1.2
Inner Moray Firth	Winter	1,811	1.0	1.6	1.2
Lindisfarne	Winter	1,192	0.7	1.1	1.3
Lough Foyle	Winter	812	0.5	3.3 (Ire)	1.3
Medway Estuary and Marshes	Winter	3,690	2.1	3.2	1.2
Mersey Estuary	Winter	4,689	2.7	4.1	1.2
Mersey Narrows and North Wirral Foreshore	Winter	1,981	1.3	1.8	1.2
Montrose Basin	Winter	2,259	1.3	2.0	1.2
Moray and Nairn Coast	Winter	1,690	1.0	1.5	1.2
Morecambe Bay	Winter	6,336	3.6	5.6	1.2
North Norfolk Coast	Winter	2,998	1.7	2.6	1.2
Poole Harbour	Winter	1,369	0.8	1.2	1.3
Ribble and Alt Estuaries	Winter	2,708	1.5	2.4	1.2
Severn Estuary	Winter	2,330	1.3	2.0	1.2
Solent and Southampton Water	Winter	1,211	0.7	1.1	1.3
Stour and Orwell Estuaries	Winter	3,545	2.0	3.1	1.2
Strangford Lough	Winter	3,176	1.8	13.0 (Ire)	1.2
Teesmouth and Cleveland Coast	Passage	1,287	0.7	1.1	1.3
Thames Estuary and Marshes	Winter	1,161	0.7	1.0	1.3
The Dee Estuary	Passage	8,451	4.8	7.0	1.2
The Swale	Winter	1,640	0.9	1.4	1.2
The Wash	Winter	2,953	1.7	2.6	1.2
Upper Solway Flats and Marshes	Winter	3,088	1.7	2.7	1.2
Ythan Estuary, Sands of Forvie and Meikle Loch	Winter	1,149	0.7	1.0	1.3
JANUARY TOTALS		56,739	37.8%	48.4% 14.1% (Ire)	
AUGUST TOTALS		58,167	32.9%	45.8% 13.0% (Ire)	

24 Data in site total column relate to season of peak use.

A6.75 Greenshank *Tringa nebularia* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,440	50 (see section 5.1.2 for rationale)	408 (28% of GB population)
Ireland			
Biogeographic population	57,600	576	408 (0.7% of the biogeographic population)

GB population source: Hancock et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global breeding distribution of Greenshank is widely spread across the boreal regions of Eurasia. It extends from Scotland and Scandinavia in the west, across Fennoscandia, northern Russia to Kamchatka and the shores of the Sea of Okhotsk. There is an isolated breeding population in northern Ukraine/southern Belarus associated with extensive peatlands in that region. The species is monotypic (Cramp & Simmons 1983). In winter, Greenshank move south where they occur at low densities across much of Africa south of the Sahara, along the shores of the Middle East, across much of India and south-east Asia, and the shores and coastal regions of Australia.

Within Britain, which lies at the extreme west of the breeding range, Greenshanks breed exclusively in the north Scotland and are most common in Sutherland, west Caithness, Wester Ross, west Inverness and the Western Isles (Nethersole-Thompson & Nethersole-Thompson 1979; Gibbons *et al.* 1993). Their distribution is closely associated with areas of high rainfall and poorly drained acidic peat soils (Nethersole-Thompson & Nethersole-Thompson 1979). Breeding densities are highest where feeding habitats (pool complexes, rivers) occur in close proximity. Greenshank rarely breed in Ireland. Although the British breeding population may represent only a small proportion of the biogeographic population, Greenshanks nesting in Scotland occur at some of the highest breeding densities in Europe (Hagemeijer & Blair 1997).

Greenshanks are highly site faithful, returning to the same territory each year (Nethersole-Thompson 1951; Nethersole-Thompson & Nethersole-Thompson 1979; Thompson & Thompson 1991).

4. Population structure and trends

Four biogeographical populations of Redshank have been described (Rose & Scott 1997). Of these, two occur in Europe. The European/West African population breeds in northern Europe (including Britain) and winters in south-west Europe, north-west Africa and West Africa east to the Chad. The population is estimated at between 100,000–1,000,000 individuals. Birds that breed further east in western Siberia belong to the south-west Asia, Eastern and Southern Africa population (between 25,000–1,000,000 individuals). These winter mainly in the Middle East and eastern and southern Africa (Rose & Scott 1997). As Greenshanks have a continuous and wide breeding distribution in Russia, the separation of the two populations is not clear-cut.

Greenshanks breed at low densities over extensive areas, whilst most also spend the winter in inland areas. This makes it difficult to estimate the population size accurately since they do not concentrate at high densities in coastal areas, as do most other waders.

The breeding population in Europe excluding Russia has recently been estimated at 57,613–83,189 (Hagemeijer & Blair 1997). There is limited information regarding changes in the numbers and distribution of Greenshank. Overall, the European breeding population has been stable in recent decades (Tucker and Heath 1994; Rose & Scott 1997; based on Smit & Piersma 1989). There have been some local decreases in parts of European Russia, but the large breeding population in Fennoscandia appears to be relatively stable. The small breeding population in Belarus is reported to be increasing (Nikiforov & Mongin 1998).

During 1988–1991, 1,100–1,600 pairs of Greenshank were estimated to breed in Britain (Gibbons *et al*. 1993). A first national survey of this species in 1995 estimated a breeding population of 1,440 pairs, with 95% confidence limits of 1,100–1,790 (Hancock *et al*. 1997). In Scotland there have been a number of recorded declines owing to changes in breeding habitat, mainly due to afforestation (Nethersole-Thompson & Nethersole-Thompson 1979; Snow & Perrins 1998).

In the Flow Country of Caithness and Sutherland, numbers of Greenshank were estimated to have fallen by 17% due to the afforestation that occurred there after 1945 (Stroud *et al*. 1987). Elsewhere, a small forest-breeding population declined and contracted in range as the breeding habitat dried out and ground vegetation deteriorated owing to successional changes (Nethersole-Thompson & Nethersole-Thompson 1979). In an area of north-west Sutherland, numbers declined from the early 1980s as a consequence of damage inflicted by off-road vehicles (Thompson & Thompson 1991). Overall, there is little evidence of change in the Caithness and Sutherland peatlands, with one study showing a non-significant decline of 3% per annum during the period 1979–1994 (Whitfield 1997) and another study indicating stability between 1988 and 1995 (Hancock & Avery 1998). Numbers in the Western Isles of Lewis and Harris were stable during the period 1987–1995 (Whitfield 1997).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Greenshank supports, on average, 408 pairs. This amounts to about 28% of the British breeding population. The suite contains about 0.7% of the international population. Greenshanks do not regularly breed in Northern Ireland. The SPA suite total is contained within two sites (Table 6.75.1) where breeding Greenshank have been listed as a qualifying species.

6. Classification criteria

No sites in the UK hold more than 1% of the international population in the breeding season. A case for considering SPA selection using Stage 1.4 was made in view of the concentration of the population on a few sites of high nature conservation value, and the role of these areas in maintaining the southern limit to the European Greenshank range. Accordingly, two sites (the Caithness and Sutherland Peatlands; and the Lewis Peatlands) known to support large, relatively high density breeding populations were considered under Stage 1.4, and both were selected after consideration of Stage 2 judgements.

The sites are located in the core of the UK range of this species (Nethersole-Thompson & Nethersole-Thompson 1979; Hancock *et al.* 1997) and both sites in the suite have a high degree of naturalness

(Lindsay *et al.* 1988), and are multi-species SPAs of importance for many other breeding birds (Stroud *et al.* 1987, 1988). There is a very long recorded history of occupancy at both these sites (Harvie-Brown & Buckley 1887, 1888; Nethersole-Thompson 1951; Nethersole-Thompson & Nethersole-Thompson 1979; Holloway 1996).

Outwith the SPA suite, breeding Greenshanks have a scattered distribution in the British uplands.

Distribution map for breeding Greenshank SPA suite

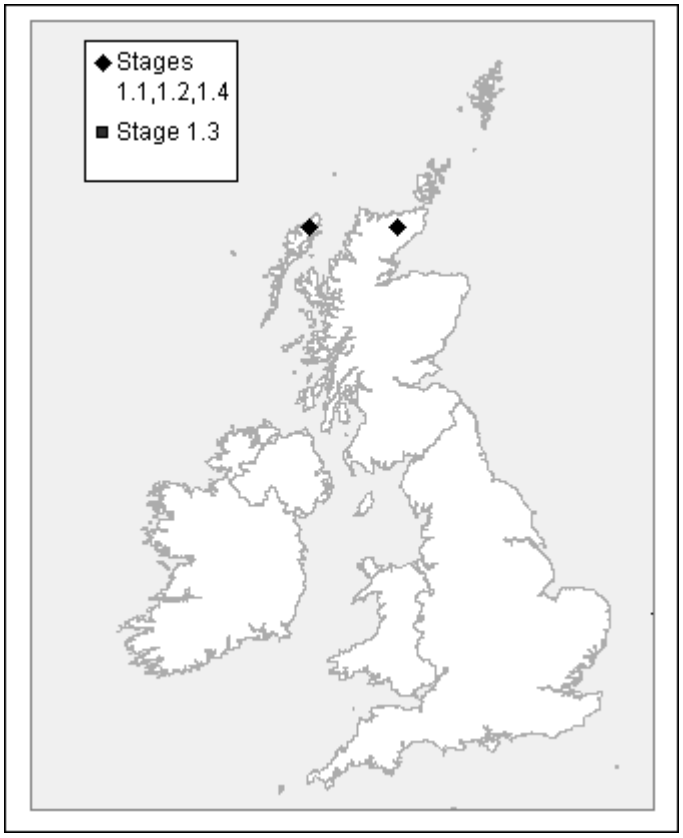


Table 6.75.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	256	0.4	17.8	1.4
Lewis Peatlands	152	0.3	10.6	1.4
TOTALS	408	0.7%	28.3%	

A6.76 Wood Sandpiper *Tringa glareola* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**declining**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	10	1	10 (100% of GB population)
Ireland			
Biogeographic population	298,800	2,988	10 (<0.1% of biogeographic population)

GB population source: SNH
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

Globally, breeding Wood Sandpipers occur throughout the northern Palearctic, mainly in the boreal and sub-Arctic (taiga) zones, although they become scarcer in the south. The species breeds from Scotland and Scandinavia in the west, across Fennoscandia, northern Russia, to Kamchatka and the shores of the Sea of Okhotsk. The species is monotypic. Wood Sandpipers are migratory, with those birds breeding in north-west Europe wintering throughout sub-Saharan Africa, and those breeding in eastern Europe and Siberia wintering in India, Indo-China, Malaysia and Australia (Cramp & Simmons 1983).

Within Europe, Wood Sandpipers breed in Scotland and Denmark in small numbers, but are mainly found throughout Scandinavia, the Baltic States and across northern Russia (Hagemeijer & Blair 1997; Cramp & Simmons 1983).

In Britain, they breed only in the Highlands of Scotland, and then at only a few widely scattered locations (Gibbons *et al.* 1993; Ogilvie & RBBP 1999a). Wood Sandpiper breeding habitat is primarily flark fens (fens of complex structure with many pools and *Sphagnum* hummocks), open mires, and pine bogs (Nikolaev 1998). In the southern part of the range, lakeshore meadows, and riverbanks in heather moorland, are also used for nesting (Hagemeijer & Blair 1997). In Britain, open boggy moorland with scattered pools, and marshy areas are favoured (Thom 1986; Nethersole-Thompson & Nethersole-Thompson 1986).

4. Population structure and trends

Four biogeographical populations of Wood Sandpiper have been described (Rose & Scott 1997). Of these, two occur in Europe. The European/West African population breeds in northern Europe (including Britain) and winters locally in north Africa, and more continuously across western and central sub-Saharan Africa. The population is estimated at over 1,000,000 individuals. Birds that breed further east in western Siberia belong to the South-west Asia, Eastern and Southern African population (between 100,000–>1,000,000 individuals). These winter mainly in the Middle East and eastern and southern Africa (Rose & Scott 1997).

The total estimated European population is 298,842–412,474 pairs (Hagemeijer & Blair 1997). Within north-west Europe, the largest numbers occur in Finland, which holds an estimated 250,000 pairs. Sweden holds an estimated 75,000 pairs and Norway 30,000 pairs (Tucker & Heath 1994; Hagemeijer & Blair 1997). Smaller populations occur in Belarus (3,100 pairs) and Estonia (1,500 pairs), and very small, scattered populations occur in Iceland, northern Britain, and eastward from Denmark and northern Germany to the Baltic states (Tucker & Heath 1994; Hagemeijer & Blair 1997).

Since 1970, Wood Sandpipers have declined in Finland, and elsewhere where small populations occur along the southern extent of the species' range. However, the populations in Norway and Sweden are now thought to be stable. The main reasons for declining populations are thought to be loss of breeding habitat from wetland drainage, peat extraction and afforestation, and factors influencing winter survival in Africa (Cramp & Simmons 1983; Tucker & Heath 1994; Hagemeijer & Blair 1997).

In Britain, an average of 10 pairs has been recorded breeding annually between 1993 and 1997, although the population has fluctuated between two and fifteen pairs since 1987 (SNH unpublished; Ogilvie 1999). In the late nineteenth and early twentieth centuries, the species declined dramatically in southern Sweden, and became extremely rare in some parts of its southern range where it had once been more common.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Wood Sandpiper supports, on average about 10 pairs[25]. This amounts to the whole of the British breeding population. Wood Sandpipers do not breed in Northern Ireland. The suite contains less than 0.1% of the international population (numbers in the UK are very small in comparison to those breeding in northern Scandinavia and Russia). The SPA suite total is contained within three sites (Table 6.76.1) where Wood Sandpiper has been listed as a qualifying species.

6. Classification criteria

All sites regularly supporting more than 1% of the national breeding population of Wood Sandpiper were considered under Stage 1.1, and three sites in northern Scotland were selected after consideration of Stage 2 judgements.

All the sites in the suite have a high degree of naturalness, and the Caithness and Sutherland Peatlands and the River Spey – Insh Marshes are multi-species SPAs. Achanalt Marshes, however, has been selected solely for breeding Wood Sandpipers. Since the 1959 re-establishment of Wood Sandpipers in Scotland, the sites have a long history of occupation (Batten *et al.* 1990).

25 Calculation of site totals and population coverage for Wood Sandpipers is problematic. At any site, breeding is often difficult to confirm, and additionally, site and national totals vary considerably from year-to-year. The totals and proportions presented here should thus be regarded as indicative rather than exact.

Distribution map for breeding Wood Sandpiper SPA suite

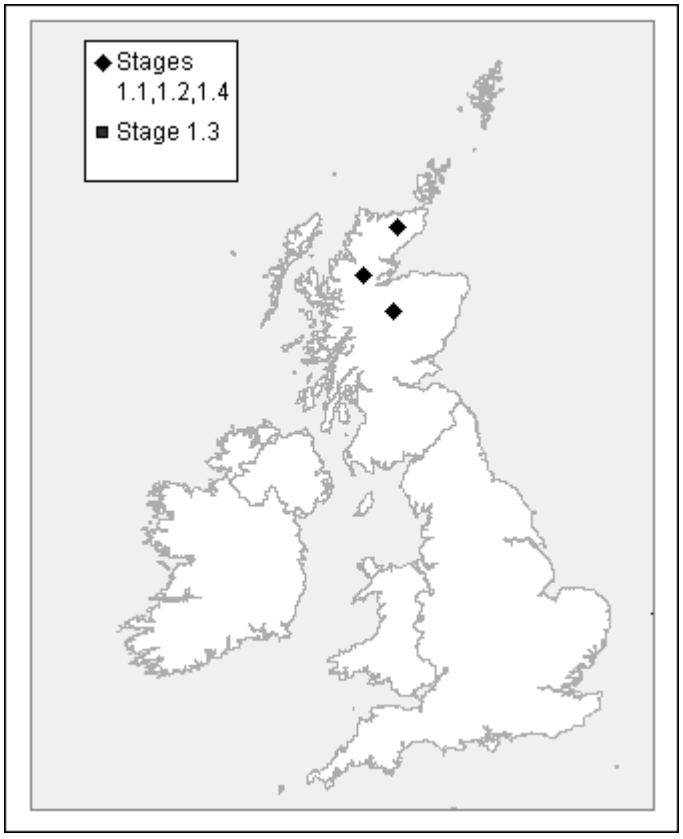


Table 6.76.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Achanalt Marshes	3	<0.1	30	1.1
Caithness and Sutherland Peatlands	5	<0.1	50	1.1
River Spey – Insh Marshes	2	<0.1	20	1.1
TOTALS	10	<0.1%	100%	

A6.77 Turnstone *Arenaria interpres*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	64,400	640	8,606 (13% of GB total)
Ireland	22,500	225	1,594 (7% of all-Ireland total)
Biogeographic population	67,000	700	10,200 (15% of biogeographic population)

GB population source: Cayford & Waters 1996
All-Ireland population source: Cranswick et al. *1999*
Biogeographic population source: Rose & Scott 1997

3. Distribution

The Turnstone has a circumpolar breeding distribution. Through much of its range, the species is a high-Arctic breeder, occurring in the northernmost parts of Greenland, Russia and Canada. However, in Scandinavia it breeds further south, occurring at low densities along most of the coast of Norway and the inner parts of the Baltic, from Oland northwards (Hagemeijer & Blair 1997). The species is polytypic, with two described sub-species. The nominate *A. i. interpres* breeds from Ellesmere Island in north-eastern Canada, through north and east Greenland, across the whole of northern Eurasia (including Europe) to western Alaska. The race *A. i. morinella* breeds in the north Canadian Arctic (Cramp & Simmons 1983).

In winter, Turnstones are highly migratory, moving south to overwinter around the coasts of north-west Europe, Africa, the Arabian Peninsula, the Indian and south-east Asian sub-continents and Australasia. In these areas birds are generally but sparsely distributed along extensive shorelines (Rose & Scott 1997).

The UK wintering total is a component of the Western Palearctic wintering population, which comprises 67,000 individuals (Rose & Scott 1997). The UK non-breeding distribution includes the entire coastline of the UK, with concentrations on the coast of north-east England, the estuaries of north-west England, the north Kent coast, the east coast of Scotland, the Outer Hebrides, Orkney, and the east coast of Northern Ireland (Lack 1986). The preferred non-breeding habitat is shores that are rocky, stony, or covered with seaweed (Snow & Perrins 1998).

4. Population structure and trends

Six biogeographical populations of Turnstone have been described (Rose & Scott 1997). Of these, three occur in Europe. The Western Palearctic population breeds in Ellesmere Island, and north and east Greenland, and winters on the coasts of north-west Europe (including Britain and Ireland). It is currently estimated to comprise 67,000 individuals (Rose & Scott 1997). The Western and Southern African population breeds in Scandinavia and north-east Russia (roughly east to Novaya Zemyla) and winters mainly in Western Africa. The population is estimated at about 32,000 individuals. These birds pass along the coasts of north-west Europe in spring and autumn. Birds that breed further east in western Siberia belong to the South-west Asia, Eastern Africa population (between 25,000–100,000 individuals). These winter mainly in the Middle East and eastern Africa (Rose & Scott 1997).

There is generally poor monitoring information on population trends in Europe given the low-density occurrence of non-breeding Turnstones along extensive lengths of rocky coastlines (Delany *et al.* 1999).

The annual population index for non-breeding Turnstones in the UK shows a downward trend, which reached its lowest point since 1982/83 in 1997/98 (Pollitt *et al.* 2000). The index only describes trends on Wetland Bird Survey sites (which tend largely to be estuarine in nature), but a similar pattern prevails for other coastal non-breeding areas. Preliminary analyses of the 1998 Non-estuarine Waterfowl Survey suggest a national decrease of 36% (from 26,123 to 16,623) on coastal sections since 1984/85 (Cranswick *et al.* 1999). The causes of the decline are not apparent.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Turnstone supports, on average, 10,200 individuals (calculated using WeBS January site totals for the period 1992/93 to 1996/97 – see section 4.4.1 and Appendix 2 for further explanation). This total amounts to about 13% of the British population, about 7% of the all-Ireland population, and about 15% of the East Atlantic flyway population. The suite comprises 13 sites at which Turnstone has been listed as a qualifying species (Table 6.77.1).

6. Classification criteria

All 12 sites in the UK that were known to support more than 1% of the international population of Turnstone were considered under Stage 1.2. All were selected after consideration of Stage 2 judgements (Mersey Narrows and North Wirral Foreshore, Morecambe Bay; Northumbria Coast; East Sanday Coast; Firth of Forth; Outer Ards; Thanet Coast and Sandwich Bay; Stour and Orwell Estuaries; Belfast Lough; The Wash; Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast); and North Uist Machair and Islands). Strangford Lough was further considered and selected under Stage 1.3 (see section 5.3), with Turnstone identified as an important component of non-breeding waterbird assemblages at these localities.

The sites within the suite are distributed throughout the range of the population in the UK, on east and west coasts, from Sanday in the northern Orkneys, to sites in the Outer and Inner Hebrides, Northern Ireland, to sites on the west and east coasts of England. Most sites are multi-species SPAs, of importance also for a range of other waterbirds, although Thanet Coast and Sandwich Bay has been selected solely for Turnstones. There is a long recorded history of occupancy at most of these sites (Prater 1981).

As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives comprehensive coverage of the range and moderate coverage of the population of this dispersed wintering species in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Turnstone SPA suite

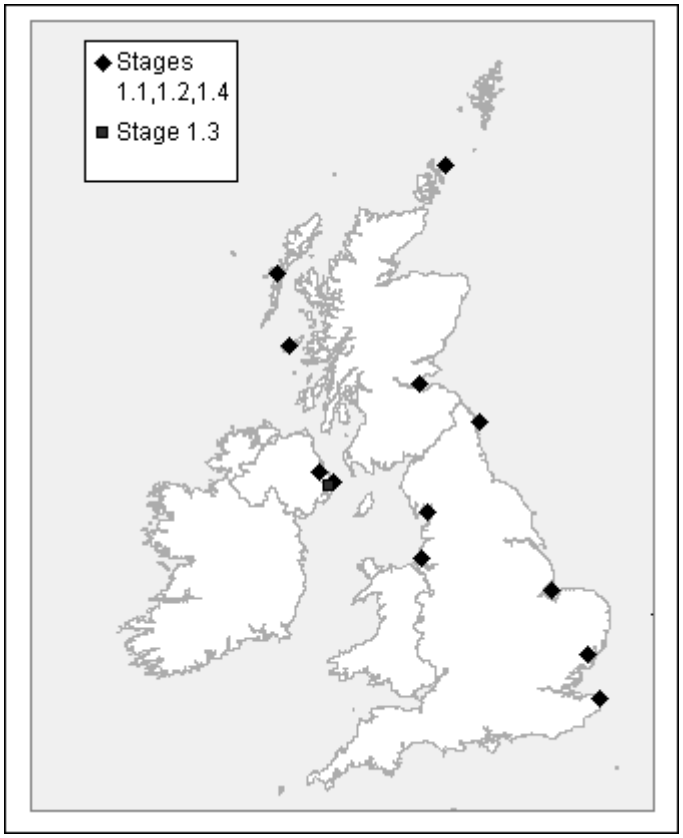


Table 6.77.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Belfast Lough	734	1.1	3.3 (Ire)	1.2
East Sanday Coast	1,400	2.1	2.2	1.2
Firth of Forth	1,286	1.9	2.0	1.2
Mersey Narrows and North Wirral Foreshore	1,138	1.6	1.8	1.2
Morecambe Bay	1,583	2.4	2.5	1.2
North Uist Machair and Islands	670	1.0	1.0	1.2
Northumbria Coast	1,456	2.2	2.3	1.2
Outer Ards	1,241	1.9	5.5 (Ire)	1.2
Stour and Orwell Estuaries	836	1.3	1.3	1.2
Strangford Lough	401	0.6	1.8 (Ire)	1.3
Thanet Coast and Sandwich Bay	940	1.4	1.5	1.2
The Wash	717	1.1	1.1	1.2
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	700	1.0	1.1	1.2
TOTALS	10,200 (in January)	14.6%	13.4% 7.1% (Ire)	

A6.78 Red-necked Phalarope *Phalaropus lobatus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Endangered**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	36	1	30 (83% of GB population)
Ireland			
Biogeographic population	65,500	655	30 (<0.1% of biogeographic population)

GB population source: Stone et al. *1997*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Red-necked Phalarope has a wide circumpolar breeding distribution in tundra habitats. It is absent from high Arctic areas of north and east Greenland, Svalbard, the Russian high Arctic islands and the Canadian Arctic archipelago. Red-necked Phalaropes otherwise occur in virtually all parts of the Arctic, as well as some areas of the sub-Arctic. It is monotypic (Cramp & Simmons 1983). Outside the breeding season, the species undertakes a lengthy migration to overwinter at sea in sub-tropical, shallow inshore waters. Birds breeding in Scandinavia (and possible also Iceland) migrate south-east to winter off the coast of the Arabian Peninsula, between Oman and Yemen (Cramp & Simmons 1983).

The European breeding range extends from Iceland, through Scandinavia and to northern Russia. Those that breed in the north of Britain lie at the extreme south of the European distribution (Hagemeijer & Blair 1997), and are amongst the most southerly breeding Red-necked Phalaropes in the world.

In Britain, almost the entire population has recently been found on the island of Fetlar, Shetland. Although formerly more abundant at wetlands in western and northern Scotland (Everett 1971; Parslow 1973; Holloway 1996), breeding now only occurs sporadically at sites in the Northern Isles, Hebrides and Highlands (Gibbons *et al*. 1993).

4. Population structure and trends

Two biogeographic populations have been described (Rose & Scott 1997); a Nearctic population of more than 2,000,000 individuals, and a Eurasian population, of which those breeding in the UK form

part, comprising between 100,000 to over 1,000,000 individuals (Rose & Scott 1997). Largest numbers in Europe breed in Iceland (*c.* 4,000 pairs), with between about 800–1,500 pairs in each of Sweden, Finland and Norway (Hagemeijer & Blair 1997).

The European population (used as the reference in this review) is estimated as between 65,536–94,301 pairs. The European population as a whole appears to be stable although there has been a decline in Iceland (Hagemeijer & Blair 1997).

The UK breeding population has declined in size and range since the 1950s with a loss of regular breeding sites in the Hebrides and the Highlands (Yates *et al*. 1983; Batten *et al*. 1990; Gibbons *et al*. 1993). Total UK numbers have declined from about 60 breeding males in 1950 to 36 in 1995 (Stone *et al*. 1997).

UK declines have been linked to loss of suitable habitat through vegetation succession, drainage and agricultural intensification, especially in the Hebrides and Highlands (Everett 1971). Robbing of nests by egg-collectors is still a substantial threat to Red-necked Phalaropes breeding on some of the more remote sites. In Britain, Red-necked Phalaropes appear to require a mosaic of open water, emergent vegetation and marsh for successful breeding (Yates *et al*. 1983) and the loss of any part of this mosaic may make a site unsuitable. On Fetlar, management to maintain and extend this mosaic of habitats on the RSPB reserve can be successful in increasing the breeding population (O'Brien *et al.* 1997).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Red-necked Phalarope supports, on average about 30 pairs. This amounts to about 83% of the British breeding population. Red-necked Phalaropes do not breed in Northern Ireland. The suite contains less than 0.1% of the international population (numbers in the UK are very small in comparison to those breeding in Iceland, Scandinavia and Russia). The SPA suite comprises a single site (Table 6.78.1) where Red-necked Phalarope has been listed as a qualifying species.

Other measures

A Biodiversity Action Plan has been published for this species (Biodiversity Steering Group 1998) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

The only site (Fetlar) in the UK now known to regularly support more than 1% of the national breeding population was considered under Stage 1.1, and was selected after consideration of Stage 2 judgements. Consideration of additional coverage using Stage 1.4 was problematic since away from Fetlar, the occurrence of the Red-necked Phalarope was irregular in the early 1990s. Following the success of active wetland habitat management on Fetlar (O'Brien *et al.* 1997), however, and the application of these techniques to the restoration of sites of former importance elsewhere, this situation may change in the future.

Fetlar is a multi-species SPA with a very long recorded history of occupancy by Red-necked Phalaropes. The island has held most of Shetland's Red-necked Phalaropes since at least the beginning of the twentieth century (Venables & Venables 1955; Everett 1971).

Distribution map for Red-necked Phalarope SPA suite

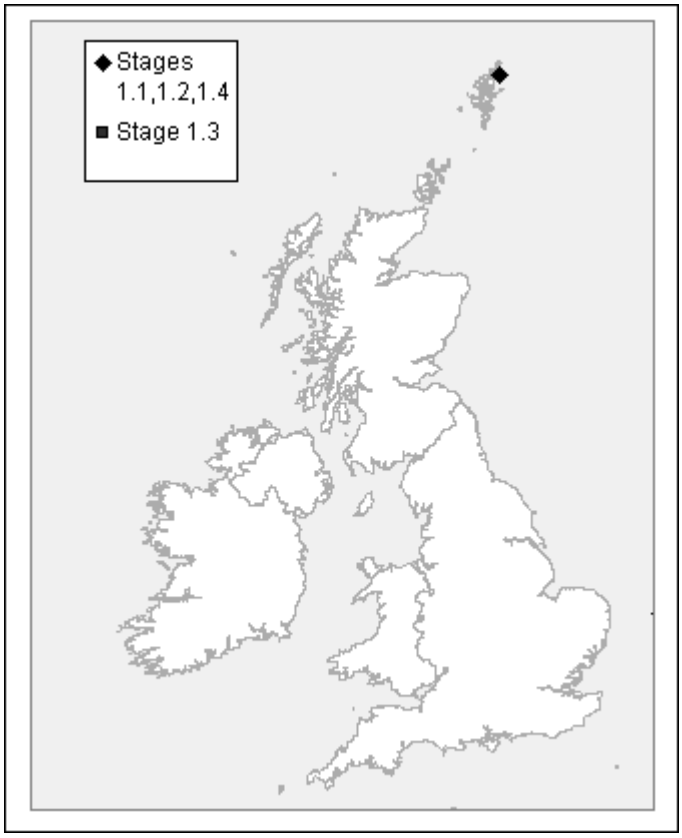


Table 6.78.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Fetlar	30	<0.1%	83%	1.1
TOTALS	30	<0.1%	83%	

A6.79 Arctic Skua *Stercorarius parasiticus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	3,200	32	780 (24% of GB population)
Ireland			
Biogeographic population	30,000	300	780 (3% of biogeographic population)

GB population source: Walsh et al. *1995*
Biogeographic population source: Lloyd et al. 1991

3. Distribution

Arctic Skuas have a circumpolar distribution, breeding on tundra and coastal moors between 82°N and 56°N. Within this distribution, the species is absent only from the very high Arctic and parts of east Greenland (Cramp & Simmons 1983; Furness 1987). The largest populations are found in Russia, Iceland, Svalbard, Norway and Sweden (Hagemeijer & Blair 1997). In the southern parts of its range the species is coastal, whilst in the Arctic it occurs as a widespread predator of the tundra. It is monotypic.

In Europe, Arctic Skuas breed in Iceland, along the northern coasts of Scandinavia south from the White Sea, and locally along parts of the northern coasts of the Baltic.

In Britain and Ireland, breeding Arctic Skuas are restricted to Scotland, particularly the Northern Isles, where they nest in colonies, being present from April to August. In the Orkney and Shetland archipelagos, Arctic Skuas are widely distributed, but further south they breed more locally at sites with a traditional history of occupancy. Sites in the Inner Hebrides are the most southerly in the Palearctic range of the species, and amongst the most southerly in the world. Birds breeding in Scotland are an important component of the North Atlantic range of Arctic Skua.

During the breeding season (April–July/August) Arctic Skuas occur in northern waters around Scotland, generally close to the nesting colonies. At the end of the breeding season (August–October), they move south to inshore waters along British and Irish coasts (Stone *et al.* 1995) before migrating to the southern hemisphere, with some wintering off the coasts of South America and South Africa (Lloyd *et al*. 1991).

4. Population structure and trends

Because large numbers of Arctic Skuas nest in remote and relatively inaccessible parts of Russia, Canada and Alaska, the size of the world population is poorly known. However, the North-East Atlantic biogeographical population is known to comprise about 30,000 pairs, with the largest numbers in Norway (8,000 pairs) and Iceland (4,000 pairs). About 10% of the population (*i.e.* 3,200 pairs) nests in Scotland (Lloyd *et al.* 1996).

Some Arctic Skuas in Scotland nest on inland moors and heaths, but a lack of survey data for these areas prior to 1985_1987 makes it impossible to describe the historic population trend in UK. However, an analysis comparing total numbers from 1974_1975 and 1985–1986 in Shetland (where about 60% of the UK population nests) indicated little change over this period (Ewins *et al*. 1988). Sears *et al*. (1995) again found no change in a more recent census in 1992. However, colonies monitored by the UK Seabird Monitoring Programme have revealed consistent declines in breeding numbers since 1992 (*e.g.* Walsh *et al*. 1995; Thompson *et al*. 1999). These declines may be linked to a period of poor reproductive output during the late 1980s and early 1990s when the Shetland sandeel stock was very low. Arctic Skuas rely largely on stealing food from other seabirds.

Arctic Skuas have also been displaced from some breeding areas by the expansion of the Great Skua population. Elsewhere in the North Atlantic, the population on the Faeroes is believed to have declined (Furness 1987) due partly to human interference.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Arctic Skua supports, on average, 780 pairs. This amounts to about 24% of the British breeding population, and about 3% of the international population. Arctic Skuas do not breed in Northern Ireland. The SPA suite contains seven sites (Table 6.79.1) where Arctic Skua has been listed as a qualifying species.

6. Classification criteria

No site in the UK holds more than 1% of the international population of Arctic Skua; thus no sites were selected under Stage 1.2. At six sites (Rousay; Fetlar; Foula; West Westray; Fair Isle; Hoy) Arctic Skua was identified as an important component of the breeding seabird assemblages at these localities. After consideration of Stage 2 judgements, all these sites were selected under Stage 1.3 (see section 5.3).

An additional 14 sites were assessed under Stage 1.4 to provide additional coverage of population size and range. Of these, the highest-density breeding colony in Britain (Papa Westray) was included in the SPA suite. A further ten sites in the Northern Isles, as well as colonies on the Lewis Peatlands, Handa and Coll, were not selected as these supported smaller or less dense populations..

Distribution map for breeding Arctic Skua SPA suite

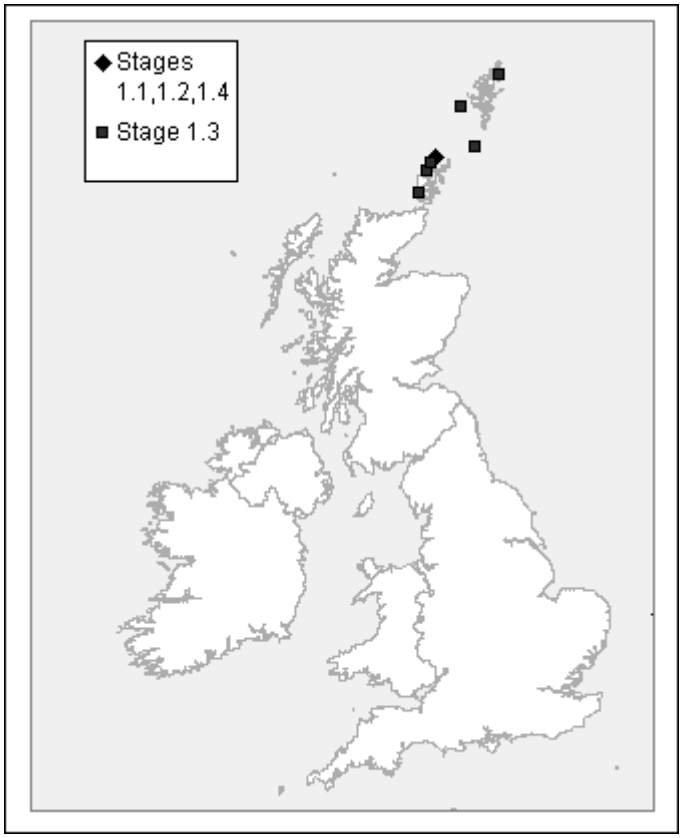


Table 6.79.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Fair Isle	74	0.3	2.3	1.3
Fetlar	130	0.4	4.1	1.3
Foula	125	0.4	3.9	1.3
Hoy	59	0.2	1.8	1.3
Papa Westray (North Hill and Holm)	135	0.5	4.2	1.4
Rousay	180	0.6	5.6	1.3
West Westray	77	0.3	2.4	1.3
TOTALS	780	2.6%	24.4%	

A6.80 Great Skua *Catharacta skua* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	8,500	85	6,262 (74% of GB population)
Ireland			
Biogeographic population	13,600	136	6,262 (46% of biogeographic population)

GB population source: Walsh et al. *1995*
Biogeographic population source: Lloyd et al. 1991

3. Distribution

The taxonomy of the Great Skua is complex, but it is considered to be polytypic with four sub-species described. The nominate race *Catharacta skua skua* is the only sub-species to occur in the northern hemisphere and is endemic to Europe. The other three sub-species occur throughout the southern oceans, breeding within sub-Antarctic and Antarctic island groups. In Europe, Great Skuas have a localised breeding distribution and are present in just a few countries, with the main population centres being in Iceland, Scotland and the Faroe Islands (Cramp & Simmons 1983; Furness 1987; Lloyd *et al.* 1991).

In the UK, the species occurs mainly in Orkney and Shetland, with smaller numbers at a few sites in the Outer Hebrides and the mainland of north-west Scotland (Lloyd *et al*. 1991). It nests colonially and is present at its colonies from April to August. During this period, it forages in inshore waters around the northern islands (Stone *et al*. 1995), feeding by stealing food from other seabirds.

Outside the breeding season, Great Skuas move southwards as far as the north coast of South America and West Africa (Cramp & Simmons 1983), but with relatively large numbers in the Bay of Biscay (Stone *et al*. 1995). However, the species can occur widely in the North Atlantic.

4. Population structure and trends

The world population of the nominate sub-species of Great Skua is estimated at about 13,600 pairs (Lloyd *et al.* 1991), and as the sub-species has a distinct biogeographical range, this is the population

estimate used for the current review. Over 60% of this population (8,500 pairs) nests in Scotland (Walsh *et al.* 1995).

It seems likely that the species colonised the northern hemisphere relatively recently, probably just before the sixteenth century (Furness 1987). The earliest Scottish records refer to a few pairs nesting in Shetland in the eighteenth century. In the late nineteenth century, the skins of Great Skuas became prized by bird collectors, and the species was virtually exterminated in Scotland. It was partly helped back from the brink by the employment of a full-time warden on Hermaness from 1891 onwards – possibly the first wildlife protection warden in Scotland.

Since the low point in the 1890s, the UK population approximately doubled every ten years until the 1970s (Furness 1987). This rate of increase probably slowed after 1970, but is difficult to measure precisely as some pairs now nest inland in areas that had not been surveyed prior to 1985–1987. This makes it impossible to describe precisely the overall population trend in the UK. However, numbers in Shetland will have benefited in recent years from the abundance of whitefish discarded as undersized catches (Hudson & Furness 1988; Furness 1997). In contrast, the failure of sandeel recruitment in the late 1980s and early 1990s had a negative effect on the population, in particular, reducing recruitment at Foula (Hamer *et al.* 1991).

An analysis comparing total numbers in 1974–1975 and 1985–1986 in mainland Shetland indicated a 9% per annum increase over this period, whereas on Foula (the stronghold of the species, see below) the increase was much less, giving an overall figure for Shetland of only 1.3% per annum (Ewins *et al.* 1988). Sears *et al.* (1995) reported a similar situation in a 1992 census. Colonies in Shetland monitored by the UK Seabird Monitoring Programme continued to increase in size after 1992 (*e.g.* Walsh *et al.* 1995; Thompson *et al.* 1999). Elsewhere in the North Atlantic, the population on the Faroes is believed to have increased, but not as significantly as in Scotland (Furness 1987).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Great Skua supports, on average about 6,262 pairs. This amounts to about 74% of the British breeding population. Great Skuas do not breed in Northern Ireland. The suite contains about 46% of the international (world) population. The SPA suite contains nine sites (Table 6.80.1) where Great Skua has been listed as a qualifying species.

6. Classification criteria

All six sites in the UK that support more than 1% of the international breeding population of Great Skuas were considered under Stage 1.2. All (Hermaness, Saxa Vord and Valla Field; Fetlar; Noss; Foula; Hoy; and St Kilda) were selected after consideration of Stage 2 judgements. Additionally, three sites (Ronas Hill – North Roe and Tingon; Fair Isle; and Handa) were selected under Stage 1.3 (see section 5.3), with Great Skua identified as an important component of the breeding seabird assemblages at these localities.

Given that the selection of sites under Stages 1.1 and 1.3 resulted in a suite which gives comprehensive coverage of Great Skua population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

All sites selected are multi-species SPAs, important for a range of other seabirds.

The distribution of SPAs covers the range of Great Skua in the UK, from the north of Shetland, west to St Kilda. Its core distribution is in Shetland (six sites), including the largest colony in the world in Foula. Some UK SPAs for this species have a very long recorded history of occupancy. For example, Saxa Vord was the site where Great Skuas were first recorded as a breeding species in Britain (Low 1879) although breeding had occurred there from the early 1770s (Furness 1987). There are also 18th century records from Foula, Hermaness, and Ronas Hill (which was colonised in the 1820s) (Furness 1981, 1987; Holloway 1996). Other sites were colonised in the early years of the 20th century: Fetlar (1900–1909), Noss (1910), and Hoy (1914) (Furness 1987; Meek *et al.* 1985). St Kilda was occupied more recently (1962).

Distribution map for Great Skua SPA suite

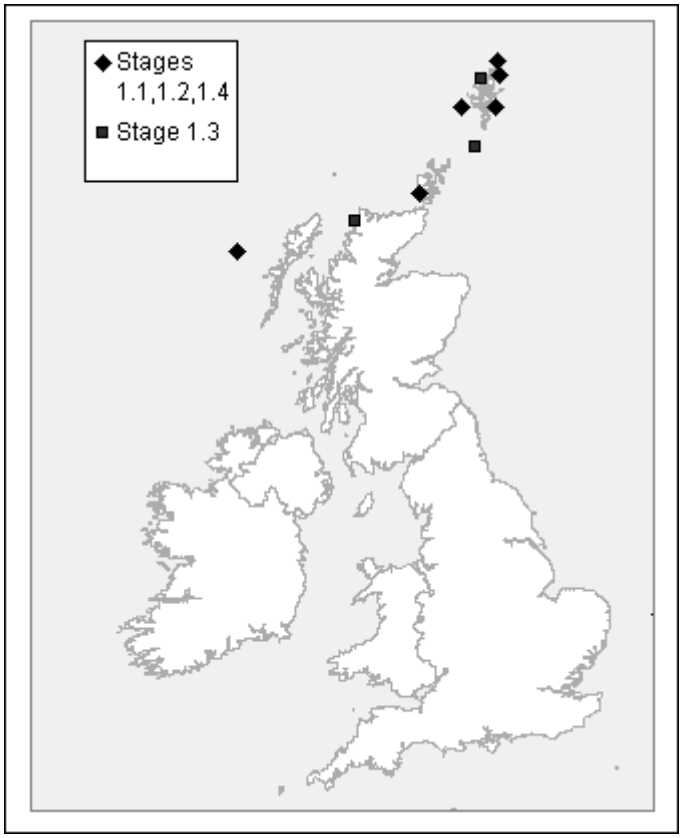


Table 6.80.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Fair Isle	130	1.0	1.5	1.3
Fetlar	512	3.8	6.0	1.2
Foula	2,170	16.0	25.5	1.2
Handa	110	0.8	1.3	1.3
Hermaness, Saxa Vord and Valla Field	630	4.6	7.4	1.2
Hoy	1,900	14.0	22.4	1.2
Noss	410	3.0	4.8	1.2
Ronas Hill – North Roe and Tingon	130	1.0	1.5	1.3
St Kilda	270	2.0	3.2	1.2
TOTALS	6,262	46.0%	73.7%	

A6.81 Mediterranean Gull *Larus melanocephalus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	31	1	23 (74% of GB population)
Ireland			
Biogeographic population	184,000	1,840	23 (<0.1% of biogeographical population)

GB population source: Ogilvie et al. *1996*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global distribution of Mediterranean Gull is highly restricted, with breeding limited to just a few localities in Europe, particularly along the northern coast of the Black Sea, from the Danube Delta in the west to the Gulf of Sivash in the east. Breeding occurs very locally elsewhere: some parts of inland Russia, Turkey, the north coast of the Mediterranean including the Aegean and Adriatic Seas, The Netherlands, Britain, and locally in the Baltic. The species is monotypic.

In the UK, which is at the north-western limit of the species' world range, breeding first occurred as recently as 1968 on the south coast of England (Lloyd *et al.* 1991).

It is not known where the birds that breed in England spend the non-breeding season, but it seems likely that they use coastal areas near to the nesting colonies in south-east and south England. The few records from the Seabirds at Sea survey programme all come from the English Channel (Stone *et al.* 1995).

4. Population structure and trends

The European population is estimated at between 183,925–339,963 pairs. This comprises most of the world population with just a further 600–18,300 pairs occurring in Russia and Turkey (Hagemeijer & Blair 1997; Siokhin *et al*. 1988). Most of the world population breeds around the Black Sea and spends the winter in the Mediterranean.

The Mediterranean Gull was first recorded breeding in Britain in 1968 (Taverner 1970), and since 1979, pairs have bred successfully each year, reaching a current peak of 31 pairs. This expansion to Britain was a natural progression from a spread in range and increase in numbers across central and western Europe from the species' stronghold. There are no obvious causes of this spread and increase in population, though climate change must be an obvious possible factor. There is every indication that the expansion is set to continue.

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Mediterranean Gulls supports, on average, 23 pairs. This amounts to about 74% of the British breeding population, and less than 0.1% of the international population. The species does not regularly breed in Northern Ireland. The SPA suite contains five sites (Table 6.81.1) where Mediterranean Gull has been listed as a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national Mediterranean Gull breeding population were considered under Stage 1.1, and all (The Swale; Poole Harbour; Dungeness to Pett Level; Solent and Southampton Water; and North Norfolk Coast) were selected after consideration of Stage 2 judgements.

The sites within the suite include all regular breeding localities in the UK, including sites on the south and east coasts of England. All these sites are multi-species SPAs, of importance also for a range of other breeding seabirds.

As the selection of sites under Stage 1.1 resulted in a suite which gives very good coverage of the population and breeding range Mediterranean Gulls in the UK, there was no need to consider additional sites for selection under Stage 1.4.

Distribution map for Mediterranean Gull SPA suite

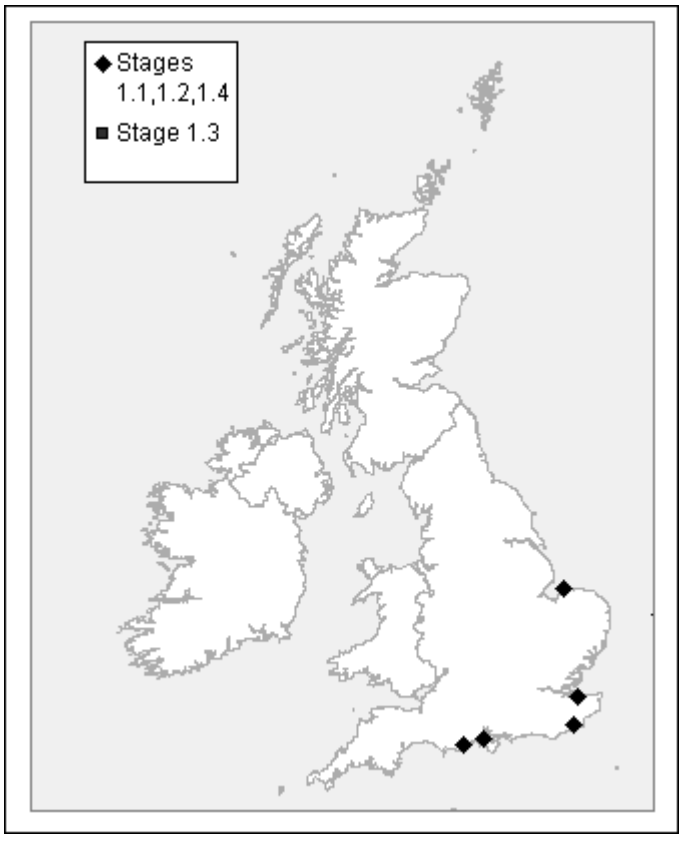


Table 6.81.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Dungeness to Pett Level	2	<0.1	6	1.1
North Norfolk Coast	2	<0.1	6	1.1
Poole Harbour	5	<0.1	16	1.1
Solent and Southampton Water	2	<0.1	6	1.1
The Swale	12	<0.1	39	1.1
TOTALS	23	<0.1%	74%	

A6.82 Black-headed Gull *Larus ridibundus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	167,000	1,670	15,582 (9% of GB population)
Ireland	53,800	538	33,000 (61% of all-Ireland population)
Biogeographic population	1,650,000	16,500	48,582 (3% of biogeographic population)

GB population source: Lloyd et al. *1991*
Ireland population source: Gibbons et al. *1987*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Black-headed Gull has a global breeding range that extends from about 35°–65°N throughout the Palearctic from the Kamchatka Peninsula in the east, to the Atlantic seaboard in the west (Cramp & Simmons 1983). The species is monotypic.

In Europe, many colonies occur along the north-western coasts as well as a few areas around the Mediterranean. The largest coastal colonies are found in Sweden, Denmark, The Netherlands and Britain (Cramp *et al.*1983). However, Black-headed Gulls also have an extensive inland breeding distribution, occurring in most European countries.

In Britain, coastal colonies are largest in southern and south-eastern England and along the Irish Sea, including a large colony in the Ribble estuary (20,000 pairs in 1985) (Lloyd *et al.*1991). As elsewhere, inland colonies are more numerous than coastal sites, especially in north-west Ireland, Wales, north-west England and most of Scotland. These include some significant concentrations such as 33,000 nests in 1987 at Lough Neagh, Northern Ireland and 25,000 pairs at Sunbiggin Tarn in Cumbria (Lloyd *et al.* 1991).

Throughout the range, typical Black-headed Gull breeding habitats include bogs, marshes and man-made ponds. Dry sites next to water are also selected, such as heath-covered moorland, coastal sand-dunes, rocky islets and industrial waste dumps.

Outside the breeding season Black-headed Gulls range widely, occurring both at sea, as well as inland in much of western Europe (as far south as Spain). The species occurs through the Mediterranean as

well as in coastal and inshore areas of much of the north-east Atlantic (Cramp & Simmons 1983; Stone *et al.* 1995).

4. Population structure and trends

There are six described biogeographic populations of Black-headed Gulls (Rose & Scott 1997), of which two occur in Europe (Mediterranean and North-western European populations). As most Black-headed Gulls breed inland throughout their global range, the species' breeding distribution and abundance in most countries is not precisely known. Coastal and inland breeding colonies in Britain and Ireland held at least 220,800 pairs in 1985–1987, or about 22% of the European total.

There has been a marked spread in northern Europe since the early 20th century and the recent colonisation of Italy (1960), Spain (1960), Greenland (1969) and Newfoundland (1977) would suggest this expansion is continuing. British and Irish populations have also reflected the increases that started during the 1900s (Cramp *et al.* 1983). More recent population changes have only been adequately documented for coastal sites, and these showed a slight increase of about 7% between 1969–1970 and 1985–1987 for Britain and Ireland as a whole (Lloyd *et al.* 1991). English coastal colonies showed an overall increase of more than 30%, whereas over the same period, a 55% decrease was recorded on Scottish coasts (particularly south-east Scotland). Coastal populations in Wales also declined.

In Ireland, numbers on the north-east coast increased by 70%, but elsewhere there were no clear trends. In some areas dramatic variations may occur, for example, a tenfold increase in east and west Sussex sites from 260 to 2,900 pairs between the two census dates (Gibbons *et al.* 1993). Such phenomena may, however, merely reflect movements between colonies. Inter-colony movements by breeding birds are known to occur inland (Gribble 1976), at least, in response to factors such as disturbance or fluctuations in water levels.

The most notable recent changes are the apparent loss of colonies in Scotland (probably a consequence of agricultural drainage) and north-west Ireland (Gibbons *et al.* 1993). The latter loss may be due in part to changes in census coverage but the decline in Scotland is unclear. There has not been any apparent increase in the amount of predation, flooding or other factors that have adversely affected coastal birds so the reason for the decline remains unknown.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Black-headed Gulls supports, on average, 48,582 pairs. This amounts to about 9% of the British breeding population, 61% of the all-Ireland population, and about 3% of the international population. The SPA suite total is contained within four sites (Table 6.82.1) where Black-headed Gull has been listed as a qualifying species.

6. Classification criteria

The single Black-headed Gull colony in the UK that supports more than 1% of the international breeding population (Lough Neagh and Lough Beg) was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. Additionally, the Alde – Ore Estuary, Coquet Island and the Ribble and Alt Estuaries were selected under Stage 1.3 (see section 5.3), since Black-headed Gulls were identified at those sites as an important component of a wider breeding seabird assemblage. All these sites are multi-species SPAs, important for a range of other seabirds.

The suite encompasses sites in Northern Ireland, and north and east England. Black-headed Gull has a wide distribution in the UK and is a very successful species. Accordingly, as the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and breeding range in the UK, there was no case to select additional sites using Stage 1.4.

Distribution map for breeding Black-headed Gull SPA suite

Table 6.82.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	1,582	0.1	1.0	1.3
Coquet Island	2,100	0.1	1.3	1.3
Lough Neagh and Lough Beg	33,000	2.0	61.3 (Ire)	1.2
Ribble and Alt Estuaries	11,900	0.7	7.1	1.3
TOTALS	48,582	2.9%	9.3% 61.3% (Ire)	

A6.83 Common Gull *Larus canus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**declining**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	68,000	680	18,264 (26% of GB population)
Ireland	3,600	36	264 (7% of all-Ireland population)
Biogeographic population	124,000	1,240	18,264 (15% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1988*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Common Gull has a wide global distribution, breeding in temperate and sub-Arctic areas throughout the Palearctic (from Iceland, Britain and Ireland in the west, to the coasts of the Bering Sea in the east) as well as in north-west North America. The Common Gull is a polytypic species. Two sub-species occur in Europe: the nominate race *L. c. canus,* which is found from north-west Europe east to the White Sea, and *L. c. heinei* which breeds from the Kanin Peninsula, east to the Lena River. Two other races occur in other parts of the world range (*L. c. kamtchatschensis* in north-east Siberia and *L. c. brachyrhynchus* in north-west North America) (Cramp & Simmons 1983).

In Europe, the Common Gull only breeds in northern regions. In the Low Countries, Denmark, Germany and Poland, its breeding distribution is scattered and localised. In more northerly regions, such as Scotland and Scandinavia, Common Gull breeding distribution is more continuous. In Europe, the largest numbers of the nominate sub-species are in Norway and Sweden where most colonies are on, or near, the coast. Each of these countries holds about 14,000 pairs.

Within Britain and Ireland, the Common Gull is very much a breeding bird of the north and west, with only a few colonies being found in England and Wales. Over 90% occur in Scotland with a large proportion of these in Shetland and Orkney (Lloyd *et al.* 1991). Overall in Britain and Ireland, only about a fifth of Common Gulls breed on the coast, with the rest nesting inland. They are widely but sparsely distributed through inland Scotland, especially in the north, and there are many sites in north-west Ireland, as well as a few in the north of England.

Outside the breeding season, Common Gulls occur mainly at sea, as well as locally inland in parts of central Europe (Snow & Perrins 1998). There are particular concentrations in inshore waters of the southern North Sea, especially the international Wadden Sea and other parts of the Danish coast – notably the Kattegat (Stone *et al.* 1995).

4. Population structure and trends

Lloyd *et al.* (1991) estimated the world population at between 578,000–585,000 pairs, although this seems to be a significant underestimate, since Hagemeijer & Blair (1997) estimated between 416,157–558,316 pairs in Europe alone. The biogeographic population used in this review is that of North-west and Central Europe, the Atlantic and the Mediterranean which amounts to 124,000 pairs.

During 1985–1987, the British Common Gull population was estimated at about 68,000 pairs, of which 53,000 occurred inland. For Ireland, the figure was 3,600 pairs and of these 2,700 were inland (Lloyd *et al.* 1991). Together the British and Irish populations comprise some 15% of the overall European population.

The Common Gull showed a marked population expansion in most parts of its range during the 20th century. This increase would appear to have slowed in some countries, whilst others, such as Denmark, have recently begun to show a decline. In Britain and Ireland, there has been an increase and spread since 1900. Cramp *et al.* (1974) mention new breeding sites at Scolt Head, Norfolk and an increase in numbers at Dungeness, Kent as evidence of the species continuing to extend its range southwards. Birds breeding in south-east England are believed to derive from the European continental population that migrates to Britain in the winter (Sharrock 1976).

Lack of complete census data from previous years makes it difficult to assess any likely changes in populations. Colonies for which past counts or estimates are available appear to show an increased or stable population since the mid-1970s. One colony on the Correen Hills (Tips of Corsemaul) was thought to hold 4,000–5,000 pairs of Common Gulls in 1976 (Bourne *et al.* 1978), whilst a more detailed survey in 1987 gave an estimate of 13,599–24,000 pairs (Tasker *et al.* 1991). Nearby, a large colony in the Mortlach Hills (Tom Mor) where 1,300 pairs were found in 1978 (A.F.G. Douse in Knox & Bell 1979), held between 5,000–6,700 pairs in 1988 (Tasker *et al.* 1991). In contrast, a survey of inland Common Gull colonies in the west of Ireland in 1977–1978, partially resurveyed in 1983, indicated a stable population (Whilde 1978, 1983).

Generally, there are insufficient data available to assess population trends since inland sites have received little survey attention in recent years. Gibbons *et al.* (1993), for example, found only a small change in the population since 1968–1972. The only comprehensive data available were for the coastal population of Britain and Ireland that had increased from 13,000 to 15,700 between 1969–1970 and 1985–1987 (Lloyd *et al.* 1991). As this population only constitutes 20% of the overall total of the British and Irish population, the significance of this change is not known.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Common Gulls supports, on average, 18,264 pairs. This amounts to about 26% of the British breeding population, and about 7% of the all-Ireland population. The suite contains about 15% of the international population, and comprises three sites (Table 6.83.1) where Common Gull has been listed as a qualifying species.

6. Classification criteria

The single Common Gull colony in the UK that supports more than 1% of the international breeding population (Tips of Corsemaul and Tom Mor) was considered under Stage 1.2, and was selected after consideration of Stage 2 judgements. This site is the largest known Common Gull breeding colony in the world and has a very long recorded history of occupancy, being known from at least the end of the 19th century (Buckland *et al.* 1990).

Additionally, Lough Neagh and Lough Beg, and Rathlin Island were selected under Stage 1.3 (see section 5.3), since Common Gulls were identified at those sites as forming an important component of a wider breeding seabird assemblage. Lough Neagh and Lough Beg, and Rathlin Island are both multi-

species SPAs, important for a range of other seabirds, although Tips of Corsemaul and Tom Mor has been selected solely on the basis of its importance for Common Gulls.

The suite encompasses sites in Northern Ireland and Scotland. Common Gulls elsewhere occur at relatively low densities in the UK and are widely dispersed. Accordingly, and as the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and breeding range in the UK, there was no case to select additional sites using Stage 1.4.

Distribution map for breeding Common Gull SPA suite

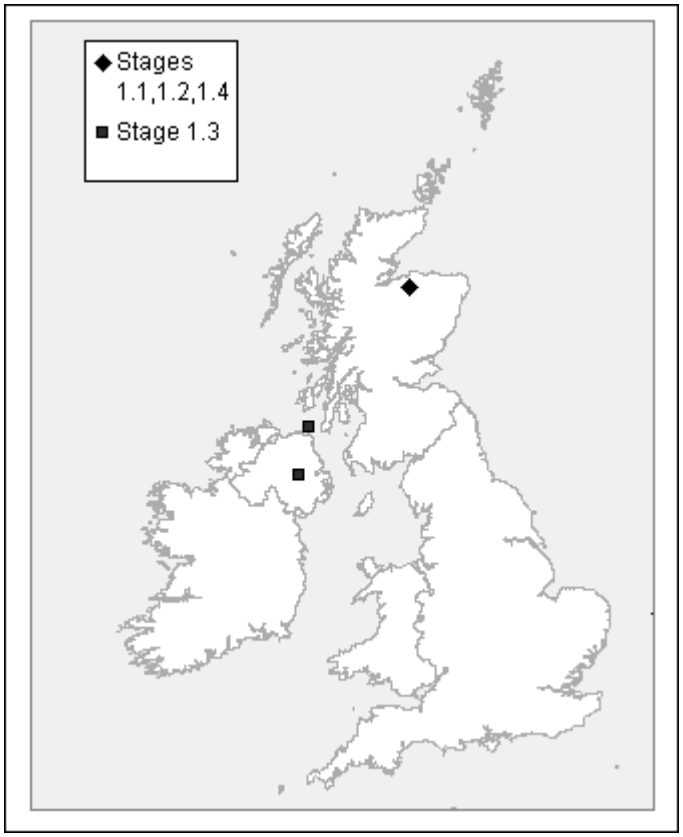


Table 6.83.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Lough Neagh and Lough Beg	200	0.2	5.6 (Ire)	1.3
Rathlin Island	64	<0.1	1.8 (Ire)	1.3
Tips of Corsemaul and Tom Mor (formerly Correen/Mortlach Hills)	18,000	14.5	26.5	1.2
TOTALS	18,264	14.7%	26.5% 7.3% (Ire)	

A6.84 Lesser Black-backed Gull *Larus fuscus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	83,000	830	88,028 (*c.* 100% of GB population)
Ireland	5,200	52	605 (12% of all-Ireland population)
Biogeographic population	124,000	1,240	88,633 (71% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1989*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Lesser Black-backed Gull has a restricted global breeding range that extends from Iceland east to the Taimyr peninsula and south to Portugal. In the eastern part of the range, the Lesser Black-backed Gull is an Arctic breeding bird, occurring largely in inland areas above the Arctic Circle and especially along major river valleys (Rogačeva 1992). Further west, breeding occurs south to about 40°N on the coast of Portugal. In western Europe, Lesser Black-backed Gulls have a largely coastal breeding distribution with colonies occurring only short distances from the coast.

The species is polytypic, with five sub-species described, of which four occur in Europe. The nominate race *L. f. fuscus* breeds in northern Norway, Sweden and the western part of the Kola Peninsula. All the birds that breed in Britain and Ireland belong to the race *L. f. graellsii* whose range also includes Iceland, France and north-west Spain. The sub-species *L. f. intermedius* breeds in The Netherlands and Denmark, whilst *L. f. heuglini* breeds from the southern Kola Peninsula to the Yenisey. A further race is found further east in Russia breeding from the Yenisey east to the Taimyr (Cramp & Simmons 1983).

Other than in Finland and around the White Sea, the European distribution of Lesser Black-backed Gulls is largely restricted to coastal areas.

The species is widespread throughout Britain and Ireland with possibly a more southerly distribution than the closely related Herring Gull. The west coasts of England and Wales hold upwards of 58% of the coastal breeding population and there is another marked concentration of colonies in central Scotland. In Ireland, far more birds breed inland than on the coast, especially in the west of the country (Lloyd *et*

al. 1991). Lesser Black-backed Gulls share many colonies with Herring Gulls, though the former tend to favour more vegetated breeding habitats.

Lesser Black-backed Gulls are highly migratory, and outside the breeding season birds move south along the west coasts of Europe and Africa. Coastal wintering birds occur as far as the coast of Nigeria, and there is some evidence from ringing recoveries of birds wintering inland in the Inner Niger Delta (Cramp & Simmons 1983). At least some birds remain in northern waters, with sightings of birds at sea around Britain and Ireland in all months of the year (Stone *et al.* 1995).

4. Population structure and trends

The European population of Lesser Black-backed Gulls has been estimated at between 212,377–229,522 pairs (Hagemeijer & Blair 1997), although this total includes birds of several subspecies as noted above. The total *L. f. graellsii* population amounts to about 124,000 pairs (Lloyd *et al.* 1991) and this is the biogeographic population used in this review. In 1985–1987, there were 88,200 Lesser Black-backed Gulls breeding in Britain and Ireland – about 71% of total *L. f. graellsii* numbers.

Like many other seabird species, the Lesser Black-backed Gull has expanded its range and abundance during much of the 20th century. The species first bred in Iceland, The Netherlands and Germany during the 1920s and 1930s. It also recolonised northern France over the same period. In another expansion episode, Spain and Portugal were colonised in the 1970s (Cramp *et al.* 1983). More recently, some populations have been showing signs of decline (Finland, Sweden and Denmark) (Lloyd *et al.* 1991), though in Britain and Ireland numbers increased by about 25% between 1969–1970 and 1985–1987.

The census of 1985–1987 found most Lesser Black-backed Gull colonies to be located in the west of England and Wales, between Cumbria and the Isles of Scilly. Nearly 79% of the total bred in 17 major colonies, each holding over 500 pairs. The largest coastal sites were at Skomer Island (13,205 pairs) and South Walney in Cumbria (10,000). The latter site has more recently been abandoned with birds moving to the Bowland Fells. Other large colonies with more than 2,000 pairs were found at Little Cumbrae in the Firth of Clyde (3,000) (now in decline), and at Orfordness, Suffolk (5,000) (Lloyd *et al.* 1991). As noted above, there have been significant changes in numbers at many of the formerly important breeding colonies, often with birds re-locating to other sites.

Breeding Lesser Black-backed Gull numbers in 1969–1970 in coastal Britain and Ireland were assessed at 50,100 pairs, although increases over many areas had, by 1985–1987, brought the total to an estimated 64,500. Coastal colonies in England between 1969–1970 and 1985–1987 remained stable, but increases were recorded in Scotland (55%), in Wales (65%) and Ireland (29%) (Lloyd *et al.*1991). Problems with the census techniques make interpretation of the data difficult for some areas but there was a general upward trend in breeding numbers between 1969–1970 and 1985–1987. A highly significant increase in the number of gulls breeding on the shingle spit of Orfordness, Suffolk was recorded. The first pairs of Lesser Black-backed Gulls became established in the mid-1960s on then Ministry of Defence land. By 1986, the colony had grown to 5,000 pairs (Thomas *et al.* 1982) and by 1997 the figure was 19,700 (Cormack & Lohoar 1999). It was concluded by Thomas *et al.* (1982) that such increases in gull numbers could only have occurred by the immigration of birds into the colony but it was not known from which sources.

Birds nesting inland or at urban sites have not been included in recent seabird surveys, and a number of the inland sites have been culled in recent years, generally on human health grounds. Lloyd (1991) estimated the total inland breeding population of Lesser Black-backed Gulls in Britain in the 1980s to be about 20,000 pairs.

In Ireland, far more birds breed inland than on the coast, particularly in the west of the country. Some 200 pairs were located on the islands of Upper and Lower Lough Erne in 1986. An earlier survey in 1978 found 2,500 pairs in the west of Ireland, mainly on Lough Corrib, Galway (Whilde 1978). A repeat survey in 1983 suggested little change had occurred (Whilde 1983).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Lesser Black-backed Gulls supports, on average, 88,633 pairs. This is virtually the whole of the British breeding population, and about 12% of the all-Ireland population. The suite contains about 71% of the international population (total numbers of *L. f. graellsii*), and comprises ten sites (Table 6.84.1) where Lesser Black-backed Gull has been listed as a qualifying species.

6. Classification criteria

The eight Lesser Black-backed Gulls colonies in the UK that support more than 1% of the international breeding population (Ailsa Craig; Alde – Ore Estuary; Bowland Fells; Firth of Forth Islands; Isles of Scilly; Morecambe Bay; Ribble and Alt Estuaries; and Skomer and Skokholm) were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. Additionally, Lough Neagh and Lough Beg, and Rathlin Island were both selected under Stage 1.3 (see section 5.3), with Lesser Black-backed Gull identified as an important component of wider breeding seabird assemblages at these localities.

All the sites selected are multi-species SPAs, important for a range of other birds.

The suite encompasses ten sites in Northern Ireland, England, Wales and Scotland. As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and breeding range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Lesser Black-backed Gull SPA suite

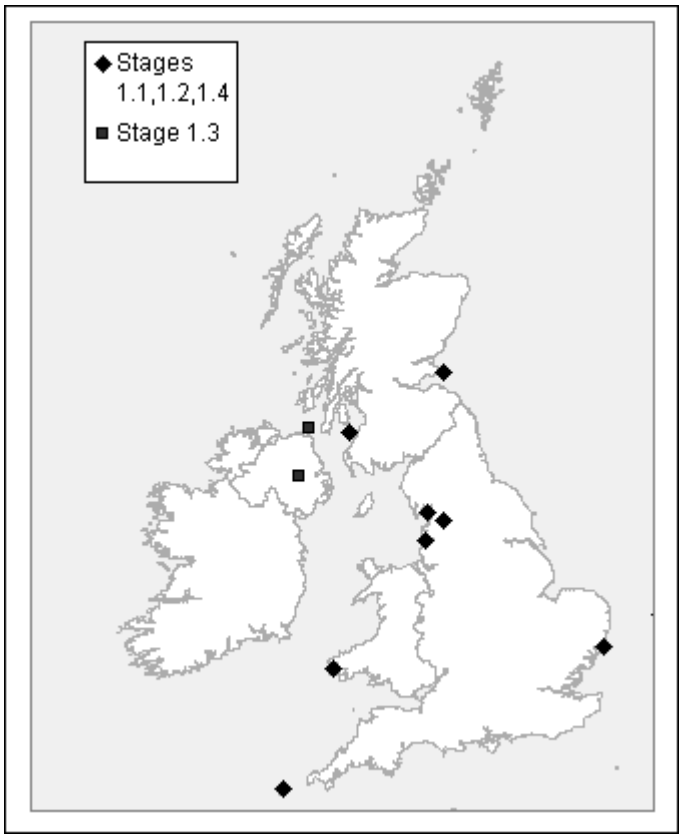


Table 6.84.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ailsa Craig	1,800	1.5	2.2	1.2
Alde – Ore Estuary	21,700	17.5	26.1	1.2
Bowland Fells	13,900	11.2	16.8	1.2
Firth of Forth Islands	2,920	2.4	3.5	1.2
Isles of Scilly	3,608	2.9	4.4	1.2
Lough Neagh and Lough Beg	450	0.4	8.7 (Ire)	1.3
Morecambe Bay	22,000	17.7	26.5	1.2
Rathlin Island	155	0.1	3.0 (Ire)	1.3
Ribble and Alt Estuaries	1,800	1.5	2.2	1.2
Skomer and Skokholm	20,300	16.4	24.5	1.2
TOTALS	88,633	71.4%	100% 11.6% (Ire)	

A6.85 Herring Gull *Larus argentatus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	160,000	1,600	50,613 (32% of GB population)
Ireland	44,700	447	4,037 (9% of all-Ireland population)
Biogeographic population	940,000	9,400	54,650 (6% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Herring Gull has a wide and complex distribution through the northern hemisphere, with three main centres: north-west Europe, including Iceland; eastern Arctic Russia from the eastern part of the Taimyr to the Bering Sea; and the northern part of North America. Herring Gull is a polytypic species with an extremely complex taxonomy[26]. The north-west European Herring Gulls are of two sub-species. The nominate race *L. a. argentatus* breeds from Denmark, through Scandinavia to the White Sea and Kola Peninsula. Birds breeding elsewhere in Europe (mainly France, Britain, Ireland, Iceland and the Low Countries) belong to the race *L. a. argenteus*. Each of the two other centres of distribution is occupied by other races of Herring Gull (Cramp & Simmons 1983).

Through most of its European range, the Herring Gull is largely a coastal breeder, although in some Baltic countries and especially in Finland and north-western Russia (Kola Peninsula) it has an extensive inland breeding distribution. The species breeds around most of the coast of the UK, being absent only from a few areas in eastern England (Gibbons *et al.* 1993).

The Herring Gull is a very adaptable and successful species. It breeds in a wide variety of habitats including steep cliffs, scree slopes, rocky outcrops and small islands, as well as beaches and inland sites such as moorland and, more recently, buildings (Cramp & Simmons 1983). The main centres of

26 "Systematics of the Herring Gull and its close relatives represent one of the most complex challenges in ornithology, and typify the discord between evolution, biogeography, reproductive isolation, and taxonomy" del Hoyo *et al.* 1996.

the breeding population are found in north-east Caithness and on the western seaboard in Argyll, Bute, Cumbria, and Down in Northern Ireland. In 1985–1987, colonies holding 4,000 or more breeding pairs were found on Inchkeith in the Firth of Forth (4,100 pairs) and, on the east coast of Ireland, on Rathlin Island (4,000 pairs), the Copeland Islands (7,000 pairs), and Lambay (5,500 pairs).

Outside the breeding season, Herring Gulls range widely in the seas around northern Europe, especially in inshore waters around the southern North Sea (including the English Channel) and the Kattegat (Stone *et al.* 1995).

4. Population structure and trends

The Herring Gull is the most numerous of the larger gulls breeding in Britain and Ireland. The European breeding population (of both *L. a. argentatus* and *L. a. argenteus*) amounts to 757,945–830,567 pairs (Hagemeijer & Blair 1997).

Within north-west Europe, Britain and Ireland has the greatest number of breeding Herring Gulls, with over 178,000 pairs or about 20% of the birds breeding in Europe (Hagemeijer & Blair 1997). Large numbers also occur in Norway (*c.* 175,000 pairs). Numbers on the coasts of the Barents and White Seas are not known but are probably between 100,000 and 200,000 (Golovkin 1984). The world population is probably almost 2 million pairs.

Overall, numbers of Herring Gulls increased in Britain at an estimated 10–13% per year from the 1940s until the mid-1970s. Many existing colonies expanded and new ones were established, and the species colonised many inland and urban sites during this period. The Herring Gull's success, like many other gull species, has been attributed to the relaxation of human persecution and new food resources such as fishing boats, rubbish tips, sewage outfalls, and fish factories. Overwinter survival may have been enhanced (Harris 1970) and some birds that fed at rubbish tips and fish docks may have bred more successfully (Davis 1974). In many areas, the availability of abundant discarded fish at sea will have resulted in increases in numbers (Hudson & Furness 1988; Camphuysen *et al.* 1995).

Lloyd *et al.* (1991) estimated that 204,000 pairs of Herring Gulls bred in Britain in 1985–1987. About half of these bred in Scotland and over 20% in England. Herring Gull numbers declined throughout all areas of Britain and Ireland between the two population censuses of 1969–1970 (which found 335,000 pairs) and 1985–1987. The major declines appeared to be in colonies in the west where numbers were estimated to have more than halved in north and west Scotland, the south-east and south-west of Ireland, Wales and south-west England (Lloyd *et al.* 1991).

In the west of Scotland, Lloyd *et al.* (1991) found the species' status to be less clear; some colonies increased after 1969 whilst others declined. By 1985–1987 however, there had been an overall decrease of between 20% and 25% in the number of pairs breeding. In the south-west of Scotland all the colonies that had held over 500 pairs in 1969–1970 either remained stable or had declined, *e.g.* Treshnish Islands, west Jura, Inchmarnock Island. Only Little Cumbrae in the Firth of Clyde had expanded from 700 pairs in 1969–1970 to 3,500 pairs in 1985–1987.

In contrast, a survey of gulls nesting in urban areas (Monaghan & Coulson 1977) found 3,000 pairs of Herring Gulls on buildings in Britain. Numbers had increased by 17% since 1969 and other records would seem to indicate that this increase continued into the 1980s. The situation is clearly complex, for there are also inland sites that show declines.

Only a few sites ran counter to the downward trend between 1969–1970 and 1985–1987. At Orfordness in Suffolk numbers grew from 150 pairs in 1969 to nearly 1,400 in 1973 (Lloyd *et al.*1991). The colony remained more or less stable until 1981 and increased again to 3,390 pairs in 1986. A census in 1993 found 3,691 pairs present (Crewe 1994) which by 1999 had reached 4,750 pairs (Cormack & Lohoar 1999). The only other places where Herring Gulls were seen to increase between 1969–1970 and 1985–1987 were in south-west Scotland (Isle of Skye to Kyle and Carrick) and on the adjacent coast of Northern Ireland. The increase in Ireland was due mainly to several large colonies on islands off the coast of Down. These increases occurred against a general decline in all other Irish colonies.

5. Protection measures for populations in UK

SPA suite

In the breeding season, the UK's SPA suite for Herring Gulls supports, on average, 54,650 pairs. This amounts to about 32% of the British breeding population and 9% of the all-Ireland population. The suite contains about 6% of the international population within 12 sites (Table 6.85.1) where Herring Gull has been listed as a qualifying species.

6. Classification criteria

The two Herring Gull colonies in the UK that support more than 1% of the international breeding population (East Caithness Cliffs and Morecambe Bay) were considered under Stage 1.2, and both were selected after consideration of Stage 2 judgements. At an additional ten sites (Ailsa Craig; Alde – Ore Estuary; Buchan Ness to Collieston Coast; Canna and Sanday; Firth of Forth Islands; Flamborough Head and Bempton Cliffs; Fowlsheugh; Rathlin Island; St Abb's Head to Fast Castle; and Troup, Pennan and Lion's Head), Herring Gull was identified as an important component of a wider breeding seabird assemblage. Accordingly, these sites were selected under Stage 1.3 (see section 5.3), after consideration of Stage 2 judgements. All sites selected are multi-species SPAs, important for a range of other seabirds.

The suite encompasses sites in Northern Ireland, both the west and east coasts of Scotland, as well as western and eastern England. Herring Gulls have a wide breeding distribution in the UK and, as the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and breeding range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Herring Gull SPA suite

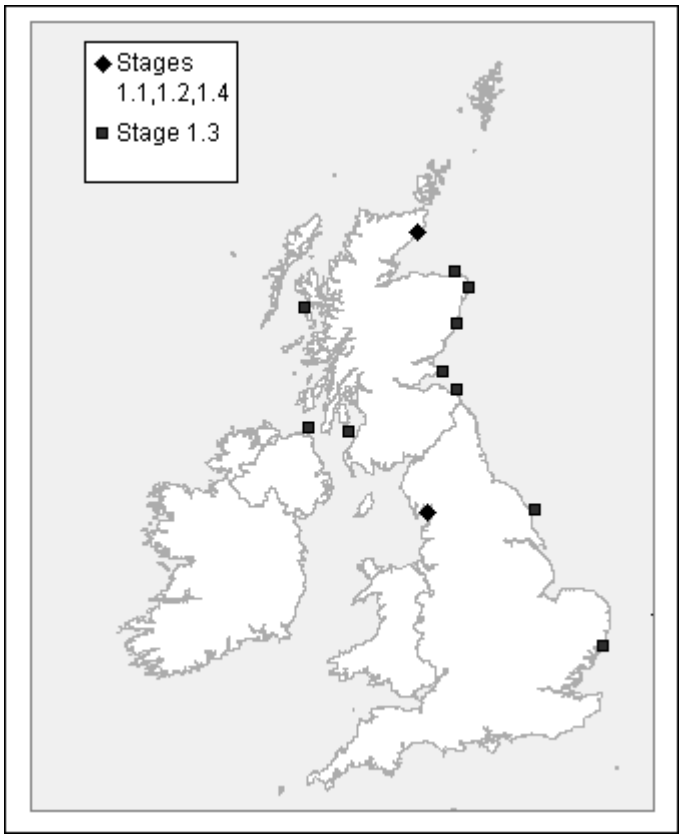


Table 6.85.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ailsa Craig	2,250	0.2	1.4	1.3
Alde – Ore Estuary	6,050	0.6	3.8	1.3
Buchan Ness to Collieston Coast	4,292	0.5	2.7	1.3
Canna and Sanday	1,391	0.2	0.9	1.3
East Caithness Cliffs	9,370	1.0	5.9	1.2
Firth of Forth Islands	6,600	0.7	4.1	1.3
Flamborough Head and Bempton Cliffs	1,110	0.1	0.7	1.3
Fowlsheugh	3,190	0.3	2.0	1.3
Morecambe Bay	11,000	1.2	6.9	1.2
Rathlin Island	4,037[27]	0.4	9.0 (Ire)	1.3
St Abb's Head to Fast Castle	1,160	0.1	0.7	1.3
Troup, Pennan and Lion's Heads	4,200	0.5	2.6	1.3
TOTALS	54,650	5.8%	31.7% 9.0% (Ire)	

27 Surveys in 1999 found a massive decline in numbers at this site with just 14 breeding pairs present.

A6.86 Great Black-backed Gull *Larus marinus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	19,000	190	4,457 (23% of GB population)
Ireland	4,500	45	No SPAs selected in Northern Ireland
Biogeographic population	95,546	955	4,457 (5% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Great Black-backed Gull is the largest and most maritime of the six *Larus* gulls that breed regularly in Britain and Ireland. Its global breeding range extends around the coasts of the North Atlantic: from Chesapeake Bay on the east coast of the USA, up the eastern coast of Canada, Greenland, Iceland, Svalbard, and the coasts of Scandinavia and the Baltic through to the White Sea. In the east Atlantic, the range extends south to include Britain, Ireland and France. The species is monotypic.

In Europe, Great Black-backed Gulls breed in Brittany and on the west coasts of Britain and Ireland. They are largely absent from southern and western coasts of the North Sea, but breed around the Baltic Sea from Estonia almost continuously to the White Sea (Cramp & Simmons 1983).

Great Black-backed Gulls breed around much of the UK coastline, from the Solent to Shetland. They are largely absent in the breeding season from the east coast of England and Scotland. In 1985–1987 around 70% of the total coastal population bred in Scotland (Lloyd *et al*. 1991). The majority of these colonies were found in Orkney, Shetland and the Western Isles. North Rona (733 pairs) was the only Scottish island outside Orkney to hold over 200 pairs (Gibbons *et al.* 1993). The remainder of the population occurred in England – mainly the south-west (7%), and Wales (2%). Only two of the Irish colonies recorded in 1985–1987 held over 200 pairs: Duvillaun Islands off Mayo and a site in the Blasket Islands off Kerry. Other smaller colonies were found in Donegal, Dublin, Cork, Galway and Wexford.

Great Black-backed Gulls are generally coastal breeders nesting on islands or on top of rocky stacks. A small number of gulls nest inland on moorland or beside lochs.

Outside the breeding season, Great Black-backed Gulls range widely in the seas around northern Europe, especially inshore waters around the North Sea (Stone *et al.* 1995).

4. Population structure and trends

The European breeding population of Great Black-backed Gulls is estimated at between 95,546–121,233 pairs (Hagemeijer & Blair 1997). As the species is monotypic the minimum figure of this range is considered as the biogeographical population for the purposes of this review.

The total breeding numbers of Great Black-backed Gulls in Russia and Iceland are not known with any precision, but the world population was estimated by Lloyd *et al.* 1991 as between 120,000–240,000 pairs. In 1985–1987, the British population was estimated at 19,000 pairs and the Irish population at 4,500 pairs (Lloyd *et al*. 1991). The combined British and Irish total of 23,500 pairs represents about 25% of the estimated European population and around 10% of the world population.

From near elimination in the 19th century, there was a strong and widespread increase in the British and Irish populations. The trend began around 1880 and continued for most of the 20th century (Parslow 1967). This reflected a more general spread and increase during the 20th century over most of the species' range on both sides of the Atlantic, although the breeding populations of Britain and Ireland appeared to be stable by the 1970s and 1980s (Cramp *et al.*1983). Great Black-backed Gulls colonised Svalbard, Denmark and France in the 1920s and 1930s and have recently spread north to the North West Territories of Canada (Brown & Nettleship 1984). One large increase occurred at the colony on Ainov Island in the Barents Sea which grew tenfold between 1958 and 1984 to 6,000 pairs (Golovkin 1984). The largest North American colony, off Long Island, New York, held over 2,000 pairs in 1983 (Buckley & Buckley 1984). By comparison, the largest Great Black-backed Gull colony in Britain and Ireland was the Calf of Eday, Orkney with 800 pairs in 1986.

The reasons for this expansion are unclear but there could be a number of factors, including the enactment of bird protection measures at the end of the 19th century which helped to ease the persecution and egg collecting that had formerly kept numbers of Great Black-backed Gulls and other seabirds low. The greater availability of discarded fish and offal at sea (Hudson & Furness 1988; Camphuysen *et al.* 1995) and access to food at landfill sites have probably also helped cause the increase.

Great Black-backed Gull numbers in Britain and Ireland appeared to have altered little between 1969–1970 (22,500 pairs) and 1985–1987 (23,300 pairs) although the latter total includes a possible census error (Lloyd *et al.* 1991). Small declines occurred in the north of Scotland and the Channel Islands, whereas there were small increases in Northern Ireland, Cumbria and the Isle of Man. The few colonies in north-west Ireland counted in both 1969–1972 and 1986–1987 showed increases of 60–70%, but this figure is based on a very incomplete set of data. Breeding pairs on the Isles of Scilly varied from 1,200 to 1,600 pairs between 1969 and 1983, but declined to 1,000 pairs by 1987 (Birkin & Smith 1987). The small Welsh breeding population declined by more than half between 1969 and 1983. The main losses were in the colonies of Midland, Skomer and St Margaret's; each had over 100 pairs in 1969 but these had reduced to between 20–40 pairs in 1985–1987 (Lloyd *et al.* 1991).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Great Black-backed Gulls supports, on average, 4,457 pairs. This amounts to about 23% of the British breeding population, and about 5% of the international population. Within an all-Ireland context, there have been no SPAs selected in Northern Ireland. The SPA suite contains six sites (Table 6.86.1) where Great Black-backed Gull has been listed as a qualifying species.

6. Classification criteria

No Great Black-backed Gull colonies in the UK hold more than 1% of the international breeding population. At six sites (Calf of Eday; Copinsay; East Caithness Cliffs; Hoy; Isles of Scilly; North Rona

and Sula Sgeir) however, Great Black-backed Gull occurs as an important component of a wider breeding seabird assemblage. Accordingly, these six sites were selected under Stage 1.3 (see section 5.3), after consideration of Stage 2 judgements. By definition, all these sites are multi-species SPAs, important for a range of other seabirds. There is a very long history of occupation at some of the selected SPAs (Holloway 1996), with written records for some colonies dating from the 19th century.

The suite encompasses sites in northern Scotland as well as south-west England. Outside the SPA suite, Great Black-backed Gulls generally occur at low densities and are widely distributed. Accordingly, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Great Black-backed Gull SPA suite

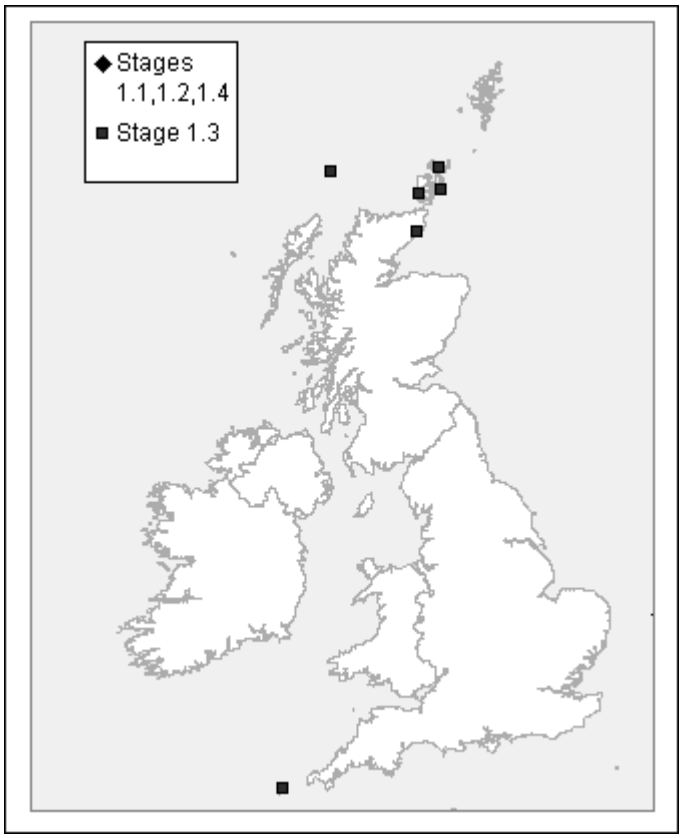


Table 6.86.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Calf of Eday	938	0.9	4.9	1.3
Copinsay	600	0.6	3.2	1.3
East Caithness Cliffs	850	0.9	4.5	1.3
Hoy	570	0.6	3.0	1.3
Isles of Scilly	766	0.8	4.0	1.3
North Rona and Sula Sgeir	733	0.8	3.9	1.3
TOTALS	4,457	4.7%	23.5%	

A6.87 Kittiwake *Rissa tridactyla* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	490,000	4,900	383,775 (78% of GB population)
Ireland	50,200	502	6,822 (14% of all-Ireland population)
Biogeographic population	3,170,000	31,700	390,597 (12% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Kittiwake has a circumpolar distribution throughout the temperate and Arctic zones of the northern hemisphere. Breeding colonies are found on both sides of the Atlantic from the Gulf of St. Lawrence to Portugal, from the southern Kuril Islands to Greenland and the high Arctic islands of the Arctic Ocean. Kittiwakes are polytypic, with two sub-species described. The nominate race *R. t. tridactyla* occurs in its North Atlantic range, whilst another sub-species occurs throughout the North Pacific.

The Kittiwake is a colonial breeding seabird and occurs discontinuously along the shores of north-west Europe, from the coasts of Portugal and Galicia (north-west Spain) in the south, through Brittany (France), Ireland and Britain, Iceland and along Scandinavian coasts to the Kola Peninsula. In the UK, Kittiwakes occur on most coasts, although there are few colonies on the south and east coasts of England.

The steep sea cliffs favoured for nesting are often shared with other seabirds, particularly Guillemot, and include some of the most impressive seabird colonies in Britain. Hence, a high percentage of the British Kittiwake population nests in northern Scotland and along the North Sea coast south to East Yorkshire. Smaller colonies are widespread but are often separated by long stretches of unoccupied coast. From Lincolnshire around to Dorset, there are few colonies, generally reflecting a shortage of suitable cliff sites. At Lowestoft, Suffolk, old buildings and a pier are used as nesting sites. At Sizewell, another Suffolk site, birds have colonised the offshore rigs associated with the cooling system of the nearby nuclear power station (Crewe 1998).

Outside the breeding season, Kittiwakes range widely in the seas around northern Europe. Between November and March they occur especially in offshore areas, although at other times of the year they move closer inshore to feed (Stone *et al.* 1995).

4. Population structure and trends

A total of 540,200 pairs breed in Britain and Ireland (50,200 in Ireland, 490,000 in Britain). This combined total represents about 31% of total numbers in Europe. In many parts of the Kittiwake's range, precise breeding numbers are unknown, but it seems likely that at least half the world population breed in Svalbard, Iceland and the Faeroe Islands (Lloyd *et al.* 1991). Together, these areas probably support three million breeding pairs with a further 1,250,000 breeding in Alaska.

The Bempton-Flamborough cliffs hold possibly the largest colony (83,700 pairs in 1986) in the North Atlantic (Lloyd *et al.* 1991). Other colonies holding over 10,000 breeding pairs include Handa (Sutherland), Fair Isle (Shetland), St Abb's Head (Borders) and Fowlsheugh (Grampian).

Along with many other seabird species, the Kittiwake began to expand its range after protection measures came into force at the beginning of the 20th century. There was a range extension southwards between the late 1930s and the 1970s. Over this period, Kittiwakes colonised Denmark, Sweden and more recently Spain and Portugal. They have recolonised Helgoland (Germany) and spread south into France (Cramp *et al*. 1983). Breeding numbers have probably increased throughout the species' range during the 20th century though there are signs that this is slowing in Alaska, Denmark, the Faeroe Islands, Britain and Ireland (Lloyd *et al.* 1991).

The first complete census of Kittiwakes was made in 1969–1970 and the results showed that the total population for Britain and Ireland was in excess of 400,000 pairs with 75% of these birds nesting on the east coast and in Shetland and Orkney (Cramp *et al*. 1974). In that period the large Bempton-Flamborough, Yorkshire colonies held 30,800 pairs.

The second complete census of Kittiwakes was in 1985–1987. An outline of the census results is given by (Lloyd *et al*.1991). Then 540,000 Kittiwakes were nesting in Britain and Ireland. Of these, 70% bred in Scotland and about 25% in England, Wales, the Channel Islands and the Isle of Man. Less than 10% were found in Ireland. Overall, the entire breeding population had increased by about 20% between 1969 and 1987 with major changes only in limited areas. Numbers in Scotland remained stable overall because declines in places like Orkney, the Moray Firth, and Dumfries and Galloway were offset by increases in all other areas. In Ireland, some coastline in Donegal was not surveyed in 1985–1987, but allowing for this, numbers still showed a decline in north-west Ireland between 1969–1970 and 1985–1987. In contrast, on the east coast and particularly Antrim, colonies showed an increase, so that the overall situation in Ireland was a stable population. In England, the huge Bempton-Flamborough colonies showed little growth with an increase of only 2% per annum being recorded – the slowest since 1950. Other colonies in England and Wales, however, showed growth of about 8% a year over the same period.

Coulson (1983) suggested that food availability during the breeding season was probably the most likely factor behind regional fluctuations in population status. The implication was that food stocks were highest on the North Sea coast but even here, changes in fish stocks may be having an adverse affect on Kittiwakes. A North Shields colony studied by Coulson & Thomas (1985) recorded a gradual decline in Kittiwake numbers, breeding success and adult survival, which paralleled a decline in North Sea herring stocks. In Shetland, there is strong evidence that Kittiwake decline is linked to sandeel availability (Monaghan 1992; Hamer *et al.* 1993), although skua predation is also a significant factor (Heubeck *et al.* 1999).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Kittiwake supports, on average, 390,597 pairs. This amounts to about 78% of the British breeding population, and about 14% of the all-Ireland population. The suite contains about 12% of the international (North Atlantic) population. The SPA suite total is contained within 33 sites (Table 6.87.1) where Kittiwakes are a qualifying species.

6. Classification criteria

The three Kittiwake colonies in the UK that support more than 1% of the international breeding population (East Caithness Cliffs; Flamborough Head and Bempton Cliffs; and Fowlsheugh) were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. At an additional 30 sites (Table 6.87), Kittiwake was identified as an important component of a wider breeding seabird assemblage. Accordingly, all these sites were selected under Stage 1.3 (see section 5.3), after consideration of Stage 2 judgements. All sites selected are multi-species SPAs, important for a range of other seabirds. A number have a very long history of occupancy with written records from at least the latter part of the 19th century (Holloway 1996).

The suite encompasses sites in Northern Ireland, the west, north and east coasts of Scotland, as well as south-west Wales and eastern England, and thus spread throughout the breeding range of the Kittiwake. As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the population and breeding range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Kittiwake SPA suite

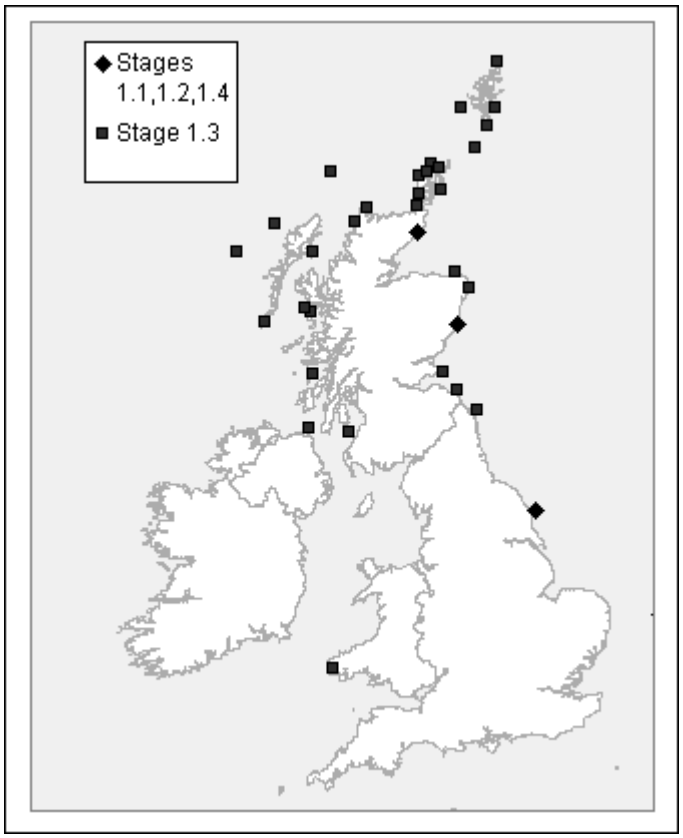


Table 6.87.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ailsa Craig	3,100	0.1	0.6	1.3
Buchan Ness to Collieston Coast	30,452	0.96	6.2	1.3
Calf of Eday	1,717	<0.1	0.4	1.3
Canna and Sanday	1,193	<0.1	0.2	1.3
Cape Wrath	9,660	0.3	2.0	1.3
Copinsay	3,610	0.1	0.7	1.3
East Caithness Cliffs	31,930	1.0	6.5	1.2
Fair Isle	9,660	0.3	2.0	1.3
Farne Islands	6,236	0.2	1.3	1.3
Firth of Forth Islands	9,380	0.3	1.9	1.3
Flamborough Head and Bempton Cliffs	83,370	2.6	17.0	1.2
Flannan Isles	2,800	<0.1	0.6	1.3
Foula	3,840	0.1	0.8	1.3
Fowlsheugh	34,870	1.1	7.1	1.2
Handa	7,420	0.2	1.5	1.3
Hermaness, Saxa Vord and Valla Field	1,710	<0.1	0.4	1.3
Hoy	3,000	<0.1	0.6	1.3
Marwick Head	7,110	0.2	1.5	1.3
Mingulay and Berneray	8,610	0.3	1.8	1.3
North Caithness Cliffs	15,650	0.5	3.2	1.3
North Colonsay and Western Cliffs	4,512	0.1	0.9	1.3
North Rona and Sula Sgeir	5,040	0.2	1.0	1.3
Noss	4,270	0.1	0.9	1.3
Rathlin Island	6,822	0.2	13.6 (Ire)	1.3
Rousay	4,900	0.2	1.0	1.3
Rum	1,500	<0.1	0.3	1.3
Shiant Isles	1,850	<0.1	0.4	1.3
Skomer and Skokholm	1,959	<0.1	0.4	1.3
St Abb's Head to Fast Castle	19,600	0.6	4.0	1.3
St Kilda	7,800	0.3	1.6	1.3
Sumburgh Head	1,366	<0.1	0.3	1.3
Troup, Pennan and Lion's Heads	31,660	1.0	6.5	1.3
West Westray	24,000	0.8	4.9	1.3
TOTALS	390,597	12.3%	78.3% 13.6% (Ire)	

A6.88a Sandwich Tern *Sterna sandvicensis* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**declining**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	14,000	140	10,107 (72% of GB population)
Ireland	4,400	44	1,333 (30% of all-Ireland population)
Biogeographic population	132,000	1,320	11,440 (9% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Sandwich Tern has a restricted global distribution encompassing Europe (including the Caspian Sea), the east coast of North America, the Caribbean and eastern South America. The species is polytypic, and of the three races recognised, only the nominate sub-species *S. s. sandvicensis* occurs in Europe (Cramp *et al.* 1974).

The European breeding distribution of Sandwich Tern stretches from north-west Europe from western France to the Baltic, as well as in scattered traditional localities around the coasts of the northern Mediterranean, Black and Caspian Seas (Hagemeijer & Blair 1997). After the end of the breeding season, European breeding Sandwich Terns move south to winter along the western and southern coasts of Africa, and the southern coasts of East Africa.

British colonies are very scattered and mostly confined to coastal shingle beaches, sand dunes and offshore islets. In a few places, small islets in coastal freshwater bodies are used. The largest colonies are on the east coast of Britain, especially north-east England and East Anglia, with smaller but important colonies in north Wales, north-west England, north-east Scotland and Northern Ireland (Ratcliffe *et al.* 2000). Migration between more southerly wintering areas and UK breeding colonies occurs in spring and autumn with significant numbers of birds passing through inshore waters and some estuarine areas (Stone *et al.* 1995; see also section A6.88b).

Feeding takes place mainly in inshore coastal waters and within a few kilometres of the colonies, but much longer distances may be travelled, up to 70 km (Cramp *et al.* 1974).

4. Population structure and trends

The Great Britain population of Sandwich Terns is 14,000 pairs with a further 4,400 pairs around the whole of Ireland (Ratcliffe *et al.* 2000). They breed in colonies varying from less than 10 to c. 4,000 pairs. These populations form part of the European biogeographic population of 132,000 pairs (Hagemeijer & Blair 1997).

Assessing trends in the numbers of breeding Sandwich Terns and the reasons for any changes is made harder by the occurrence of marked fluctuations in numbers at individual colonies, as well as the desertion of some sites and the establishment of new ones. In common with other terns, the colonies of this species appear to fluctuate significantly, apparently linked to changes in numbers at adjacent colonies (Lloyd *et al.* 1991). The main identifiable causes of colony change appear to be loss of habitat – when nesting beaches or islets are washed away – and predation, especially persistent predation, by Foxes *Vulpes vulpes* for example. Some of the newly formed colonies have been established on nature reserves, especially those where predator control is exercised.

The two national seabird censuses, in 1969–1970 and 1985–1987, covering Britain and Ireland, were considered reasonably complete for this species and found 12,000 pairs and 18,400 pairs respectively (Cramp *et al.* 1974; Lloyd *et al.* 1991). Most recent data since the 1985–1987 survey indicate continuing declines at many sites over the last ten years (Thompson *et al.* 1999). Cramp *et al.* (1974) considered that the population in 1969–1970 was higher than at any time in the previous 70 years, with a marked overall increase since the first available counts in 1920.

Between 1969–1970 and 1985–1987, colonies on the south and east coast of Britain increased, while those in the north and west decreased. Changes since 1985–1987 have continued that general trend and have involved the complete desertion of former large colonies in the north, and further declines in Northern Ireland, with some further growth elsewhere (Thompson *et al.* 1999).

It is clear from limited data that numbers in other countries of Europe also fluctuate greatly. Evidence from ringing indicates movement of birds between different parts of the range with first-time breeders regularly nesting at considerable distances from their natal colony and experienced breeders changing colony site (Cramp 1985).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Sandwich Terns supports, on average, 11,440 pairs. This amounts to about 72% of the British breeding population, about 30% of the all-Ireland population and about 9% of the international population. The SPA suite contains 16 sites (Table 6.88a.1) where Sandwich Terns are a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national Sandwich Tern breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite are distributed throughout the breeding range of the population in the UK, and cover major population centres, from sites on the east coast of Scotland, to the west, east and south coasts of England, and three sites in Northern Ireland. All sites are multi-species SPAs, of importance also for a range of other breeding seabirds. There is a very long recorded history of occupancy at some of these SPAs with records from the 19th century for a few sites (Holloway 1996). However, the historical impacts of disturbance, habitat change and, in the 19th century, persecution, mean that the exact locations of many colonies have changed.

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes the main population centres of breeding Sandwich Terns throughout their UK distribution, there was no need to consider additional sites for selection under Stage 1.4

Distribution map for breeding Sandwich Tern SPA suite

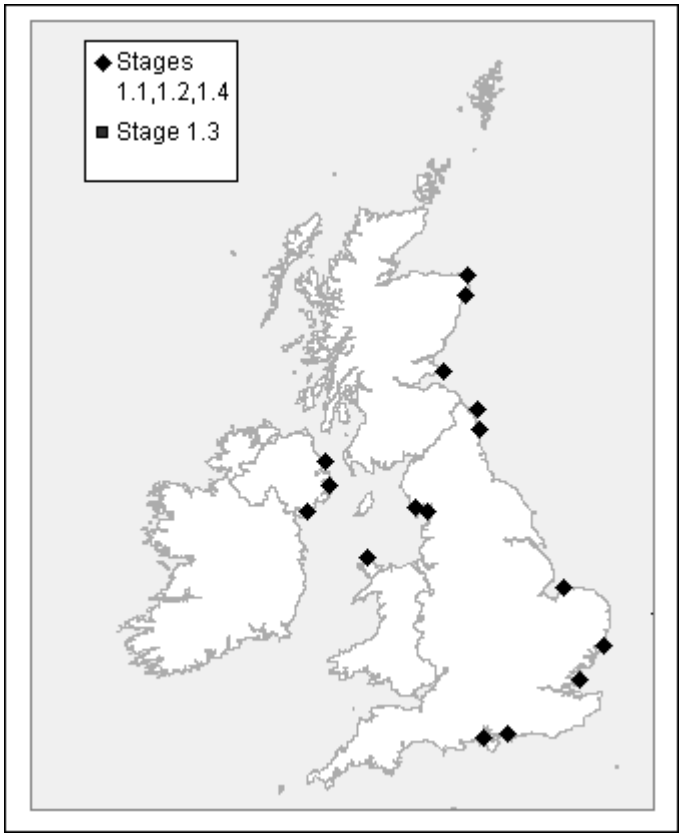


Table 6.88a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	169	0.1	1.2	1.1
Carlingford Lough	575	0.4	13.1 (Ire)	1.1
Chichester and Langstone Harbours	158	0.1	1.1	1.1
Coquet Island	1,590	1.2	11.4	1.1
Duddon Estuary	210	0.2	1.5	1.1
Farne Islands	2,070	1.6	14.8	1.1
Firth of Forth Islands	22	<0.1	0.2	1.1
Foulness	320	0.2	2.3	1.1
Larne Lough	165	0.1	3.8 (Ire)	1.1
Loch of Strathbeg	530	0.4	3.8	1.1
Morecambe Bay	290	0.2	2.1	1.1
North Norfolk Coast	3,457	2.6	24.7	1.1
Solent and Southampton Water	231	0.2	1.7	1.1
Strangford Lough	593	0.5	13.5 (Ire)	1.1
Ynys Feurig, Cemlyn Bay and The Skerries	460	0.4	3.3	1.1
Ythan Estuary, Sands of Forvie and Meikle Loch	600	0.5	4.3	1.1
TOTALS	11,440	8.7%	72.2% 30.3% (Ire)	

A6.88b Sandwich Tern *Sterna sandvicensis* (passage)

1. Status in UK

See section A6.88a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	42,000	420	4,619 (11% of GB population)
Ireland	13,200	132	No SPAs selected in Northern Ireland
Biogeographic population	396,000	3,960	4,619 (1% of biogeographic population)

GB population source: derived from Lloyd et al. *1991*
All-Ireland population source: derived from Gibbons et al. *1993*
Biogeographic population source: derived from Hagemeijer & Blair 1997

3. Distribution

See section A6.88a.

4. Population structure and trends

The number of Sandwich Terns occurring on passage in Britain and Ireland in the immediate post-breeding period – late July and August – depends first on breeding success, which shows marked annual variations, and secondly on the degree of movement between Britain and Ireland and other parts of the biogeographic range. Ringing has shown that on leaving the breeding colonies, birds move both south and north within Britain and Ireland and that there is also interchange between British and Dutch colonies (Cramp *et al*. 1990). Migration proper starts in September.

In spring, northward migration occurs through British and Irish waters, although there are fewer data for this period. In March and April, Sandwich Terns are particularly concentrated along the shores of the southern North Sea (Stone *et al.* 1995)

There are no data with which to assess trends in the numbers of passage Sandwich Terns. Counts away from the breeding colonies have only been made since 1994, when the species was included in the WeBS counts, with data available up to 1998 (Pollitt *et al.* 2000). A late summer peak count of *c.* 8,000 was reached in each of the first three seasons, falling to 5,700 in 1997 and rising to 6,900 in 1998.

There are no relevant data from elsewhere in the range.

5. Protection measures for population in UK

SPA suite

In the post-breeding season, the UK's SPA suite for Sandwich Terns supports, on average, 4,619 individuals. This amounts to about 11% of the British post-breeding population, and about 1% of the international population – although estimation of relative proportions in migration periods is always problematic owing to the high degree of turnover at sites (Moser & Carrier 1983; Frederiksen *et al.* 2001). In an all-Ireland context, no sites have been identified for Sandwich Terns during passage periods. The SPA suite contains three sites (Table 6.88b.1) where Sandwich Tern has been listed as a qualifying species.

6. Classification criteria

All of the sites in the UK that are currently known to support more than 1% of the national Sandwich Tern post-breeding population were considered under Stage 1.1, and all (Firth of Forth; Teesmouth and Cleveland Coast; and The Dee Estuary) were selected after consideration of Stage 2 judgements. As noted in section 5.6.5, knowledge of numbers of terns and other waterbirds is generally poor for migration periods and it is possible that additional sites of importance have yet to be identified.

Distribution map for passage Sandwich Tern SPA suite

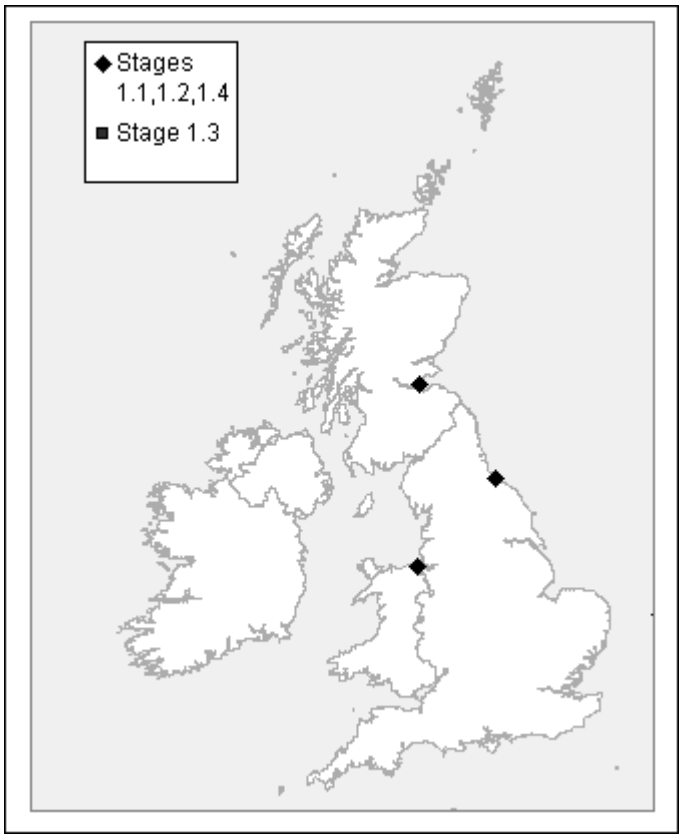


Table 6.88b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Firth of Forth	1,611	0.4	3.8	1.1
Teesmouth and Cleveland Coast	2,190	0.6	5.2	1.1
The Dee Estuary	818	0.2	1.9	1.1
TOTALS	4,619	1.2%	11.0%	

A6.89 Roseate Tern *Sterna dougallii*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**endangered**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Endangered**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	64	1	50 (88% of GB population)
Ireland	400	4	6 (1% of all-Ireland population)
Biogeographic population	1,770	18	56 (3% of biogeographic population)

GB population source: Stone et al. *1997*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The global distribution of Roseate Tern comprises a number of discrete ranges, with breeding occurring around the edges of the North Atlantic, Indian and south-west Pacific Oceans. The species is polytypic with five described races (Rose & Scott 1997). The nominate sub-species *S. d. dougallii* breeds around the Atlantic Ocean and Caribbean, from the eastern USA to western European coasts and including a discrete population in South Africa. The other four sub-species occur in the Indian and Pacific Oceans (Cramp 1985; Rose & Scott 1997).

In Europe, the breeding population is confined to Britain, Ireland and France (Brittany), as well as the Azores (del Nevo *et al.* 1993). After nesting these birds move south to winter off the coast of western Africa as far as the Gulf of Guinea (Cramp 1985), an area that has enormous resources of small fish and so attracts large numbers of terns during the northern winter.

Currently, the main British colonies are in eastern Scotland, north-eastern England, and north Wales. The Irish colonies are all now on the east coast, from Northern Ireland to the extreme south-east of the Irish Republic. Thirty years ago, the species was more widespread, with colonies in Orkney, western Scotland, southern England and south-west and north-west Ireland.

Breeding takes place on the coast, with colonies established on sand-spits and dunes, shingle beaches and low rocky islets. Inshore waters are used for feeding on small fish.

4. Population structure and trends

Eight biogeographical populations of Roseate Terns have been described (Rose & Scott 1997). Those occurring in Britain belong to the European breeding population (which overwinters along the coast of the Gulf of Guinea).

The breeding population in Britain and Ireland was close to elimination at the beginning of the 19th century, but protection, especially against killing for the millinery trade, brought about a recovery to an estimated peak population of *c.* 3,500 pairs in the mid-1960s (Avery & del Nevo 1991). The population then went into decline and by the time of the first census, in 1969–1970, a total of 2,392 pairs was counted: 691 in Great Britain and 1,701 in Ireland (Cramp *et al.* 1974). The second census, in 1985–1987, revealed a total of only 470, with 133 in Great Britain and 337 in Ireland (Lloyd *et al.* 1991). Since then, the decline in Great Britain has continued, but there has been some recovery in Ireland, the latest available total being 661 pairs in 1998 (Thompson *et al.* 1999).

Similar long-term declines have also taken place at French breeding colonies, as well as in the Azores, where numbers have declined from 1,120 pairs to 750 pairs (Hagemeijer & Blair 1997). There is evidence from ringing in Britain, Ireland and France that a proportion of Roseate Terns move between colonies, breeding at sites other than those at which they were reared (Avery & del Nevo 1991).

The single largest cause of the sharp decline in numbers in Britain and Ireland was the disappearance, following storms in the 1970s, of a sandy island in Wexford Harbour, south-east Ireland, where up to 2,000 pairs nested. Only some of these birds appeared to relocate, to a new colony in Lady's Island Lake. The underlying reasons for the continued decline, however, have been more widespread problems of predation and disturbance at the colonies, and – probably of even greater importance – the killing of large numbers on the wintering grounds in West Africa (Everett *et al.* 1987).

5. Protection measures for population in the UK

SPA suite

In the breeding season, the UK's SPA suite for Roseate Terns supports, on average, 56 pairs. This amounts to about 88% of the British breeding population, about 1% of the all-Ireland population, and about 3% of the international population. The SPA suite contains seven sites (Table 6.89.1) where Roseate Tern has been listed as a qualifying species.

Other measures

International action is being taken to conserve the species at breeding colonies in Ireland, France and the Azores and on the wintering grounds in West Africa (Avery & del Nevo 1991). A Biodiversity Action Plan has been published for this species (Biodiversity Steering Group 1998) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

All seven sites in the UK that were known to support more than 1% of the national Roseate Tern breeding population were considered under Stage 1.1, and all (Coquet Island; Farne Islands; Firth of Forth Islands; Larne Lough; North Norfolk Coast; Solent and Southampton Water; and Ynys Feurig, Cemlyn Bay and The Skerries) were selected after consideration of Stage 2 judgements.

The sites within the suite include most regular breeding localities in the UK, including all major sites in Northern Ireland, north Wales, Scotland, and England. All these sites are multi-species SPAs, of importance also for a range of other breeding seabirds. There is a very long recorded history of occupancy at many of these sites with some records dating from the 19th century (Holloway 1996).

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes all the main population centres of breeding Roseate Terns in the UK, there was no need to consider additional sites for selection under Stage 1.4.

Distribution map for Roseate Tern SPA suite

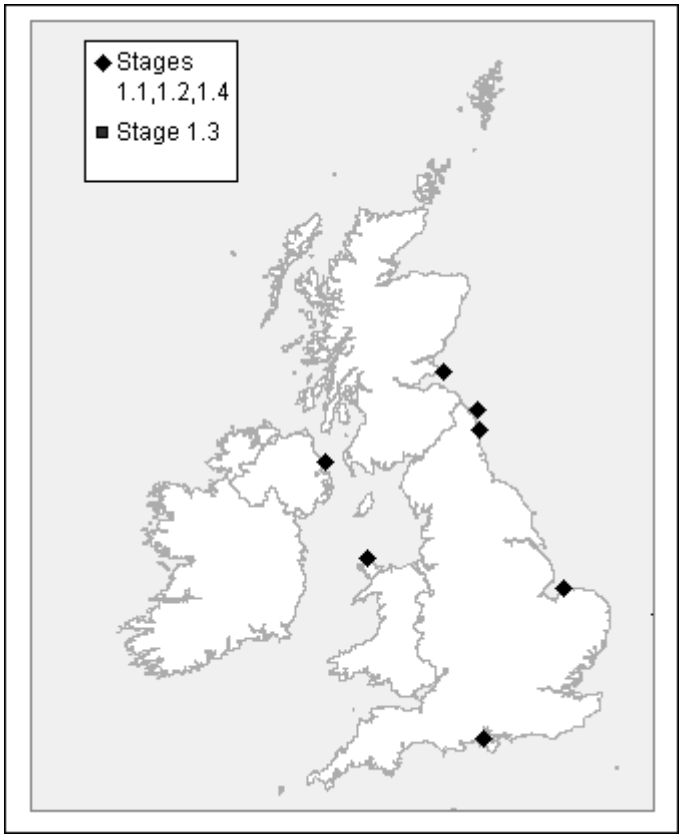


Table 6.89.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Coquet Island	31	1.8	48.4	1.1
Farne Islands	3	0.2	4.7	1.1
Firth of Forth Islands	9	0.5	14.1	1.1
Larne Lough	6	0.3	1.5 (Ire)	1.1
North Norfolk Coast	2	0.1	3.1	1.1
Solent and Southampton Water	2	0.1	3.1	1.1
Ynys Feurig, Cemlyn Bay and The Skerries	3	0.2	4.7	1.1
TOTALS	56	3.2%	88% 1.4% (Ire)	

A6.90 Common Tern *Sterna hirundo*

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	12,300	123	5,686 (46% of GB population)
Ireland	3,100	31	1,307 (42% of all-Ireland population)
Biogeographic population	195,105	1,950	6,993 (4% of biogeographic population)

GB population source: Gibbons et al. *1993*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Common Tern is a common and widespread breeding species of both coastal and inland regions in the northern hemisphere, especially at temperate and boreal latitudes. Its range extends south almost to the equator in West Africa and northern South America. The Common Tern is a long-distance migrant and winters mainly in the southern hemisphere. The species is polytypic and four sub-species have been described. Birds breeding in Europe belong to the nominate race *S. h. hirundo,* the range of which extends from eastern North America to western Siberia. Three other sub-species occur in Asia (Cramp 1985).

The European distribution of Common Tern is very scattered in the west, but much more continuous in Russia, Ukraine and Belarus. It breeds in virtually all countries (other than Portugal), with the inland distribution generally confined to major river systems.

A significant proportion of the British population breeds in Scotland, particularly in the northern and western Isles and on the west coast, but with sizeable colonies also along the east coast firths. Common Terns also commonly breed inland on riverine shingle and islands, not only in Scotland but also in England. Coastal colonies in England are mainly concentrated in the north-east, East Anglia, at a few localities along the south coast, and in the north-west. The only Welsh colonies are on Anglesey. Inland breeding takes place mainly in eastern Scotland and in central, eastern and southern England. Colonies in Ireland are well spread around the coasts, with scattered inland breeding through the midlands.

Common Terns breed around coasts and beside inland freshwater bodies. Coastal sites are mainly small rocky islets, shingle beaches, sand-spits and dunes, as well as among short vegetation (occasionally more scrubby growth). Inland sites include shingle banks in rivers, islands in lakes and gravel pits, marshes and shallow lagoons. More artificial sites, including waste ground, specially made floating rafts and even gravel-covered flat-roofs, are occasionally used.

Most feeding takes place within 3–10 km of the colony, but greater distances, up to 37 km or even "some scores" of km have been recorded (Cramp *et al.* 1974).

4. Population structure and trends

The European breeding population of Common Terns is estimated at between 195,105–227,250 pairs (Hagemeijer & Blair 1997), and the minimum of this range is the biogeographic population used in this review. The British population of 12,300 pairs is spread over 200 colonies ranging in size from under ten pairs to over 1,000. There are more than 50 further colonies in Ireland, totalling 3,100 pairs.

Information on numbers of Common Terns breeding in Britain and Ireland prior to the first census in 1969–1970 is very patchy and restricted to counts at a few colonies, which show no clear trend, though there is some evidence for a population peak in the 1930s (Cramp *et al.* 1974). In 1969–1970, there were an estimated 14,900 pairs breeding in Britain and Ireland, of which 10,800 were in Great Britain and 4,100 in the whole of Ireland. The total in the second census in 1985–1987 was very similar at 14,700, though the country totals were different, with 12,000 in Great Britain and 2,700 in Ireland (Lloyd *et al.* 1991). Within Britain, there had been a shift northwards with numbers in Scotland increasing from 4,300 to 6,200 pairs while numbers in England and Wales declined from 6,500 to 5,750. The other change during this period was an increase in inland nesting, both in Great Britain and in Ireland.

Limited information from elsewhere in the biogeographic range suggests some declines, *e.g.* in The Netherlands attributed partly to organochlorine pollution of the Rhine (Hagemeijer & Blair 1977), but otherwise fairly stable populations. Ringing suggests only limited interchange between colonies, and then probably by first-time breeders over short distances. Adults are very faithful to their breeding colonies (Cramp 1985).

Declines in specific colonies in Britain and Ireland, with some complete losses, can mostly be put down to habitat changes, *e.g.* coastal developments and increased disturbance, especially recreational, although as with all terns birds can desert breeding colonies for behavioural reasons, resettling again after a period of time. Riverine management has destroyed many former nesting sites on ephemeral shingle banks, but such inland sites have more than been replaced by gravel pits etc. Use of gravel pits, however, is affected by the often transitory nature of suitable habitats. Predation is a problem in some areas, especially where North American Mink *Mustela vison* have become well established, *e.g.* western Scotland (Craik 1995, 1997).

5. Protection measures for population in the UK

SPA suite

In the breeding season, the UK's SPA suite for Common Terns supports, on average, 6,993 pairs. This amounts to about 46% of the British breeding population, and about 42% of the all-Ireland population. The suite of 22 sites (Table 6.90.1) contains about 4% of the international population.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national Common Tern breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite are distributed throughout the UK breeding range and cover the major population centres, including sites in Northern Ireland, North Wales, both the west and east coasts of Scotland, as well as the west, east and south coasts of England. Most sites are multi-species SPAs, of importance also for a range of other breeding seabirds, although Glas Eileanan in the Sound of Mull has been selected solely for its importance for breeding Common Terns. There is a very long recorded history of occupancy at many of these SPAs with records from the 19th century for many sites (Holloway 1996).

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes the main population centres of breeding Common Terns throughout their UK distribution, there was no need to consider additional sites for selection under Stage 1.4

Distribution map for breeding Common Tern SPA suite

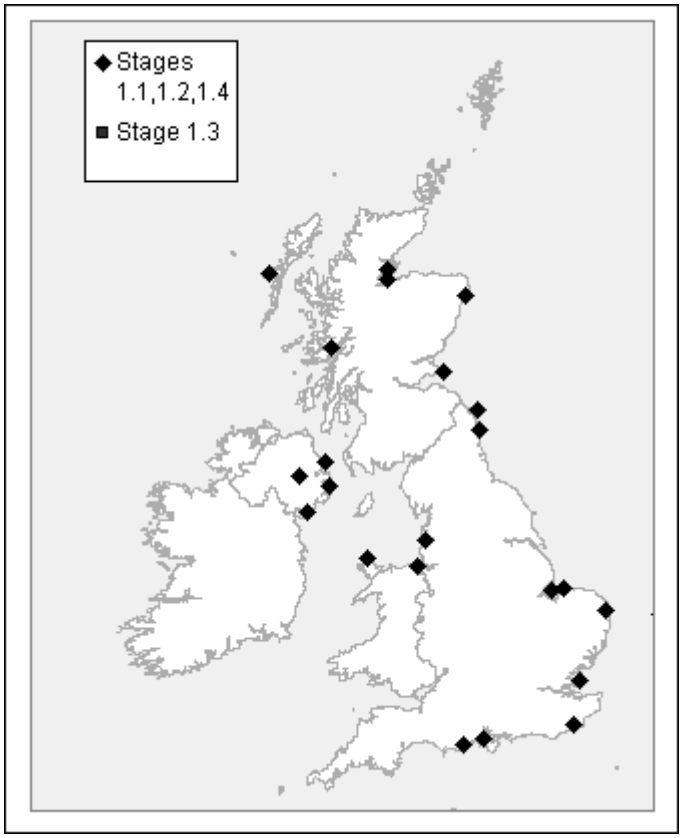


Table 6.90.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Breydon Water	155	0.1	1.3	1.1
Carlingford Lough	339	0.2	10.9 (Ire)	1.1
Coquet Island	740	0.4	6.0	1.1
Cromarty Firth	294	0.2	2.4	1.1
Dungeness to Pett Level	266	0.1	2.2	1.1
Farne Islands	230	0.1	1.9	1.1
Firth of Forth Islands	800	0.4	6.5	1.1
Foulness	220	0.1	1.8	1.1
Glas Eileanan	530	0.3	4.3	1.1
Inner Moray Firth	310	0.2	2.5	1.1
Larne Lough	180	0.1	5.8 (Ire)	1.1
Lough Neagh and Lough Beg	185	0.1	6.0 (Ire)	1.1
Monach Isles	194	0.1	1.6	1.1
North Norfolk Coast	460	0.2	3.7	1.1
Poole Harbour	155	0.1	1.3	1.1
Ribble and Alt Estuaries	182	0.1	1.5	1.1
Solent and Southampton Water	267	0.1	2.2	1.1
Strangford Lough	603	0.3	19.5 (Ire)	1.1
The Dee Estuary	277	0.1	2.3	1.1
The Wash	152	0.1	1.2	1.1
Ynys Feurig, Cemlyn Bay and The Skerries	189	0.1	1.5	1.1
Ythan Estuary, Sands of Forvie and Meikle Loch	265	0.1	2.2	1.1
TOTALS	6,993	3.6%	46.2% 42.2% (Ire)	

A6.91 Arctic Tern *Sterna paradisaea*

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	44,000	440	16,707 (38% of GB population)
Ireland	2,500	25	417 (17% of all-Ireland population)
Biogeographic population	900,000	9,000	17,124 (2% of biogeographic population)

GB population source: Gibbons et al. *1993*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The monotypic Arctic Tern is an abundant circumpolar breeding species of the Arctic and northern temperate zones of the northern hemisphere. It is one of the world's longest distance migrants, with birds travelling huge distances to overwinter around the coasts of the Southern Ocean, including Antarctica (Cramp 1985).

The species' European distribution is essentially northern, with birds breeding in Britain and Ireland being the south-westerly component of a population. The range of Arctic Terns extends north from Britain and Ireland to Iceland and Greenland, and north-west along the coasts of the Baltic and Scandinavia, into Siberia.

Nearly 90% of the Arctic Terns breeding in Britain and Ireland are found in Scotland, Orkney and Shetland and throughout the Outer and Inner Hebrides. There are also some colonies on the east and north coasts. In England, they are found mainly in the north-east and the north-west, with very small numbers in north Norfolk and along the south coast. The only Arctic Terns nesting in Wales are found on Anglesey. In Ireland, they occur on all coasts, but with a preponderance in the west.

In Britain and Ireland, the Arctic Tern is almost exclusively a coastal breeder, usually nesting on the immediate shoreline and virtually never more than 10 km from the coast. Elsewhere in its range (for instance, in Russia (Rogačeva 1992) and Canada) it breeds along rivers hundreds of kilometres from the sea. Colonies are located on shingle and sand beaches as well as on rocky islets. Away from the immediate shore, nesting may occur in short vegetation, especially on heathland and unimproved pasture (Bullock & Gomersall 1981).

Most feeding takes place within 3 km of the colony, exceptionally up to 10 km (Cramp *et al.* 1974).

4. Population structure and trends

The biogeographic population (Europe and the North Atlantic) has been estimated at *c.* 900,000 pairs. The population of Great Britain is estimated at 44,000 pairs with a further 2,500 pairs in the whole of Ireland. The British and Irish birds breed in 250–300 colonies ranging in size from just a few pairs to nearly 2,000 (Lloyd *et al.* 1991).

Historical data for Arctic Terns nesting in Britain and Ireland are scant prior to the first census in 1969–1970, although serious declines were reported from Ireland in the 1950s and 1960s (Cramp *et al.* 1974). The 1969–1970 census reported at least 30,773 pairs (Cramp *et al.* 1974), but this was revised upwards to 52,300 pairs by Lloyd *et al.* (1991), who found 80,200 pairs in 1985–1987[28]. Using the revised figures, the Scottish total increased from 46,400 to 72,400 pairs, the English and Welsh total from 4,940 to 5,280 pairs, and the all-Ireland total from 970 to 2,500 pairs.

The major increase between the two censuses preceded a massive decline in numbers in Orkney and Shetland, which held 64,900 pairs (81% of the British and Irish total) in 1985–1987. In 1989, sampled colonies in both archipelagos fell by 55% in Shetland and 45% in Orkney (Avery *et al.* 1993). Further declines have taken place since, and breeding success has been very low almost throughout the 1990s. A census of Orkney and Shetland in 1994 found only 32,400 pairs, an overall decline of 27% since 1989 (Brindley *et al.* 1999). A population model showed that this decline could be explained by observed poor natal recruitment following breeding failures on Shetland between 1985 and 1990 (Brindley *et al.* 1999). The results of these recent analyses strongly suggest that terns move between Orkney and Shetland indicating that these island populations are components of a larger meta-population (Brindley *et al.* 1999).

There have been some recent declines elsewhere in Europe, including in Finland, where predation by North American Mink *Mustela vison* is suspected to be the main cause, Estonia, The Netherlands and Germany (Hagemeijer & Blair 1997). Ringing has shown breeding in colonies other than the natal colony to be relatively common among first-time breeders, with movements up to several hundred kilometres (Cramp 1985).

The major declines in Orkney and Shetland have been attributed to breeding failures consequent upon a lack of their principal food, sandeels *Ammodytes* sp. (Monaghan *et al.* 1989, 1992), possibly due to overfishing by man, although bad weather has also played a part in recent years. Other threats include nest predation by introduced Hedgehog *Erinaceous europaeus* (Uttley *et al.* 1989) and North American Mink (Craik 1995), together with coastal development and disturbance, especially recreational disturbance.

5. Protection measures for population in the UK

SPA suite

During the breeding season, the UK's SPA suite for Arctic Terns supports, on average, 17,124 pairs. This amounts to about 38% of the British breeding population, and 17% of the all-Ireland population. The suite of 17 sites (Table 6.91.1) contains about 2% of the international population.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national breeding population were considered under Stage 1.1, and all but two were selected after consideration of Stage 2 judgements. As terns can be sporadic in their use of sites, particular emphasis was laid on the identification of sites that support other qualifying species. Accordingly, Flotta (Orkney) and Fladda Chuain (Skye) were not selected as these areas supported comparatively small populations with no other qualifying interests. Data for Fladda Chuain derives from a single count, and in the absence of routine monitoring, it is not possible to assess whether this site is used regularly. Of the 33,100 pairs estimated to breed in Orkney

28 Although 64,900 of this total was 1980 data from Orkney and Shetland owing to the lack of census coverage in 1985–1987.

(Lloyd *et al.* 1991), 6,130 (18%) are contained within the five selected SPAs there. The addition of Flotta, holding 530 pairs, was not considered to add substantially to this proportional coverage.

The SPAs within the suite are distributed throughout the UK breeding range, including sites in Northern Ireland, North Wales, north-east England, Orkney and Shetland. Most sites are multi-species SPAs, of importance also for a range of other breeding seabirds, although Sumburgh Head and the Pentland Firth Islands have been selected solely for their importance for breeding Arctic Terns. There is a very long recorded history of occupancy at many of these sites, including records dating from the 19th century (Holloway 1996).

As the selection of sites under Stage 1.1 resulted in a suite of SPAs which includes the main population centres of breeding Arctic Terns throughout their UK distribution, additional sites considered under Stage 1.4 were not selected.

Distribution map for Arctic Tern SPA suite

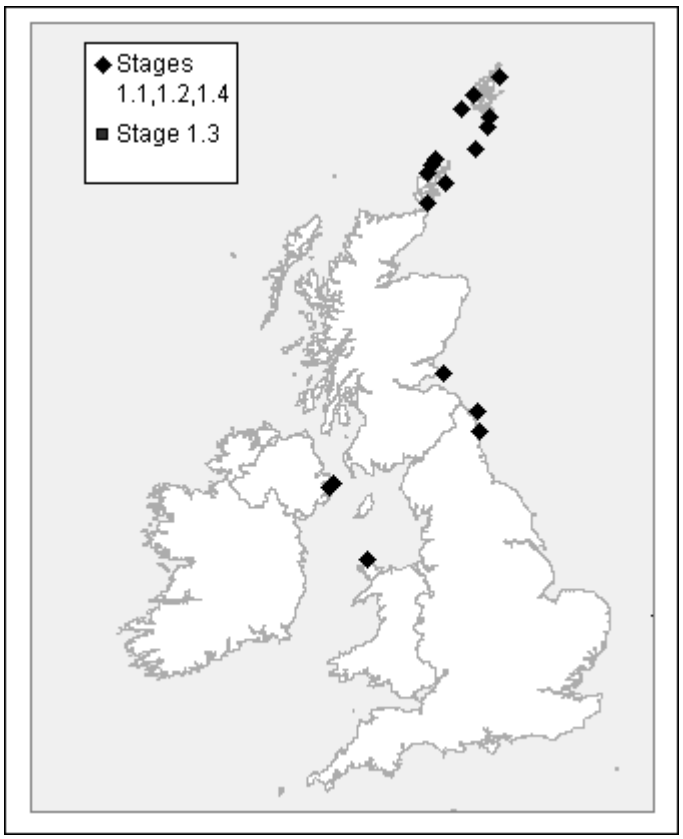


Table 6.91.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Auskerry	780	0.1	1.8	1.1
Coquet Island	700	0.1	1.6	1.1
Fair Isle	1,120	0.1	2.6	1.1
Farne Islands	2,840	0.3	6.5	1.1
Fetlar	520	<0.1	1.2	1.1
Firth of Forth Islands	540	<0.1	1.2	1.1
Foula	1,100	0.1	2.5	1.1
Mousa	767	<0.1	1.7	1.1
Outer Ards	207	<0.1	8.3 (Ire)	1.1
Papa Stour	1,000	0.1	2.3	1.1
Papa Westray (North Hill and Holm)	1,950	0.2	4.4	1.1
Pentland Firth Islands	1,200	0.1	2.7	1.1
Rousay	1,000	0.1	2.3	1.1
Strangford Lough	210	<0.1	8.4 (Ire)	1.1
Sumburgh Head	700	<0.1	1.6	1.1
West Westray	1,200	0.1	2.7	1.1
Ynys Feurig, Cemlyn Bay and The Skerries	1,290	0.1	2.9	1.1
TOTALS	17,124	1.9%	37.9% 16.7% (Ire)	

A6.92 Little Tern *Sterna albifrons*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1)**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**declining**) but not concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	**Vulnerable**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	2,400	24	1,616 (67% of GB population)
Ireland	390	4	No SPAs selected in Northern Ireland
Biogeographic population	20,643	206	1,616 (8% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair1997

3. Distribution

The Little Tern has a widely scattered global distribution. It breeds at middle and lower latitudes of North America, Eurasia and Australia, as well as in the sub-tropics and tropics in the Caribbean, West Africa, southern India and Sri Lanka, and south-west Asia. In much of this area, its distribution is essentially coastal, although it also occurs along major rivers such as the Niger, the Mississippi and the Danube. Seven subspecies have been described. Of these, only the nominate race *S. a. albifrons* occurs in Europe, part of a range that also extends to coastal North Africa and the Middle East, to northern Pakistan and India (Cramp 1985).

The European breeding distribution is discontinuous, but extends from the Gulf of Bothnia to the coasts of the Mediterranean and North Africa. Through much of this area, the species is restricted to the coast, although it breeds along a number of major river systems, in particular the Guadalquivir, Loire, Po, Danube, Dnepr, Volga and Vistula (Snow & Perrins 1998).

Breeding occurs at scattered colonies around much of the coast of Britain and Ireland, from the north of Scotland to the south coast of England. All British and Irish Little Terns nest on the coast, utilising sand and shingle beaches and spits, as well as tiny islets of sand or rock close inshore. The greater part of the population occurs in south and east England from Hampshire to Norfolk (Lloyd *et al.* 1991). There are small, scattered colonies on the coasts of north-east and north-west England, eastern Scotland, the Outer and Inner Hebrides, and in Wales. The Irish population is mainly found on the west and south-east coasts.

Feeding takes place close to the colony, to a maximum distance of 6 km, but not more than 1.5 km offshore (Cramp *et al.* 1974).

European breeding Little Terns move south to winter off the coast of western Africa, possibly as far as South Africa (Cramp 1985). However, most probably winter in the Gulf of Guinea, an area that has enormous resources of small fish and so attracts large numbers of terns during the northern winter.

4. Population structure and trends

Birds breeding in Britain and Ireland are part of the European biogeographic population, estimated to be 20,643–22,799 pairs (Hagemeijer & Blair 1997). The British population numbers 2,400 pairs with a further 390 pairs in the whole of Ireland (Ratcliffe *et al.* 2000). Lloyd *et al.* (1991) reported up to 70 colonies in Britain, ranging from less than ten pairs to 360 pairs (Foulness/Maplin Bank in Essex), together with about 30, mostly rather small, colonies in Ireland. Average colony size is about 30 pairs (Sears & Avery 1993).

It is believed that Little Terns declined at many British colonies during the latter part of the 19th century, but then recovered to reach a peak in the 1920s or early 1930s. Thereafter, a renewed decline set in which, while not quantifiable, was nevertheless regarded as very serious when a survey in 1967 and the subsequent census of 1969–1970 found no more than 2,000 pairs in the whole of Britain and Ireland (Cramp *et al.* 1974).

The next census took place in 1985–1987 when the total had increased to 2,430 pairs in Great Britain and 390 pairs in the whole of Ireland. The increase was unevenly spread through the range, with almost no change in Scotland (310 pairs and 370 pairs respectively), whilst the England and Wales total had increased from 1,320 pairs to 2,060 pairs. Much of the increase in England was concentrated in East Anglia and Hampshire, though some other localities on the south coast, as well as in northern England, had continued to decline. Numbers in Ireland increased from 310 to 390 pairs between the two censuses with much of this increase at a single colony in Dublin Bay (Lloyd *et al.* 1991). The population trend in Britain between 1969 and 1989, as well as changes in productivity, are examined in detail by Sears & Avery (1993). They found that there was no consistent trend in productivity over time, nor any apparent relationship between productivity and population trends. Productivity is not related to colony size and some Little Tern colonies are consistently more productive than others.

Elsewhere in Europe, the pattern has followed that in Britain, with a long-term decline until the 1970s. Since then, there has been some recovery, especially in France and Belgium, though there have been continued local declines in The Netherlands, Germany, Denmark and around the Baltic (Hagemeijer & Blair 1997). Ringing has shown fairly extensive interchange between colonies, at least by first-time breeders, with birds reared in British colonies breeding in Denmark and Germany, and a German-ringed bird breeding in England (Cramp 1985).

The greatest threat to Little Tern colonies is from human disturbance. The concentration of the largest colonies on beaches in south-east England coincides with the highest density of people living in Britain and wanting to use those same beaches. The period of greatest decline, from the 1930s to the 1960s, coincided with a great boom in numbers of people making trips to the seaside, with only a short respite during the war years. Once alerted by the 1967 census to the seriousness of the situation, protection measures, including wardening, signs and fencing, have had remarkable success in safeguarding a number of colonies, with considerable increases in numbers of nesting pairs at several sites in both Britain and Ireland. Predation is a factor at some colonies and fencing is widely used to keep out Red Foxes *Vulpes vulpes.* High summer tides (especially storm-surges) regularly flood some colonies, but nests have successfully been moved up the beach in some places. Blown sand is also a significant factor causing nest losses.

5. Protection measures for population in the UK

SPA suite

In the breeding season, the UK's SPA suite for Little Terns supports, on average, 1,676 pairs. This amounts to about 67% of the British breeding population, and about 8% of the international population. The species does not regularly breed in significant numbers in Northern Ireland. The SPA suite contains 27 sites (Table 6.92.1) where Little Tern has been listed as a qualifying species.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the national Little Tern breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements.

The sites within the suite are distributed throughout the UK breeding range, from sites on the east coast of Scotland, to the west, east and south coasts of England. Most sites are multi-species SPAs, of importance also for a range of other breeding seabirds, although Great Yarmouth North Denes has been selected solely for its importance for breeding Little Terns. The colony breeding at Pagham Harbour has a long history of occupation, occurs in natural habitat and forms part of the core range of Little Terns on the south coast of England. It has suffered recent declines owing to disturbance, high spring tides and possible predation. To ensure continued protection of the habitat supporting this breeding colony, Pagham Harbour was selected under Stage 1.4.

There is a very long recorded history of occupancy at some of these SPAs with records from the 19th century for a few sites (Holloway 1996). However, the historical impacts of disturbance, habitat change and past persecution mean that the locations of many colonies have changed.

Distribution map for Little Tern SPA suite

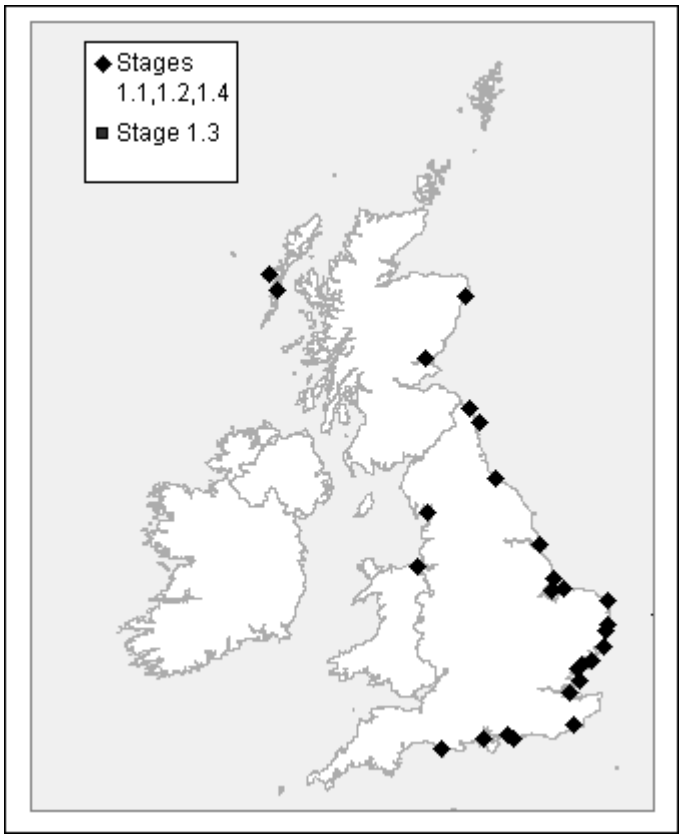


Table 6.92.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Alde – Ore Estuary	48	0.2	2.0	1.1
Benacre to Easton Bavents	53	0.3	2.2	1.1
Blackwater Estuary	36	0.2	1.5	1.1
Chesil Beach and The Fleet	55	0.3	2.3	1.1
Chichester and Langstone Harbours	100	0.5	4.2	1.1
Colne Estuary	38	0.2	1.6	1.1
Dungeness to Pett Level	35	0.2	1.5	1.1
Firth of Tay and Eden Estuary	44	0.2	1.8	1.1
Foulness	24	0.1	1.0	1.1
Gibraltar Point	23	0.1	1.0	1.1
Great Yarmouth North Denes	220	1.1	9.2	1.1
Hamford Water	55	0.3	2.3	1.1
Humber Flats, Marshes and Coast	63	0.3	2.6	1.1
Lindisfarne	38	0.2	1.6	1.1
Medway Estuary and Marshes	28	0.1	1.2	1.1
Minsmere – Walberswick	28	0.1	1.2	1.1
Monach Isles	26	0.1	1.1	1.1
Morecambe Bay	26	0.1	1.1	1.1
North Norfolk Coast	377	1.8	15.7	1.1
Northumbria Coast	40	0.2	1.7	1.1
Pagham Harbour	12	<0.1	0.5	1.4
Solent and Southampton Water	49	0.2	2.0	1.1
South Uist Machair and Lochs	31	0.2	1.3	1.1
Teesmouth and Cleveland Coast	37	0.2	1.5	1.1
The Dee Estuary	56	0.3	2.3	1.1
The Wash	33	0.2	1.4	1.1
Ythan Estuary, Sands of Forvie and Meikle Loch	41	0.2	1.7	1.1
TOTALS	1,616	7.8%	67.3%	

A6.93 Guillemot *Uria aalge* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	703,500	7,035	665,056 (95% of GB population)
Ireland	102,510	1,025	28,064 (27% of all-Ireland population)
Biogeographic population	2,250,000	22,500	693,120 (31% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

Guillemots have a circumpolar global breeding range. They are found in the North Atlantic, North Pacific and Arctic Oceans, occurring mainly in boreal and low Arctic zones, but extending south into temperate regions and north to the high Arctic (Cramp 1985). They are highly colonial and the exact distribution of breeding colonies within this range is determined by the presence of suitable cliffs on which to nest as well as patterns of abundance of their marine food. Four sub-species have been described, of which two occur in Europe (and Britain). The nominate sub-species *U. a. aalge*, breeds in Iceland, the Faeroes, Scotland (north of *c.* 55° 39'N), the Baltic and Norway (north to 69°N), whilst *U. a. albionis* breeds in Britain south of *c.* 55°39'N, Ireland, Helgoland (Germany), Brittany (France) and western Iberia (Cramp 1985; Lloyd *et al.* 1991).

In the east Atlantic (and Europe), largest numbers occur in Iceland. The greatest number of Guillemot colonies are found in Britain and Ireland, with significant numbers also along the coasts of Norway and Russia, and to a lesser extent around the Baltic (Sweden and Denmark), and on the Atlantic coasts of France (Brittany), Spain (Galicia) and Portugal.

The main concentration of breeding Guillemots in the UK in 1985–1987 was in the north of Scotland (Lloyd *et al.* 1991). Here, the largest numbers were found in Orkney, Shetland, Caithness, the Western Isles, Sutherland (the island of Handa) and Kincardine and Deeside (Fowlsheugh). The principal breeding area in Northern Ireland was Rathlin Island (Antrim). In comparison, colony sizes were smaller in England and Wales, with the largest colonies in Humberside (Bempton-Flamborough), Northumberland and Devon, with Gwynedd (Carreg y Llam) and Dyfed holding the largest proportion

of the Welsh population (Lloyd *et al*. 1991). Guillemots are absent from the low coastlines of south-east England, with no colonies between Bempton-Flamborough in Yorkshire and the Isle of Wight on the south coast.

Guillemots are coastal, cliff-nesting species differing from other North Atlantic alcids (except Brünnich's Guillemot *U. lomvia*) in that they will use open nest-sites (Cramp 1985). Breeding adults are extremely site-faithful (Harris & Wanless 1988; Harris *et al.* 1996). At sea, Guillemots prefer continental-shelf waters of 51–100 m depth (Stone *et al.* 1995).

Outside the breeding season, Guillemots occur widely in the seas off north-west Europe. In July, chicks leave the colonies before they can fly and swim out to sea to fledge. In the period July to September, major concentrations occur in inshore areas. In midwinter, Guillemots are more widely distributed in the North Sea, the English Channel and the Western Approaches, reflecting a general southward movement of most northerly breeding birds (Stone *et al.* 1995). In spring, they again move northwards to the vicinity of their breeding colonies.

4. Population structure and trends

Birds breeding in the UK belong to the North Atlantic population of 2,250,000 pairs (Lloyd *et al.* 1991).

There were few records of Guillemot numbers at colonies in Britain and Ireland before Operation Seafarer in 1969. Accordingly, few firm conclusions can be drawn about changes in populations, a problem compounded by the difficulty of estimating numbers at large colonies (Lloyd *et al.* 1991). Cramp *et al.* (1974) however, suggested – on the basis of counts at a few colonies for which good early counts had been made – that Guillemots had declined in England, Wales and south-west Scotland, whilst elsewhere in the UK numbers had increased. In the absence of good data, however, this remains largely speculative.

The population estimates from the Seabird Colony Register surveys (1985–1987) showed that the British and Irish Guillemot population had approximately doubled since the 1969–1970 estimate of 576,915 birds (Harris 1993) to a total of 1,203,100 birds. Between the 1969–1970 survey and that in 1985–1987, numbers of breeding Guillemots increased by over 50% in all regions of the country. Regions where particularly notable changes were recorded included south-west and north-west Scotland, Shetland, north-east England and Wales where there were increases of 381%, 141%, 121%, 224% and 130% respectively (Lloyd *et al.* 1991).

Regular monitoring counts show regional differences in patterns of change. Numbers in the north and east peaked in the late 1970s and early 1980s before stabilising or slightly declining (Lloyd *et al.* 1991; Harris 1993). At a few colonies in south-west Britain declines between 2%–10% were recorded between 1975 and 1982 (Rothery *et al.* 1988). Elsewhere in the south and west, however, numbers increased throughout the 1970s until the mid-1980s. Subsequently, the trend was reversed in the south, although increases continued around the Irish Sea (Harris 1991).

Detailed data are lacking, but population changes in Britain and Ireland do not appear to have been affected by changes elsewhere in Europe. There is insufficient information to assess the status of Guillemot in Iceland although there is little compelling evidence to indicate any recent large population change (Nettleship & Evans 1985). Declines in many Norwegian colonies have been evident for the last 30–40 years. On Vedøy, in the Røst archipelago, there was a 93% decline in the number of pairs between 1960–1963 and 1990 (Anker-Nilssen & Barrett 1991). Much of this decline occurred before a crash in Barents Sea Capelin (*Mallotus villosus*) stocks that further decimated Guillemot (*U. a. hyperborea*) colonies. The small colonies in France, Spain and Portugal have all declined in recent decades to the point of becoming endangered (Harris 1997).

Elsewhere in Europe, small populations have experienced recent increases. In Germany, the single colony on Helgoland has increased from *c.* 1,000 pairs in the 1950s to 2,400 pairs in the 1990's (Cramp 1985; Harris 1997). The Danish, Swedish and Finnish Baltic population increased from 8,800 pairs in the mid-1970s to 13,000 pairs in the mid-1980s because of breeding season protection (Lyngs 1992).

The factors causing Guillemot population changes are not always clear. It has been suggested that the most important reason for the decline on Vedøy, Norway was the annual mortality of many thousands or tens of thousands of birds caught in fishing nets which compounded the effect of poor breeding success resulting from food shortages (Anker-Nilssen & Barrett 1991). Mead (1989) identified drowning in fishing nets, as the biggest threat to Guillemots in north-west European seas. Oiling, chemical poisoning and disease are other causes of mortality that may be critical (Harris 1997). Linking the large regional and

temporal differences in the causes of mortality to widespread increases and some subsequent declines is difficult (Mead 1989). A direct relationship has been found, however, between changes in food availability and Guillemot numbers. There is a strong negative correlation between Sprat *Sprattus sprattus* numbers in the North Sea and first-winter mortality of Guillemots (Harris 1997).

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Guillemots supports, on average, 693,120 pairs. This amounts to about 95% of the British breeding population, about 27% of the all-Ireland population and about 31% of the international population. The suite comprises 34 sites (Table 6.93.1) where Guillemot has been listed as a qualifying species.

6. Classification criteria

The 13 Guillemot colonies in the UK that support more than 1% of the international breeding population (East Caithness Cliffs; Fair Isle; Farne Islands; Foula; Fowlsheugh; Handa; Marwick Head; North Caithness Cliffs; North Rona and Sula Sgeir; Noss; Rathlin Island; Troup, Pennan and Lion's Heads; and West Westray) were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. An additional 21 sites were selected under Stage 1.3 (see section 5.3), with Guillemot being identified as an important component of wider breeding seabird assemblages at these localities.

All the sites selected are multi-species SPAs, important for a range of other seabirds. Many have a very long recorded history of occupancy, with written records from at least the latter part of the 19th century (Holloway 1996).

The suite encompasses sites in Northern Ireland, northern England, Wales and Scotland. As the selection of sites under Stages 1.2 and 1.3 resulted in a suite which gives adequate coverage of the range and numbers of this highly colonial species in the UK, it was not considered necessary to select additional sites using Stage 1.4

Distribution map for breeding Guillemot SPA suite

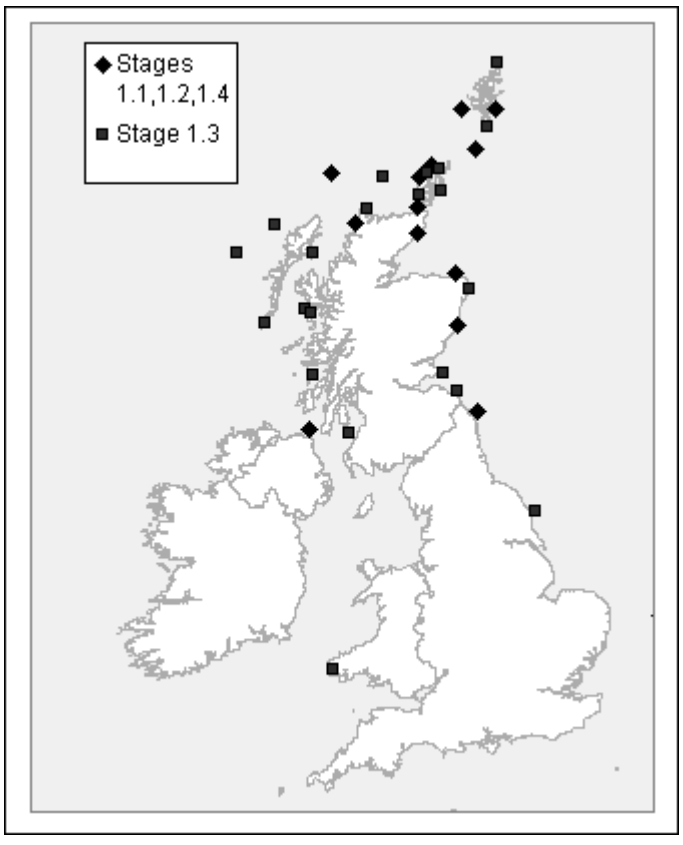


Table 6.93.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ailsa Craig	3,350	0.2	0.5	1.3
Buchan Ness to Collieston Coast	8,640	0.4	1.2	1.3
Calf of Eday	8,241	0.4	1.2	1.3
Canna and Sanday	3,858	0.2	0.6	1.3
Cape Wrath	9,159	0.4	1.3	1.3
Copinsay	13,333	0.6	1.9	1.3
East Caithness Cliffs	71,509	3.2	10.2	1.2
Fair Isle	25,165	1.1	3.6	1.2
Farne Islands	23,499	1.0	3.3	1.2
Firth of Forth Islands	22,452	1.0	3.2	1.3
Flamborough Head and Bempton Cliffs	16,150	0.7	2.3	1.3
Flannan Isles	14,693	0.7	2.1	1.3
Foula	25,125	1.1	3.6	1.2
Fowlsheugh	40,140	1.8	5.7	1.2
Handa	76,105	3.4	10.8	1.2
Hermaness, Saxa Vord and Valla Field	11,363	0.5	1.6	1.3
Hoy	13,400	0.6	1.9	1.3
Marwick Head	24,388	1.1	3.5	1.2
Mingulay and Berneray	20,703	0.9	2.9	1.3
North Caithness Cliffs	26,994	1.2	3.8	1.2
North Colonsay and Western Cliffs	6,656	0.3	1.0	1.3
North Rona and Sula Sgeir	28,944	1.3	4.1	1.2
Noss	30,619	1.4	4.4	1.2
Rathlin Island	28,064	1.3	27.4% (Ire)	1.2
Rousay	7,102	0.3	1.0	1.3
Rum	2,680	0.1	0.4	1.3
Shiant Isles	12,315	0.6	1.8	1.3
Skomer and Skokholm	7,067	0.3	1.0	1.3
St Abb's Head to Fast Castle	20,971	0.9	3.0	1.3
St Kilda	15,209	0.7	2.2	1.3
Sule Skerry and Sule Stack	6,298	0.3	0.9	1.3
Sumburgh Head	10,752	0.5	1.5	1.3
Troup, Pennan and Lion's Heads	29,902	1.3	4.3	1.2
West Westray	28,274	1.3	4.0	1.2
TOTALS	693,120	30.8%	94.5% 27.4% (Ire)	

A6.94 Razorbill *Alca torda* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 4** Favourable conservation status (**secure**) but concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	99,160	991	75,357 (76% of GB population)
Ireland	22,780	228	5,978 (26% of all-Ireland population)
Biogeographic population	575,000	5,750	81,335 (14% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

Razorbills have a restricted global distribution, being endemic to the temperate and boreal coasts of the North Atlantic and associated seas. The population is centred on Iceland where over half the world population nests. The Razorbill is a polytypic species with two sub-species described: *A. t. islandica* and *A. t. torda*. The nominate sub-species occurs in north-east America and Greenland in the west, Bear Island in the north, and Denmark, Norway and the Kola Peninsula in the east (Cramp 1985). Birds nesting in Britain and Ireland belong to *A. t. islandica,* which has a more southerly distribution. This sub-species also breeds in Iceland, the Faeroes, Germany (Helgoland) and France (Brittany) (Cramp 1985).

The European distribution ranges from the Kola Peninsula in the north-east to Brittany in the south. In the UK, the principal breeding sites are in northern Scotland, including the Western Isles, Shetland, Caithness and Sutherland (Lloyd *et al.* 1991). The three largest Scottish concentrations (in 1985–1987) were Handa, Berneray and the Shiants. The principal breeding areas in England and Wales were Bempton (Humberside) and Skomer (Dyfed). The main breeding area in Northern Ireland was Rathlin Island (Antrim).

Nests are located on cliff ledges or in crevices in cliffs, boulders or scree slopes, sometimes in the absence of cliffs (Cramp 1985). At sea, Razorbills prefer continental-shelf waters of 51–100 m depth (Stone *et al.* 1995).

Outside the breeding season, Razorbills occur widely in coastal waters off western Britain and Ireland, and in the North Sea. In July, chicks leave the colonies before they can fly and swim out to sea to fledge. In the period July to September, major concentrations occur in inshore areas, especially off the east coast of Scotland. In mid-winter, Razorbills are more widely distributed in the southern North Sea and the Western Approaches, reflecting a general southward movement of most northerly breeding birds (Stone *et al.* 1995). In spring, they again move northwards towards the vicinity of the breeding colonies.

4. Population structure and trends

The size of the *A. t. islandica* population (the biogeographical population used for this review) is estimated at 575,000 pairs, with the largest colonies outside Iceland occurring in Britain (Lloyd *et al.* 1991).

Prior to the Operation Seafarer surveys of 1969–1970, there was very little information about the numbers of breeding Razorbills in the UK. Limited data suggested that decreases might have occurred in some colonies in south-west England (Cramp *et al.* 1974). Although differences in count methodology between the 1969–1970 and 1985–1987 (Seabird Colony Register) surveys make it impossible to assess regional and national population trends (Lloyd *et al.* 1991), there was relatively little change in distribution between the two surveys (Harris 1993).

Standardised census of many individual colonies during the national surveys showed that most had increased, particularly in Shetland, north-east Scotland and north-east England. A few in north and west Scotland showed trends that are more variable. Overall, colonies in southern Britain were stable (Lloyd *et al.* 1991). Monitoring plots have shown that Razorbill numbers in the Northern Isles and at some sites in eastern Scotland increased from the late 1960s up to the beginning of the 1980s, but then stabilised or declined. In southern England and Wales numbers have remained stable or declined (Lloyd *et al.* 1991).

Elsewhere in the international range of *A. t. islandica,* population trends are poorly known although past records indicate no recent large-scale changes in range (Nettleship & Evans 1985). In Iceland, the population is apparently increasing although many large colonies remain uncounted. The Faeroes population is apparently stable following large decreases early in the last century. Decreases have been noted for the breeding populations of France and Ireland (Hildén & Tasker 1997).

The exact reasons for recent increases in Razorbill numbers are unknown but food availability is an important influence on population changes (Lloyd *et al.* 1991). Mortality may be caused by either chemical or oil pollution (the latter possibly responsible for decreases of breeding numbers in Brittany), or by drowning in fishing nets (Hildén & Tasker 1997). Deaths in nets have increased in recent years (Mead 1989) and are, perhaps, responsible for breeding population decreases in Norway and south and west Ireland (Harris 1993; Hildén & Tasker 1997).

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Razorbill supports, on average, 81,335 pairs. This amounts to about 76% of the British breeding population, about 26% of the all-Ireland population and about 14% of the international population. The SPA suite contains 19 sites (Table 6.94.1) where Razorbill has been listed as a qualifying species.

6. Classification criteria

The five Razorbill colonies in the UK that support more than 1% of the international breeding population (East Caithness Cliffs; Handa; Mingulay and Berneray; Rathlin Island; and Shiant Isles) were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. An additional 14 sites were selected under Stage 1.3 (see section 5.3), with Razorbill identified as an important component of breeding seabird assemblages at these localities.

All the sites selected are multi-species SPAs, important for a range of other seabirds. Many have a very long recorded history of occupancy, with written records from at least the latter part of the 19th century (Holloway 1996).

The suite encompasses sites in Northern Ireland, England, Wales and Scotland. As the selection of sites under Stages 1.2 and 1.3 resulted in adequate coverage of the range and numbers of this colonial species in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Razorbill SPA suite

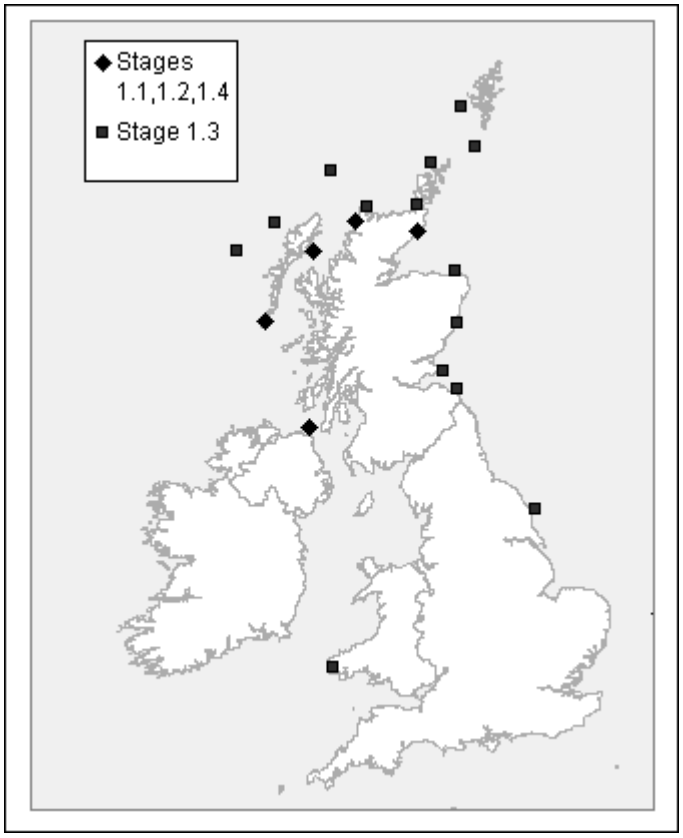


Table 6.94.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Cape Wrath	1,206	0.2	1.2	1.3
East Caithness Cliffs	9,259	1.6	9.3	1.2
Fair Isle	2,044	0.4	2.1	1.3
Firth of Forth Islands	2,693	0.5	2.7	1.3
Flamborough Head and Bempton Cliffs	5,133	0.9	5.2	1.3
Flannan Isles	2,117	0.4	2.1	1.3
Foula	4,154	0.7	4.2	1.3
Fowlsheugh	4,576	0.8	4.6	1.3
Handa	10,432	1.8	10.5	1.2
Mingulay and Berneray	11,323	2.0	11.4	1.2
North Caithness Cliffs	2,212	0.4	2.2	1.3
North Rona and Sula Sgeir	1,541	0.3	1.6	1.3
Rathlin Island	5,978	1.0	26.2 (Ire)	1.2
Shiant Isles	7,337	1.3	7.4	1.2
Skomer and Skokholm	2,854	0.5	2.9	1.3
St Abb's Head to Fast Castle	1,407	0.2	1.4	1.3
St Kilda	2,546	0.4	2.6	1.3
Troup, Pennan and Lion's Heads	3,216	0.6	3.2	1.3
West Westray	1,307	0.2	1.3	1.3
TOTALS	81,335	14.2%	76.0% 26.2% (Ire)	

A6.95 Puffin *Fratercula arctica* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	449,000	4,490	467,886 (*c.* 100% of GB population)
Ireland	20,500	205	2,398 (12% of all-Ireland population)
Biogeographic population	901,000	9,010	470,284 (52% of biogeographic population)

GB population source: Lloyd et al. *1991*
All-Ireland population source: Gibbons et al. *1993*
Biogeographic population source: Lloyd et al. *1991*

3. Distribution

The Puffin is endemic to the North Atlantic and associated seas (Harris 1984). Its range extends from the eastern seaboard of North America in Newfoundland, across the islands of the North Atlantic (Greenland, Iceland, Britain and Ireland, Svalbard) to the west coast of Novaya Zemlya (Cramp 1995). The species is polytypic, with three described sub-species, all of which occur in European waters. The nominate race *F. a. arctica* breeds at mid-latitudes, from eastern North America to southern Novaya Zemyla. *F. a. naumanni* breeds further north in high Arctic waters in north-west and eastern Greenland, Svalbard and northern Novaya Zemyla. *F. a. grabae* has the most southerly distribution and breeds in Britain, Ireland, the Faeroes, Channel Islands, France and southern Norway (Cramp 1985).

In mainland Europe, breeding is confined to the coasts of Brittany, Norway and Russia (Kola peninsula).

The vast majority of the British and Irish population breed in Scotland with the St. Kilda archipelago holding the largest colony (Lloyd *et al.* 1991). Other principal breeding areas include Shetland (particularly Fair Isle and Foula), Orkney, Sule Skerry, the Isle of May and the Western Isles including the Shiant Islands. The main breeding area in England lies in the north-east, with large colonies on the Farne Islands, Coquet Island and on the Bempton-Flamborough cliffs. Principal breeding areas in Wales include Skomer, Skokholm (both in Dyfed) and Ynys Gwylans (Gwynedd). Rathlin Island (Antrim) is the only major breeding location in Northern Ireland (Lloyd *et al.* 1991).

Puffins nest on exposed coasts and islands facing the ocean (Cramp 1985). At high latitudes, nests are located in crevices in steep and inaccessible cliffs of large islands, scree slopes or amongst rocks. The nest site preference at lower latitudes is for grass-covered, peaty turf on small islands or low coastal cliffs, or higher cliff terraces (Cramp 1985). It is the most marine of the British breeding auks, and, although there is a preference for continental shelf waters of 51–100 m depth, Puffins will use deeper waters than other auk species (Stone *et al*. 1995).

During the breeding season, Puffins feed in the waters around their breeding colonies. Outside the breeding season, they disperse more widely. In August and September there are particular concentrations off the east coast of Scotland, whilst by February and March, there has been a general movement southwards in the North Sea. In late winter, the main concentrations occur off the north-east coast of England (Stone *et al.* 1995).

4. Population structure and trends

The total population of *F. a. grabae* (which is used as the biogeographical population for this review) is estimated at 901,000 pairs (Cramp 1985; Lloyd *et al.* 1991). The combined British and Irish population of 469,500 pairs (1985–1987) makes up 52.1% of this biogeographical population (Stone *et al.* 1997).

Cramp *et al.* (1974) indicated dramatic declines at some British colonies, particularly on the west coast, during the early- and mid-20th century. For example, on Skomer the number of breeding pairs decreased from 50,000 in 1946 to 7,000 in 1969–1970. Lloyd *et al.* (1991) suggested that caution is needed with early records due to counting difficulties, together with normal variation in colony numbers. In addition, Harris (1984) concluded that the declines, although substantial as on St. Kilda, had been less marked than previously supposed. Differences in methodology make it difficult to assess how much Puffin numbers changed between the two national surveys of 1969–1970 and 1985–1987 (Lloyd *et al.* 1991).

Reliable population trend information is available for some colonies with long-term monitoring of burrow densities in sample plots (Harris 1984). These monitored colonies, located in St Kilda, the Shiant Islands, the Isle of May and in the Shetland archipelago, mostly showed stable numbers between the early 1970s and late 1980s, although numbers fluctuated at Dun, St. Kilda (Lloyd *et al.* 1991). An exception was the Isle of May where there was an annual increase of 22% in numbers between 1973 and 1981. This rate of increase would have been impossible without immigration from other colonies. After 1981, the rate of increase slowed abruptly with no increase during 1985–1991 (Harris & Wanless 1991). Census counts conducted at some colonies showed numbers increasing in north-east England with 6,800 pairs on the Farne Islands in 1969 and 20,700 pairs in 1984. Similarly, on nearby Coquet Island, numbers rose from 400 in 1969 to 3,300 in 1984 (Lloyd *et al.* 1991). The rate of increase in north-east England has now declined (Harris 1997). Census data for six colonies in south and south-west England showed that numbers fluctuated, with one Cornish colony being abandoned in 1980. In Antrim, Puffin numbers doubled between 1969 and 1985 (Lloyd *et al.* 1991).

Despite difficulties with assessing trends, declines in Puffin numbers have been noted since the 1960s in the Faeroes, France and the Channel Islands, but recently these trends have been halted (Harris 1997). The main French population on Sept Îles, off Brittany, declined from 10,000 pairs in 1912 to 250 pairs in 1982, and has since increased slightly or remained stable (Harris 1997). Puffin populations in south-western Norway remained stable during the 1980s in contrast to northern populations where large declines have occurred (Anker-Nilssen & Barrett 1991).

Food availability appears to be a major factor influencing population change. The cessation of increase in the Isle of May colony coincided with a reduction in the numbers of Sprats *Sprattus sprattus* in the North Sea and a doubling of the annual mortality rate of breeding adults (Harris & Wanless 1991). The large decrease in the northern Norway population in the 1970s and 1980s was linked to a crash in Atlantic/Scandinavian Herring *Clupea harengus* stocks (Anker-Nilssen & Barrett 1991). Declines have often been exacerbated by local factors such as oiling or mammalian predation (Harris 1997). Conditions in the wintering areas also appear to be critical for Puffins (Harris 1993).

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Puffin supports, on average, 470,284 pairs. This amounts to virtually the whole of the British breeding population, about 12% of the all-Ireland population and about 52% of the international population. The SPA suite contains 21 sites (Table 6.95.1) where Puffin has been listed as a qualifying species.

6. Classification criteria

The nine Puffin colonies in the UK that support more than 1% of the international breeding population (Coquet Island; Farne Islands; Firth of Forth Islands; Foula; Hermaness, Saxa Vord and Valla Field; Shiant Isles; Skomer and Skokholm; St Kilda; and Sule Skerry and Sule Stack) were considered under Stage 1.2, and all were selected after consideration of Stage 2 judgements. An additional 12 sites were selected under Stage 1.3 (see section 5.3), with Puffin identified as an important component of the breeding seabird assemblage at each of these localities.

All the sites selected are multi-species SPAs, important for a range of other seabirds. Many have a very long recorded history of occupancy, with written records from at least the latter part of the 19th century (Holloway 1996).

The suite encompasses sites in Northern Ireland, England, Wales and Scotland. As the selection of sites under Stages 1.2 and 1.3 resulted in adequate coverage of the range and numbers of this colonial species in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Puffin SPA suite

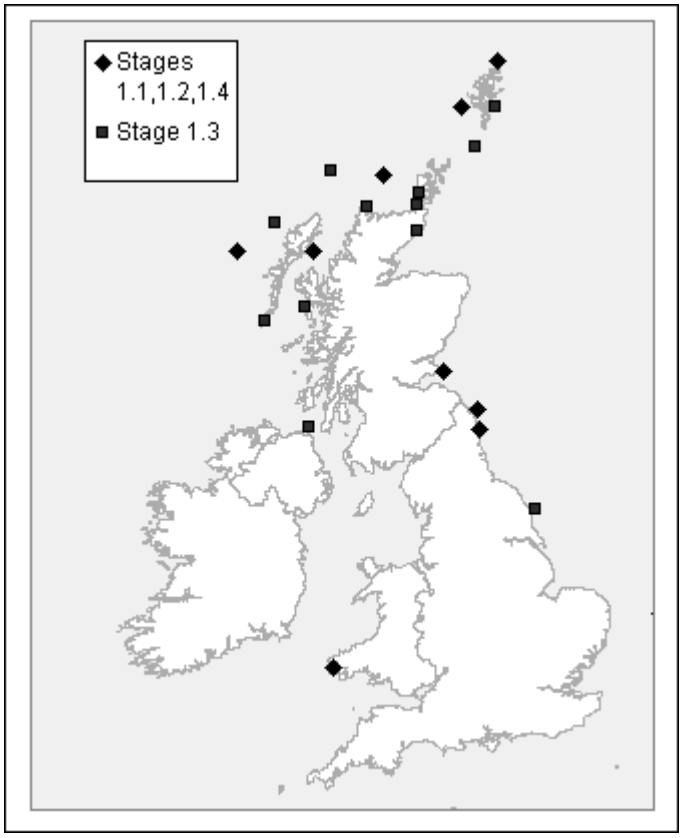


Table 6.95.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Canna and Sanday	1,225	0.1	0.3	1.3
Cape Wrath	5,900	0.7	1.3	1.3
Coquet Island	11,400	1.3	2.5	1.2
East Caithness Cliffs	1,750	0.2	0.4	1.3
Fair Isle	8,700	0.9	1.9	1.3
Farne Islands	34,710	3.9	7.7	1.2
Firth of Forth Islands	21,000	2.3	4.7	1.2
Flamborough Head and Bempton Cliffs	3,473	0.4	0.8	1.3
Flannan Isles	5,500	0.6	1.2	1.3
Foula	48,000	5.3	10.7	1.2
Hermaness, Saxa Vord and Valla Field	25,400	2.8	5.7	1.2
Hoy	3,500	0.4	0.8	1.3
Mingulay and Berneray	4,000	0.4	0.9	1.3
North Caithness Cliffs	1,750	0.2	0.4	1.3
North Rona and Sula Sgeir	5,250	0.6	1.2	1.3
Noss	2,348	0.3	0.5	1.3
Rathlin Island	2,398	0.3	11.7 (Ire)	1.3
Shiant Isles	76,100	8.5	17.0	1.2
Skomer and Skokholm	9,500	1.1	2.1	1.2
St Kilda	155,000	17.2	34.5	1.2
Sule Skerry and Sule Stack	43,380	4.8	9.7	1.2
TOTALS	470,284	52.2%	*c.* 100% 11.7% (Ire)	

A6.96 Short-eared Owl *Asio flammeus* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 3** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Rare**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,000	10	131 (13% of GB population)
Ireland			
Biogeographic population	13,400	134	131 (1% of biogeographic population

GB population source: Gibbons et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Short-eared Owl has a wide global distribution. It breeds in northern boreal regions of the Palearctic, from Iceland and Britain eastwards across northern Asia to the Bering Sea. It likewise occurs across the whole of northern North America. There are isolated populations in the Caribbean (Hispaniola) and northern South America, as well as the southern half of South America. Populations occurring on outlying oceanic islands, such as the Falkland Islands, Hawaii and Juan Fernández, probably derive from the long-distance migrations and dispersive movements typical of this nomadic owl, undertaken by individuals outside the breeding season (Hagemeijer & Blair 1997). The species is polytypic, the nominate race *A. f. flammeus* occurring throughout North America and the Palearctic. At least a further eight sub-species occur elsewhere (Cramp 1985).

In much of its range, the Short-eared Owl is migratory, moving south in winter from northern breeding areas. However, some populations are sedentary, for example those in South America.

Short-eared Owls have a scattered breeding distribution in western Europe, occurring in upland, moorland and heathland areas of Britain, the Low Countries, Denmark and Germany. Further north and east, in Scandinavia, the Baltic States, Belarus and Russia, the species occurs much more extensively.

In the UK, Short-eared Owls breed locally in south-east England, and in the uplands from the north Staffordshire moors, north to the Scottish border. The Welsh population is concentrated on moorland and afforested tracts flanking central areas and the north Cambrian Mountains. Similar habitats are occupied in the Isle of Man. In Scotland, breeding is recorded in most mainland counties, with greatest numbers found in the Southern Uplands and the foothills along the south and east fringes of the

Cairngorm and Grampian mountains. There is a healthy population in Orkney and on islands in the Inner Hebrides, but an absence on Shetland, Harris and Lewis (Gibbons *et al.* 1993). In Ireland, breeding has not been proven.

The species is widely, but sparsely distributed (Stroud *et al.* 1990). In the breeding season they inhabit moorland, heaths, marshes, bogs, sand dunes and young forestry plantations (Stroud *et al.* 1990; Gibbons *et al.* 1993). The species is an opportunistic feeder, heavily reliant upon vole and mice populations, upon which its distribution and nesting success tend to revolve.

4. Population structure and trends

The European population is between 13,376–26,265 pairs (Hagemeijer & Blair 1997), with large numbers also occurring in Russia (10,000–100,000 pairs) where Short-eared Owls breed from the Arctic tundra south to the steppes. Elsewhere, the next-largest populations occur in Finland (3,000–10,000 pairs), Sweden (2,000–7,000 pairs), Norway (1,000–10,000 pairs), Belarus (1,500–3,000 pairs) and Great Britain (1,000–3,500 pairs) (Hagemeijer & Blair 1997). There is little information on trends in most of these countries.

In Britain, both the breeding distribution and population size of Short-eared Owls have expanded over the past 70 years as a result of young conifer plantations offering high numbers of voles for Short-eared Owl to prey upon (Shaw 1995). However, the suitability of this habitat declines as the plantations mature. For first rotation forestry, suitability is retained up to 12 years post planting (Shaw 1995).

Numbers and local distribution also fluctuate greatly in association with periodic cyclical changes in populations of prey species (Village 1987; Stroud *et al.* 1990; Gibbons *et al*. 1993). Short-eared Owls prey upon field voles almost everywhere, but it is usual for them to specialise on alternative prey. For example, in Norfolk, Short-eared Owls prey upon Brown Rats *Rattus norvegicus*. Lawton Roberts & Bowman (1986) found that numbers and distribution of heathland-breeding owls feeding on small mammals with relatively stable populations (*e.g.* shrews *Sorex* spp. and Wood Mice *Apodemus sylvaticus*) were themselves more stable (Gibbons *et al.* 1993).

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Short-eared Owls supports, on average about 131 pairs. This amounts to about 13% of the British breeding population and about 1% of the international population. Short-eared Owls do not regularly breed in Northern Ireland. The suite contains six sites (Table 6.96.1) spread across the British uplands, where Short-eared Owl has been listed as a qualifying species.

6. Classification criteria

All sites in the UK that support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. All sites selected are multi-species SPAs and are distributed throughout the uplands, from the moors of Orkney, south to Skomer in west Wales and the South Pennines, reflecting the breeding distribution of Short-eared Owls in Britain.

Knowledge of numbers of Short-eared Owls breeding in different parts of the British uplands is generally poor. They are typically distributed widely, often at low densities, although numbers vary considerably between years according to vole population cycles. Site occupancy also tends to be erratic, with territory and hunting ranges small but variable in relation to prey numbers (Mikkola 1983; Village 1987; Gibbons *et al.* 1993). All these factors make the identification of further sites outside core areas, problematic. Accordingly, no further sites have been selected under Stage 1.4.

Distribution map for breeding Short-eared Owl SPA suite

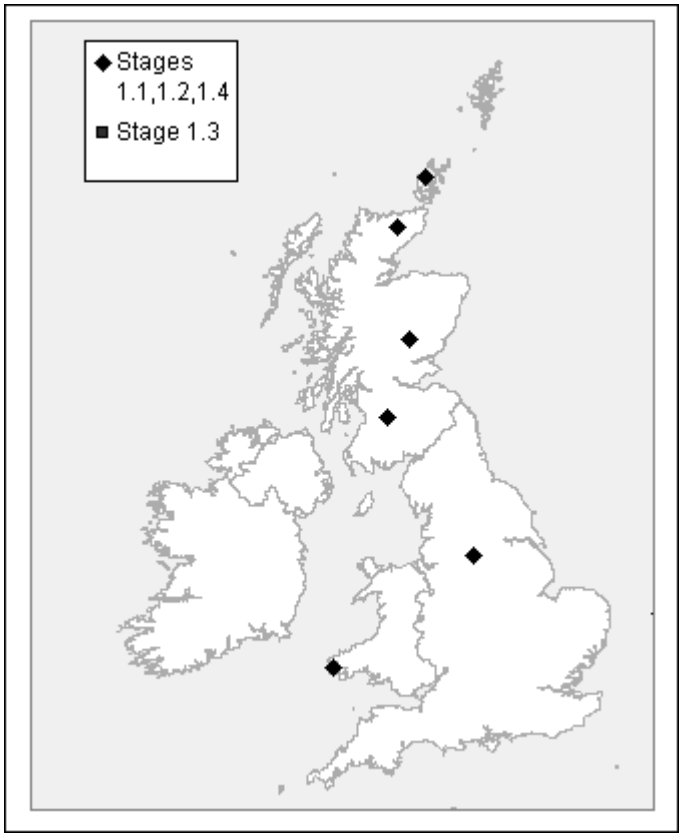


Table 6.96.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Caithness and Sutherland Peatlands	30	0.2	3.00	1.1
Forest of Clunie	20	0.1	2.00	1.1
Muirkirk and North Lowther Uplands	30	0.2	3.00	1.1
Orkney Mainland Moors	20	0.1	2.00	1.1
Skomer and Skokholm	6	<0.1	0.60	1.1
South Pennine Moors	25	0.2	2.50	1.1
TOTALS	131	1.0%	13.1%	

A6.97 Nightjar *Caprimulgus europaeus*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**declining**) and concentrated in Europe
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 4**
Wintering		EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Endangered**

2. Population data

	Population sizes (churring males)	Selection thresholds	Totals in species' SPA suite
GB	3,400	34	1,785 (53% of GB population)
Ireland			
Biogeographic population	224,000	2,240	1,785 (0.8% of biogeographic population)

GB population source: Morris et al. *1994*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Nightjar's global distribution lies in the Palearctic where it breeds from North Africa and western Europe, widely across temperate regions of Eurasia as far as central Asia and western China (to *c.* 112°E). It is polytypic with six sub-species described, two of which occur in Europe. The nominate race, *C. e. europaeus* has a northern distribution in central and northern Europe across to northern Asia, whilst *C. e. meridionalis* occurs in southern Europe, North Africa and Asia Minor (Cramp 1985).

Nightjars are highly migratory and birds leave temperate breeding areas to overwinter in Africa, where they are widely distributed south of the Sahara.

Over half of the species' global breeding range lies in Europe, where it occurs in most countries, being absent only from Iceland and northern parts of Scandinavia. In the UK, Ireland and central Europe its distribution tends to be sporadic, reflecting the scattered availability of good breeding habitats (Cramp 1985; Hagemeijer & Blair 1997).

Nightjars breeding in the UK are concentrated in southern and south-eastern England and East Anglia, with much smaller numbers and lower densities occurring in Wales, the Midlands, north-east England and south-west Scotland. There may be less than 30 pairs throughout the whole of Ireland (Gibbons *et al.* 1993).

Breeding habitats include heathland, often with scattered pine or birch, woodland edges and clearings, young forestry plantations and, particularly in south-east England, coppiced woodland. Forestry plantations are used up to 15–20 years after planting (Bowden & Green 1994). In clear-felled areas of

Thetford Forest, nests have been found in a variety of habitats, including extensive, non-vegetated areas and sparse bracken (Burgess *et al.* 1989). Birds forage over a variety of habitats including deciduous or mixed woods, orchards, gardens, riparian habitats and freshwater wetlands, heathland and young plantations (Bowden & Green 1994; Alexander & Cresswell 1990).

4. Population structure and trends

The European population of Nightjar is estimated at between 223,921 and 264,419 pairs (Hagemeijer & Blair 1997). The species is declining in both numbers and range, with almost half of national populations having declined by more than 20% since 1970.

The Nightjar has been in decline through much of the UK since about 1930 and more markedly between 1953–1973 (Parslow 1973). It is now absent as a breeding bird from large areas of its former range, including much of Scotland, north-east England, the Midlands, Central Wales and Ireland (Parslow 1973; Holloway 1996). There are currently estimated to be about 3,400 churring males in Britain (Morris *et al.* 1994).

The decline in the UK reflects similar trends elsewhere in Europe and is largely attributed to the loss, fragmentation and degradation of heathland combined with the decline of invertebrate prey as a result of increased pesticide use (Tucker & Heath 1994). An increase in numbers of males in the UK between the national surveys of 1981 (Gribble 1983) and 1992 (Morris *et al.* 1994) was accompanied by a reduction in range. This may be explained by a shift in habitats occupied from traditional heathland sites towards forestry (possibly a reflection of changing availability and suitability). In particular, much suitable habitat became available in commercial restocks and clear-felled areas following the storms of 1987 and 1990/91 in southern and eastern England (Morris *et al.* 1994).

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Nightjar supports, on average about 1,785 churring males. This amounts to about 53% of the British breeding population. Nightjars do not regularly breed in Northern Ireland. The suite contains about 0.8% of the international population (Britain lies on the edge of the species' range and numbers in the UK are relatively small compared to those elsewhere in Europe). The SPA suite contains ten sites (Table 6.97.1) where Nightjar has been listed as a qualifying species.

The lowland heathlands in the SPA suite are currently benefiting from management work funded by the Heritage Lottery Fund in partnership with English Nature, RSPB, local authorities and wildlife trusts. Sympathetic management of heathland SSSIs, including the removal of conifers, and bracken control, is also encouraged by English Nature under its Wildlife Enhancement Scheme.

Other measures

A Biodiversity Action Plan has been published for this species (Biodiversity Steering Group 1998) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

All sites in the UK that support more than 1% of the national breeding population of Nightjars were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. Most are multi-species SPAs, although Thorne and Hatfield Moors has been selected solely for Nightjars. The sites are concentrated in southern England and East Anglia reflecting the distribution of Nightjars in Britain. There is a long recorded history of occupancy at many of these sites.

Given that the selection of sites under Stage 1.1 resulted in a suite which gives adequate coverage of Nightjar population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Nightjar SPA suite

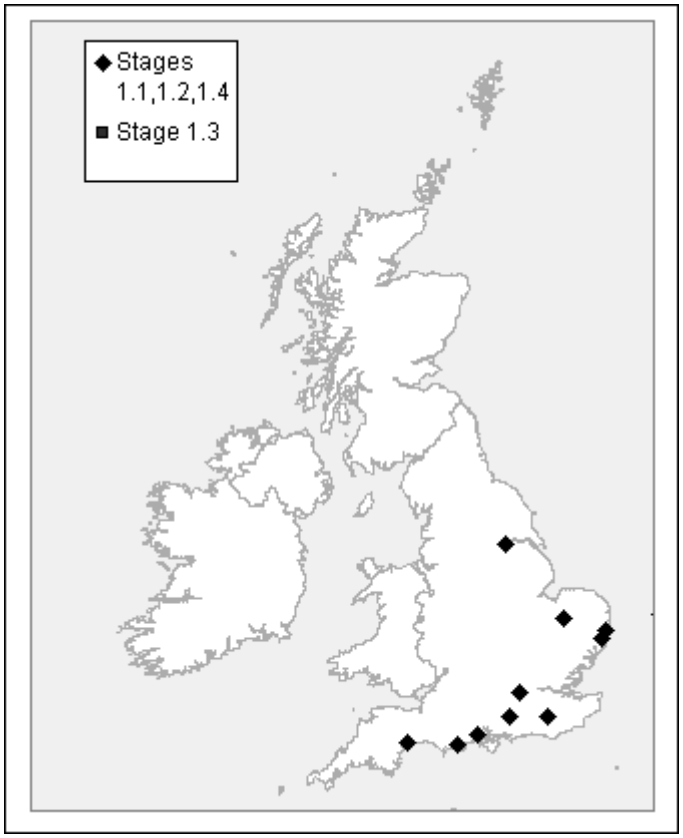


Table 6.97.1 – SPA suite

Site name	Site total	% of biogeographical populations	% of national population	Selection stage
Ashdown Forest	35	<0.1	1.0	1.1
Breckland	415	0.2	12.2	1.1
Dorset Heathlands	386	0.2	11.4	1.1
East Devon Heaths	83	<0.1	2.4	1.1
Minsmere – Walberswick	24	<0.1	0.7	1.1
New Forest	300	0.1	8.8	1.1
Sandlings	109	<0.1	3.2	1.1
Thames Basin Heaths	264	0.1	7.8	1.1
Thorne and Hatfield Moors	66	<0.1	1.9	1.1
Wealden Heaths	103	<0.1	3.0	1.1
TOTALS	1,785	0.8%	52.5%	

A6.98 Woodlark *Lullula arborea*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) and concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 4**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Extinct**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,500	15	1,102 (73% of GB population)
Ireland			
Biogeographic population	1,050,000	10,500	1,102 (0.1% of biogeographic population)

GB population source: Wotton & Gillings 2000
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Woodlark has a restricted global range that mostly lies in Europe. It breeds from southern Fennoscandia (south of 60°N), south to the Mediterranean and North Africa, and from Iberia east to the Urals and Iran (Cramp 1998; Tucker & Heath 1994). It is polytypic with two sub-species described. The nominate race *L. a. arborea* occurs across most of Europe, south to Portugal, northern Spain, northern Italy and Ukraine. *L. a. pallida* occurs further south of this range in North Africa, as well as further east, as far as Iran and Turkmenistan (Cramp 1988).

Woodlarks are widely distributed across Europe from Iberia to the Russian steppes, but have a generally southern distribution, occurring only in the southernmost parts of Scandinavia and Britain. This reflects its preference for Mediterranean and temperate climatic conditions with warm summers and mild winters. Western populations are sedentary, but further east birds migrate west and south from summer breeding areas to avoid severe continental winters. The species is absent from Ireland (Hagemeijer & Blair 1997).

In the UK, breeding is confined to southern England with most birds occurring in Dorset, Hampshire (especially the New Forest), Surrey, Sussex, Breckland and the Suffolk Coast. Small populations have also recently become established in north Norfolk and the east Midlands. The preferred breeding habitat in England varies with location. Birds in the south-west use agricultural habitats, whilst those in southern England are largely found on heathland, and those in East Anglia depend on recently cleared or restocked forestry plantations (Gibbons *et al.* 1993).

Migratory behaviour also varies across the species' English distribution. East Anglian birds largely desert their breeding grounds in the winter, although a greater proportion of the birds in southern England remain on breeding areas throughout the year.

4. Population structure and trends

The European population of Woodlark is estimated at 1,050,376–2,239,048 pairs (Hagemeijer & Blair 1997). Numbers have fluctuated widely during the 20th century in north-west and central Europe, with several countries experiencing long-term declines. Up to two-thirds of the known European population is currently experiencing a reduction in range, particularly in Spain and France. Similarly in the UK and Finland, the northern limit of the range has moved south, and the species is now absent in Ireland. These declines have been attributed to the loss of dry grassland, fallow land and pasture to intensive agriculture, abandonment and afforestation, and the loss, or degradation of lowland heathland to agriculture, scrub invasion and development. Severe winters in north-west Europe may also cause local extinctions where numbers have already been reduced by habitat loss (Tucker & Heath 1994).

Woodlark populations have also fluctuated widely in the UK. Between the 1920s and early 1950s the population expanded and the species became widely distributed in England and Wales as far north as Yorkshire (Parslow 1973). This was followed by a rapid decline and contraction of range. From the late 1960s to the early 1980s, the population is thought to have fluctuated between 100–400 pairs (Sitters *et al.* 1996). The number of 10x10 km squares occupied in the breeding season in the UK decreased by 62% between 1968–1972 and 1988–1991. However, the population has since increased from an estimated 250 pairs in 1986 to around 1,500 pairs in 1997 (Wotton & Gillings 2000). The recent increase is thought to be largely because of a recent increase in the availability of breeding habitat in forestry plantations due to storm damage and clear felling.

5. Protection measures for population in UK

SPA suite

During the breeding season, the UK's SPA suite for Woodlark supports, on average about 1,102 pairs. This amounts to about 73% of the British breeding population. Woodlarks do not breed in Northern Ireland. The suite contains about 0.1% of the international population (Britain lies on the edge of the European range and numbers in the UK are small compared to elsewhere in Europe). The SPA suite contains seven sites (Table 6.98.1) where Woodlark has been listed as a qualifying species.

Other measures

A Biodiversity Action Plan has been published for this species (Biodiversity Steering Group 1998) and is being implemented as part of the UK's national response to the Biodiversity Convention.

6. Classification criteria

All sites in the UK that support more than 1% of the national breeding population were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. All sites selected are multi-species SPAs, and are distributed in southern England and East Anglia, reflecting the distribution of Woodlarks in Britain.

Given that the selection of sites under Stage 1.1 resulted in a suite which gives very good coverage of Woodlark population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for breeding Woodlark SPA suite

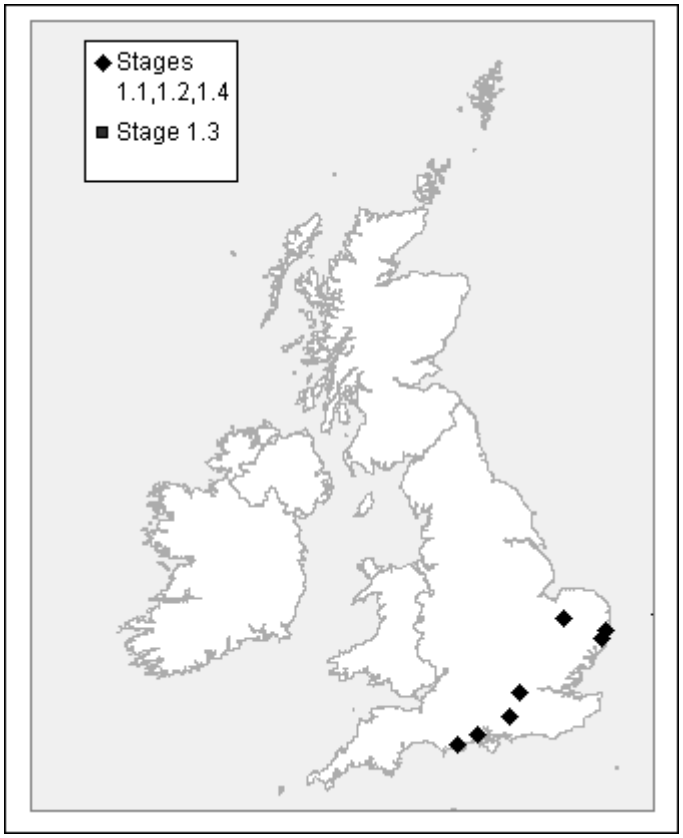


Table 6.98.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Breckland	430	<0.1	28.7	1.1
Minsmere – Walberswick	20	<0.1	1.3	1.1
Dorset Heathlands	60	<0.1	4.0	1.1
New Forest	184	<0.1	12.3	1.1
Sandlings	154	<0.1	10.3	1.1
Thames Basin Heaths	149	<0.1	9.9	1.1
Wealden Heaths	105	<0.1	7.0	1.1
TOTALS	1,102	0.1%	73.4%	

A6.99 Fair Isle Wren *Troglodytes troglodytes fridariensis*

1. Status in UK

Biological status		Legal status		Conservation status
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern
Migratory		Wildlife (Northern Ireland) Order 1985		(UK) Species of Conservation Importance
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	37	1	37 (100% of GB population)
Ireland			
Biogeographic population	37	1	37 (100% of biogeographic population)

GB population source: SNH
Biogeographic population source: SNH

3. Distribution

The Fair Isle Wren *Troglodytes troglodytes fridariensis* is an endemic sub-species of Wren *T. troglodytes* confined to the small island of Fair Isle, located in the North Sea half way between Orkney and Shetland.

Fair Isle Wrens are resident and sedentary (Thom 1986). They are closely associated with cliffs and gully systems on the island, with a preference for the more sheltered inlets, or 'geos' (Williamson 1958b). Although, they occur around the entire coast of the island, they do show some preference for the less exposed north and east facing shores.

When nesting they are absent from the crofting areas on the island, maintaining territories along the cliffs and geos, but when the young fledge there is some dispersal into cultivated habitats, especially during severe winter weather. The feeding ecology of the Fair Isle Wren has not been subject to intensive study. They may feed on the small marine invertebrates and fly larvae found amongst seaweed washed up on the boulder beaches at the foot of geos (Williamson 1958b).

4. Population structure and trends

The first Fair Isle Wren population census was carried out in 1950, and the population has been monitored annually since. Population estimates are based on singing males, which are relatively easy to census, and monogamy is assumed for this sub-species (Armstrong 1955). The population has fluctuated between 36 singing males in 1950, no more than 50 in 1957, a maximum of 52 in the mid-1960s and a minimum of 10 in 1981. Despite these fluctuations the population was in general decline

between 1950 and 1987, but appears to have recently recovered and remained stable at around 30–35 singing males between 1994 and 1998 (Aspinall 1988; Fair Isle Bird Observatory annual reports).

As part of the SNH-funded Ranger Service, which is currently run through the Fair Isle Bird Observatory, methods are being developed to allow more accurate censuses to be made in future. The causes of the general decline in population are not fully understood. Severe wet and windy winter weather may play a part (Williamson 1958b; Aspinall 1988), particularly as the species is known to experience low breeding densities following cold winters (Marchant *et al.* 1900; Gibbons *et al*. 1993).

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for Fair Isle Wren contains the habitats used throughout the year by, on average, 37 pairs. This is the whole of the British and international breeding population, which is restricted in distribution solely to Fair Isle in Shetland (Table 6.99.1).

All the cliff habitats of the island are within the SPA, as are the uplands in the north. The only areas excluded from the SPA are the in-bye pastures, gardens and housing, which represents the majority of the southern end of the island. The island is part of the Shetland Environmentally Sensitive Area, and croft management throughout is likely to be beneficial to the sub-species under this scheme.

6. Classification criteria

Fair Isle was selected under Stage 1.1 after consideration of Stage 2 judgements.

Fair Isle is a multi-species SPA also holding important seabird populations. The SPA contains the entire coastal habitat of the island (the main breeding areas for the Wren) as well as moorland areas in the north of the island. The Fair Isle race of Wren was first described in 1951 (Williamson 1951) although it has clearly been long present on the island. The SPA is thus also the type locality.

Distribution map for Fair Isle Wren SPA suite

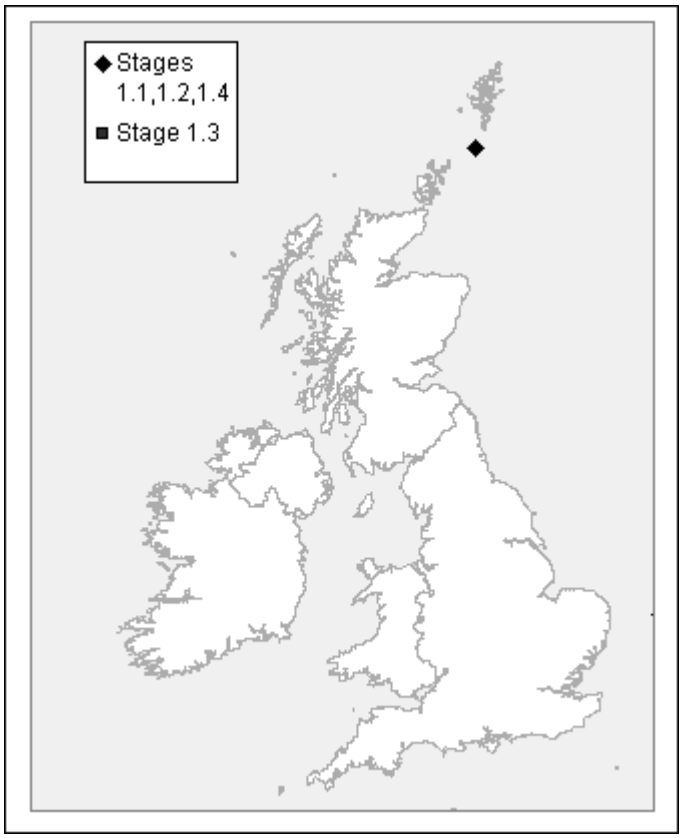


Table 6.99.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Fair Isle	37	100	100	1.1
TOTALS	37	100%	100%	

A6.100 Aquatic Warbler *Acrocephalus paludicola*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding		Wildlife and Countryside Act 1981	**General Protection**	Species of European Conservation Concern	**SPEC 1** Global conservation concern (**endangered**)
Migratory	✔	Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 1**
Wintering		EC Birds Directive 1979	**Annex I Migratory**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	67	1	47 (70% of GB total)
Ireland			
Biogeographic population	11,220	112	47 (0.4% of biogeographic population)

GB population source: English Nature unpublished
Biogeographic population source: Tucker & Heath 1994

3. Distribution

Aquatic Warblers have a highly restricted global distribution that is confined to eastern Europe. They breed in extensive reed-swamps between 50°E and 60°E, from eastern Germany to the River Ob in western Siberia (Cramp 1992; Hagemeijer & Blair 1997). The population winters in west Sahelian wetlands, from Senegal and Mali, to Ghana (Hagemeijer & Blair 1997), although the exact location of the wintering area(s) remains unknown. The species is monotypic.

The extent of suitable breeding habitat, *i.e.* large, undisturbed reed-swamps, has been greatly diminished by large-scale drainage.

Despite their eastern European breeding distribution, many Aquatic Warblers migrate west or south-west in autumn en route to wintering areas in western Africa. This brings them into north-west Europe before they turn south through France and Iberia. Observations in Great Britain show that they are virtually restricted to reedbed habitats during their migration through Europe. Accordingly, small numbers of birds occur in southern England every autumn, mostly as drift migrants. Consequently, the UK passage population is very small and at the edge of the species' range, although several sites have a long history of occurrence. All regular passage sites are in England, concentrated on the south coast. On autumn passage, Aquatic Warblers occupy damp habitats with rushes (*Scirpus* and *Juncus spp.*).

4. Population structure and trends

The Aquatic Warbler is classified as Globally Threatened (Collar *et al.* 1994) due to its small world population and anticipated further declines due to habitat loss. In fact the species is one of only three globally threatened birds that regularly occur in Great Britain.

The period 1970 to 1990 has seen declining numbers in most of the remaining central European populations and the current population in Europe is possibly as few as 3,740 singing males, although the upper limit of estimations is 18,000 singing males (Tucker & Heath 1994). No quantitative data are available to determine the magnitude of the decline which is thought to be largely the result of habitat loss due to land drainage for agriculture and industrial development, as well as the abandonment of traditional farming practices (Tucker & Heath 1994).

In Europe, the Aquatic Warbler has become extinct as a breeding species in the former Yugoslavia, Bulgaria, Romania, Italy, Slovakia, Austria, France and The Netherlands since 1930 (Tucker & Heath 1994).

Historically, very few quantitative data exist for Aquatic Warblers passing through the UK in autumn. However, the number of records has greatly increased since 1950 and the species ceased to be considered as an official rarity by the British Birds Rarities Committee in 1982 (Grant & the BBRC 1982). The increase in records is likely to be a result of greater observer coverage and, particularly, of ringing effort. The autumn passage population of Aquatic Warblers in Great Britain is estimated to be 67 birds, based on 1997 figures, although this number is based on casual observations supplemented by ringing records at a limited proportion of sites, so is likely to be an underestimate.

Numbers passing through the UK in any given year are primarily determined by the prevailing weather conditions in August and September. South-easterly winds are liable to push birds that would otherwise migrate over the European continent across the English Channel. Like other migrant passerines, Aquatic Warblers are more likely to pause suitable habitat if they encounter inclement weather during migration. Thus, the species is more likely to be recorded in adverse conditions than during fine weather.

On return migration to breeding areas in spring, Aquatic Warblers are thought to take a more easterly route across Europe, using inland wetlands as staging areas. Consequently, there are very few spring records for those sites along the southern English coast where the species occurs regularly in autumn. There is, however, a general paucity of data concerning both autumn and spring migration routes and habitat requirements (Heredia 1996).

5. Protection measures for population in UK

SPA suite

In the autumn passage period, the UK's SPA suite for Aquatic Warbler supports, on average about 47 individuals. This is thought to amount to about 70% of the British population at this season[29]. There are no records of Aquatic Warblers migrating through Northern Ireland. In the autumn passage period, the SPA suite is thought to support about 0.4% of the international population. The suite comprises three sites on the south coast of England (Table 6.100.1).

Aquatic Warblers depend on the availability of large areas of reedbed habitat for feeding prior to autumn migration and at staging points along the course of the route to their wintering areas. They use these staging points to feed and rest in order to replenish their fat reserves, before commencing the long flight over the sea to France or Spain.

Other measures

A Biodiversity Action Plan has been drafted for this species (Biodiversity Steering Group 1995) and is being implemented as part of the UK's national response to the Biodiversity Convention.

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29 Calculation of site totals and population coverage for migrating Aquatic Warblers is problematic. Assessment of total numbers using any site is difficult owing to turnover as birds move through. Additionally, the national total (although based on the best available data) is probably imprecise for the same reasons. The site totals and proportions presented here should thus be regarded as indicative rather than exact.

6. Classification criteria

All sites in the UK known to support more than 1% of the national total of Aquatic Warblers during autumn migration were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. All three SPAs (Dungeness to Pett Level; Poole Harbour; and Marazion Marsh) are multi-species sites lying respectively on the eastern, central and western parts of the English south coast.

Monitoring of Aquatic Warblers has improved in recent years – they are known to have occurred at Dungeness to Pett Levels every autumn since at least 1989 (James 1996), and at Poole Harbour every autumn since 1991 (Taylor 1992).

Distribution map for passage Aquatic Warbler SPA suite

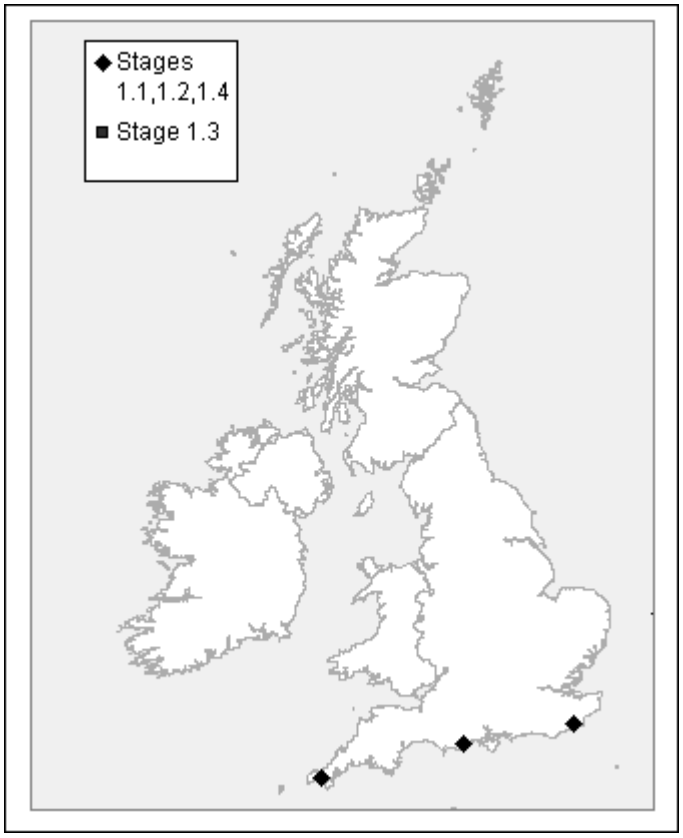

Table 6.100.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Dungeness to Pett Level	30	0.3	45	1.1
Marazion Marsh	6	<0.1	9	1.1
Poole Harbour	11	0.1	16	1.1
TOTALS	47	0.4%	70%	

A6.101 Dartford Warbler *Sylvia undata*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) and concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	1,600	16	1,681 (100% of GB population)
Ireland			
Biogeographic population	2,026,000	20,260	1,681 (<0.1% of biogeographic population)

GB population source: Gibbons & Wotton 1996
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The global breeding range of the Dartford Warbler is largely restricted to the western part of the Mediterranean region and almost the entire world population breeds in Europe, with more than 75% thought to breed in Spain and large numbers also occurring in southern and western France, southern Italy and Portugal. The species is polytypic with three sub-species described, all of which occur in Europe. *S. u. dartfordiensis* occurs in southern England, western France, north-west Spain and northern Portugal. The nominate *S. u. undata* occurs in Mediterranean France, north-east Spain and the main Mediterranean islands, whilst *S. u. toni* occurs in southern Portugal, central and southern Spain and north-west Africa (Cramp 1992).

Southern England is at the northern limit of the species' world range. Here, the main concentrations occur in Dorset, Hampshire and Surrey, with smaller numbers in south-western England and East Anglia.

In Europe, Dartford Warblers breed in a wide variety of low Mediterranean scrub habitats and Atlantic heathlands. In Britain, the species is almost exclusively found on lowland dry heathland with Heather *Calluna vulgaris* and Gorse *Ulex* spp. Large areas of heathland typically hold higher densities of breeding birds than fragmented and isolated habitats, with up to 10–15 pairs/km^2 present in the best areas. Territories containing Gorse *Ulex* spp. tend to be more productive (Catchpole & Phillips 1992), most likely due to the greater abundance of invertebrate prey and increased shelter during the winter. Birds generally remain on the breeding grounds throughout the year, although there is a partial

migration of adults, notably in October. Such movements are more pronounced in years of high productivity (Bibby 1979).

4. Population structure and trends

The total European population is estimated to be in the range 2,025,456–3,635,791 pairs (Hagemeijer & Blair 1997).

The Dartford Warbler population is generally stable or fluctuating in Europe, with the exception of parts of Spain where a slow progressive decline has continued since the 1970s (Tucker & Heath 1994). Populations may fluctuate markedly. During hard winters, populations can crash by as much as 90% causing widespread extinction. For example, the especially cold winters of 1961/62 and 1962/63 reduced the English population to only 11 known pairs. However, with two or three broods each year and autumn dispersal, breeding numbers can double in just two years. Consequently, the British population has recovered with an expansion of the species' range and an increase in numbers from nearly 600 pairs in the mid-1970s to an estimated minimum of 1,600–1,890 breeding pairs in 1994 (Gibbons & Wotton 1996).

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Dartford Warblers supports, on average, about 1,681 pairs. This amounts to virtually the whole British breeding population. Dartford Warblers do not breed in Northern Ireland. The suite contains less than 0.1% of the international population (England lies on the edge of the European range and numbers in the UK are very small compared to those in Iberia and south-west Europe). The SPA suite contains six sites (Table 6.101.1) where Dartford Warbler has been listed as a qualifying species.

The lowland heathlands in the SPA suite are benefiting from management work funded by the Heritage Lottery Fund in partnership with English Nature, RSPB, local authorities and wildlife trusts. Sympathetic management of heathland SSSIs, including the removal of conifers, and bracken control, is also encouraged by English Nature under its Wildlife Enhancement Scheme.

6. Classification criteria

All sites in the UK that support more than 1% of the national breeding population of Dartford Warblers were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. All sites selected are multi-species SPAs and are distributed in southern England reflecting the distribution of Dartford Warblers in Britain.

Given that the selection of sites under Stage 1.1 resulted in a suite which gives comprehensive coverage of the Dartford Warbler population and range in the UK, it was not considered necessary to select additional sites using Stage 1.4.

Distribution map for Dartford Warbler SPA suite

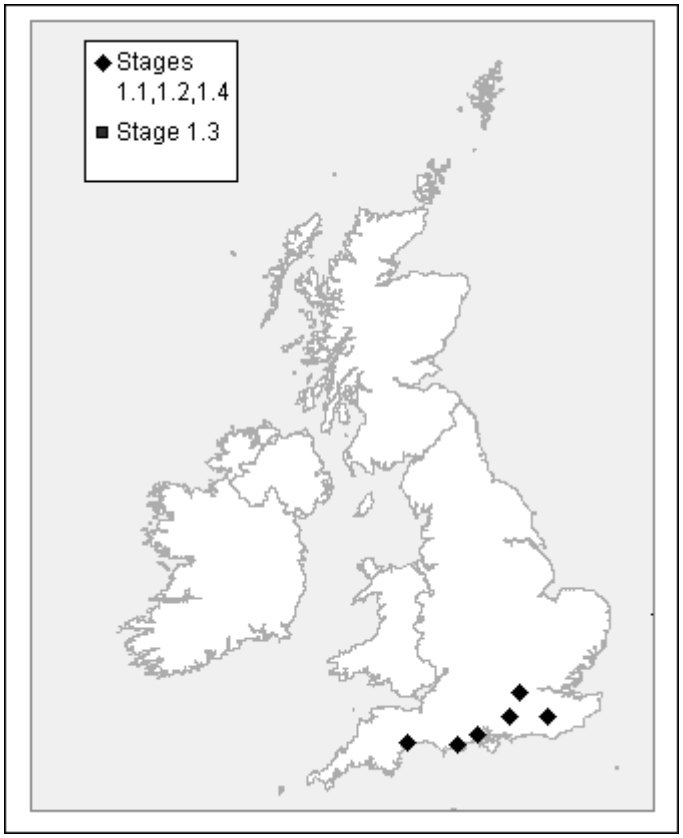

Table 6.101.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Ashdown Forest	29	<0.1	1.8	1.1
Dorset Heathlands	418	<0.1	26.1	1.1
East Devon Heaths	128	<0.1	8.0	1.1
New Forest	538	<0.1	33.6	1.1
Thames Basin Heaths	445	<0.1	27.8	1.1
Wealden Heaths	123	<0.1	7.7	1.1
TOTALS	1,681	<0.1%	c. 100%	

A6.102a Chough *Pyrrhocorax pyrrhocorax* (breeding)

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 2** Unfavourable conservation status (**vulnerable**) but not concentrated in Europe
Migratory		Wildlife (Northern Ireland) Order 1985	**General Protection Schedule 1(1)**	(UK) Species of Conservation Importance	**Table 2**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	**Internationally important**

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	340	3	112 (33% of GB population)
Ireland	906	9	No SPAs selected in Northern Ireland
Biogeographic population	12,265	123	112 (*c.* 1% of biogeographic population)

GB population source: Bignal et al. *1997*
All-Ireland population source: Berrow et al. *1993*
Biogeographic population source: Hagemeijer & Blair 1997

3. Distribution

The Chough's global range extends from the European Atlantic coast in the west through montane areas of southern Europe and central Asia, to the Himalayas and China in the east (Cramp & Perrins 1994). Southwards, it reaches the Canaries, while the Scottish Hebrides represent the north-western edge of its global range (Bignal *et al.* 1997). Isolated populations are found in Morocco and Ethiopia, and throughout the rest of its range, the species' distribution is sparse and fragmented (Cramp & Perrins 1994). With such a widely scattered and isolated distribution, it is unsurprising that there is a high degree of geographic variation, and eight sub-species have been described. Of these, three races are found in Europe. The nominate *P. p. pyrrhocorax* is restricted to Britain and Ireland, whilst *P. p. erythrorhamphus* is distributed from Iberia and southern France through the Alps to Austria and south through Italy to Sicily and Sardinia. The race *P. p. docilis* is found in southern Yugoslavia, Greece, Crete, and east through Turkey and the Middle East, as far as Afghanistan.

The European distribution of Chough is highly localised. In Britain and Ireland it is essentially a coastal species, whilst in other countries (France, Austria, Italy, Greece and Switzerland) it occurs in mountainous areas. Only in Spain is the species widespread (Hagemeijer & Blair 1997).

Within the UK, the Chough is now restricted to isolated localities on the western coasts of Scotland, Wales and Ireland (Monaghan 1988) with a few isolated pairs remaining in inland parts of north and central Wales. Historically it was much more widespread in Britain, occurring along much of the coastline of south and west Britain from Kent and Sussex, westwards to Cornwall, and up the west

coast to the former counties of Cumberland and Westmoreland (Parslow 1973; Owen 1989). In Scotland, it formerly occurred on the east coast (Berwickshire and Fife), as well as on the coast of Dumfries and Galloway, Arran, and through the Inner Hebrides to Skye. There are also records from north-western Sutherland. The sequence and timing of local extinctions of Chough from much of its former UK range is closely related to patterns of spread of intensive agriculture and the loss of traditional mixed farming (Warnes 1983). In England, the Chough became extinct as a breeding species in Cornwall in 1948.

4. Population structure and trends

The European Chough population is estimated to be in the range 12,265–17,370 pairs (Hagemeijer & Blair 1997). Britain holds about 27% of the nominate sub-species which is restricted in distribution to Britain and Ireland.

Not least, because the distribution of Choughs in Europe comprises populations that are small and isolated, the European status of Chough has been categorised as vulnerable (Tucker & Heath 1994). The species is estimated to be declining in about 90% of its range, as well as showing a contraction in its distribution. This decline is almost entirely attributed to the loss of traditional low-intensity livestock farming (Bignal & Curtis 1988; Tucker & Heath 1994).

Within the UK, persecution had an impact on Choughs for much of the early part of the 20th century (Owen 1989), and the population decline continued in more recent decades because of agricultural intensification. However, there has been some reversal in this downward trend over the last 20 years.

The British and Irish population is highly fragmented, with a restricted distribution, but censuses in 1982 and 1992 showed an increase from 923–949 to 1,246 breeding pairs (Newbery 1998) (although in part this may have reflected methodological differences between the surveys). The British population consists of three self-contained groups with no apparent interchange of individuals demonstrated by ringing programmes: in Scotland on the islands of Islay, Jura and Colonsay; on the Isle of Man; and in Wales. Colour-ringing studies have shown that movement within these populations can, however, be large and follow regular annual patterns. Thus birds fledged from the Anglesey and Lleyn coasts move up to 60 km to traditional wintering sites in Snowdonia.

The Welsh population is stable or increasing overall, with increases in coastal areas, but declines at inland sites in mid-Wales. Numbers inland in North Wales remain stable.

There are concerns about the Scottish population which is almost entirely concentrated on Islay and Colonsay and which has experienced a significant decrease in recent years (McKay, pers. comm.), especially on the Oa peninsula (Madders *et al.* 1998). Choughs regularly move between different areas of Islay (Bignal *et al.* 1989), as well as between Islay, Jura and Colonsay, but there is no exchange of individuals with other populations (Bignal *et al.* 1997). Numbers have declined on Islay, but increased over the same period on Colonsay.

A single breeding pair remains in Northern Ireland and the Chough there is on the verge of extinction.

5. Protection measures for population in UK

SPA suite

In the breeding season, the UK's SPA suite for Chough supports, on average 112 pairs. This amounts to 33% of the British breeding population. The suite contains about 0.9% of the international population. In an all-Ireland context, no sites have been selected in Northern Ireland. The SPA suite contains nine sites (Table 6.102a.1) where Chough has been listed as a qualifying species.

Other measures

As understanding of Chough ecology increases (Bignal & Curtis 1988; Bignal *et al.* 1997), the impact of changes in agricultural practice on Chough populations is becoming apparent. In Northern Ireland, specific prescriptions have been introduced to the Environmentally Sensitive Areas Scheme to protect the foraging habitat of remaining breeding Choughs. Similar measures are being taken in Scotland, where some farmers who have Choughs on their land are being paid through management agreements and agri-environment schemes to undertake habitat management that will benefit the species.

Action has also been taken to create and protect breeding sites. In Wales a number of artificial cliff nest sites (on sea-cliffs, quarry faces and in mine shafts) have been successfully created. In Wales, these now support 5% of the population. RSPB Cymru is beginning a three-year, EU-funded project to improve Chough habitats at a range of sites throughout Wales. On Islay, farmers are given financial support to renovate barns in a way that maintains suitable nesting sites for Chough (Bignal & Bignal 1987). The need to manage habitats for Choughs in Wales is promoted through a number of 'Chough Conservation Strategies' (for example Hodges 1994) which promote awareness of the species' requirements both within and outside SPAs.

At sites where Choughs nest on recognised rock-climbing routes, disturbance during the breeding season is prevented by voluntary climbing restrictions.

6. Classification criteria

All sites in the UK that support more than 1% of the national breeding population of Chough were considered under Stage 1.1, and all, except for Gruinart Flats, The Oa peninsula and the Kilmeny area of Islay, were selected after consideration of Stage 2 judgements. The Oa was not selected because of current declines in numbers there (Madders *et al.* 1998). The decreasing population there cannot currently be confirmed as viable. Gruinart Flats and Kilmeny were not selected because they have the lowest density population and a higher proportion of birds nesting in buildings than other sites. A general point of difficulty for the selection is SPAs for Choughs on Islay is that the species is increasingly breeding in man-made sites rather than natural ones, raising issues of site and population viability.

All of the sites are of high naturalness, with a long history of occupation by Chough, and all make a significant contribution to the species' European range. Most sites have been selected solely because of their importance for Chough, although three of the sites (Rinns of Islay; Glannau Aberdaron and Ynys Enlli/Aberdaron Coast and Bardsey Island; and Skomer and Skomer) are multi-species sites.

Distribution map for breeding Chough SPA suite

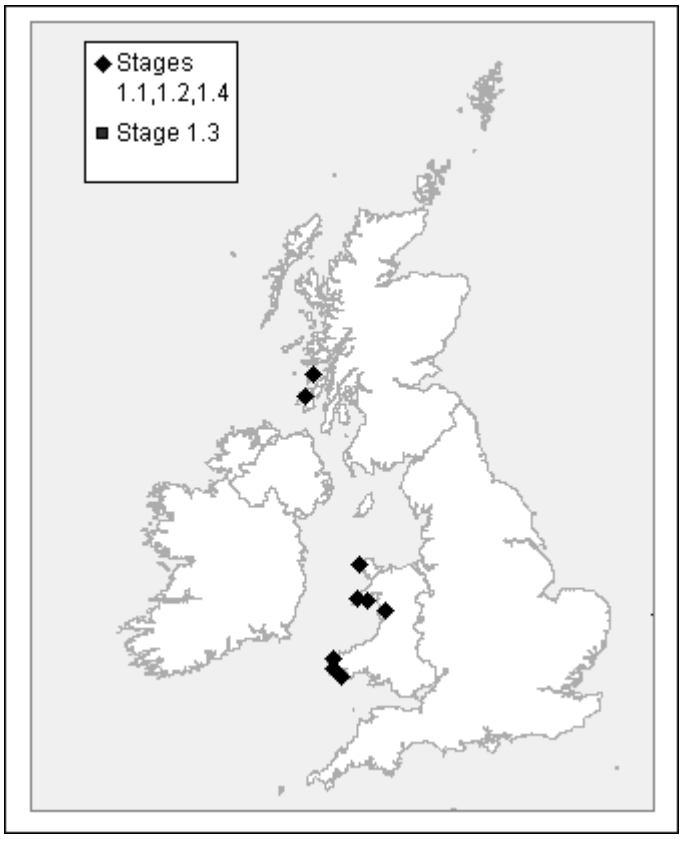

Table 6.102a.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Castlemartin Coast	12	0.1	3.5	1.1
Craig yr Aderyn	6	<0.1	1.8	1.1
Glannau Aberdaron and Ynys Enlli/ Aberdaron Coast and Bardsey Island	12	0.1	3.5	1.1
Glannau Ynys Gybi/Holy Island Coast	18	0.1	5.3	1.1
North Colonsay and Western Cliffs	9	<0.1	2.7	1.1
Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal/Mynydd Cilan, Trwyn y Wylfa and the St Tudwal Islands	9	<0.1	2.7	1.1
Ramsey and St David's Peninsula Coast	11	0.1	3.2	1.1
Rinns of Islay	31	0.3	9.1	1.1
Skomer and Skokholm	4	<0.1	1.2	1.1
TOTALS	112	0.9%	32.9%	

A6.102b Chough *Pyrrhocorax pyrrhocorax* (non-breeding)

1. Status in UK

See section A6.102a.

2. Population data

	Population sizes (individuals)	Selection thresholds	Totals in species' SPA suite
GB	689	7	241 (35% of GB total)
Ireland	2,633	26	No SPAs selected in Northern Ireland
Biogeographic population	36,800	368	241 (0.7% of biogeographic population)

GB population source: Bignal et al. *1997*
All-Ireland population source: Berrow et al. *1993*
Biogeographic population source: derived from Hagemeijer & Blair 1997

3. Distribution

See section A6.102a for description of distribution and taxonomy.

Choughs are largely resident on their breeding areas, although there is some local movement. Out of the breeding season, non-breeders mix with fledglings to form large non-breeding flocks that roam and feed over extensive areas (Warnes 1982; Madders *et al.* 1998). The social significance of such winter flocking is both important and complex (Bignal *et al.* 1989; Bignal & Bignal 1997). Research on Islay has shown that the conservation requirements of such flocks is an important consideration in maintaining a viable population, not least because of their social role.

4. Population structure and trends

See section A6.102a. Winter numbers of Chough are not monitored on a national scale, although the UK population is covered by an international Anglo-Irish survey every ten years.

5. Protection measures for population in UK

SPA suite

In the non-breeding season, the UK's SPA suite for Chough supports, on average 241 individuals. This amounts to 35% of the British breeding population. The suite contains about 0.7% of the international population. In an all-Ireland context, no sites have been selected in Northern Ireland. The SPA suite contains eight sites (Table 6.102b.1) where Chough has been listed as a qualifying species.

Other measures

See section A6.102a.

6. Classification criteria

All sites in the UK that support more than 1% of the national population of Chough in the non-breeding season were considered under Stage 1.1, and all, except for Gruinart Flats, The Oa peninsula and the Kilmeny area of Islay, were selected after consideration of Stage 2 judgements. Kilmeny, The Oa, Gruinart Flats and Kilmeny were not selected because of lack of data.

Skomer and Skokholm has been identified as an SPA for breeding Chough but in winter, there are little data available on the birds' movements, although they are believed to move across to mainland parts of Pembrokeshire.

All of the sites are of high naturalness, with a long history of occupation by Chough, and all make a significant contribution to the species' European range. Most sites have been selected solely because of their importance for Chough, although three of the sites (Rinns of Islay; Glannau Aberdaron and Ynys Enlli/Aberdaron Coast and Bardsey Island; and Skomer and Skomer) are multi-species sites.

Distribution map for wintering Chough SPA suite

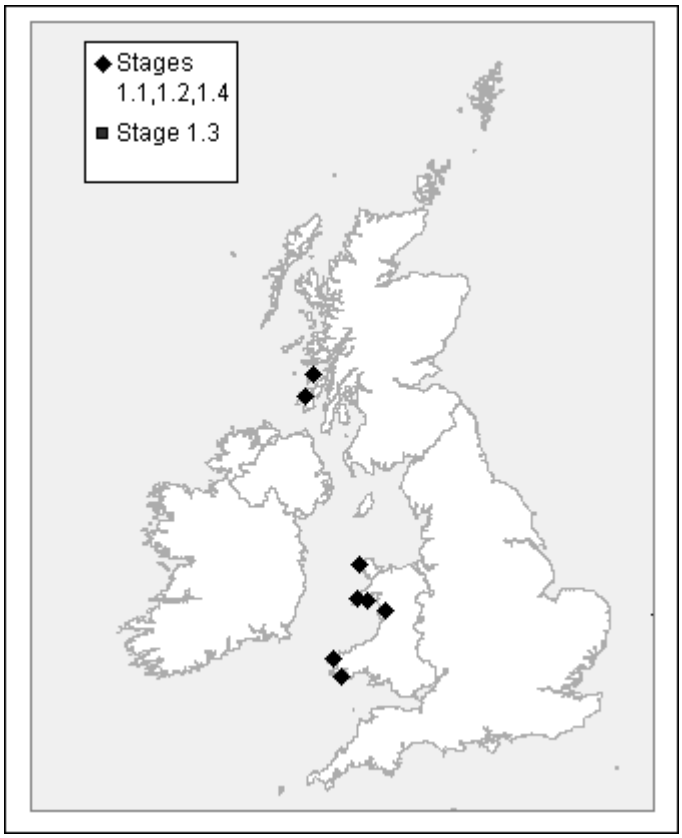

Table 6.102b.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Castlemartin Coast	24	<0.1	3.5	1.1
Craig yr Aderyn	55	0.1	8.0	1.1
Glannau Aberdaron and Ynys Enlli/ Aberdaron Coast and Bardsey Island	24	<0.1	3.5	1.1
Glannau Ynys Gybi /Holy Island Coast	18	<0.1	2.6	1.1
North Colonsay and Western Cliffs	18	<0.1	2.6	1.1
Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal/Mynydd Cilan, Trwyn y Wylfa and the St Tudwal Islands	18	<0.1	2.6	1.1
Ramsey and St David's Peninsula Coast	22	<0.1	3.2	1.1
Rinns of Islay	62	0.2	9.0	1.1
TOTALS	241	0.7%	35.0%	

A6.103 Scottish Crossbill *Loxia scotica*

1. Status in UK

Biological status		Legal status		Conservation status	
Breeding	✔	Wildlife and Countryside Act 1981	**General Protection Schedule 1(1) Schedule 4**	Species of European Conservation Concern	**SPEC 1** Global conservation concern (insufficiently known)
Migratory		Wildlife (Northern Ireland) Order 1985		(UK) Species of Conservation Importance	**Table 1**
Wintering	✔	EC Birds Directive 1979	**Annex I**	All-Ireland Vertebrate Red Data Book	

2. Population data

	Population sizes (pairs)	Selection thresholds	Totals in species' SPA suite
GB	300[30]	3	295 (98% of GB population)
Ireland			
Biogeographic population	300	3	295 (98% of biogeographic population)

GB population source: Stone et al. *1997*
Biogeographic population source: Stone et al. *1997*

3. Distribution

The Scottish Crossbill is globally endemic to the UK, where it occurs in the northern and eastern Highlands of Scotland (Voous 1978; Gibbons *et al*. 1993; Summers *et al.* in press). It is a species associated with remnant native Scots Pine *Pinus sylvestris* forests, and plantations of Scots Pine and other conifers. Breeding distribution is limited by suitable food supply, the main food being Scots Pine seeds (Cramp & Perrins 1994). The species is monotypic with its type location in East Ross-shire.

4. Population structure and trends

The Scottish Crossbill was long regarded as a race of other crossbills *Loxia* spp., and was recognised as a separate species in 1978 (Cramp & Perrins 1994; Voous 1978). The Scottish Crossbill can be identified by its calls, and although its range is now better described, there has been no good national population estimate to date. The distribution overlaps with Common Crossbill *Loxia curvirostra* and Parrot Crossbill *Loxia pytyopsittacus* (Summers *et al.* in press). The most recent estimate of population size was a minimum of 300 pairs (European Birds Database). The species' population size and/or distribution varies with natural fluctuations in the Scots pinecone crop (Summers 1999).

30 Note that the national population estimate for Scottish Crossbill has a very high degree of uncertainty attached to it and thus the proportions presented in this review are indicative rather than exact assessments.

5. Protection measures for population in UK

SPA suite

The UK's SPA suite for Scottish Crossbill contains the habitats used throughout the year by, on average, 295 pairs. This is estimated to about 98% of the British breeding population and, as the species is endemic to Scotland, also 98% of the world population. As noted above, there is a high degree of uncertainty associated with both the overall total and the proportion contained within the SPA suite, owing to very poor quantitative information on the species both at key sites and elsewhere. The suite contains five sites (Table 6.103.1) where Scottish Crossbill is a qualifying species.

Other measures

A Species Action Plan has been published as part of the UK Biodiversity Action Plan (Biodiversity Steering Group 1995), with the objective of maintaining current range and population size. Among the specific actions proposed are: consideration of additional protection for the remaining native pinewoods holding important crossbill populations; minimising the impact of development proposals that would damage relevant SSSIs; consideration of aerial insecticide spraying proposals on a case by case basis to ensure local crossbill populations are not affected; and enhancement of native pine wood management for the benefit of crossbills, with emphasis on isolated Scots Pine woods within the range of the Scottish Crossbill.

6. Classification criteria

All sites in the UK that were known to support more than 1% of the breeding population of Scottish Crossbills were considered under Stage 1.1, and all were selected after consideration of Stage 2 judgements. The distribution of the SPAs (Abernethy; Cairngorms; Glen Tanar; Kinveachy; and Ballochbuie) closely matches the core range of the species in Scotland and includes the best Caledonian pinewood habitat for this species. The Forest of Birse was assessed using Stage 1.4, but was not selected since this site did not add significant additional coverage of range or numbers (given the inclusion in the suite of the neighbouring larger population at Glen Tanar).

All the sites in the suite have a high degree of naturalness, and all are multi-species SPAs. Many are in the ownership of nature conservation organisations or are otherwise subject to active conservation management.

There is a history of occupancy at a number of the sites since the studies in 1974 which first led to clear understanding of the distribution and identification of Scottish Crossbills (Knox 1990a, 1990b). These sites include Glen Tanar, Ballochbuie, and Mar (within the Cairngorms SPA). Indeed, there are records of crossbills in these areas from the 19th century, indicating that this has long been the core range.

Distribution map for Scottish Crossbill SPA suite

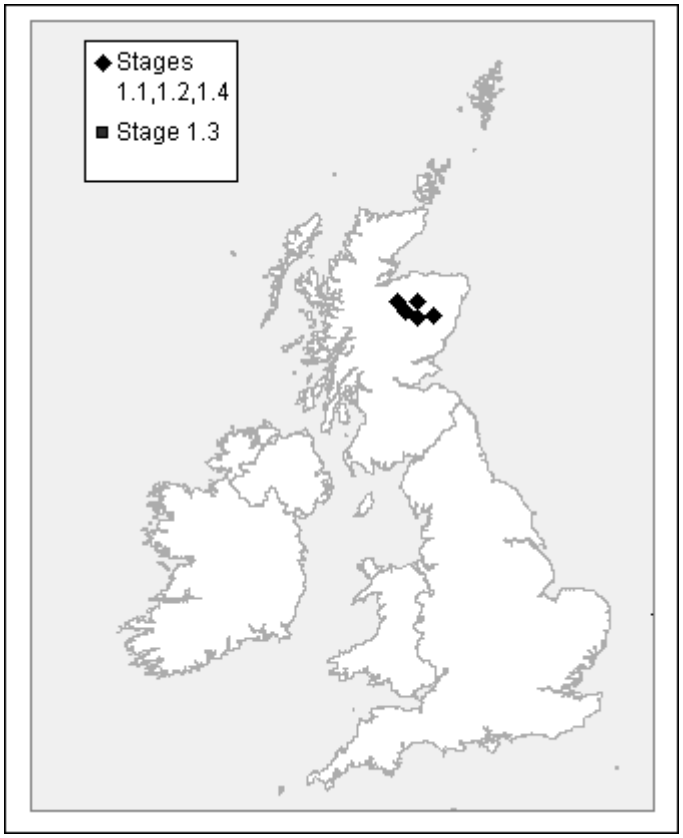

Table 6.103.1 – SPA suite

Site name	Site total	% of biogeographical population	% of national population	Selection stage
Abernethy Forest	175	58.3	58.3	1.1
Ballochbuie	10	3.3	3.3	1.1
Cairngorms	50	16.7	16.7	1.1
Glen Tanar	50	16.7	16.7	1.1
Kinveachy	10	3.3	3.3	1.1
TOTALS	295	98%	98%	

A6.104 Assemblages of waterbirds

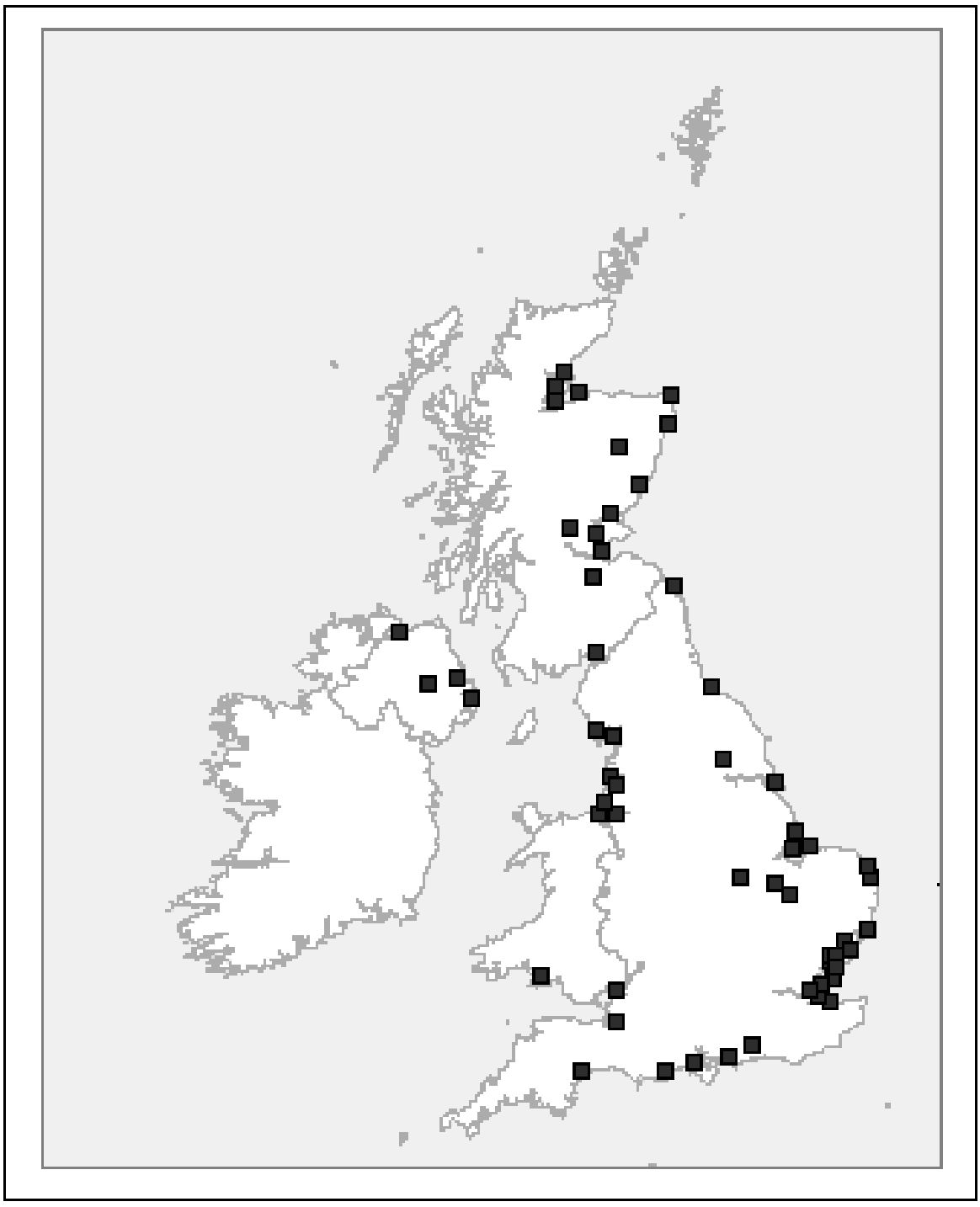

Figure 6.104.1. Distribution of SPAs selected for holding internationally important assemblages of waterbirds.

The UK is of outstanding international importance for its waterbird populations – one of the notable features of the UK avifauna (Fuller 1982; Moser 1987; Davidson *et al.* 1991; Ferns 1992; Scott & Rose 1996; Madsen *et al.* 1999). Internationally important assemblages of more than 20,000 waterbirds have been selected under Stage 1.3 to represent this interest (Figure 6.104.1). This also reflects the requirement of Article 4.2 of the Birds Directive to pay particular attention to wetlands of international importance (Temple-Lang 1982).

A total of 57 sites have been selected (Table 6.104.1). Each of these sites holds more than 20,000 waterbirds, generally in the non-breeding season. In order to identify the important components of these assemblages, all species occurring at levels of more than 1% of national populations or where there are more than 2,000 individuals present were identified (section 4.3.1). These components are highlighted in the respective species accounts.

Many of these sites have already been designated by the UK as wetlands of international importance under the Ramsar Convention on Wetlands in support of that convention's aim to "stem the progressive encroachment on and loss of wetland now and in the future" through the wise use of wetlands.

Distribution of waterbird assemblages

Most sites holding large numbers of waterbirds are coastal areas, with large estuaries being of particular importance. These tend to be located in the south and east of Britain. Sites selected range from the Firths of the Moray Basin – the most northerly regular wintering area for waterbirds in north-western Europe, down the Scottish and English coasts of the North Sea to sites within the Greater Thames Estuary. A further six sites lie along the coast of the English Channel.

There are fewer sites in western Britain, although there are many sites of high importance along the north-west coast of England (Stroud & Craddock 1996).

Four sites have been identified in Northern Ireland, including Lough Neagh and Lough Beg, a site of major international importance for its populations of diving ducks, a large proportion of which derive from Icelandic breeding areas. This site is also the most extensive freshwater body in the UK.

There are no sites holding more than 20,000 waterbirds on the west coast of Scotland, north of the Solway Firth. This tends to reflect the absence of large, productive estuarine systems, although the area is still of international importance for many wintering waterbirds (especially some geese and waders), which generally do not occur in large, multi-species aggregations.

Many of the sites identified are long known for their importance for waterbirds. Indeed, most were included in the first *Directory of Wetlands of International Importance in the Western Palearctic* (Carp 1980), as well as earlier inventories (Ratcliffe 1977; Berry 1939). In comparing the present list of sites with earlier inventories, it is notable that sites identified as SPAs are generally much more extensive than previously identified sites for the same interests. This reflects not only better knowledge of the distribution and abundance of waterbirds, but also statutory agency policy to ensure that boundaries of classified sites are so drawn that they contain and reflect the range of ecological needs of the individual species contained within them (Stroud *et al.* 1990a).

Size of waterbird SPAs

During the period of this review, The Wash held the largest number of waterbirds (400,273), with the Ribble and Alt (301,449), Morecambe Bay (210,668), Humber Flats and Marshes (152,817), Upper Solway Flats and Marshes (133,222), the Blackwater Estuary (109,815) and Foulness (107,468) all holding more than 100,000 waterbirds.

It is not possible to sum the peak mean counts for each site given in Table 6.104.1 owing to the double counting that would occur, due to movement between sites within and between winters. However, the average of January counts for these sites between 1993 and 1997 is 2,084,272. To this total can be added the January totals of waterbirds wintering at a further 57 SPAs that hold qualifying species of wintering waterbirds but at population levels below 20,000. The addition of these totals indicates that the UK SPA network holds a minimum 2,186,443 waterbirds in January.

In terms of assessing total numbers of waterfowl that gain conservation benefits from the UK SPA network, it should be noted that this total is an underestimate for four reasons:

- the totals used on sites holding <20,000 waterbirds relate to just the totals of qualifying species. To this should be added other 'non-qualifying' waterbirds occurring on those sites;
- the totals do not account adequately for those non-breeding waterbird species where peak occurrence on the network is in months other than January (*e.g.* Tufted Duck where peak national occurrence is in December). The most extreme example of this is species that occur on the SPA network during migration periods, en route to/from Arctic breeding grounds and wintering areas further

south in Europe or Africa (*e.g.* populations of waders such as East Greenland Dunlin *Calidris alpina arctica* and North Siberian/West and South African Knot *Calidris canutus canutus*);

- since the January counts are 'snapshots' they makes no allowance for turnover of birds in migratory periods. This can be very considerable as birds pass through the UK, but is technically very difficult to assess (Frederiksen *et al.* 2001); and
- periods of extremely cold weather, especially further east in Europe, displace large numbers of waterbirds to seek milder areas in Britain and Ireland (Ridgill & Fox 1990). The winters included in this review were generally mild, although there were significant periods of severe cold in 1995/96 and 1996/97.

Making allowance for these factors, it can be conservatively estimated that about 3,000,000 non-breeding waterbirds directly benefit from the general wetland habitat conservation provisions of the UK SPA network. This is a significant proportion of total East Atlantic Flyway populations of waders and North-west European populations of waterbirds.

Table 6.104.1. SPAs holding more than 20,000 waterbirds.

Site	Numbers of waterbirds (five year peak mean)
Abberton Reservoir	39,155
Alde – Ore Estuary	24,962
Arun Valley	27,241
Belfast Lough	20,492
Benfleet and Southend Marshes	34,789
Blackwater Estuary	109,815
Breydon Water	43,225
Broadland	22,603
Burry Inlet	34,962
Chichester and Langstone Harbours	93,142
Colne Estuary	38,548
Cromarty Firth	34,847
Dengie	31,452
Dornoch Firth and Loch Fleet	34,837
Duddon Estuary	78,415
Exe Estuary	23,513
Firth of Forth	86,067
Firth of Tay and Eden Estuary	34,074
Foulness	107,468
Gibraltar Point	22,137
Hamford Water	44,461
Humber Flats, Marshes and Coast	187,617
Inner Moray Firth	33,148
Lindisfarne	41,870
Loch Leven	32,177
Loch of Strathbeg	49,452
Lough Foyle	37,310
Lough Neagh and Lough Beg	99,221
Lower Derwent Valley	39,936
Martin Mere	46,196

Site	Numbers of waterbirds (five year peak mean)
Medway Estuary and Marshes	65,274
Mersey Estuary	99,467
Mersey Narrows and North Wirral Foreshore	20,269
Montrose Basin	54,917
Moray and Nairn Coast	20,250
Morecambe Bay	210,668
Muir of Dinnet	28,600
Nene Washes	25,437
North Norfolk Coast	91,249
Ouse Washes	64,392
Poole Harbour	28,426
Ribble and Alt Estuaries	301,449
Rutland Water	23,501
Severn Estuary	93,986
Solent and Southampton Water	53,948
Somerset Levels and Moors	72,874
South Tayside Goose Roosts	52,403
Stour and Orwell Estuaries	64,768
Strangford Lough	60,220
Teesmouth and Cleveland Coast	21,406
Thames Estuary and Marshes	33,433
The Dee Estuary	130,408
The Swale	65,390
The Wash	400,273
Upper Solway Flats and Marshes	133,222
Westwater	31,465
Ythan Estuary, Sands of Forvie and Meikle Loch	51,265

Table 6.104.2. January waterbird totals on the UK SPA network.

	1993	1994	1995	1996	1997	Mean
Total on sites holding >20,000 waterbirds (Guideline 1.3 qualifiers)	2,059,695	2,081,224	2,112,164	2,007,900	2,160,379	2,084,272
Total on sites holding <20,000 waterbirds (Guideline 1.1 & 1.2 qualifiers only)	108,394	115,699	108,813	94,780	83,165	102,170
Total waterbirds on SPA network	2,168,089	2,196,923	2,220,977	2,102,680	2,243,544	2,186,443

A6.105 Assemblages of breeding seabirds

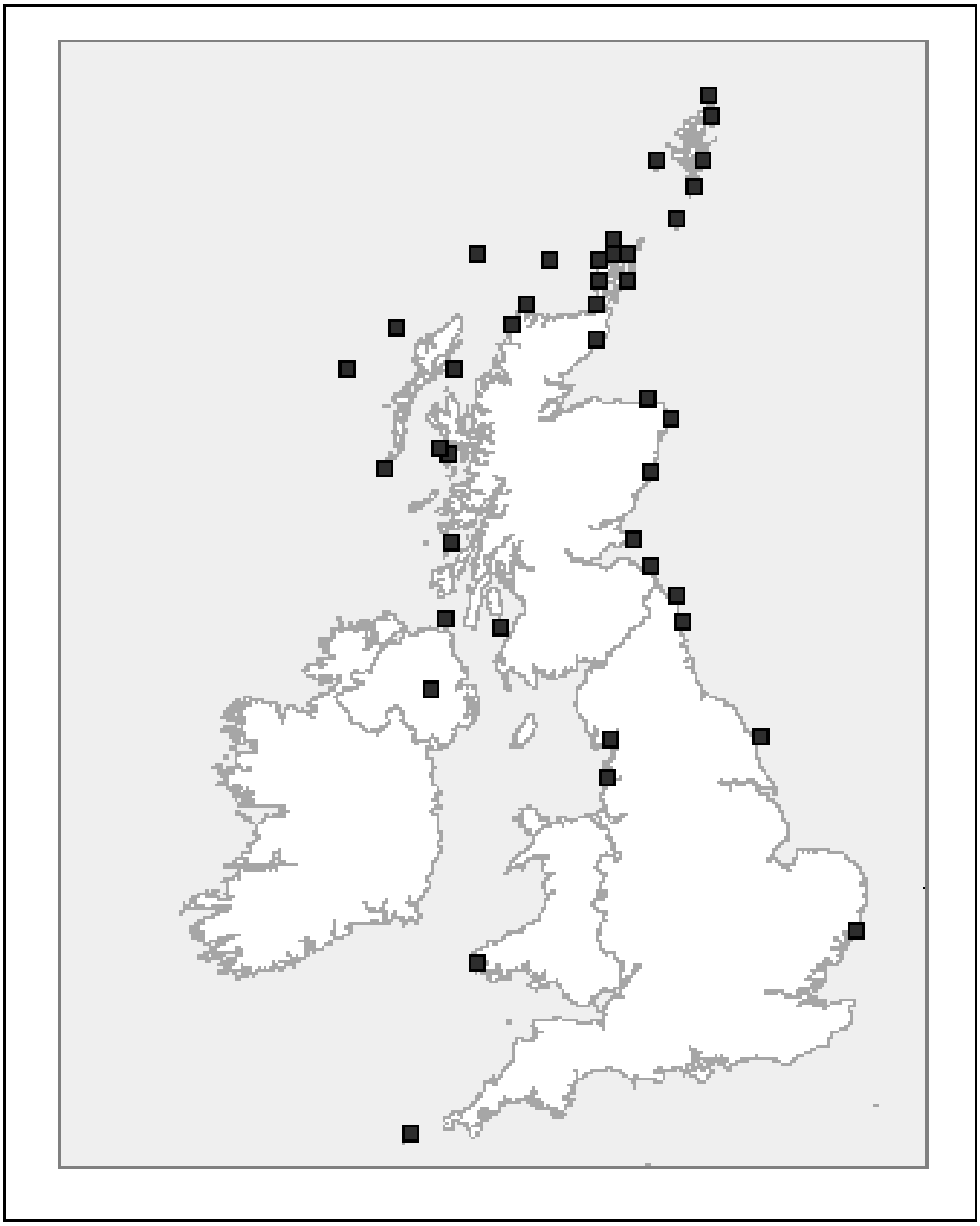

Figure 6.105.1. Distribution of SPAs selected for holding internationally important assemblages of breeding seabirds.

The UK is notable for the outstanding international importance of its populations of breeding seabirds (Cramp *et al.* 1974; Lloyd *et al.* 1991). Internationally important assemblages of breeding seabirds have been selected under Stage 1.3 to represent this interest (Figure 6.105.1).

A total of 41 sites have been selected (Table 6.105.1). Each of these sites holds more than 10,000 pairs of seabirds (*i.e.* >20,000 individuals). In order to identify the important components of these assem-

blages, all species occurring at levels of more than 1% of national populations (or where there are more than 2,000 individuals present) were identified (section 4.3.1). These components are highlighted in the respective species accounts.

Distribution of seabird assemblages

Unsurprisingly, the distribution of SPAs identified for important assemblages closely reflects the distribution of major seabird colonies in the UK (Lloyd *et al.* 1991; Gibbons *et al.* 1993). There are significant clusters of SPAs in the archipelagos of Shetland and Orkney, as well as the Atlantic islands of St Kilda, the Flannans, North Rona and Sula Sgeir, and Sule Stack and Sule Skerry.

Seabird SPAs have been identified along most of the coast of the North Sea, from the far north of Shetland, down the east coast of Scotland, to eastern England (with the Alde – Ore Estuary being the most southerly on this coast). In the south-west, the concentrations of seabirds on the Isles of Scilly and Skomer, Skokholm and Middleholm have been included. Further north, sites are located through the Inner Hebrides to the Minch.

One inland colony of seabirds (dominated by gulls) has been identified – Lough Neagh and Lough Beg in Northern Ireland.

The sites identified contain a wide range of habitats. Whilst many important seabird colonies occur on cliffs, especially in the north and west of Britain, in other areas seabirds breed on moorland (for example, in Shetland at sites such as Hermaness, Saxa Vord and Valla Field, and Foula), or on soft coastal environments. Several of the English sites include sand dunes and shingle beaches (for example, the Alde – Ore Estuary, the Ribble and Alt Estuaries, and Morecambe Bay). Where low coastal islands, such as the Farne Islands in north-east England, have remained free of land predators, these often hold large numbers of breeding seabirds.

There are a wide range of types of cliff, determined by geology and patterns of exposure. These range from hyper-oceanic exposed stacks and islands such as those found at St Kilda, Sule Skerry and Sule Stack in the Atlantic, through to eroded sandstone cliffs, with horizontal bedding planes (such as are found in Orkney at sites such as Marwick Head), and to low cliffs in relatively sheltered areas (for example, the Shiant Isles in Scotland, and Skomer and Skokholm in Wales). The variety of cliff types and locations results in a range of differing assemblages of breeding seabirds.

Size of breeding seabird SPAs

The largest seabird SPA, by a significant margin, is the St Kilda archipelago, which holds about 600,000 individual breeding seabirds. Other sites holding more than 200,000 individual breeding seabirds during the period of this review are Flamborough Head and Bempton Cliffs (305,784 breeding individuals), East Caithness Cliffs (300,000), Foula (250,000), Handa (200,000), and the Shiant Islands (200,000). In total, all the sites identified under Stage 1.3 for breeding seabirds hold 4,724,078 individual breeding seabirds.

Total number of breeding seabirds on the UK SPA network

To the total of seabirds occurring on sites holding major seabird assemblages (4,724,078 individuals) can be added those species that occur as qualifying species at sites where total numbers are less than 10,000 pairs. This amounts to a further 222,470 pairs of 14 species at 51 further SPAs, bringing the total number of seabirds breeding in the SPA network to 4,946,548 individuals. Note, however, that this is a minimum estimate of the number of breeding seabirds that benefit from the general habitat conservation provisions on seabird SPAs. This is because the total excludes non-qualifying seabird species which breed at sites classified for seabirds but where there are less than 10,000 pairs.

Table 6.105.1. SPAs holding more than 20,000 individual breeding seabirds.

Site	Number of individual breeding seabirds
Ailsa Craig	65,000
Alde – Ore Estuary	59,118
Buchan Ness to Collieston Coast	95,000
Calf of Eday	30,000
Canna and Sanday	21,000
Cape Wrath	50,000
Copinsay	70,000
Coquet Island	33,448
East Caithness Cliffs	300,000
Fair Isle	180,000
Farne Islands	142,490
Fetlar	22,000
Firth of Forth Islands	90,000
Flamborough Head and Bempton Cliffs	305,784
Flannan Isles	50,000
Foula	250,000
Fowlsheugh	170,000
Handa	200,000
Hermaness, Saxa Vord and Valla Field	152,000
Hoy	120,000
Isles of Scilly	26,616
Lough Neagh and Lough Beg	67,690
Marwick Head	75,000
Mingulay and Berneray	110,000
Morecambe Bay	61,858
North Caithness Cliffs	110,000
North Colonsay and Western Cliffs	30,000
North Rona and Sula Sgeir	130,000
Noss	100,000
Rathlin Island	66,000
Ribble and Alt Estuaries	29,236
Rousay	30,000
Rum	130,000
Shiant Isles	200,000
Skomer and Skokholm	67,278
St Abb's Head to Fast Castle	79,560
St Kilda	600,000
Sule Skerry and Sule Stack	100,000
Sumburgh Head	35,000
Troup, Pennan and Lion's Heads	150,000
West Westray	120,000
Total seabirds at assemblage sites	4,724,078
Total seabirds at non-assemblage sites	222,470
Total seabirds in UK SPA network	4,946,548

A6.106 Annex I and migratory species for which no SPAs have been selected

This section outlines the reasons why SPAs have been not been selected for certain species that are either migrants (or partial migrants) and/or are listed on Annex I of the Directive. The latter species are indicated by bold facing. See Appendix 2 for the derivation of the list of regularly occurring migratory species in the UK.

1. Wintering and passage waders

A number of waders pass through the UK on migration to/from breeding grounds in the Arctic or Scandinavia, and more southerly wintering areas. The migration of these species is irregular and often varies in volume considerably between years. Sites used are not always predictable. For the following migratory species it has not been possible to locate internationally significant concentrations that occur on a predictable basis: Spotted Redshank *Tringa erythropus*, Green Sandpiper *Tringa ochropus*, Little Stint *Calidris minuta*, Curlew Sandpiper *C. ferruginea*, and – the least predictable – Grey Phalarope *Phalaropus fulicarius*.

Jack Snipe *Lymnocryptes minimus* winters in the UK and the species is arguably the most poorly known of all regularly occurring British birds in terms of knowledge of population size (10,000–100,000 individuals – Cayford & Waters 1996), and trends (unknown). There are no known concentrations. An EU action plan is under development for the species since it is an Annex II species with an unfavourable conservation status. A major element of this plan will to be to improve knowledge and monitoring of the species.

2. Breeding waders

Little Ringed Plovers *Charadrius dubius* have colonised Britain during the twentieth century and the species is especially associated with exposed sand and gravel banks. It has accordingly benefitted from the development of minerals and aggregate extraction in lowland England and Wales and is especially associated with this habitat. The population is relatively small and there are no known internationally important concentrations.

Kentish Plover *Charadrius alexandrinus* formerly bred in the UK in very small numbers, but there have been no recent breeding records.

Woodcock *Scolopax rusticola* are widely, but locally, distributed across Britain and Ireland, occurring in woodlands. They occur at low densities. Especially given the large numbers of this species occurring in continental Europe (Britain holds between 1%–4% of the European total), there are no known concentrations of international importance. Both breeding and wintering Woodcocks occur on many SPAs classified for other species within the UK network.

Common Sandpipers *Actitis hypoleucos* breed widely in upland Britain and Ireland. They are territorial waders occurring adjacent to streams and other flowing water. There are no known concentrations of international importance, although the species occurs incidentally in most upland SPAs classified for other montane and sub-montane birds.

Britain lies on the northernmost edge of the European range of **Black-winged Stilt *Himantopus himantopus*** which is essentially a Meditteranean species. The species has regularly occurred in the breeding season at one site since 1995 (Ogilvie and the Rare Birds Breeding Panel 1998,1999). There are no current, or likely future, concentrations of this species at levels of international importance.

3. Rails

Moorhens *Gallinula chloropus* are widely distributed across Britain and Ireland (other than in north-west Scotland). Britain is particular important in terms of the European conservation of this species. Indeed, Britain and Ireland hold 35% of the European population, with smaller numbers also in France, The Netherlands and Spain (Hagemeijer & Blair 1997). The range (and numbers) of Moorhen declined between 1968–1972 and 1988–1991 (Gibbons *et al.* 1993). There are no known internationally

important concentrations in the UK, though Moorhens occur incidentally in most wetland SPAs classified for other waterbirds.

Water Rails *Rallus aquaticus* are locally distributed across the UK. Britain and Ireland lie on the edge of the European range and together hold only a small proportion of the European population (*c.* 1.5%). Although traditional sites are used, there are no known concentrations of European importance, but census data are very poor.

4. Wildfowl and other waterbirds

Although formerly widespread in historical times (Boisseau & Yalden 1998) **Cranes *Grus grus*** became extinct in Ireland by the 14th century and by about 1600 in England. It has recently recolonised England with regular nesting occurring since 1981, and birds resident throughout the year. The area of recolonisation is an SPA, but Cranes have not been listed as a qualifying species there because of uncertainty surrounding the viability of the breeding population, which is known to be derived from a very small number of birds and includes at least one sibling pair (Taylor *et al.* 1999). Consequently, the population may be at risk of suffering inbreeding depression. These birds also behave in a manner that is different from other Cranes in Europe since they are largely sedentary within their breeding area, although they do occasionally wander within East Anglia during spring and autumn. The reasons for this are not clear. It may be that the area provides for the birds requirements year round or this aberrant behaviour could have resulted from the possible inbreeding depression described above.

Grey Herons *Ardea cinerea* are partial migrants in the UK. They nest locally and colonially across the whole of Britain and Ireland. Britain holds about 9% of the European total and the island of Ireland a further 3%. None of the colonies occurring in the UK exceed 1% of the European total.

Ferruginous Duck *Aythya nyroca* occurs irregularly as a non-breeding vagrant. There are no concentrations of the species. Red-crested Pochard *Netta rufina* breed in the UK, but as a result of introduced stock (Ogilvie & the Rare Breeding Birds Panel 1999b). There are no obligations for SPA designation for non-native birds. A few natural vagrants occur irregularly.

Smew *Mergus albellus* occur regularly in the UK at a small number of wetlands, although numbers are very low relative to the major concentrations in The Netherlands and elsewhere in continental Europe. No SPAs have been selected for Smew because levels of occurrence, even at sites with the largest numbers, fall significantly below the threshold of 50 used as a minimum in selecting sites for wintering waterbirds (see section 5.1.2).

5. Raptors and owls

No SPAs have been selected in this review for **White-tailed Eagle *Haliaeetus albicilla*** for reasons outlined in section 5.6.2. **Montagu's Harrier *Circus pygargus*** nest largely on arable land in eastern England. No SPAs have been selected for this species because the only regular breeding area is largely comprised of intensively managed arable farmland within which precise nest locations vary considerably between years. This has prevented the identification of concentrations and delineation of suitable site boundaries. Nevertheless, Montagu's Harriers are monitored in their regular nesting area and, as mechanisms are currently being developed to enable the classification of temporary and mobile habitats such as arable land, the species will remain under review."

Although the British populations of a number of birds of prey are particularly significant in European terms, (15% of Kestrel *Falco tinnunculus*, 11% of Sparrowhawk *Accipter nisus*), the dispersed nesting of the following species means that it has not been possible to identify sites holding concentrations of European importance for Goshawk *Accipiter gentilis, S*parrowhawk, Buzzard *Buteo buteo,* Kestrel, Hobby *Falco subbuteo*, and Long-eared Owl *Asio otus*. All these species occur in significant numbers on many UK SPAs classified for other species.

Following a period of regular breeding in Shetland between 1967–1975, **Snowy Owls *Nyctea scandiaca*** now occur only sporadically in the British uplands. There have been no breeding attempts since 1975.

6. Grebes and seaducks

Both Red-necked Grebe *Podiceps grisegena* and Black-necked Grebe *Podiceps nigricollis* are rare breeding birds, whilst Little Grebes *Tachybaptus ruficollis* occur much more widely across the UK. There are no known concentrations of European importance for these grebe species.

7. Birds using the marine environment

A number of migrant seabirds regularly pass through British and Irish waters, sometimes in very large numbers. Their protection needs, relative to the Birds Directive, are the subject of a separate review (see section 2.2). These species include: Great Northern Diver *Gavia immer,* Surf Scoter *Melanitta perspicillata,* Velvet Scoter *Melanitta fusca,* Cory's Shearwater *Calonectris diomedea,* Great Shearwater *Puffinus gravis,* Sooty Shearwater *Puffinus griseus,* Pomarine Skua *Stercorarius pomarinus,* Long-tailed Skua *Stercorarius longicaudus,* Little Gull *Larus minutus,* Sabine's Gull *Larus sabini,* Iceland Gull *Larus glaucoides,* Glaucous Gull *Larus hyperboreus,* **Black Tern *Childonias niger***, and Little Auk *Alle alle.*

8. Passerines

Many of the terrestial birds that breed (or winter) in the UK are migrants or partial migrants. They generally have wide distributions across Britain and Ireland. They rarely aggregate in large numbers and sites holding concentrations of European importance (or, in the case of the Annex I species, of national importance) have not been identified for the following species: Stock Dove *Columba oenas,* Woodpigeon *Columba palumbus,* Turtle Dove *Strepopelia turtur,* Swift *Apus apus,* Sand Martin *Riparia riparia,* Swallow *Hirundo rustica,* House Martin *Delichon urbica* ,Cuckoo *Cuculus canorus,* **Kingfisher *Alcedo atthis,*** Wryneck *Jynx torquilla,* Skylark *Alauda arvensis,* Shore Lark *Eremophila alpestris,* Tree Pipit *Anthus trivialis,* Meadow Pipit *Anthus pratensis,* Rock Pipit *Anthus petrosus,* Water Pipit *Anthus spinoletta*, Yellow Wagtail *Motacilla flava*, Grey Wagtail *Motacilla cinerea*, Pied (White) Wagtail *Motacilla alba*, Waxwing *Bombycilla garrulus*, Robin *Erithacus rubecula*, Nightingale *Luscinia megarhynchos*, Black Redstart *Phoenicurus ochruros*, Redstart *Phoenicurus phoenicurus*, Whinchat *Saxicola rubetra*, Stonechat *Saxicola torquata*, Wheatear *Oenanthe oenanthe*, Ring Ouzel *Turdus torquatus*, Blackbird *Turdus merula*, Fieldfare *Turdus pilaris*, Song Thrush *Turdus philomelos*, Redwing *Turdus iliacus*, Grasshopper Warbler *Locustella naevia*, Savi's Warbler *Locustella luscinioides*, Sedge Warbler *Acrocephalus schoenobaenus*, Marsh Warbler *Acrocephalus palustris*, Reed Warbler *Acrocephalus scirpaceus*, Lesser Whitethroat *Sylvia curruca*, Whitethroat *Sylvia communis*, Garden Warbler *Sylvia borin*, Blackcap *Sylvia atricapilla*, Yellow-browed Warbler *Phylloscopus inornatus*, Wood Warbler *Phylloscopus sibilatrix*, Chiffchaff *Phylloscopus collybita*, Willow Warbler *Phylloscopus trochilus*, Goldcrest *Regulus regulus*, Firecrest *Regulus ignicapillus*, Spotted Flycatcher *Muscicapa striata*, **Red-breasted Flycatcher *Ficedula parva***, Pied Flycatcher *Ficedula hypoleuca*, Golden Oriole *Oriolus oriolus*, Red-backed Shrike *Lanius collurio*, Great Grey Shrike *Lanius excubitor*, Rook *Corvus frugilegus*, Starling *Sturnus vulgaris* , Chaffinch *Fringilla coelebs*, Brambling *Fringilla montifringilla*, Serin *Serinus serinus*, Greenfinch *Carduelis chloris*, Goldfinch *Carduelis carduelis*, Siskin *Carduelis spinus*, Linnet *Carduelis cannabina*, Redpoll *Carduelis flammea*, Crossbill *Loxia curvirostra*, Common Rosefinch *Carpodacus erythrinus*, Lapland Bunting *Calcarius lapponicus*, Snow Bunting *Plectrophenax nivalis*, Little Bunting *Emberiza pusilla* and Reed Bunting *Emberiza schoeniclus.*

Many of these species are subject to monitoring through the Breeding Bird Survey (Noble *et al.* 1999) and other relevant schemes. National Biodiversity Action Plans exist for several of the scarcer species and these are listed in Table 6.1. All these species are liable to occur – some in significant numbers – at many UK SPAs classified for other species.

9. Vagrants and scarce migrants

A number of species are not rarities as defined by the British Birds Rarities Committee, yet occur on an infrequent basis in the UK. These are usually only seen individually and at unpredictable locations.

Accordingly, no SPAs have been selected for the following species: Mediterranean Shearwater *Puffinus yelkouan*, Snow Goose *Anser caerulescens*, Ring-necked Duck *Aythya collaris*, Rough-legged Buzzard *Buteo lagopus*, Purple Heron *Ardea purpurea*, **White Stork *Ciconia ciconia*, Spoonbill *Platalea leucorodia***, Pectoral Sandpiper *Calidris melanotus*, Buff-breasted Sandpiper *Tryngites subruficollis*,

Ring-billed Gull *Larus delawarensis*, Bee-eater *Merops apiaster*, Hoopoe *Upupa epops*, Red-rumped Swallow *Hirundo daurica*, Woodchat Shrike *Lanius senator*, Richard's Pipit *Anthus novaeseelandiae*, Tawny Pipit *Anthus campestris*, Bluethroat *Luscinia svecica*, **Barred Warbler *Sylvia nisoria***, Pallas's Warbler, *Phylloscopus proregulus,* Icterine Warbler *Hippolais icterina,* Melodious Warbler *Hippolais polyglotta*, and Ortolan Bunting *Emberiza hortulana*.