JOINT NATURE CONSERVATION COMMITTEE

JNCC Report

No. 312

Handbook on the UK status of EC Habitats Directive interest features: provisional data on the UK distribution and extent of Annex I habitats and the UK distribution and population size of Annex II species

Version 1

Edited by DL Jackson and CR McLeod

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Notes on nomenclature

Scientific names of higher plant species are as used in Stace (1991). English names of higher plants are from Dony *et al.* (1986). Scientific names of lower plants are as used in Hill *et al.* (1991, 1992, 1994) and Purvis *et al.* (1992). The names of National Vegetation Classification types are taken from Rodwell (1991a,b, 1992, 1995, 2000). In some cases species names cited by Rodwell differ from those used in Stace (1991); where such inconsistencies occur, the names used in Rodwell (1991a, *et seq*.) have been retained. Marine species nomenclature follows Howson & Picton (1997).

The codes and the names for the habitat types and species used in the present report are those adopted by Council Directive 97/43/ECC *Adapting to technical and scientific progress Directive 92/43/ECC on the conservation of natural habitats and of wild fauna and flora*. These are the same names as those used in the *Interpretation manual of European habitats* (European Commission DG Environment 1999). Where a name differs from that listed in the annexes of the original Directive, the superseded name has been inserted in brackets in the section heading after the current name.

The hierarchical classification of biotopes prepared in 1988 under the CORINE programme is cited in the preamble to Annex I of the Directive as the reference source for interpretation of Annex I types. However, many habitat types listed in Annex I either do not appear in the 1988 version of the CORINE biotopes classification or have different names or numbers from those used in the CORINE classification. The CORINE biotope classification number codes used in the Directive have been inserted in brackets after Annex I habitat type names in section headings in the present report.

Names of Annex I habitat types are given in bold in the text where appropriate. Annex I priority habitat types and the single Annex II priority species known to occur in the UK are preceded in headings by an asterisk (*).

Sites proposed as Special Areas of Conservation which have been submitted to the European Commission are termed candidate SACs (cSAC); those advised to UK government and devolved administrations by JNCC but not yet submitted to the EC are possible SACs (pSAC).

A list of cited acronyms is given in Appendix 1.

Summary

This report provides an overview of current knowledge on certain aspects of the conservation status in the UK of habitats (in terms of range and extent) and species (in terms of distribution and estimated population size) which are listed on Annexes I and II of the EC Habitats Directive. For each Annex I habitat and Annex II species in the UK this report provides an account which contains the following elements:

(i) a UK distribution map

(ii) data on the extent of each habitat, and population size of each species for England, Scotland, Wales, Northern Ireland, and the UK as whole, where these data are available.

This report is a provisional document based upon the most readily available data sources. The data summarised in this report are of variable quality and due regard should be given to the data source and, in the case of Annex I habitat types, the compatibility of the data source with the Annex I habitat definition. The distribution maps are intended to provide indicative information about distribution, and it should not be inferred that they provide a complete picture of the UK resource. Guidance on the relationship between NVC types and Annex I habitat types is given in Appendix 2

This report was compiled primarily to support the UK's proposals in relation to Special Areas of Conservation, but it should also provide contextual information for developing conservation initiatives, both on statutory sites and in the wider environment.

Introduction

This report provides an overview of current knowledge on certain aspects of the conservation status of habitats (in terms of range and extent) and species (in terms of distribution and estimated population size) which are listed on Annexes I and II of the EC Habitats Directive and which occur in the UK.

Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (the 'Habitats Directive'), came into legal force in June 1994. The main aim of the Directive is stated as being "to promote the maintenance of biodiversity" and it endeavours to achieve this by the protection of habitats or species 'of Community interest' (Article 2). These habitats and species are to be protected throughout the Member States of the European Union by the creation of a series of 'Special Areas of Conservation' (SACs) (Article 4), and by various other safeguard measures for particular species. Annex I of the Directive lists habitats and Annex II lists species for which SACs are to be designated. In addition a series of Annex I habitats and Annex II species are afforded 'priority' status as these are judged to be in particular danger of disappearance (Article 1).

Seventy-six Annex I habitats occur in the UK, including 22 priority types. Candidate or possible SACs have been selected for all of these. Fifty-one Annex II species have been recorded in the UK in recent times, including one priority species, the liverwort *Marsupella profunda*. Ten of these species are now extinct in the UK or have been recorded only as vagrants or introductions. Of the remaining 41 species, 40 are proposed as qualifying features for conservation within candidate or possible SACs. The species for which no sites have been selected is harbour porpoise *Phocoena phocoena*, for which the selection rationale has yet to be finalised by the EC, although it is recorded as occurring as a 'non-significant presence' on a number of sites selected for other Annex I or Annex II interests.

For each Annex I habitat and Annex II species occurring in the UK the present report provides an account containing the following elements:

(i) a UK distribution map

(ii) data on the extent of each habitat, and population size of each species for England, Scotland, Wales, Northern Ireland, and the UK as a whole, where these data are available.

Comprehensive data on the distribution and abundance of many Annex I habitats and Annex II species are not currently available for the UK. For some habitat types there are complete or partial inventories but for others data are only available from selected sites or, in some cases, there are only broad-scale extent estimates provided by specialists. There are particular problems with Annex I habitat types which do not correspond closely with categories in standard UK vegetation classifications, such as the National Vegetation Classification (NVC), as estimates of extent cannot readily be calculated from existing information sources.

Obtaining estimates for the UK population size of species is generally even more difficult. Difficulties with determining population size and viability are well documented (Soulé 1987; Burgman *et al*. 1993), and there are many Annex II species where the total population size in the UK is unknown. More frequently the only quantitative data available are the number of localities where the species is known to occur, sometimes supplemented by population counts at selected sites. Generally, however, information about the distribution of Annex II species is more readily available and more comprehensive than that for Annex I habitats. There are national recording schemes which include many Annex II species, although comprehensive data are not readily available for a small number of the species.

The data summarised in this report are of variable quality and due regard should be given to the data source and, in the case of Annex I habitat types, the compatibility of the data source with the Annex I habitat definition. The distribution maps are intended to provide indicative information about distribution, and it should not be inferred that they provide a complete picture of the UK resource.

This information was first collated in 1995 (Buck & Wright 1995), based on a preliminary survey of data sources. Following extensive consultation with specialists in the country agencies since 1998,

much of this information has been revised and updated. This work was undertaken primarily to support the UK's proposals in relation to SACs. In particular, it provides a basis for assessing (a) the proportion of the total UK resource of each habitat an species contained within the site series, and (b) the geographical coverage of the site series. The data should also provide contextual information for developing conservation initiatives, both on statutory sites and in the wider environment.

Data sources

A large number of data sources have been used to produce the present report. Two data sources have been used to provide the majority of the UK distribution maps. These are the NVC database at Lancaster University and the Biological Records Centre (BRC) at the Centre for Ecology and Hydrology (CEH).

The NVC (Rodwell 1991a,b, 1992, 1995, 2000) includes data from around 35,000 vegetation samples from England, Scotland and Wales. Although there are some gaps in the geographical coverage of these data the maps give a general indication of the distribution of each of the NVC types, and these NVC types can generally be related to Annex I habitats. Guidance on the relationship between the NVC types and the Annex I habitat types is given in Appendix 2.

The BRC provided data for most of the species. These data are based on the documented occurrence of a species within 10x10 km grid squares. This information is largely collated from local recorders and there may be gaps in the geographical coverage of the data. Taking account of the irregularity and incompleteness of the recording of each species, a suitable cut-off data point was selected for each species to ensure as far as possible that the maps reflect contemporary distribution patterns.

For some habitats and species other, more comprehensive distribution data were readily available, including information held in a number of habitat-specific databases held by the JNCC Support Unit or the country agencies. These included the Coastal Resource, Estuaries, Saltmarsh, Sand Dune and Woodland databases held by the Support Unit, and the Upland and Standing Water databases held by Scottish Natural Heritage. Some of these databases were also able to provide information on the UK extent of certain Annex I habitat types.

The Coastal Resource, Estuaries, Saltmarsh, and Sand Dune Databases have evolved from resource surveys, and hold individual site and vegetation information, which can be accessed on site, administrative region, national or GB-wide basis (UK-wide for estuaries). Coverage is virtually complete for these habitats. For sea cliffs, information is only available on the length or presence of cliffs.

The Woodland Database contains information on the distribution of NVC woodland types which has been collated from separate surveys undertaken by many different organisations including the country agencies. The Upland Database holds site-based data on habitat extent for over 300 sites distributed throughout England, Scotland and Wales. These data are based on vegetation surveys carried out during the 1980s and 1990s. Survey coverage of the British uplands is incomplete and habitat data are not available for substantial areas of upland, especially in Scotland. The Standing Water Database contains information on 3000 lochs in Scotland, around 10% of the total, which have been surveyed since 1983 as part of the Scottish freshwater loch survey.

JNCC's International Designations Database (IDD) contains details, submitted by the country agencies, of all Annex I habitats and Annex II species recorded on candidate and possible Special Areas of Conservation in the UK. With a few exceptions, such as vagrant sea mammals on some marine sites, the database includes all Habitats Directive features occurring on SACs, including non-qualifying features, i.e. non-significant occurrences for which sites have not been proposed in a European context. These data have been used in the production of the maps. However, for each SAC, only a single central grid reference is provided in the IDD. In the case of sites which fall within more than one 10x10 km grid square, it is possible that the mapped feature actually lies in an adjacent square to that shown, and/or that it occurs in more squares than are shown on the map.

Other data have come from both published and unpublished sources. In many cases where comprehensive survey data have been unavailable, extent and population size estimates have been based on the expert opinion of country agency specialists. Extent or population figures have generally been rounded to the nearest 10, 100 or 1000 units, except in the case of some very localised habitats or small, well-studied populations.

For each feature, an indication of the reliability of habitat extent or population size data within the UK and within each country is given, as follows:

1 Precise measure of total extent/population size
2 Measure based on inventory data
3 Estimate calculated from different data sources and/or incomplete inventory data
4 Estimate based on expert opinion

In some cases only a range can be quoted for habitat extent or population size, based on expert opinion of the likely minimum and maximum figures. The true figure could lie anywhere within this range. In other cases, the habitat extent or population size cannot be estimated with any degree of confidence, and it has only been possible to indicate presence/absence.

This provisional document is based upon the most readily available data sources. The JNCC intends to update the report as new information becomes available. We would welcome information about further data sources and comments upon specific habitats and species. Those wishing to make comments should do so in writing to:

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ANNEX I HABITATS

1110 Sandbanks which are slightly covered by sea water all the time [11.25]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

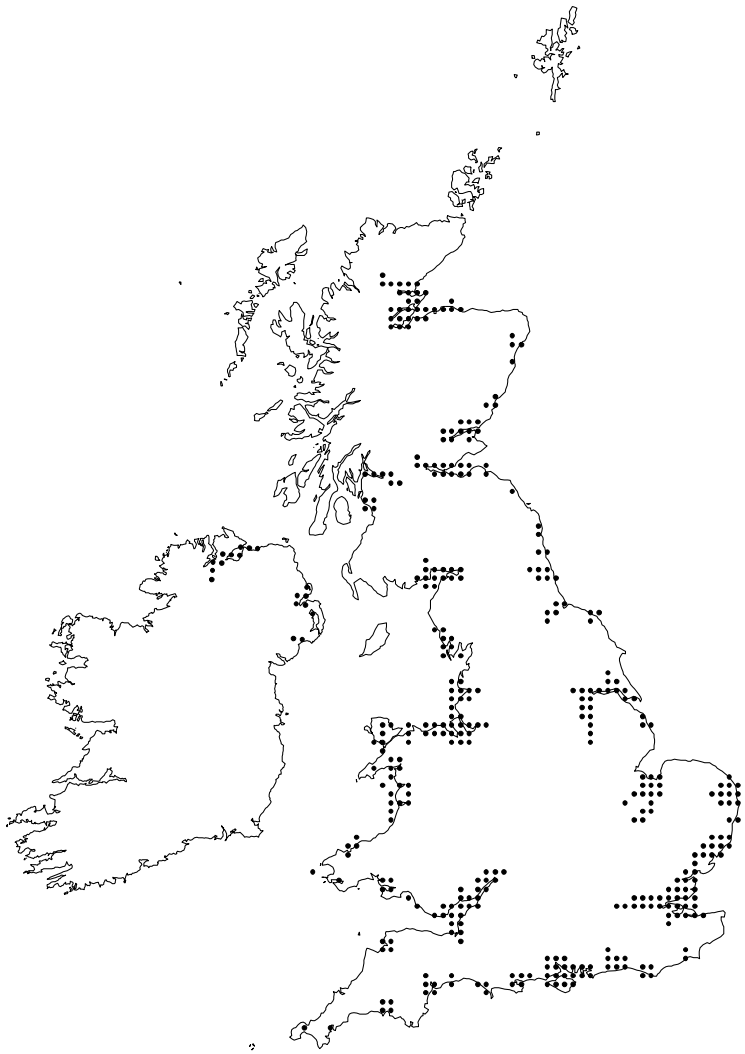
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**unknown**	**–**

Data source:

There are no comprehensive data available for the UK.

1130 Estuaries [13.2]

UK distribution:



Data source: Estuaries Review Database, JNCC; JNCC International Designations Database.

The map shows the distribution of coastal plain, bar-built, and complex estuaries as defined by Davidson *et al*. (1991), together with candidate and possible Special Areas of Conservation supporting this Annex I type. Some sites identified by Davidson *et al*. (1991) have since been reclassified and are considered to correspond to Annex I type **1160 Large shallow inlets and bays**, and are not shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	196,810[1]	2
Scotland	54,120	2
Wales	28,320[2]	2
Northern Ireland	3,310	2
Total UK extent:	**283,060**	**2**

Data source: Marine Information Team, JNCC.

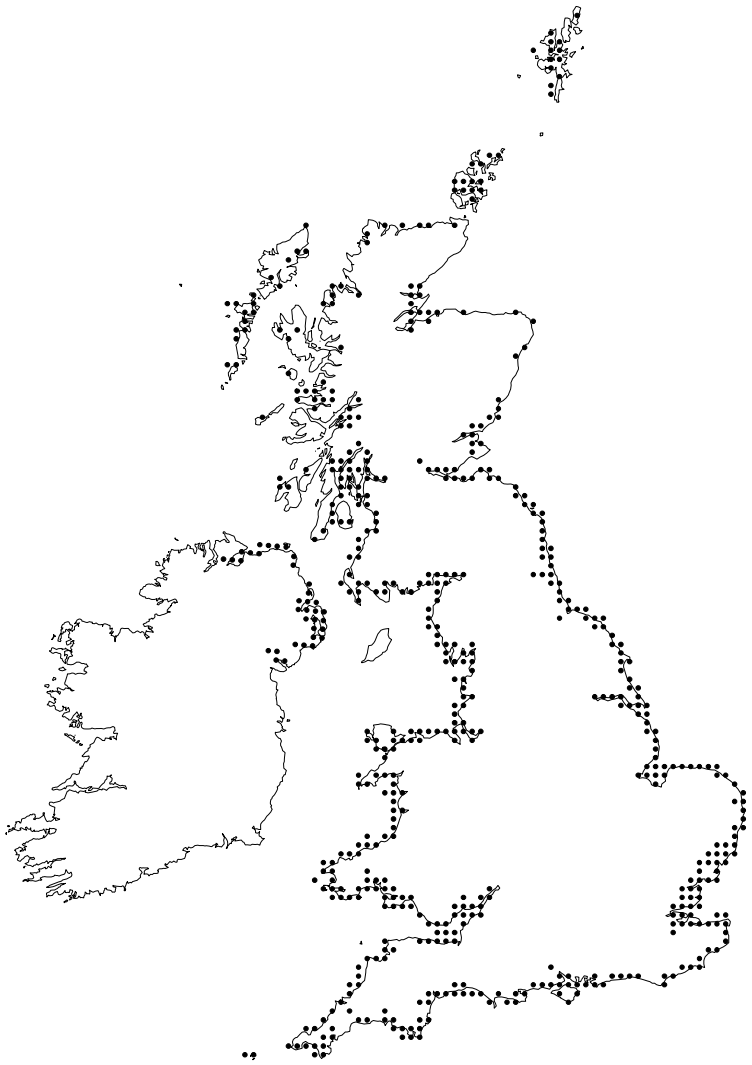
[1] Includes Severn estuary; Solway Firth

[2] Includes Dee estuary

The data have been generated in GIS, based on OS maps supplied by the country agencies. A complete GB inventory of estuaries as defined by Davidson *et al.* (1991) was undertaken as part of the NCC's Estuaries Review (1988-1990); the Review included some fjards, voes, rias and selected embayments which have since been reclassified and are considered to correspond to Annex I type **1160 Large shallow inlets and bays**, and are not included in the above totals.

1140 Mudflats and sandflats not covered by seawater at low tide [14]

UK distribution:



Data source: Marine Information Team, JNCC; Buck & Donaghy (1996); JNCC International Designations Database.

The map shows the approximate location of littoral sediments, including candidate and possible Special Areas of Conservation supporting this Annex I type. Small areas of littoral sediment are present at the heads of most Scottish sealochs, but few of these sites are shown on the map.

UK extent:

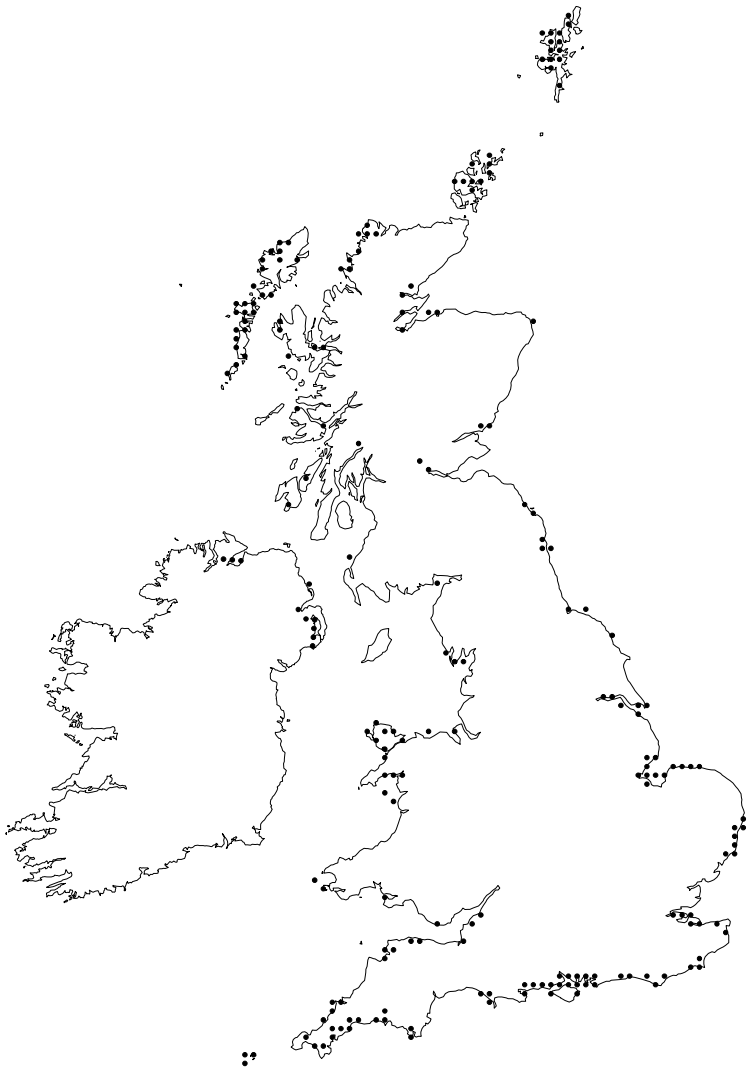
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	>11,000	3
Total UK extent:	**290,000**	**3**

Data source: Davidson *et al*. (1991) (total intertidal area); Burd (1989) (saltmarsh); JNCC unconfirmed Coastwatch data (rock and boulder); Buck & Donaghy (1996) (Northern Ireland).

There are no comprehensive data for the extent of this habitat type in the UK. The figure provided for the UK resource has been derived from a number of separate data sources but is likely to be a reasonable estimate. The total intertidal area only includes up to Mean High Water, rather than to the limit of extreme high water. It also includes areas of mixed stony shores as well as intertidal sand and mudflats.

1150 *Coastal lagoons [21 Lagoons]

UK distribution:



Data source: JNCC International Designations Database; Marine Information Team, JNCC; Wolfe-Murphy *et al.* (1992).

The map shows where coastal lagoons have been recorded by the above sources, together with candidate and possible Special Areas of Conservation supporting this Annex I type. It also includes some man-made and freshwater lagoons which are not considered for selection as **Coastal lagoons** under the Directive. For Northern Ireland the location of saline lakes which are less than 1 ha in size are shown; however, these are mostly man-made.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	1,200	2
Scotland	2,900	2
Wales	12[3]	1
Northern Ireland	<50	3
Total UK extent:	**4,200**	**2**

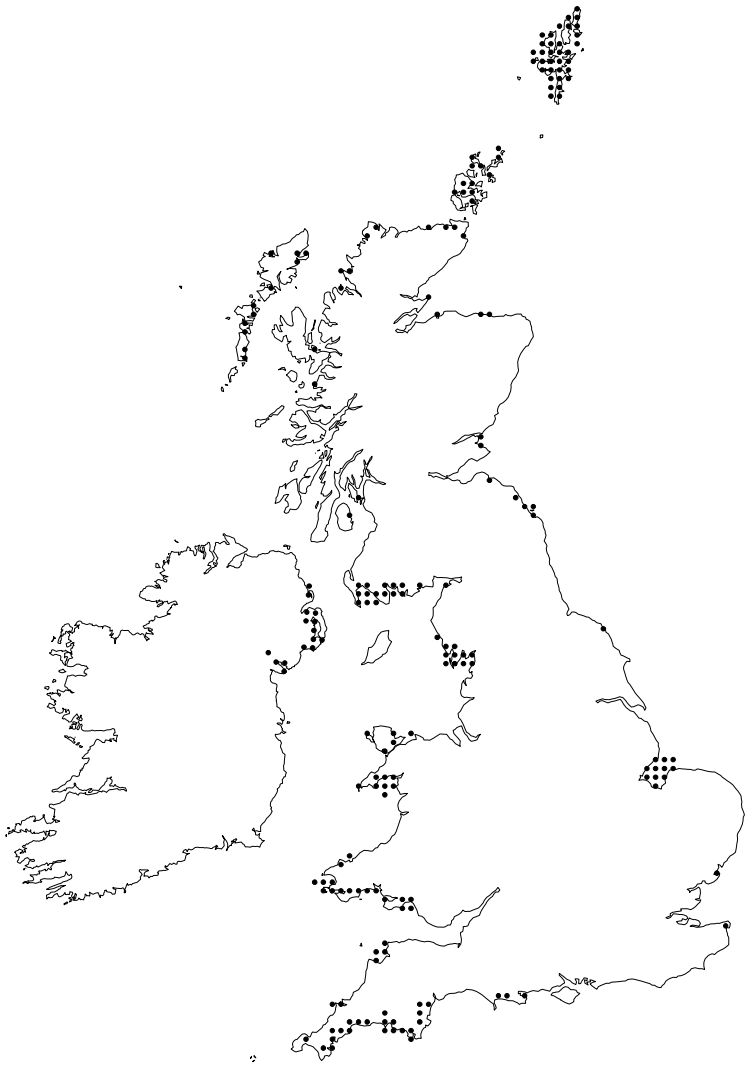
Data source: Bamber *et al.* (2000); Barnes (1988); Covey *et al*. (1998); Smith & Laffoley (1992); Thorpe (1998); Thorpe *et al.* (1998); Wolfe-Murphy *et al.* (1992).

The definition of lagoon varies between source. The MNCR survey of isolated saline waters in Scotland included obs, rock basins formed by glaciation with a rock sill that prevents free movement of seawater into and out of the basin. Barnes (1988) used a narrower definition, and lagoons separated from the sea by rock sills were excluded. Smith & Laffoley (1992) included both natural and artificially created lagoons; brackish drainage ditches, artificial boating lakes, etc. were included where they support a high species diversity.

[3] Figure refers to the only two "characteristic saline lagoons" of natural origin in Wales (Bamber *et al.* 2000).

1160 Large shallow inlets and bays [12]

UK distribution:



Data source: Marine Information Team, JNCC; Buck & Donaghy (1996); JNCC International Designations Database

The map shows the location of selected inlets and embayments that lie within the definition of this Annex I habitat type, including candidate and possible Special Areas of Conservation supporting this feature.

UK extent:

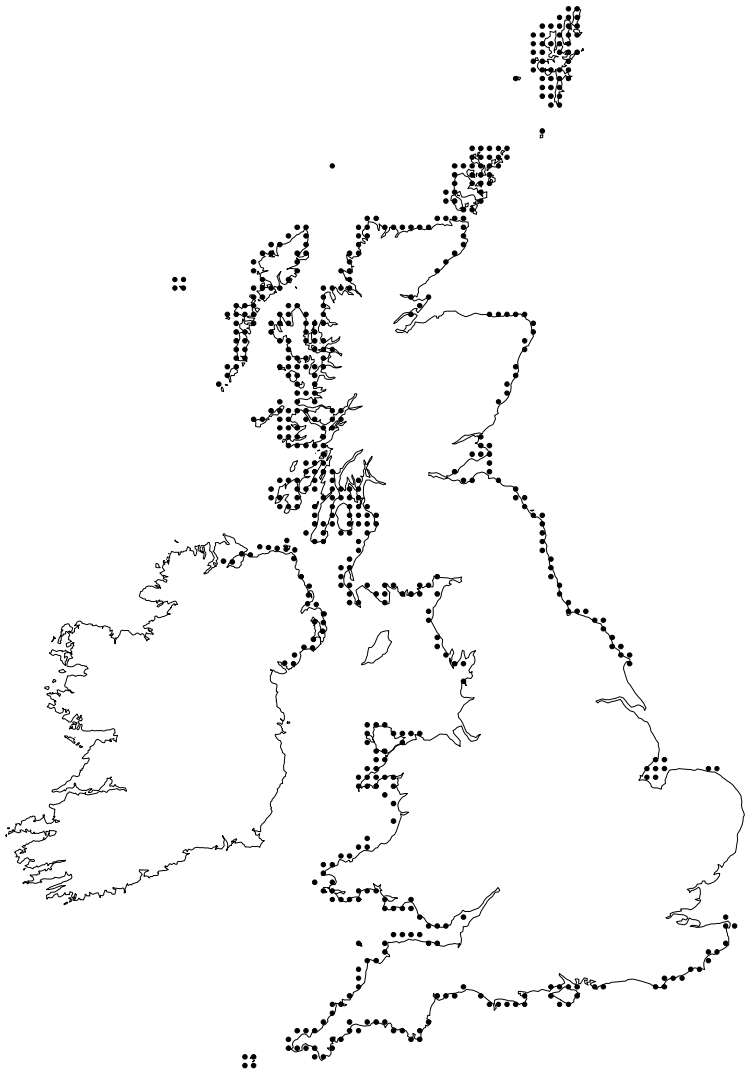
	Area (ha)	*Reliability of measure/estimate*
England	167,930	2
Scotland	338,820	2
Wales	101,970	2
Northern Ireland	63,730	2
Total UK extent:	**672,450**	**2**

Data source: Marine Information Team, JNCC.

The data have been generated in GIS, based on OS maps supplied by the country agencies.

1170 Reefs [11.24]

UK distribution:



Data source: Coastal Resource Database, JNCC; Marine Information Team, JNCC; JNCC International Designations Database.

The map shows the presence of rocky shores that are exposed at Mean Low Water, and selected biogenic reefs, together with candidate and possible Special Areas of Conservation supporting this Annex I type. This does not indicate the presence of subtidal and offshore reefs, for which little information is available.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**present**	**–**

The true extent of reefs in the UK is unknown. The only indicator of the possible occurrence of inshore reefs is the length of intertidal rocky shores; subtidal reefs may or may not be contiguous with these. No extent data are available for offshore reefs.

1210 Annual vegetation of drift lines [17.2]

UK distribution:

Data source: NVC data; Sand Dune Database, JNCC; Cooper *et al*. (1992); JNCC International Designations Database.

The map shows records for NVC communities SD2 and SD3, together with candidate and possible Special Areas of Conservation supporting this Annex I type. These communities occur on sandy beaches (not included in the Annex I habitat type) as well as shingle; the Annex I type is therefore less widespread than indicated on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**<100**	**4**

Data source: Coastal Specialist Working Group, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion. As this vegetation is ephemeral in nature, the location and extent of this habitat at both site level and in the UK as a whole will vary considerably from year to year, and even the largest sites probably support less than 10 ha of this habitat.

1220 Perennial vegetation of stony banks [17.3]

UK distribution:

Data source: NVC data; Sneddon & Randall (1993 *et seq*.); Cooper *et al*. (1992); JNCC International Designations Database.

The map shows records for NVC community SD1, together with candidate and possible Special Areas of Conservation supporting this Annex I type, and other known shingle structures; the latter may be unvegetated, or only very sparsely vegetated.

UK extent:

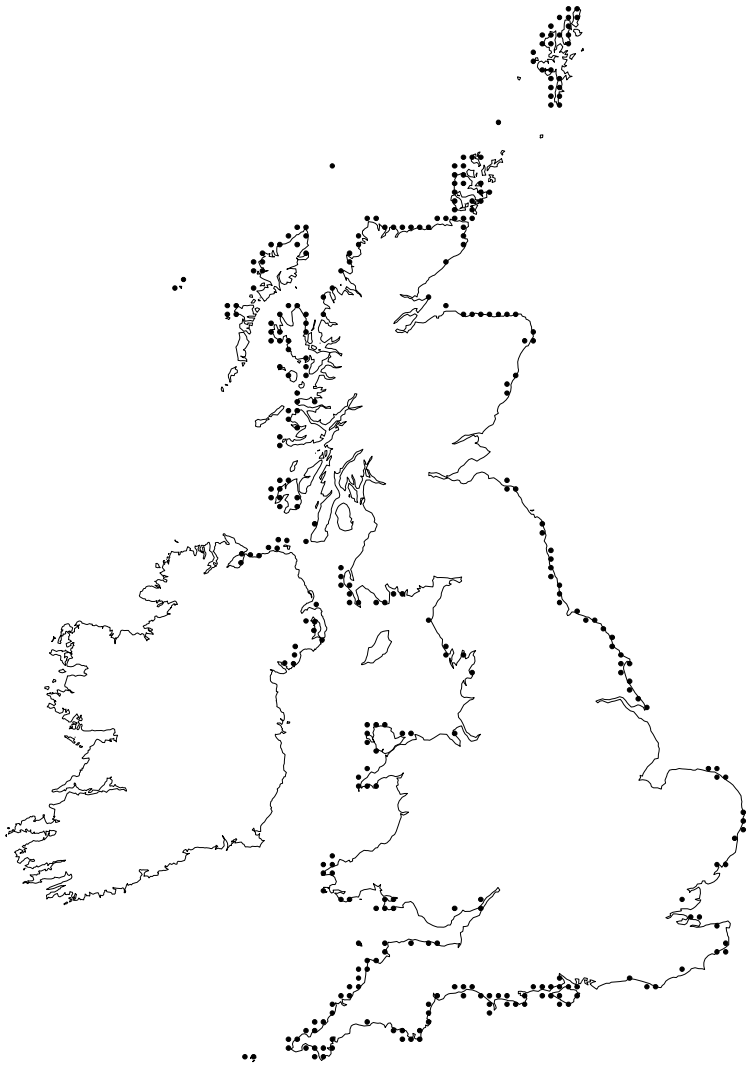
	Area (ha)	*Reliability of measure/estimate*
England	4,350	3
Scotland	670	3
Wales	100	3
Northern Ireland	<10	4
Total UK extent:	**5,130**	**3**

Data source: Coastal Resource Database, JNCC; Richard Weyl, EHS; see also Sneddon & Randall (1993a,b, 1994a,b); Ferry *et al*. (1990).

Reasonably comprehensive extent data for England, Scotland and Wales are available from the Coastal Vegetative Shingle Structures Survey of Great Britain (1987-1992) (Sneddon & Randall 1993 *et seq.*). This survey included shingle structures rather than areas of intertidal shingle or fringing beaches and included unvegetated shingle. However, some sites were only partially surveyed, and others not surveyed at all. The extent data are therefore under-estimates. The figure for Northern Ireland is an estimate based on expert opinion.

1230 Vegetated sea cliffs of the Atlantic and Baltic coasts [18.21]

UK distribution:



Data source: NVC data; Upland Database, SNH; Cooper *et al*. (1992); Stewart Angus, SNH; Pye & French (1993); JNCC International Designations Database.

The map shows records for NVC types H7, H8d, MC1, MC2, MC3, MC4, MC5, MC6, MC8, MC9, MC10, MC11 and MC12, together with candidate and possible Special Areas of Conservation supporting this Annex I type. In addition records for NVC community MC7 are also shown for Northern Ireland. Unprotected soft cliffs in England are also shown. Soft cliffs in Scotland, Wales and Northern Ireland are under-represented on the map.

UK extent:

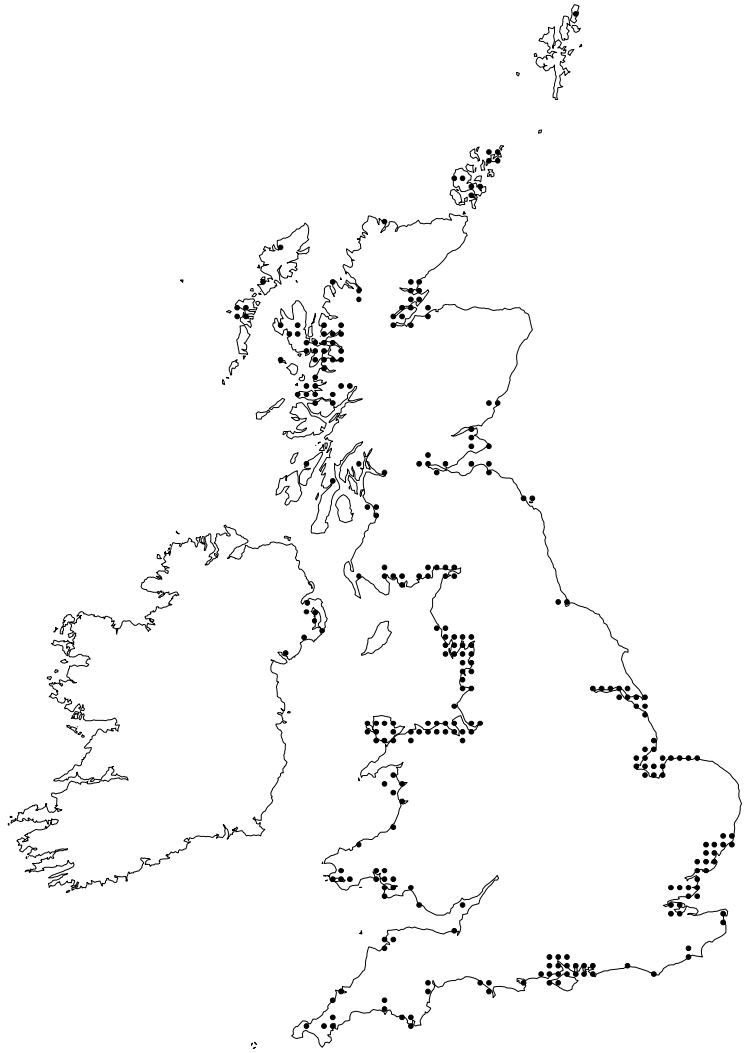
	Length (km)	*Reliability of measure/estimate*
England	1,200	3
Scotland	2,400	3
Wales	500	3
Northern Ireland	present	–
Total UK extent:	**>4,100**	**3**

Data source: Coastal Resource Database, JNCC.

The figures quoted are the lengths of sea cliffs along the coast of Great Britain; these may be vegetated or bare, and the figures must therefore be treated with caution. No area data are available. There are no comprehensive data available for Northern Ireland.

1310 *Salicornia* and other annuals colonising mud and sand [15.11]

UK distribution:



Data source: NVC data; Burd, (1989); Cooper *et al*. (1992); JNCC International Designations Database.

The map shows records for NVC communities SM7, SM8, and SM9 from NVC data and Cooper *et al*. (1992) and community 2a *Salicornia*/*Suaeda* saltmarsh from Burd (1989), together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	1,620	2
Scotland	360	2
Wales	380	2
Northern Ireland	present	–
Total UK extent:	**>2,400**	**2**

Data source: Saltmarsh Database, JNCC; see also Burd (1989).

Comprehensive extent data for England, Scotland and Wales are available from the Saltmarsh Survey of Great Britain (1981-1989). However, these may be inaccurate, especially for pioneer vegetation, and should therefore be treated with caution. The Saltmarsh Database holds information on

community 2a *Salicornia/Suaeda* saltmarsh which is synonymous with NVC communities SM7, SM8 and SM9. No information is held on NVC community SM27 but this community is an ephemeral vegetation type and generally covers relatively small areas. There are no comprehensive data available for Northern Ireland.

1320 *Spartina* swards (*Spartinion maritimae*) [15.12 *Spartina* swards (*Spartinion*)]

UK distribution:

Data source: JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation where *Spartina maritima, Spartina alterniflora* , or the rare and local hybrid *Spartina* x *townsendii* are known to occur in any quantity. No data are available for sites not proposed as SAC. Occurrences of the widely introduced invasive *Spartina anglica*, which is not considered for site selection in the UK, are not shown.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<100	3
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**<100**	**3**

Data source: Pat Doody, JNCC.

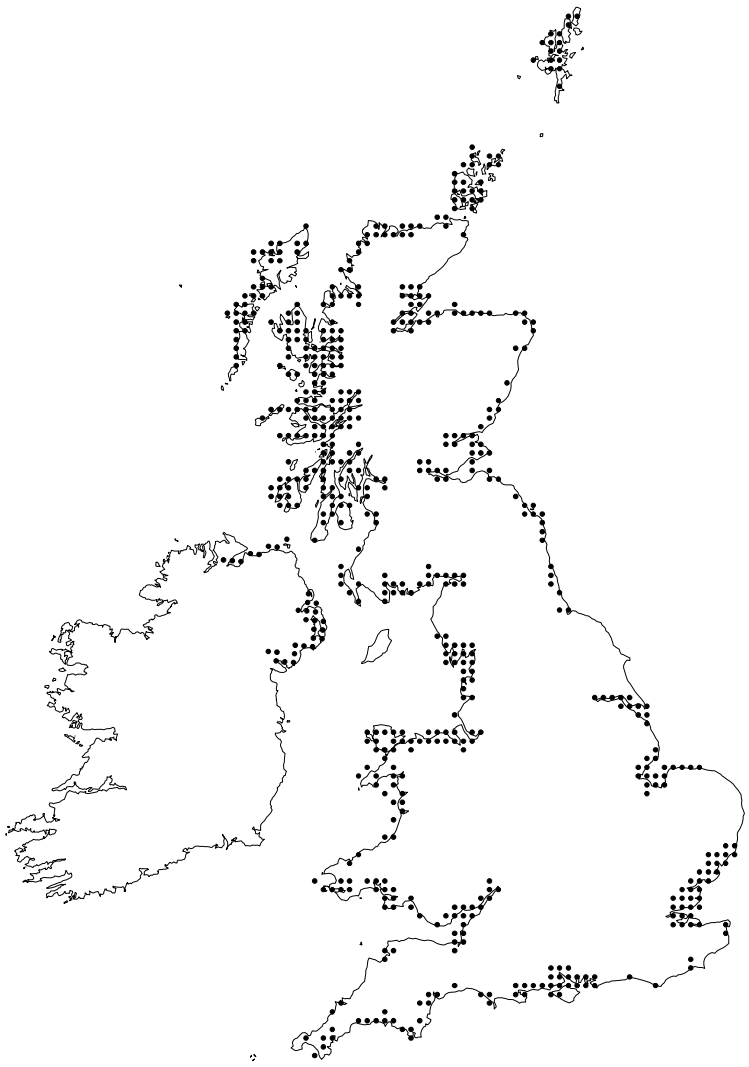
There are no comprehensive data available for the UK but there are only two sites where *Spartina maritima* or *Spartina alterniflora* are known to occur in any quantity and the hybrid *Spartina* x

townsendii is also rare and local. Stands of the widely introduced invasive *Spartina anglica* are not included in the figure. The extent figure provided is an estimate based on expert opinion.

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

[15.13 Atlantic salt meadows *Glauco-Puccinellietalia*]

UK distribution:



Data source: NVC data; Burd (1989); Cooper *et al*. (1992); JNCC International Designations Database

The map shows records for NVC communities SM10 to SM20 from NVC data and Cooper *et al.* (1992) and communities 2b *Aster*, 3a *Puccinellia*, 3b *Halimione*, 4a *Limonium/Armeria*, 4b *Puccinellia/Festuca*, 4c *Juncus gerardii*, and 4d *Juncus maritimus* saltmarsh from Burd (1989), together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	21,000	2
Scotland	4,000	2
Wales	4,000	2
Northern Ireland	present	–
Total UK extent:	**>29,000**	**2**

Data source: Saltmarsh Database, JNCC; see also Burd (1989).

Comprehensive survey data for England, Scotland and Wales are available from the Saltmarsh Survey of Great Britain (1981-1989). These data are the best available but may be inaccurate. The Saltmarsh Database holds information on communities 2b Aster, 3a *Puccinellia/Festuca*, 4c *Juncus gerardii*, and 4d *Juncus maritimus* saltmarsh which are synonymous with NVC communities SM10 to SM18. No information is held on NVC communities SM19 and SM20 but these are transitional communities which are restricted to the west and north coasts of the UK and only cover small areas. There are no comprehensive data available for Northern Ireland.

1340 *Inland salt meadows

[15.14 Continental salt meadows (*Puccinellietalia distansis*)]

UK distribution:

Data source: Lee (1975, 1977)

The map shows the only remaining natural inland saltmarsh in the UK.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	0.5	1
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**0.5**	**1**

Data source: Richard Jefferson, EN.

Only one natural site surveyed by Lee (1975, 1977) remains today, and although the vegetation was not surveyed using the NVC, the vegetation present consisted of plant species of the *Puccinellietalia distansis*.

1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)

[15.16 Mediterranean and thermo-Atlantic halophilous scrubs (*Arthrocnemetalia-fruticosae*)]

UK distribution:

Data source: NVC data; JNCC International Designations Database.

The map shows records for NVC communities SM21, SM25 and SM7, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	100	2
Scotland	not present	–
Wales	5	3
Northern Ireland	not present	–
Total UK extent:	**110**	**2**

Data source: Saltmarsh Database, JNCC; Peter Rhind, CCW; see also Burd (1989).

Reasonably comprehensive extent data are available from the Saltmarsh Survey of Great Britain (1981-1989). The Saltmarsh Database holds information on community 5b *Suaeda fruticosa* which is synonymous with NVC community SM25. Stands of SM7 and SM21 are not recognised individually by the Saltmarsh Database and therefore this figure is an underestimate.

2110 Embryonic shifting dunes [16.211]

UK distribution:

Data source: NVC data; Sand Dune Database, JNCC; JNCC International Designations Database; Cooper *et al.* (1992).

The map shows records for NVC types SD2 and SD4, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

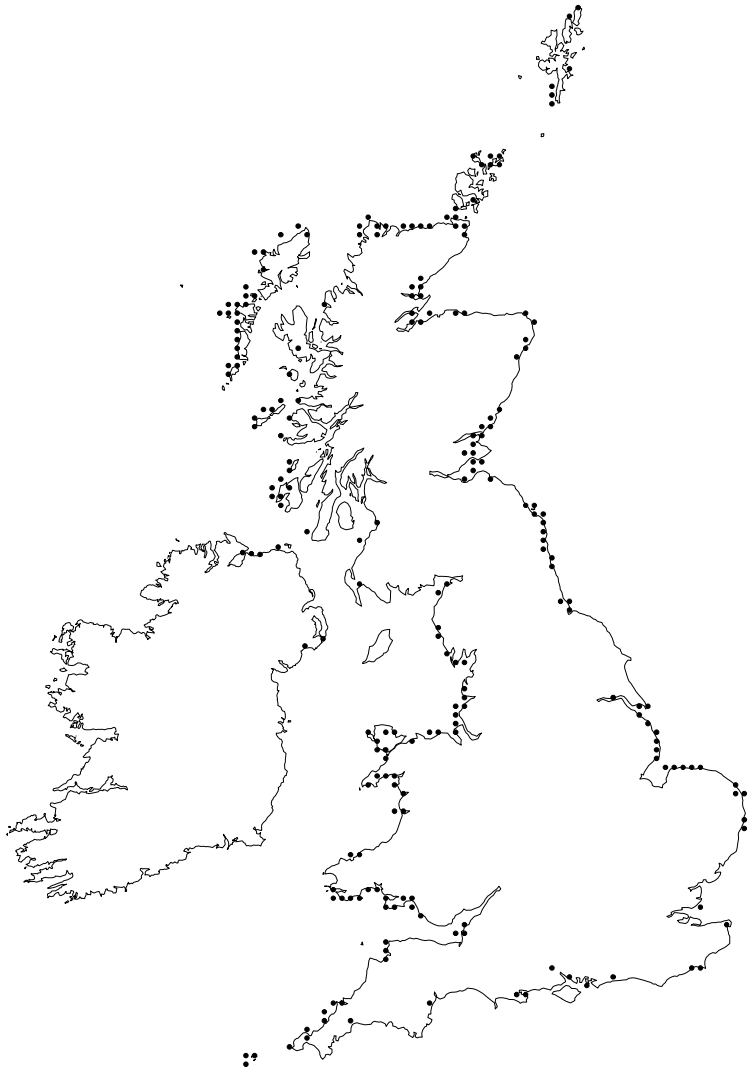
	Area (ha)	*Reliability of measure/estimate*
England	100	2
Scotland	90	2
Wales	100	2
Northern Ireland	present	–
Total UK extent:	**>290**	**3**

Data source: Sand Dune Database, JNCC; Dargie (1998a-e, 1999, in press); Stewart Angus, SNH; see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on NVC community SD4. However, this community is also characteristic pioneer vegetation of gently-sloping beaches all around the coast, which were not covered by the sand dune survey. There are no comprehensive data available for Northern Ireland.

2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") [16.212]

UK distribution:



Data source: NVC data; Sand Dune Database, JNCC; Cooper *et al.* (1992); JNCC International Designations Database.

The map shows records for NVC community SD6, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

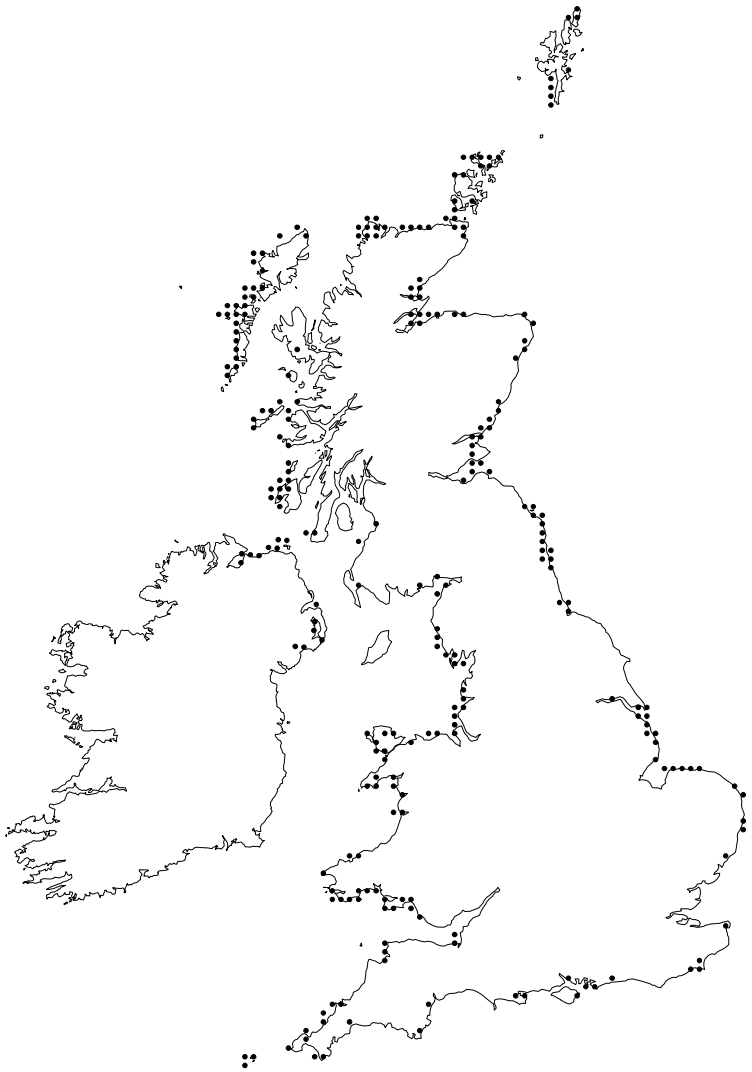
	Area (ha)	*Reliability of measure/estimate*
England	780	2
Scotland	950	2
Wales	480	2
Northern Ireland	<10	3
Total UK extent:	**2220**	**2**

Data source: Sand Dune Database, JNCC; Dargie (1998a-e, 1999, in press); Stewart Angus, SNH; Richard Weyl, EHS; see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on NVC community SD6. The figure for Northern Ireland is an estimate based on expert opinion.

2130 *Fixed dunes with herbaceous vegetation ("grey dunes")** [16.221-16.227]

UK distribution:



Data source: NVC data; Sand Dune Database, JNCC; Cooper *et al.* (1992); JNCC International Designations Database.

The map shows coastal records for NVC types SD7, SD8, SD9b, SD11 and SD12, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Some of these NVC types are also found on machair; these records have not been distinguished on this map. Note that inland examples of NVC communities SD11 and SD12 are considered to be referable to Annex I type **2330 Inland dunes with open *Corynephorus* and *Agrostis* grasslands** and are not shown above.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	3,900	2
Scotland	14,900	3
Wales	2,800	2
Northern Ireland	800	4
Total UK extent:	**<22,400**	**3**

Data source: Sand Dune Database, JNCC; Stewart Angus, SNH; (Dargie 1998a-e, 1999, in press); Richard Weyl, EHS; see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on NVC types SD7, SD8, SD9b, SD11 and SD12. The data for Scotland are likely to be an overestimate as it includes a large part of the machair resource. The figure for Northern Ireland is an estimate based on expert opinion.

2140 Decalcified fixed dunes with *Empetrum nigrum* [16.23]

UK distribution:

Data source: Sand Dune Database, JNCC; JNCC International Designations Database; Stewart Angus, SNH.

The map shows records for NVC type H11b, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	380	3
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**380**	**3**

Data source: Sand Dune Database, JNCC; Stewart Angus, SNH; see also Dargie (1993).

The figure provided is taken from the Sand Dune Database and other survey reports which hold information on NVC type H11b. These surveys also identified other areas of undifferentiated H11 and areas of transition between H11/M16; some intermediate types are included in the above total.

2150 *Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)

[16.24 Eu-Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)]

UK distribution:

Data source: NVC data; Sand Dune Database, JNCC; Cooper *et al*. (1992); JNCC International Designations Database.

The map shows the records for NVC types H11 and H1d, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	190	3
Scotland	550	3
Wales	40	3
Northern Ireland	120	4
Total UK extent:	**900**	**3**

Data source: Sand Dune Database, JNCC; Stewart Angus, SNH; Richard Weyl, EHS; see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on NVC types H11a, H11c, and H1d. These surveys also identified other areas of undifferentiated H11 and areas of transition between H11/M16 which have not been included in this total. The figure for Northern Ireland is an estimate based on expert opinion.

2160 Dunes with *Hippophae rhamnoides* [16.25 Dunes with *Hyppophae rhamnoides*]

UK distribution:

Data source: JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting native stands of *Hippophae rhamnoides*. Occurrences resulting from introductions outside its natural range, which are not considered for site selection in the UK, are not shown.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	185	2
Scotland	introduced	–
Wales	introduced	–
Northern Ireland	introduced	–
Total UK extent:	**185**	**2**

Data source: JNCC International Designations Database.

The Sand Dune Survey of Great Britain (1987-1990) recorded 372 ha of this habitat type, but most stands result from introductions.

2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)

[16.26 Dunes with *Salix arenaria*]

UK distribution:

Data source: NVC data; Sand Dune Database, JNCC; JNCC International Designations Database; Cooper *et al*. (1992).

The map shows records for NVC community SD16 together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	230	2
Scotland	170	2
Wales	230	2
Northern Ireland	present	–
Total UK extent:	**<630**	**3**

Data source: Sand Dune Database, JNCC; Stewart Angus, SNH; Dargie (1998a-e, 1999, in press); see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on the NVC type SD16. The total includes some occurrences of **2190 Humid dune slacks**, and is therefore an overestimate. There are no comprehensive data available for Northern Ireland.

2190 Humid dune slacks [16.31 to 16.35]

UK distribution:

Data source: NVC data; Sand Dune Database; JNCC International Designations Database; Cooper *et al*. (1992).

The map shows records for NVC communities SD13, SD14, SD15, and SD17, together with candidate and possible Special Areas of Conservation supporting this Annex I type. This map does not include NVC community SD16 because of the considerable overlap with Annex I type **2170 Dunes with *Salix repens* ssp. *argentea***.

UK extent:

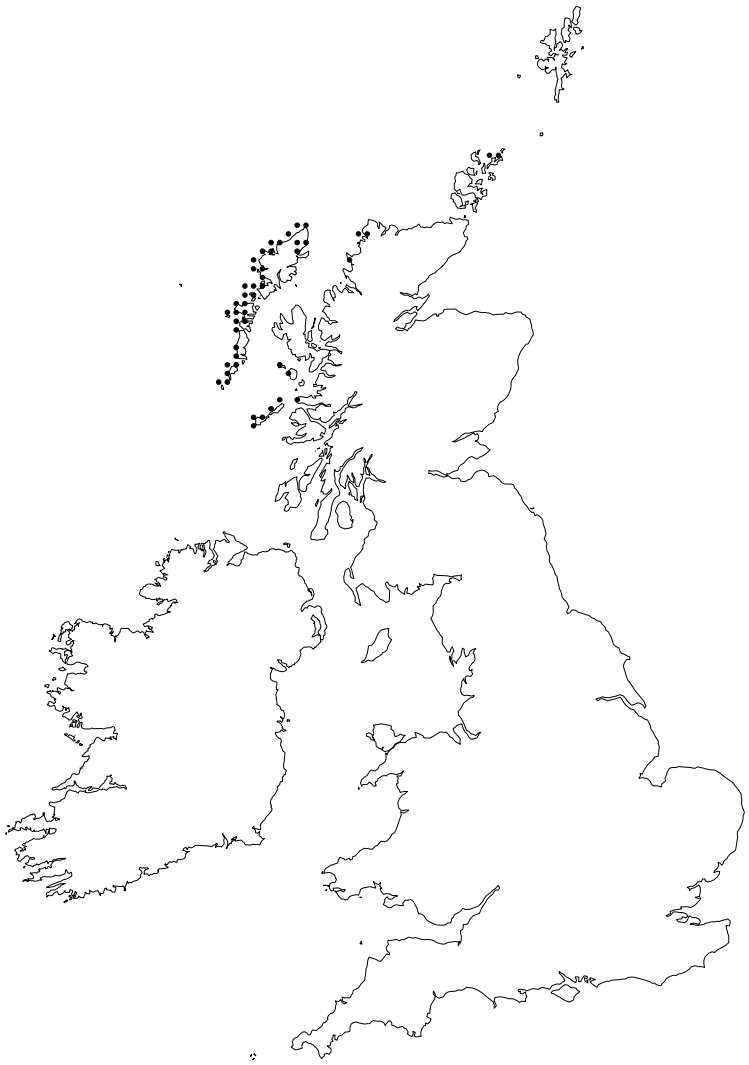
	Area (ha)	*Reliability of measure/estimate*
England	200	2
Scotland	1200	2
Wales	390	2
Northern Ireland	present	–
Total UK extent:	**1,790**	**3**

Data source: Sand Dune Database, JNCC; Dargie (1998a-e, 1999, in press); Richard Weyl, EHS; see also Radley (1994); Dargie (1993, 1995).

Comprehensive extent data are available from the Sand Dune Survey of Great Britain (1987-1990) and the subsequent Sand Dune Vegetation Survey of Scotland. The Sand Dune Database and other survey reports provide information on NVC communities SD13, SD14, SD15, and SD17. Figures for the extent of SD16 have not been included because of the considerable overlap with **2170 Dunes with *Salix repens* ssp. *argentea***. There are no comprehensive data available for Northern Ireland.

21A0 **Machairs** [1A]

UK distribution:



Data source: Stewart Angus, SNH; JNCC International Designations Database.

The map shows the known distribution of machair, including some marginal types.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	13,300	3
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**13,300**	**3**

Data source: Stewart Angus, SNH.

The figure is based on a number of information sources and includes minor habitats which form part of the machair mosaic, but excludes areas of improved grassland which cover a significant proportion of the former machair resource.

2250 *Coastal dunes with *Juniperus* spp.

[16.27 Dune juniper thickets (*Juniperus* spp.)]

UK distribution:

Data source: Sand Dune Database, JNCC; Stewart Angus, SNH; JNCC International Designations Database.

The map shows the known distribution of this habitat type, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	<20	3
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**<20**	**3**

Data source: Sand Dune Database, JNCC; Kathy Duncan, SNH; see also Dargie (1993).

The above figure is based on an estimate of the extent of this habitat within the two candidate SACs selected for this Annex I type. It excludes very small stands which have been recorded at several other locations.

2330 Inland dunes with open *Corynephorus* and *Agrostis* grasslands

[64.1 x 35.2 Open grassland with *Corynephorus* and *Agrostis* of continental dunes]

UK distribution:

Data source: NVC data.

The map shows inland records for NVC communities SD11 and SD12. Note that coastal examples of these sand dune communities are considered to be referable to Annex I type **2130 Fixed dunes with herbaceous vegetation ("grey dunes")**.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	120	2
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**120**	**2**

Data source: Richard Jefferson, EN.

The figure provided is an estimate based on the total area of the site management unit which includes this habitat.

3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

[22.11 x 22.31 Oligotrophic waters containing very few minerals of Atlantic sandy plains with amphibious vegetation: *Lobelia*, *Littorella* and *Isoetes*]

UK distribution:

Data source: JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**500**	**4**

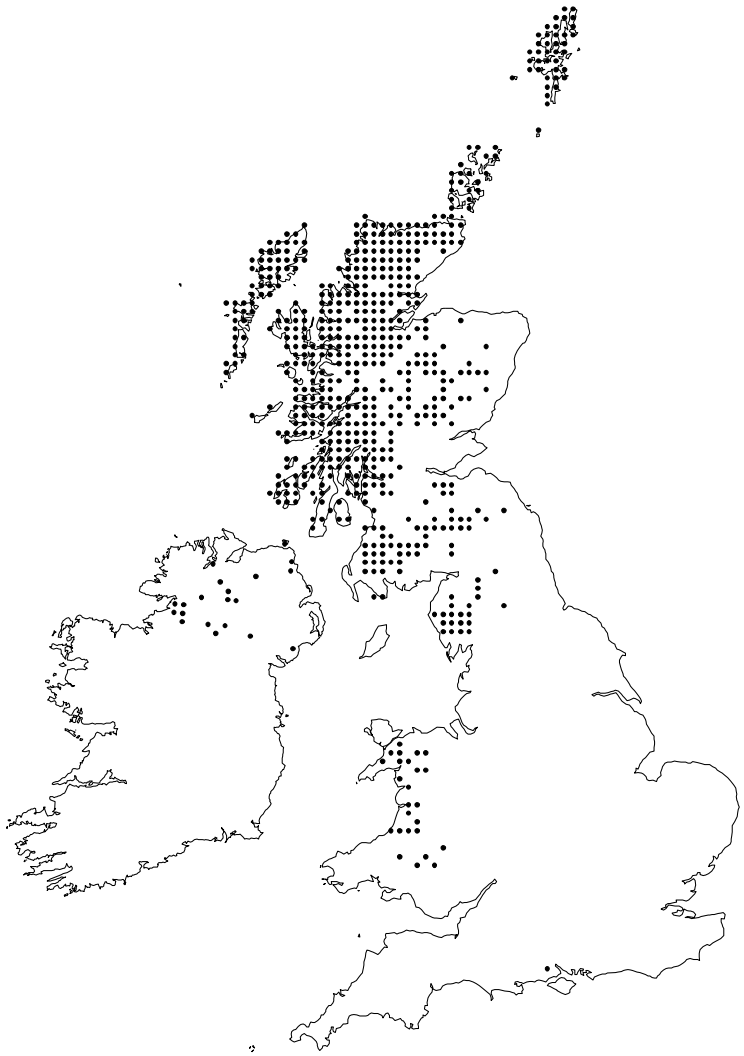
Data source: Freshwater Lead Co-ordination Network, JNCC.

There are no comprehensive data for the extent of this habitat type in the UK. The figure provided is an estimate based on expert opinion.

3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*

[22.12 x (22.31 and 22.32) Oligotrophic waters in medio-European and perialpine areas with amphibious vegetation: *Littorella* or *Isoetes* or annual vegetation on exposed banks (*Nanocyperetalia*)]

UK distribution:



Data source: Standing Water Database, SNH; Palmer & Roy (1997); Wolfe-Murphy *et al.* (1992); JNCC International Designations Database.

The map shows records for oligotrophic and mesotrophic lake types 2, 3, 4 and 5 of the Standing Water Classification in upland regions in Great Britain, and the equivalent types from the Northern Ireland Lake Survey (lake types III and IV) in upland areas, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	2,450	2
Total UK extent:	**150,000**	**4**

Data source: Freshwater Lead Co-ordination Network, JNCC; Wolfe-Murphy *et al*. (1992).

There are no comprehensive data available for the extent of this habitat type in England, Scotland and Wales. The figure provided for total UK extent is an estimate based on expert opinion. For Northern Ireland comprehensive data are available from the Northern Ireland Lake Survey (Wolfe-Murphy *et al*. 1992).

3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

[21.12 x 22.44 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* formations]

UK distribution:

Data source: Freshwater Lead Co-ordination Network, JNCC; JNCC International Designations Database; Wolfe-Murphy *et al*. (1992).

The map shows sites where this habitat type is known to occur in Great Britain, and lake types XV and XVI with *Chara* recorded in the Northern Ireland Lake Survey, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	180	2
Total UK extent:	**1,000**	**4**

Data source: Freshwater Lead Co-ordination Network, JNCC; Wolfe-Murphy *et al.* (1992).

There are no comprehensive data available for the extent of this habitat type in England, Scotland and Wales. The figure provided for total UK extent is an estimate based on expert opinion. For Northern Ireland comprehensive data are available from the Northern Ireland Lake Survey (Wolfe-Murphy *et al*. 1992). The figure includes lakes types XV and XVI where *Chara* are present, as described by survey.

3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation [22.13]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	4,420	2
Total UK extent:	**unknown**	**–**

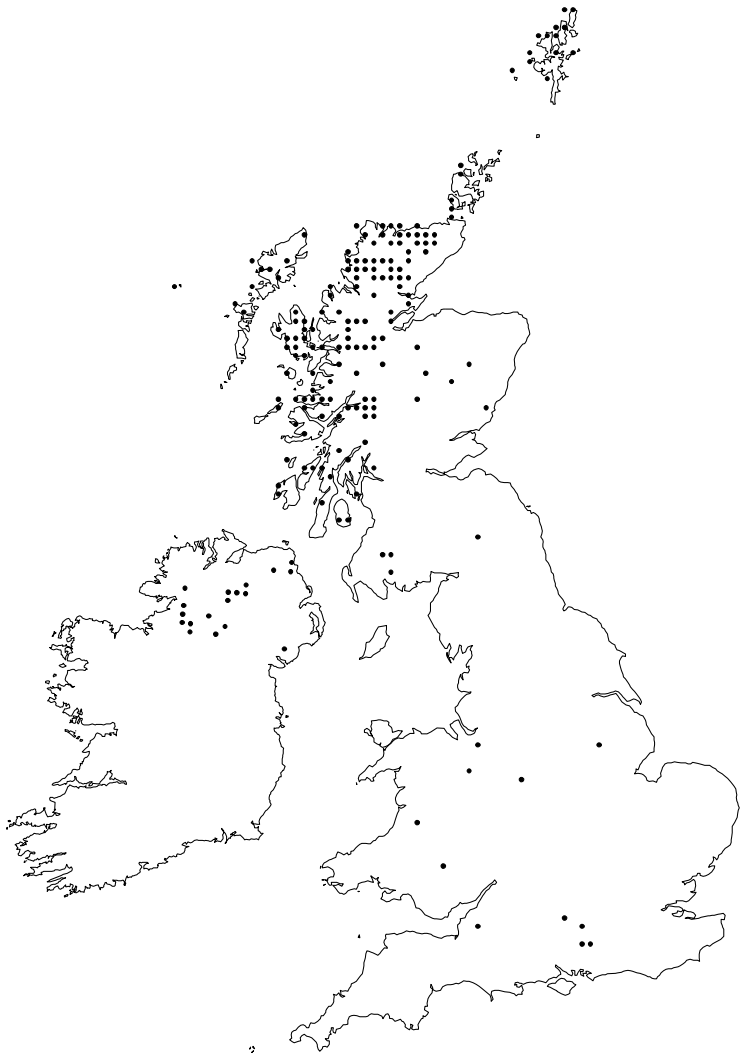
Data source: Wolfe-Murphy *et al.* (1992).

There are no comprehensive data available for the extent of this habitat type in England, Scotland and Wales, as it is not possible to distinguish natural eutrophic lakes from non-naturally eutrophic (i.e. polluted) lakes using existing data sources. For Northern Ireland comprehensive data are

available from the Northern Ireland Lake Survey measure (Wolfe-Murphy *et al.* 1992). The figure includes lakes types XII, XIII and XIV as described by the survey, and Upper Lough Erne. Lough Neagh has not been included as it is not naturally eutrophic.

3160 Natural dystrophic lakes and ponds [22.14 Dystrophic lakes]

UK distribution:



Data source: Standing Water Database, SNH; Palmer & Roy (1997); Wolfe-Murphy *et al*. (1992); JNCC International Designations Database.

The map shows records for dystrophic lake type 1 of the Standing Water Classification in Great Britain, and the equivalent type from the Northern Ireland Lake Survey (lake type I), together with candidate and possible Special Areas of Conservation supporting this Annex I type. This map may under-represent the abundance of this habitat type in the uplands of England and Wales.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	70	2
Total UK extent:	**1000-10,000**	**4**

Data source: Freshwater Lead Co-ordination Network, JNCC; Margaret Palmer; Wolfe-Murphy *et al.* (1992).

There are no comprehensive data available for the extent of this habitat type in England, Scotland and Wales. The figures provided are estimates based on expert opinion. For Northern Ireland comprehensive data are available from the Northern Ireland Lake Survey measure (Wolfe-Murphy *et al.* 1992). The figure includes lake type I as described by the survey.

3170 *Mediterranean temporary ponds [22.34]

UK distribution:

Data source: John Hopkins, EN.

The map shows sites where this habitat type is known to occur.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<10	4
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**<10**	**4**

Data source: John Hopkins, EN.

There are no comprehensive data available for the extent of this habitat type in the UK. The figure provided is an estimate based on expert opinion.

3180 *Turloughs [22.5]

UK distribution:

Data source: JNCC International Designations Database.

The map shows the only sites where this habitat type is known to occur in the UK.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	not present	–
Wales	1	1
Northern Ireland	6	1
Total UK extent:	**7**	**1**

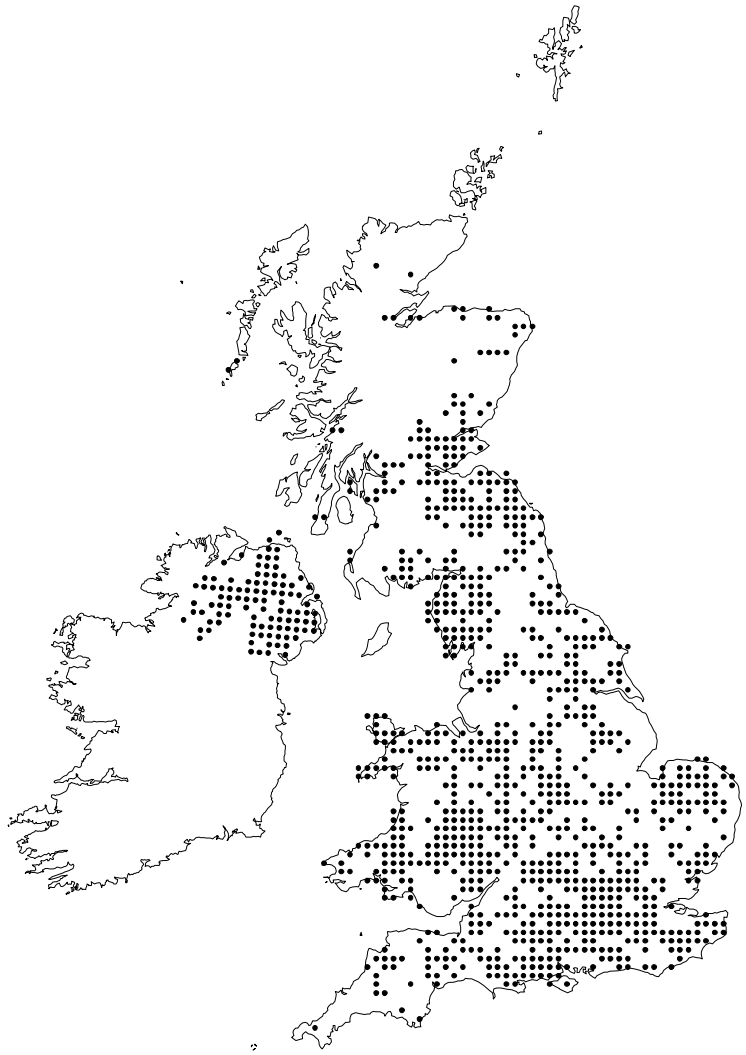
Data source: Blackstock *et al*. (1993); Tony Waterman, EHS.

The figure for Wales is the approximate area calculated from the measured length and breath of the turlough. For Northern Ireland the area figure has been calculated from Ordnance Survey maps.

3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

[24.4 Floating vegetation of *Ranunculus* of plain and submountainous rivers]

UK distribution:



Data source: Biological Records Centre; CEDaR; JNCC International Designations Database.

The map indicates the distribution of this habitat type by showing the recorded distribution of *Ranunculus fluitans*, *Ranunculus penicillatus* ssp. *penicillatus*, *R. penicillatus* ssp. *pseudofluitans*, and *Ranunculus peltatus* and its hybrids from 1970-1999, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Some records are from standing waters, not rivers. The occurrence in the River Spey, north-east Scotland, is believed to result from an introduction, and is not shown on the map.

UK extent:

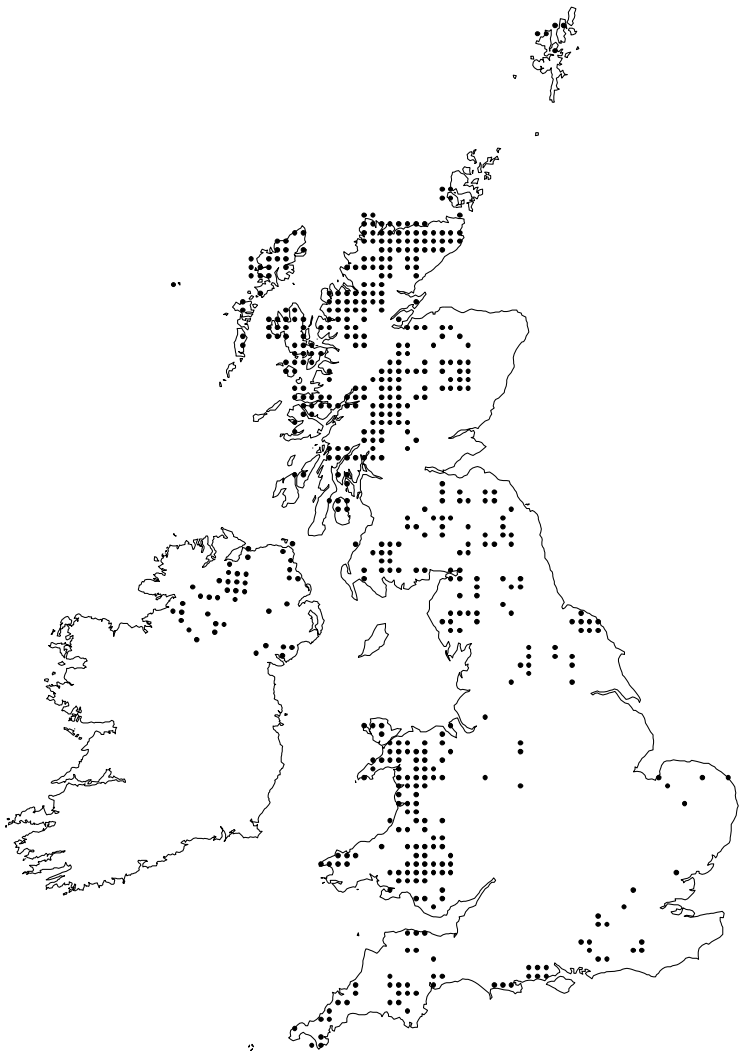
	Length (km)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**unknown**	**–**

Data source:

There are no comprehensive data available for the extent of this habitat type in the UK. However, it has been estimated that there are about 2,500 km length of river which have *Ranunculus* cover in England and Wales (D. Withrington, EN, pers. comm.). The length of rivers with *Ranunculus* cover in Scotland and Northern Ireland is unknown, but the comparable figures are likely to be much lower. The length of river in Scotland outwith the River Tweed with *Ranunculus* cover as a native habitat is considered to be insignificant.

4010 Northern Atlantic wet heaths with *Erica tetralix* [31.11]

UK distribution:



Data source: NVC data; Upland Database, SNH; Northern Ireland Countryside Survey; JNCC International Designations Database.

The map shows records for NVC communities M14, M15, M16 and H5 in Great Britain, together with their equivalent types in Northern Ireland, and candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	25,000	3
Scotland	340,000-400,000	3
Wales	12,000	3
Northern Ireland	<55,000	3
Total UK extent:	**432,000-492,000**	**3**

Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH; Nick Michael, EN; Richard Weyl, EHS.

Estimates have been provided based on a number of information sources. For England the figure for lowland heath has been based upon the Lowland heathland inventory (EN/RSPB) and for upland heath an estimate has been provided.

For Scotland the estimate is calculated from a number of information sources, including the Land Cover Survey for Scotland (LCS88), and site-based information.

For Wales the figure is based upon survey undertaken during the 1980s and 1990s. The figure for Northern Ireland is an estimate based upon Countryside Survey data, but this is likely to be an over-estimate as it may include some areas of **7130 Blanket bogs**.

The figures given above include degraded or poor quality examples of this habitat type.

4020 *Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*

[31.12 Southern Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*]

UK distribution:

Data source: NVC data.

The map shows records for NVC communities H3 and H4 in which naturally-occurring *Erica ciliaris* has been recorded. Populations of *Erica ciliaris* on Dartmoor are considered to have originated from deliberate introductions, and are not shown on the map.

UK extent:

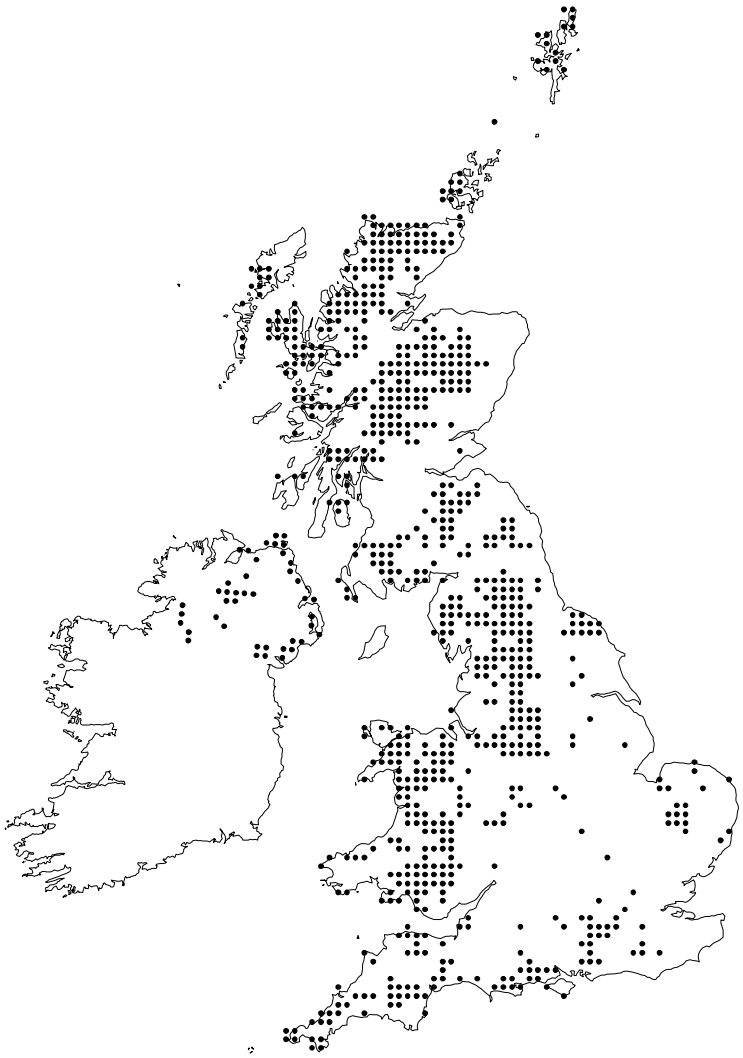
	Area (ha)	*Reliability of measure/estimate*
England	400	3
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**400**	**3**

Data source: Hocking (1997); Nick Michael, EN.

Recent survey data for Cornish sites gives an area figure of 106.5 ha for this habitat type (Hocking & Stewart 2000). Only an estimate is available for Dorset.

4030 European dry heaths [31.2 Dry heaths (all subtypes)]

UK distribution:



Data source: NVC data; Upland Database, SNH; Cooper *et al.* (1992); Northern Ireland Countryside Survey; JNCC International Designations Database.

The map shows records for NVC types H1, H2, H3, H4, H8a, H8b, H8c, H8e, H9, H10, H12, H16, H18 and H21 in Great Britain, together with their equivalent types in Northern Ireland, and candidate and possible Special Areas of Conservation supporting this Annex I type. Most occurrences of NVC types H7 and H8d are referable to Annex I type **1230 Vegetated sea cliffs** and so are not shown above.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	250,000	3
Scotland	650,000-800,000	3
Wales	78,000	3
Northern Ireland	10,200	3
Total UK extent:	**988,000-1,138,000**	**3**

Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH; Nick Michael, EN; Richard Weyl, EHS.

Estimates have been provided based on a number of information sources. For England the figure for lowland heath has been based upon the Lowland heathland inventory (EN/RSPB) and for upland heath an estimate has been provided.

For Scotland the estimate is calculated from a number of information sources, including the Land Cover Survey for Scotland (LCS88), and site-based information.

For Wales the figure is based upon survey undertaken during the 1980s and 1990s. The figure for Northern Ireland is an estimate based upon Countryside Survey data.

The figures given above include degraded or poor quality examples of this habitat type.

4040 *Dry Atlantic coastal heaths with *Erica vagans*

[31.234 Dry coastal heaths with *Erica vagans* and *Ulex maritimus*]

UK distribution:

Data source: NVC data.

The map shows records for NVC community H6.

UK extent:

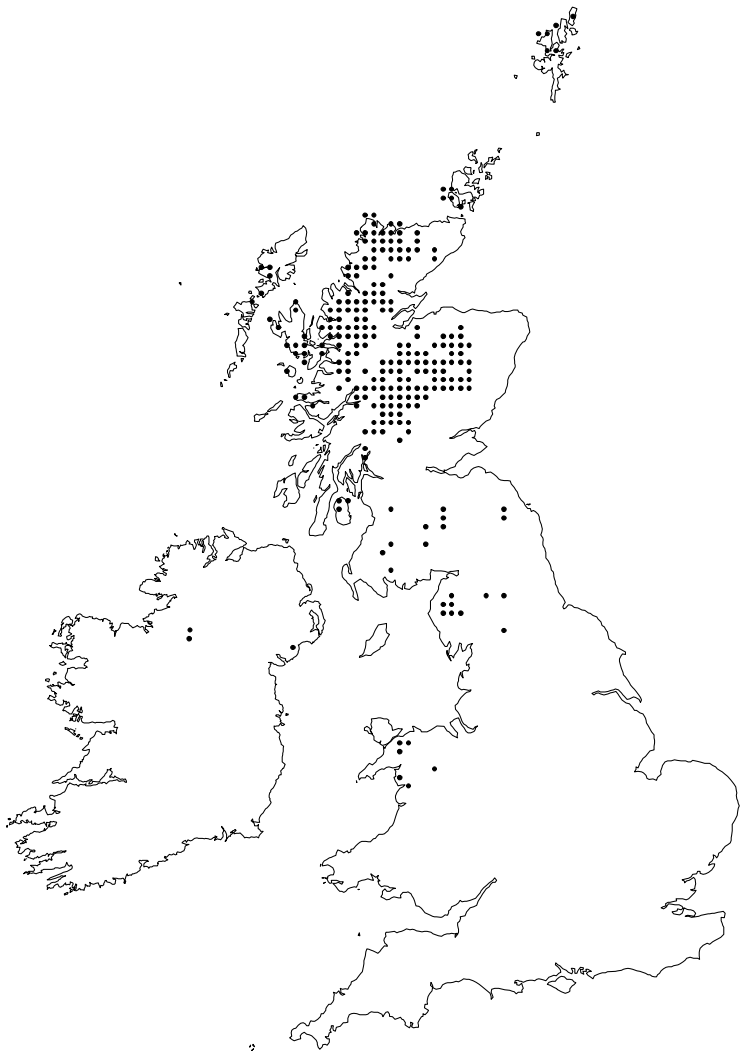
	Area (ha)	*Reliability of measure/estimate*
England	600	4
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**600**	**4**

Data source: John Hopkins, EN.

A complete vegetation map was produced for the Lizard district between 1976-1980 but areas for the individual habitat types were not calculated. The figure provided is an estimate based on expert opinion.

4060 Alpine and Boreal heaths [31.4 Alpine and subalpine heaths]

UK distribution:



Data source: NVC data; Upland Database, SNH; Cooper *et al.* (1992); Richard Weyl, EHS; JNCC International Designations Database.

The map shows the records for NVC communities H13, H14, H15, H17, H19, H20 and H22 in Great Britain, together with sites where this habitat type is known to occur in Northern Ireland, and candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	1,000	4
Scotland	90,000	3
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**91,000**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

4080 Sub-Arctic *Salix* spp. scrub [31.622 Sub-Arctic willow scrub]

UK distribution:

Data source: NVC data; Upland Database, SNH; JNCC International Designations Database.

The map shows records for NVC community W20, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<0.5	3
Scotland	<10	4
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**<10**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figure provided is an estimate based on expert opinion.

5110 Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.) [31.82 Stable *Buxus sempervirens* formations on calcareous rock slopes (*Berberidion* p.)

UK distribution:

Data source: JNCC International Designations Database.

The map shows the only site in the UK where scrub dominated by box *Buxus sempervirens* forms a stable habitat type.

UK extent:

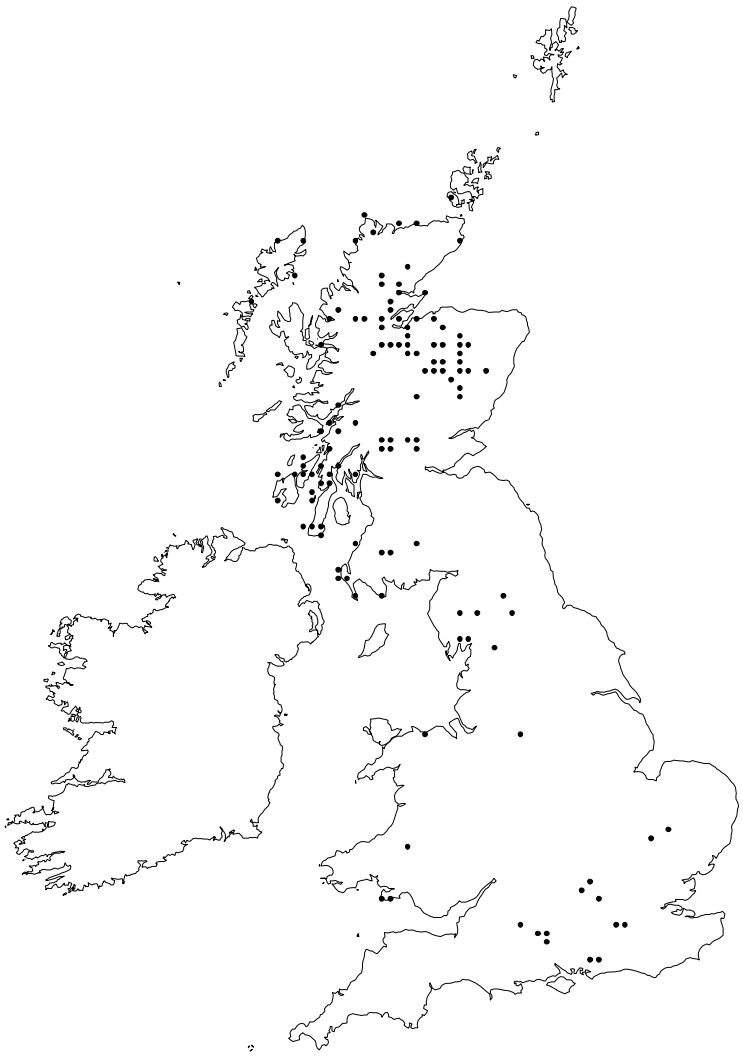
	Area (ha)	*Reliability of measure/estimate*
England	20	1
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**20**	**1**

Data source: Sussex and Surrey Team, EN.

This figure includes stands dominated by box within the Mole Gap to Reigate Escarpment SSSI. However, box is also present in the understorey throughout the rest of the SSSI.

5130 *Juniperus communis* formations on heaths or calcareous grasslands [31.88]

UK distribution:



Data source: Biological Records Centre; JNCC International Designations Database.

The map shows the post-1950 recorded distribution of Juniper *Juniperus communis* ssp. *communis*, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Many of the records shown refer to scattered bushes of juniper rather than juniper scrub; the habitat therefore has a more restricted distribution than is indicated by the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	500-2,000	4
Wales	present	–
Northern Ireland	not present	–
Total UK extent:	**1,000-3,000**	**4**

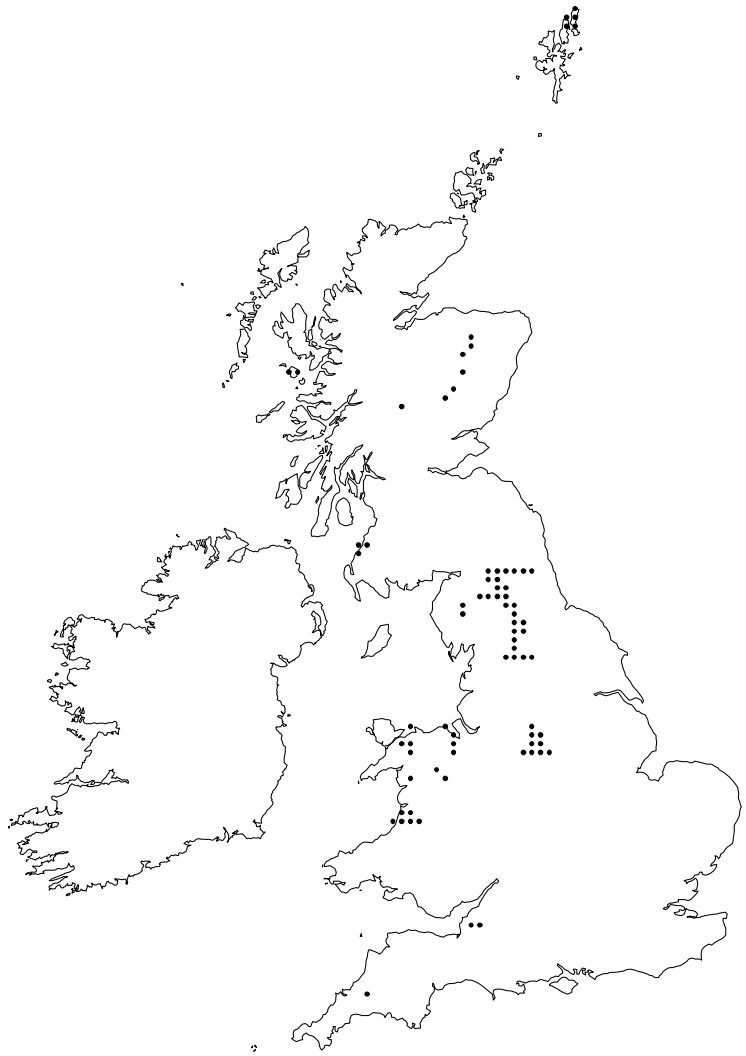
Data source: John Hopkins, EN; David Horsfield, SNH.

There are no comprehensive data available for the extent of this habitat type in the UK. The figure provided is an estimate based on expert opinion.

6130 Calaminarian grasslands of the *Violetalia calaminariae*

[34.2 Calaminarian grasslands]

UK distribution:



Data source: NVC data; Upland Database, SNH; Birse (1982); JNCC International Designations Database; Richard Jefferson, EN.

The map shows records for NVC community OV37 together with additional records for metallophyte grasslands from other sources, and candidate and possible Special Areas of Conservation supporting this Annex I type.

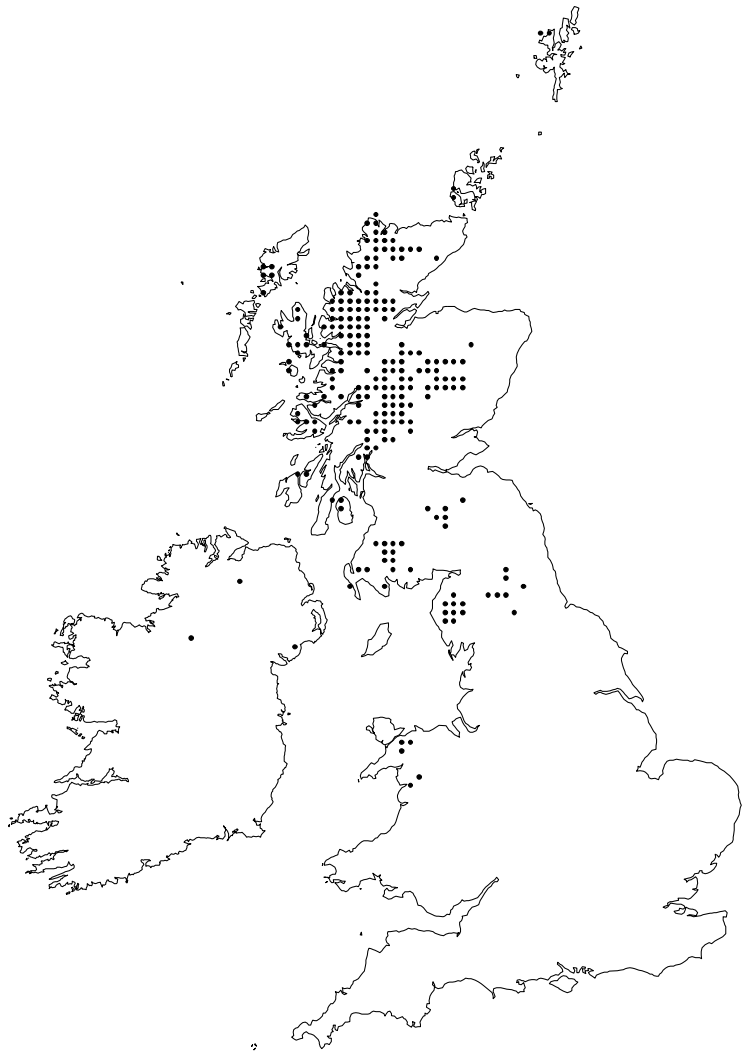
UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	not present	–
Total UK extent:	**unknown**	**–**

There are no comprehensive data available for the extent of this habitat type in the UK.

6150 Siliceous alpine and boreal grasslands [36.32]

UK distribution:



Data source: NVC data; Upland Database, SNH; Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities U7, U8, U9, and U10 in Great Britain, together with sites where this habitat type is known to occur in Northern Ireland, and candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	150,000	4
Wales	100	4
Northern Ireland	present	–
Total UK extent:	**150,000**	**4**

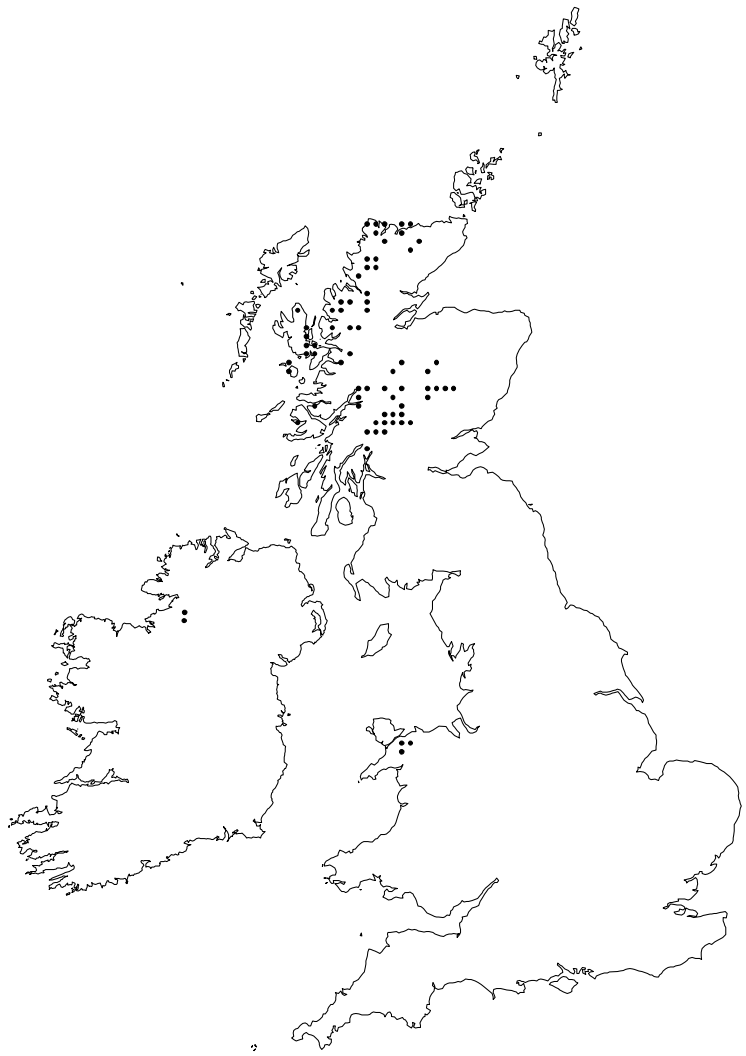
Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH.

There are no comprehensive data available for the extent of this habitat type in the UK. The figure provided is an estimate based on expert opinion.

6170 Alpine and subalpine calcareous grasslands

[36.41 to 36.45 Alpine calcareous grasslands]

UK distribution:



Data source: NVC data; Upland Database, SNH; Richard Weyl, EHS; JNCC International Designations Database.

The maps shows records for NVC communities CG12, CG13 and CG14 in Great Britain, together with sites where *Dryas* grassland or ledge communities are known to occur in Northern Ireland, and candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

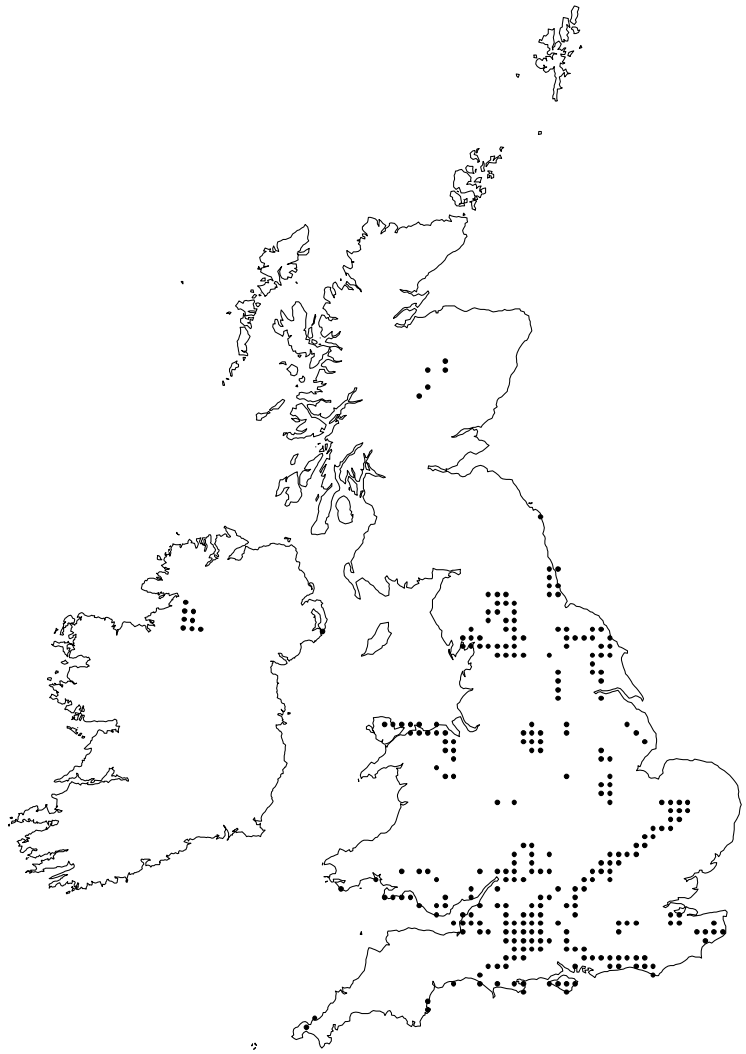
	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	500-1,000	4
Wales	<1	4
Northern Ireland	present	–
Total UK extent:	**500-1,000**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) [34.31 to 34.34]

UK distribution:



Data source: NVC data; Upland Database, SNH; Lowland Grassland Database, CCW; Cooper *et al*. (1992); Northern Ireland Countryside Survey; Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities CG1, CG2, CG3, CG4, CG5, CG6, CG7, CG8 and CG9 in Great Britain and the equivalent land-cover type (SO6) recorded in the Northern Ireland Countryside Survey, together with sites in Northern Ireland where *Sesleria* grassland is known to occur, along with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<50,000	3
Scotland	500	3
Wales	1,000	3
Northern Ireland	1,140	3
Total UK extent:	**<53,000**	**3**

Data source: John Hopkins, EN; David Horsfield, SNH; David Stevens, CCW; Richard Weyl, EHS; Blackstock *et al.* (1999).

The figures provided are based on a large number of data sources, including expert opinion.

6211 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [34.31 to 34.34]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I priority type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**unknown**	**–**

Data source:

Because of the complex definition of this Annex I priority habitat type, it is not possible to provide data on its extent in the UK at present.

6230 *Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas in continental Europe)** [35.1]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

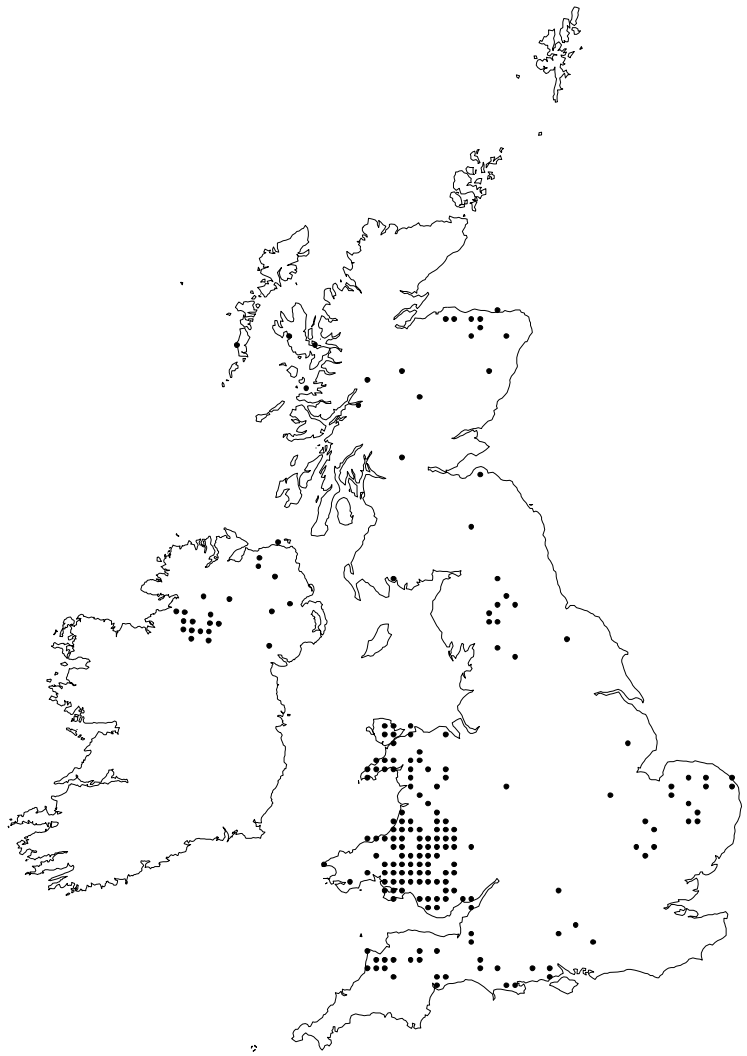
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**present**	**–**

Data source:

There are no comprehensive data available for the extent of this Annex I type in the UK, as it is not possible to distinguish species-rich *Nardus* grasslands on siliceous substrates from those occurring on limestone using existing data sources.

6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [37.31 *Molinia* meadows on chalk and clay (*Eu-Molinion*)]

UK distribution:



Data source: NVC data; Upland Database, SNH; Jane Mackintosh, SNH; Lowland Grassland Database, CCW; Northern Ireland Countryside Survey; Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities M24 and M26 in Great Britain and the equivalent land-cover type from the Northern Ireland Countryside Survey (S65), together with sites in Northern Ireland where species-rich *Molinia* grassland (mostly *Molinia-Cirsium dissectum* grassland) is known to occur, along with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

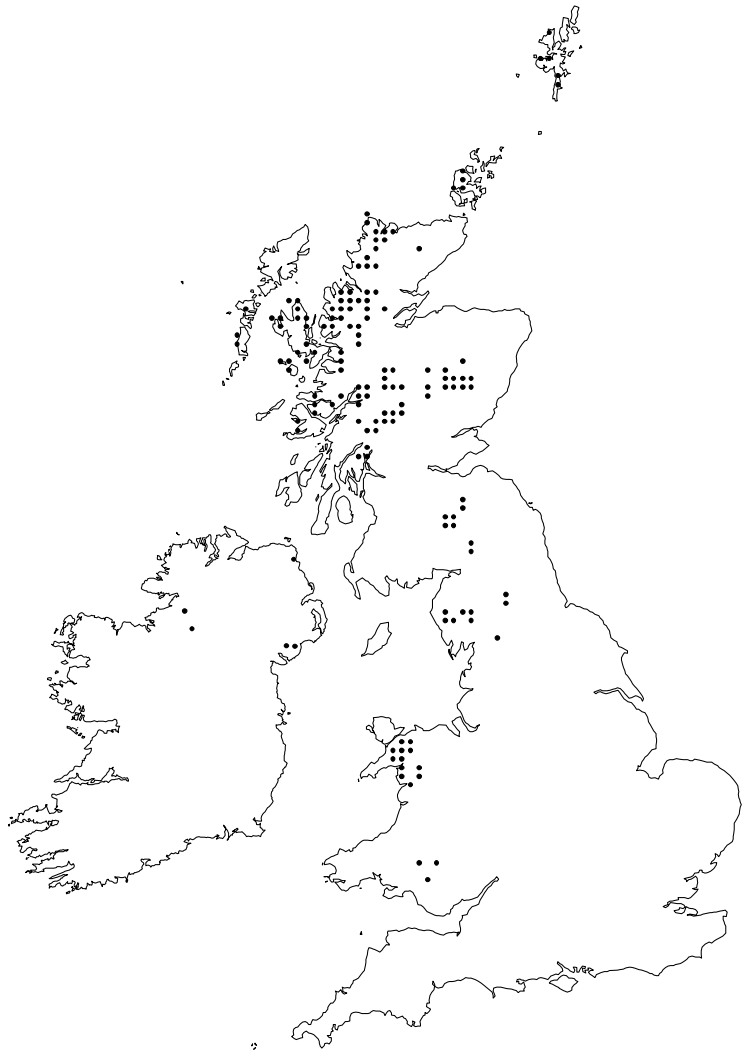
	Area (ha)	*Reliability of measure/estimate*
England	<2,000	3
Scotland	<200	4
Wales	500-1,000	3
Northern Ireland	present	–
Total UK extent:	**2,000-4,000**	**3**

Data source: Blackstock *et al.* (1999); Richard Jefferson, EN.

The figures provided are estimates based on the extrapolation of findings of recent survey work in different parts of the UK.

6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [37.7 and 37.8 Eutrophic tall herbs]

UK distribution:



Data source: NVC data; Upland Database, SNH; Cooper *et al.* (1992); Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC community U17 in Great Britain, and sites where this habitat is known to occur in Northern Ireland, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

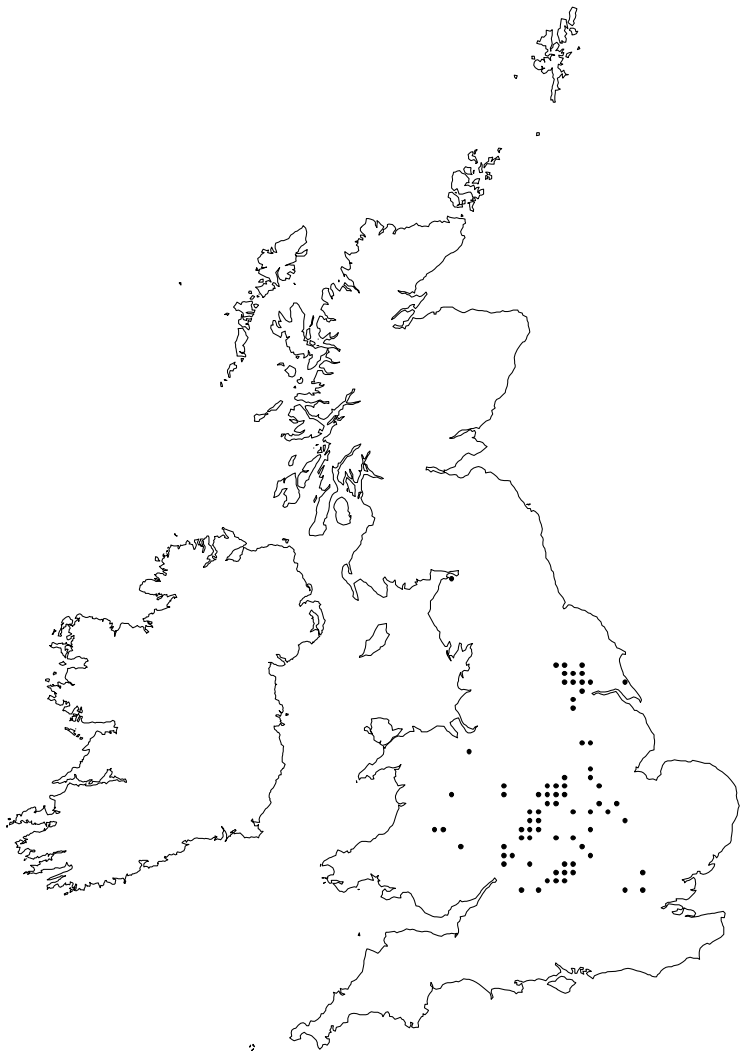
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	100-200	4
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**100-300**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [38.2]

UK distribution:



Data source: NVC data; Jefferson (1997); Lowland Grassland Database, CCW; JNCC International Designations Database.

The map shows records for NVC community MG4, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<1,500	3
Scotland	not present	–
Wales	<10	3
Northern Ireland	not present	–
Total UK extent:	**<1,500**	**3**

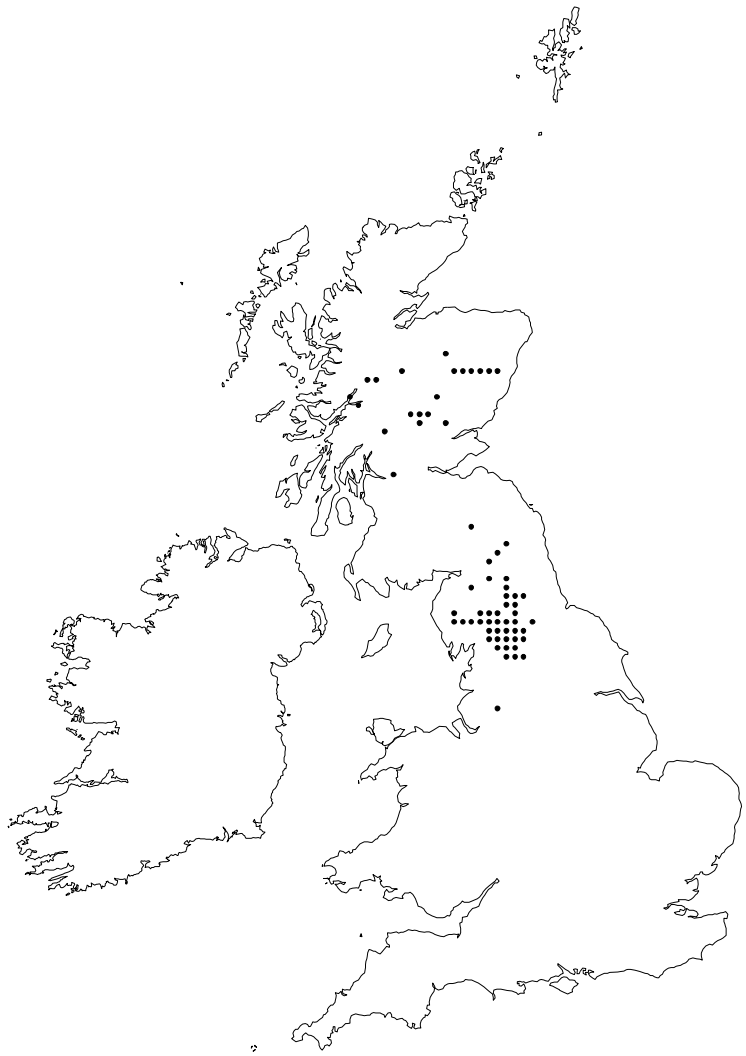
Data source: Blackstock *et al*. (1999).

The figures provided are estimates based on the extrapolation of findings of recent survey work in different parts of the UK.

6520 Mountain hay meadows

[38.3 Mountain hay meadows (British types with *Geranium sylvaticum*)]

UK distribution:



Data source: NVC data; Jane Mackintosh, SNH; JNCC International Designations Database.

The map shows records for NVC community MG3, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type. Many occurrences, particularly in Scotland, are fragmentary, or are found in situations other than "hay meadows" such as on stream banks or road side verges.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<1,000	3
Scotland	<100	3
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**<1,000**	**3**

Data source: Blackstock *et al*. (1999); Jane Mackintosh, SNH.

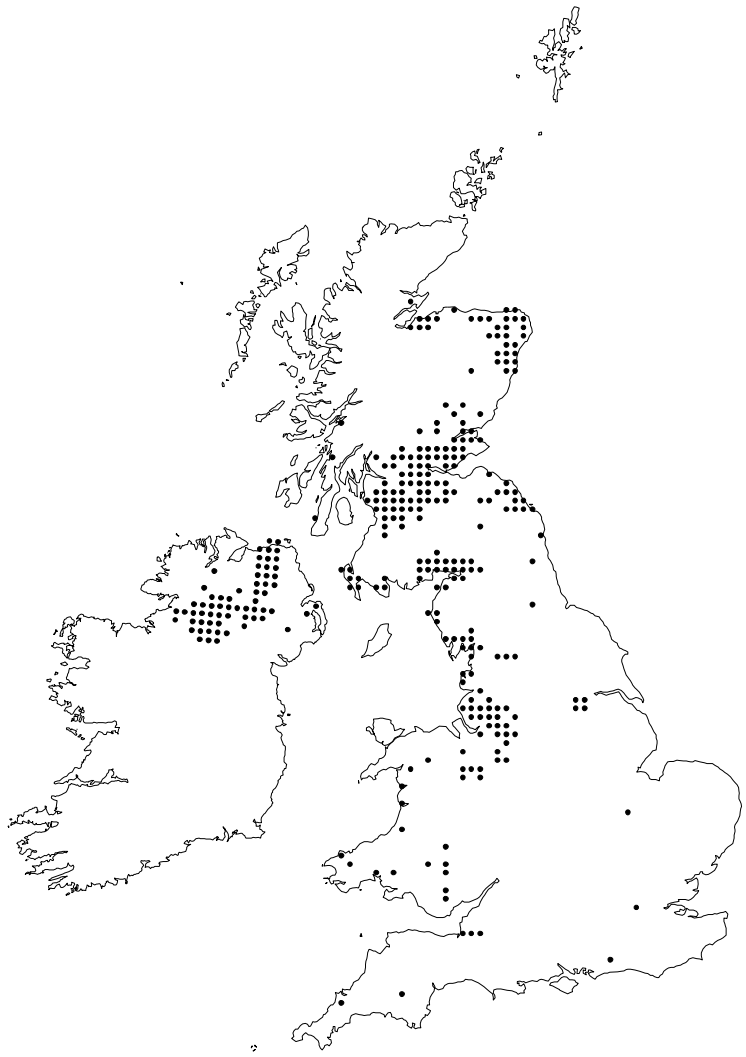
The figures provided are estimates based on the extrapolation of findings of recent survey work in different parts of the UK.

7110 *Active raised bogs [51.1] and

7120 Degraded raised bogs still capable of natural regeneration

[51.2 Degraded raised bogs (still capable of natural regeneration)]

UK distribution:



Data source: Lindsay & Immirzi (1996); Cruickshank & Tomlinson (1988); JNCC International Designations Database.

The map shows the distribution of both active and degraded raised bogs, including candidate and possible Special Areas of Conservation supporting this Annex I type. It is not possible to separate the two Annex I habitat types using existing information sources.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	-
Scotland	present	-
Wales	present	-
Northern Ireland	present	-
Total UK extent:	**unknown**	**-**

Data source:

The information sources which are currently available in the UK on the extent of raised bog do not separate 'active' and 'degraded' forms of bogs as defined by the Directive.

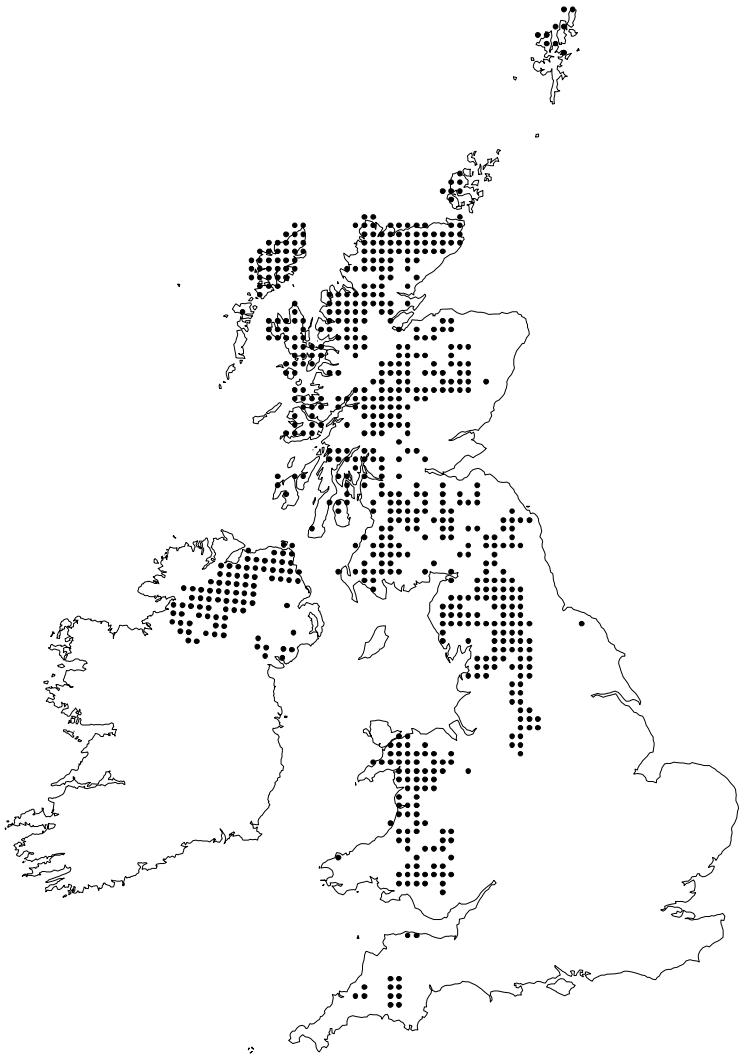
Lindsay & Immirzi (1996) calculated area figures for near-natural (P1), drained (P2) and degraded (P3) primary raised bog for England, Scotland and Wales. The figures they gave for these three condition classes combined were: England, 1,900 ha; Scotland, 5,600 ha; and Wales, 1,300 ha. However, Lindsay & Immirzi did not calculate area figures for secondary re-vegetated or regenerating raised bog (S1) which accounts for a significant proportion of the total resource of active bog.

Additional data for England held in the Fenbase/Bogbase database (version 1998) gives a figure of approximately 11,500 ha of active and degraded raised bog in England; these data probably give a reasonably accurate estimate of the overall raised bog resource in England.

Peatland in Northland Ireland has been classified and mapped using air photographs (Cruickshank & Tomlinson 1988). This identified 2,270 ha of intact lowland peatland and 20,042 ha of 'cut-over' peatland, but it is not possible to report separately on the area of 'active' or 'degraded' raised bog using this information source.

7130 Blanket bogs (*if active bog) [52.1 and 52.2 Blanket bog (*active only)]

UK distribution:



Data source: NVC data; Cruickshank & Tomlinson (1988); JNCC International Designations Database.

The map shows records for NVC communities M1, M17, M18, M19 and M20 in Great Britain (although not all of these records occur on blanket bog), and the location of blanket peatland in Northern Ireland identified by the Peatland Survey, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	215,000	3
Scotland	1,502,000-2,254,000	3
Wales	70,000	3
Northern Ireland	140,000	3
Total UK extent:	**1,927,000-2,679,000**	**3**

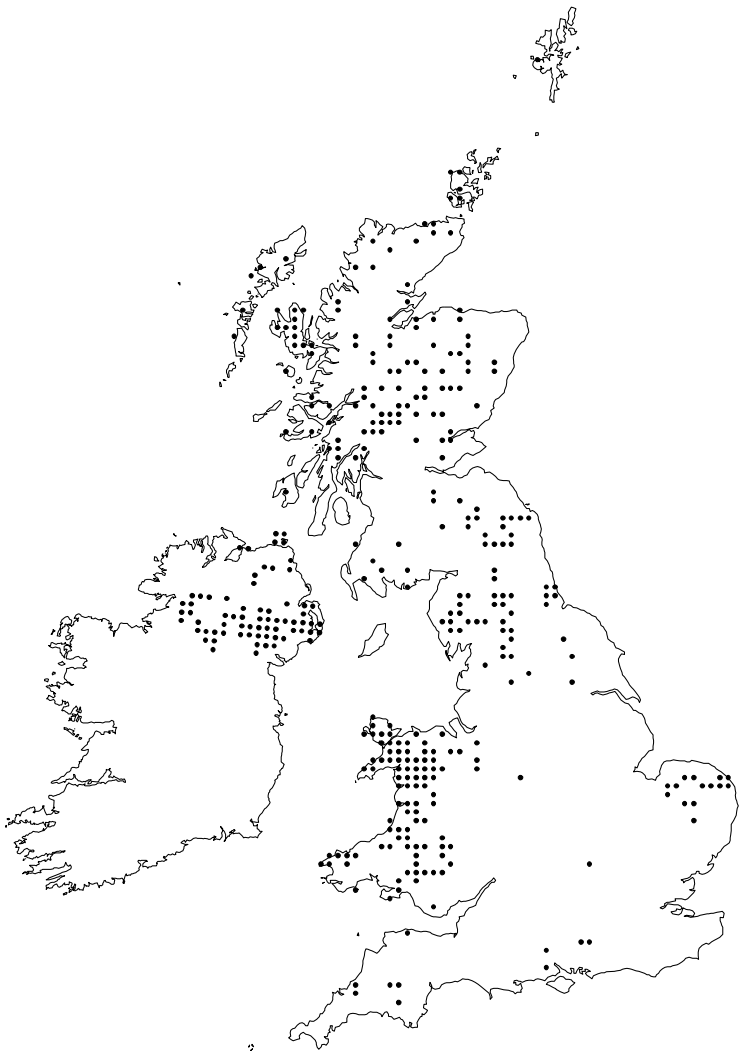
Data source: Lindsay & Immirzi (1996); Scottish Blanket Bog Inventory; Yeo (1997); Cruickshank & Tomlinson (1988).

For England the figure provided is the estimated area of peat soils greater than 1 m deep (based on British Geological Survey maps). For Wales the figure given is based on the estimated area of peat soils greater than 30 cm deep over bedrock or 40 cm on mineral soil (based on the Soil Survey of England and Wales 1:250,000 scale map). It has been estimated that in excess of 10% of the area of blanket peat soils no longer supports blanket bog vegetation. For Scotland an estimate has been calculated using data derived from the Scottish Blanket Bog Inventory classified satellite imagery.

The figures given above include degraded or poor quality examples of this habitat type.

7140 Transition mires and quaking bogs [54.5]

UK distribution:



Data source: NVC data; Upland Database, SNH; Wolfe-Murphy *et al.* (1992); ECUS (1995); Cooper *et al.* (1992); Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities M4, M5, M8, M9 and S27 in Great Britain, and the equivalent types from the Peatland Survey together with other sites where this habitat type is known to occur in Northern Ireland, along with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**unknown**	**–**

Data source:

There are no comprehensive data available for the extent of this habitat type in the UK.

7150 Depressions on peat substrates of the *Rhynchosporion*

[54.6 Depressions on peat substrates (*Rhynchosporion*)]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**unknown**	**–**

Data source:

There are no comprehensive data available for the extent of this habitat type in the UK.

7210 *Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

[53.3 Calcareous fens with *Cladium mariscus* and *Carex davalliana*]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

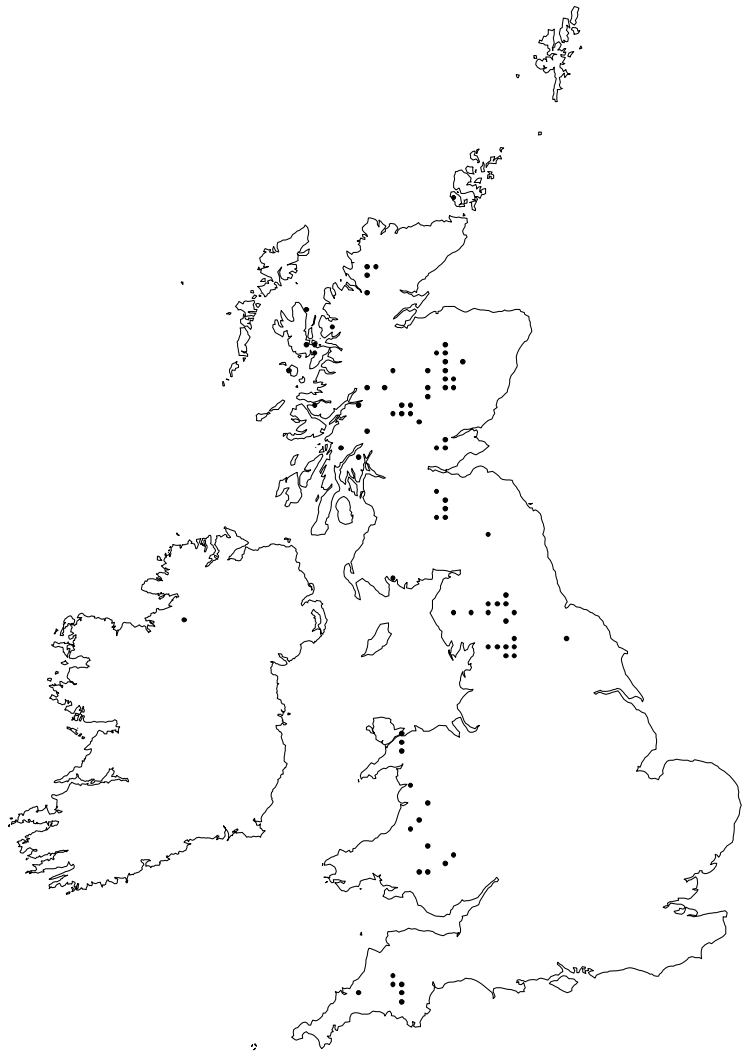
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	not present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**500**	**4**

Data source: Chris Newbold, EN.

There are no comprehensive data available for the extent of this habitat type in the UK. The figure provided for total UK extent is an estimate based on expert opinion.

7220 *Petrifying springs with tufa formation (*Cratoneurion*)** [54.12]

UK distribution:



Data source: NVC data; Uplands Database, SNH; JNCC International Designations Database.

The map shows records for NVC communities M37 and M38, together with other sites where this habitat type is known to occur, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

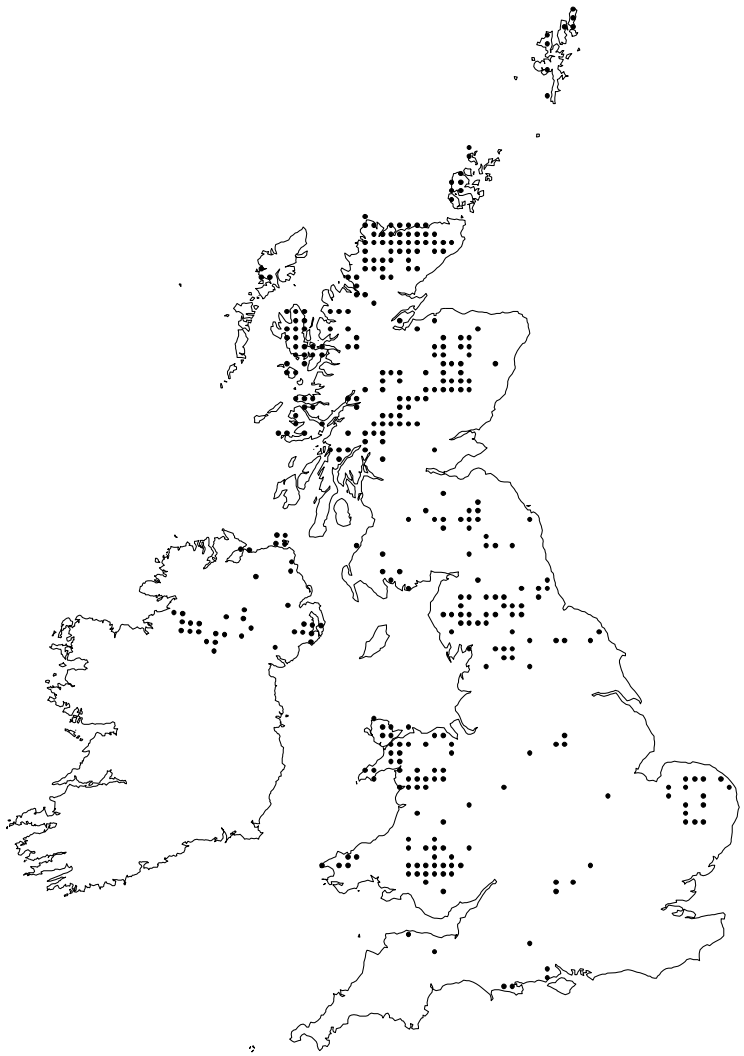
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**<100**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

7230 Alkaline fens [54.2]

UK distribution:



Data source: NVC data; Upland Database, SNH; Wolfe-Murphy *et al*. (1992); ECUS (1995); Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities M9, M10 and M13 in Great Britain and equivalent vegetation types in Northern Ireland, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

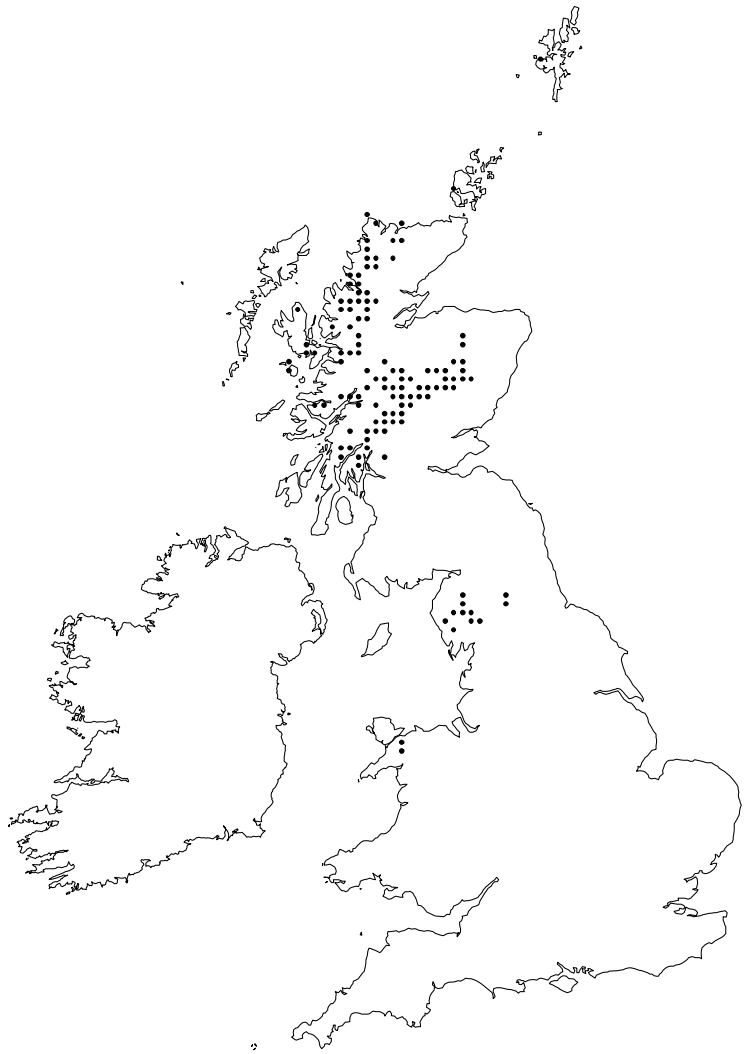
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	150	–
Northern Ireland	present	–
Total UK extent:	**unknown**	**–**

Data source: Marcus Yeo, CCW.

There are no comprehensive data available for the UK.

7240 *Alpine pioneer formations of the *Caricion bicoloris-atrofuscae* [54.3]

UK distribution:



Data source: NVC data; Upland Database, SNH; JNCC International Designations Database.

The map shows records for NVC communities M11 and M12, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Records of M10 have not been included as most forms of this community are referable to Annex I type **7230 Alkaline fens**.

UK extent:

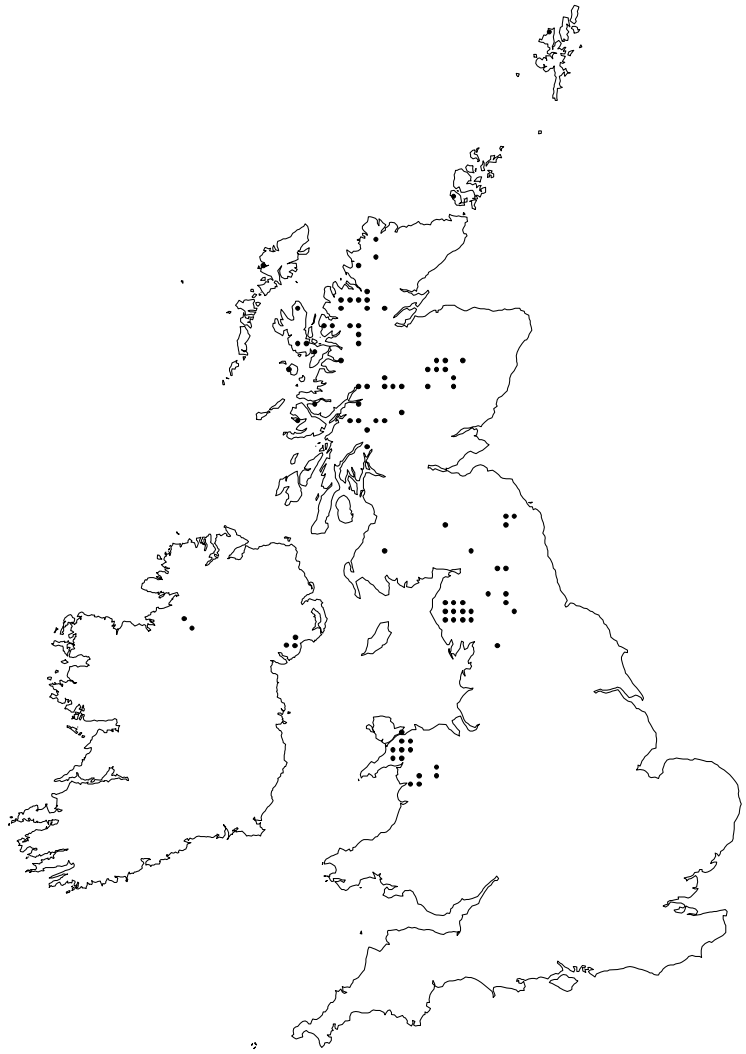
	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	100-200	4
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**250**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [61.1 Siliceous scree]

UK distribution:



Data source: NVC data; Richard Weyl, EHS; JNCC International Designations Database.

The map shows records for NVC communities U18 and U21 in Great Britain, and sites where this habitat type is known to occur in Northern Ireland, together with candidate and possible Special Areas of Conservation supporting this Annex I type. However, the map under-represents the true distribution of this habitat type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	3,000-3,500	4
Scotland	50,000-70,000	4
Wales	3,000	4
Northern Ireland	present	–
Total UK extent:	**50,000-80,000**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) [61.2 Eutric scree]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	300-500	4
Scotland	100-200	4
Wales	<100	4
Northern Ireland	present	–
Total UK extent:	**500-800**	**4**

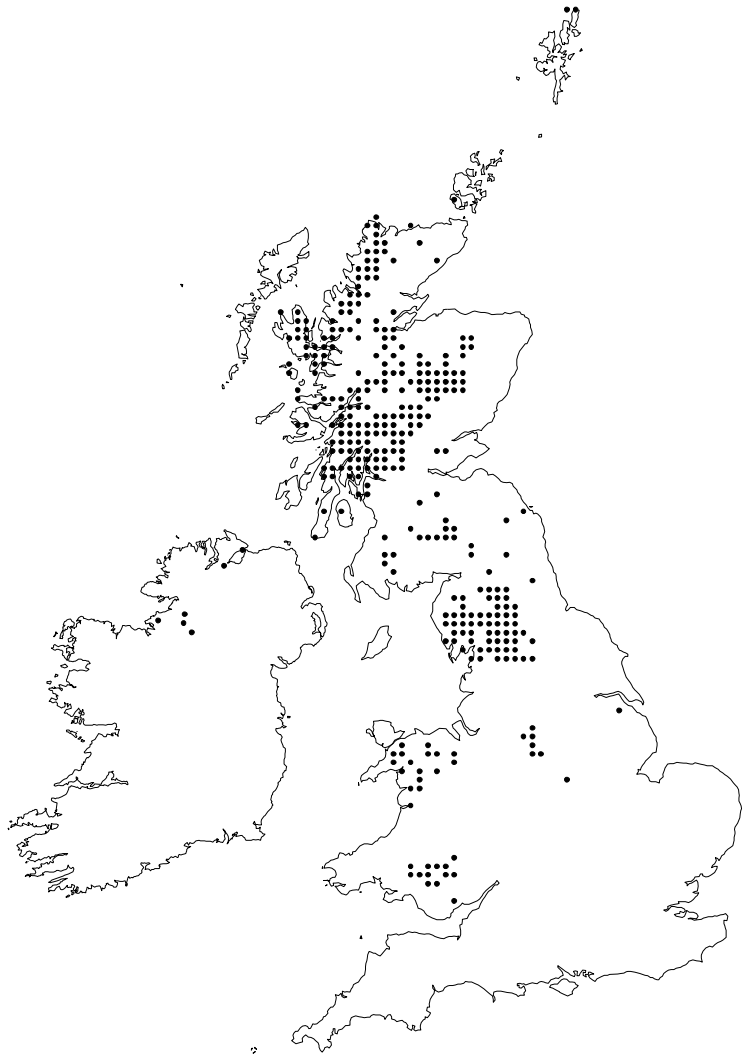
Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the UK. The figures provided are estimates based on expert opinion.

8210 Calcareous rocky slopes with chasmophytic vegetation

[62.1 and 62.1A Chasmophytic vegetation on rocky slopes – calcareous sub-types]

UK distribution:



Data source: Biological Record Centre; CEDaR; JNCC International Designations Database.

The map shows post-1950 records of *Asplenium trichomanes-ramosum*, a fern that is characteristic of this habitat type, together with candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	100-500	4
Scotland	150-250	4
Wales	<100	4
Northern Ireland	present	–
Total UK extent:	**300-900**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the UK. The figures provided are estimates based on expert opinion.

8220 Siliceous rocky slopes with chasmophytic vegetation

[62.2 Chasmophytic vegetation on rocky slopes – silicicolous sub-types]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

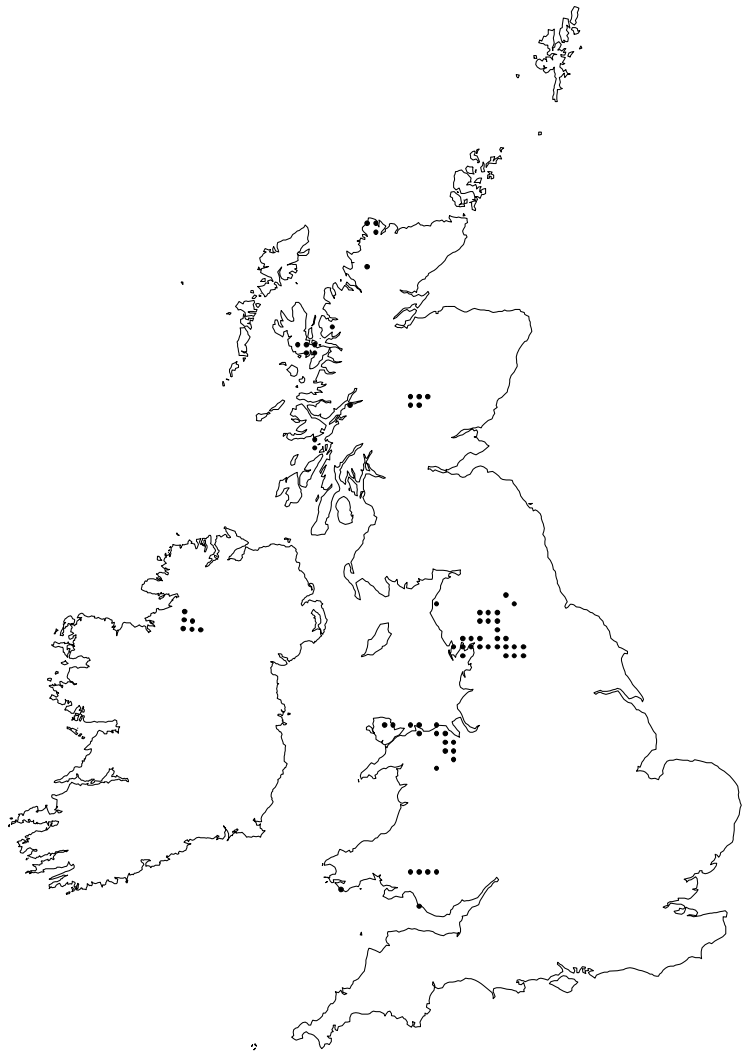
	Area (ha)	*Reliability of measure/estimate*
England	1,000-1,500	4
Scotland	35,000-40,000	4
Wales	<1,000	4
Northern Ireland	present	–
Total UK extent:	**37,000-43,000**	**4**

Data source: Uplands Lead Co-ordination Network, JNCC; David Horsfield, SNH.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

8240 *Limestone pavements [62.4]

UK distribution:



Data source: Ward & Evans (1976); Stephen Ward, SNH; Deacon (1997); Northern Ireland Earth Science Conservation Review, EHS; JNCC International Designations Database.

The map shows the known distribution of limestone pavement, including candidate and possible Special Areas of Conservation supporting this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	2,340	1
Scotland	350	2
Wales	7	1
Northern Ireland	220	2
Total UK extent:	**2,920**	**1**

Data source: Webb (1995); Ward & Evans (1976); Stephen Ward, SNH; Deacon (1997); Northern Ireland Earth Science Review, EHS.

The figures provided are principally derived from complete inventories of the resource. In Scotland these data have been supplemented by estimates of the extent of a small number of additional sites.

8310 Caves not open to the public [65]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation proposed for Annex II bat species in natural cave systems, which have additionally been considered to support this Annex I feature. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	not present	–
Wales	present	–
Northern Ireland	not present	–
Total UK extent:	**unknown**	–

Data source:

There are no comprehensive data available for the UK. JNCC's International Designations Database holds records of candidate and possible Special Areas of Conservation which support this Annex I feature, but has no indication of the extent of the cave systems.

8330 Submerged or partially submerged sea caves

[Submerged or partly submerged sea caves]

UK distribution:

Data source: Marine Information Team, JNCC; Northern Ireland Earth Science Conservation Review; JNCC International Designations Database.

The map shows 10x10 km grid squares from which sea caves have been recorded, together with candidate and possible Special Areas of Conservation supporting this Annex I type; however, much of the GB coast is unsurveyed, and the map considerably under-represents the true distribution of this Annex I type.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK extent:	**unknown**	–

Data source:

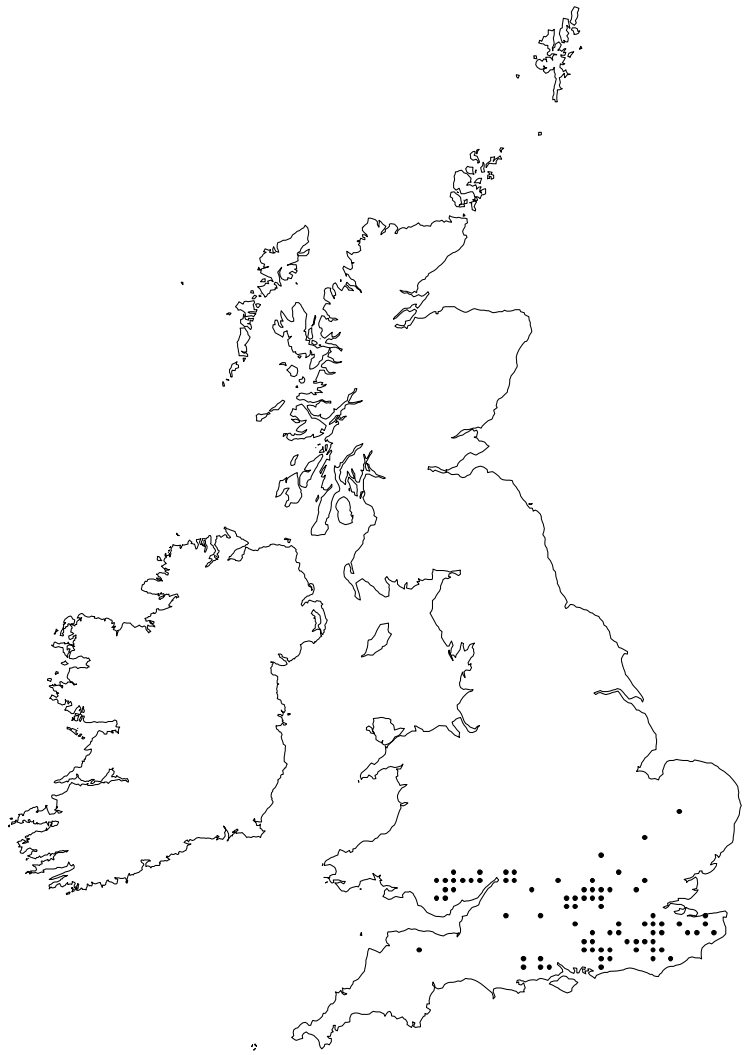
There are no comprehensive data available for the UK. The only figures available are for incidental records of sea caves and tunnels from field surveys undertaken by the MNCR and from published

literature, which give no indication of the extent of the cave systems; furthermore much of the coast is unsurveyed, so the data are very incomplete.

9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)

[41.12 Beech forests with *Ilex* and *Taxus*, rich in epiphytes *(Ilici-Fagenion*)]

UK distribution:



Data source: NVC data; Woodland NVC Database, JNCC; JNCC International Designations Database.

The map shows selected records of NVC communities W14 and W15, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Stands of these NVC communities in the north of the UK are planted or derived from plantations, and are not shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	5,000-7,000	4
Scotland	not present	–
Wales	1,000-1,500	4
Northern Ireland	not present	–
Total UK extent:	**6,000-8,500**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this Annex I type in the UK. The figures provided are estimates based on expert opinion.

9130 *Asperulo-Fagetum* beech forests [41.13]

UK distribution:

Data source: NVC data; Woodland NVC Database, JNCC; JNCC International Designations Database.

The map shows selected records for NVC communities W12, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Stands of this NVC community in the north of the UK are planted or derived from plantations, and are not shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	10,000-12,000	4
Scotland	not present	–
Wales	1,000-1,500	4
Northern Ireland	not present	–
Total UK extent:	**11,000-13,500**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this Annex I type in the UK. The figures provided are estimates based on expert opinion.

9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli* [41.24 *Stellario-Carpinetum* oak-hornbeam forests]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	1,000	4
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**1,000**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

9180 **Tilio-Acerion* forests of slopes, screes and ravines

[41.4 *Tilio-Acerion* ravine forests]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	5,000-10,000	4
Scotland	present	–
Wales	1,500-2,500	4
Northern Ireland	present	–
Total UK extent:	**8,000-15,000**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

9190 Old acidophilous oak woods with *Quercus robur* on sandy plains [41.51]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	4,000-5,000	4
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**4,000-5,000**	**4**

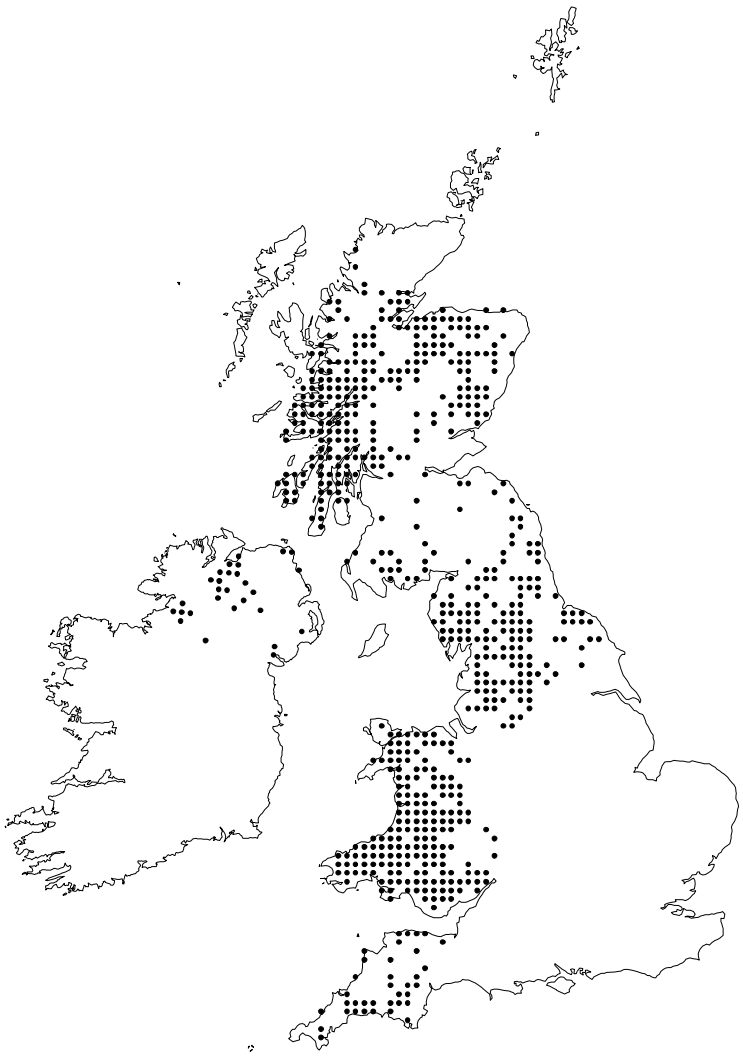
Data source: Keith Kirby, EN.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

[41.53 Old oak woods with *Ilex* and *Blechnum* in the British Isles]

UK distribution:



Data source: NVC data; Richard Weyl, EHS; JNCC International Designations Database.

The map shows selected records of NVC types W11, W17, W10e and W16b (excluding records from beyond the natural range of oak), together with candidate and possible Special Areas of Conservation supporting this Annex I type. The eastern examples of this woodland type have a less floristically rich bryophyte flora than those found in the more oceanic climate of the west.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	20,000	4
Scotland	40,000-50,000	4
Wales	35,000-40,000	4
Northern Ireland	1,000	4
Total UK extent:	**96,000-111,000**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC; Richard Weyl, EHS.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion. Many occurrences of this woodland type are small and fragmentary stands.

91C0 *Caledonian forest [42.51]

UK distribution:

Data source: NVC data; Woodland NVC Database, JNCC; JNCC International Designations Database.

The map shows selected records for NVC community W18, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Stands of this NVC community which occur outside the Caledonian forest zone are plantations or derived from plantations. The habitat is likely to occur on more SACs in Scotland than are shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	not present	–
Scotland	25,440	2
Wales	not present	–
Northern Ireland	not present	–
Total UK extent:	**25,440**	**2**

Data source: MacKenzie (1999).

Extent data are available from the Pinewood Inventory. The figure provided refers to long-established areas of native pinewood, together with self-sown stands naturally regenerated from stock

of genuinely native local origin recorded in the Inventory. The figure must be treated with caution, as sites not on the Inventory (i.e. <2 ha) are excluded.

91D0 *Bog woodland [44.A1 to 44.A4]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC. The habitat is likely to occur on more SACs in Scotland than are shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	<100	4
Scotland	<1,000	4
Wales	50-100	4
Northern Ireland	present	–
Total UK extent:	**<1,200**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC; Jim Latham, CCW.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

[44.3 Residual alluvial forests (*Alnion glutinoso-incanae*)]

UK distribution:

Data source: JNCC International Designations Database

The map shows candidate and possible Special Areas of Conservation supporting this Annex I type. No data are available for sites not proposed as SAC. The habitat is likely to occur on more SACs in Scotland than are shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	2,000-3,000	4
Scotland	1,500-2,000	4
Wales	1,000-3,000	4
Northern Ireland	present	–
Total UK extent:	**4,500-8,000**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the extent of this habitat type in the UK. The figures provided are estimates based on expert opinion.

91J0 **Taxus baccata* woods of the British Isles

[42.A71 to 42.A73 *Taxus baccata* woods]

UK distribution:

Data source: NVC data; Woodland LCN Database, JNCC; JNCC International Designations Database.

The map shows records for NVC community W13, together with candidate and possible Special Areas of Conservation supporting this Annex I type. Stands of this NVC community in Scotland are considered to have been planted, and are not shown on the map.

UK extent:

	Area (ha)	*Reliability of measure/estimate*
England	>1,500	4
Scotland	introduced	–
Wales	50-100	4
Northern Ireland	not present	–
Total UK extent:	**>1,500**	**4**

Data source: Woodlands Lead Co-ordination Network, JNCC.

There are no comprehensive data available for the UK. The figures provided are estimates based on expert opinion.

ANNEX II SPECIES

1013 Geyer's whorl snail *Vertigo geyeri*

UK distribution:

Data source: Biological Records Centre; Conchological Society; Environment and Heritage Service; JNCC International Designations Database; Scottish Natural Heritage.

The map shows records of Geyer's whorl snail from 1990 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (populations)	*Reliability of measure/estimate*
England	6	3
Scotland	18	3
Wales	3	3
Northern Ireland	2	3
Total UK population:	**29**	**3**

Data source: Conchological Society; Environment and Heritage Service; Scottish Natural Heritage.

There are no comprehensive population size estimates for this species in the UK. The figures provided refer to the number of recently recorded populations. Further survey is likely to reveal more localities for this species in the UK.

1014 Narrow-mouthed whorl snail *Vertigo angustior*

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of narrow-mouthed whorl snail from 1980 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (populations)	*Reliability of measure/estimate*
England	5	2
Scotland	1	2
Wales	2	2
Northern Ireland	not present	–
Total UK population:	**8**	**2**

Data source: Conchological Society.

There are no comprehensive population size estimates for this species in the UK. The figures provided refer to the number of recently recorded populations.

1015 Round-mouthed whorl snail *Vertigo genesii*

UK distribution:

Data source: Biological Records Centre; Conchological Society; JNCC International Designations Database; Scottish Natural Heritage.

The map shows records of round-mouthed whorl snail from 1990 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (populations)	*Reliability of measure/estimate*
England	1	3
Scotland	6	3
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**7**	**3**

Data source: Conchological Society; Scottish Natural Heritage.

There are no comprehensive population size estimates for this species in the UK. The figures provided refer to the number of recently recorded populations. Further survey is likely to reveal more localities for this species in the UK.

1016 Desmoulin's whorl snail *Vertigo moulinsiana*

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database; Martin Drake, English Nature; Killeen (2000).

The map shows records of Desmoulin's whorl snail from 1980 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

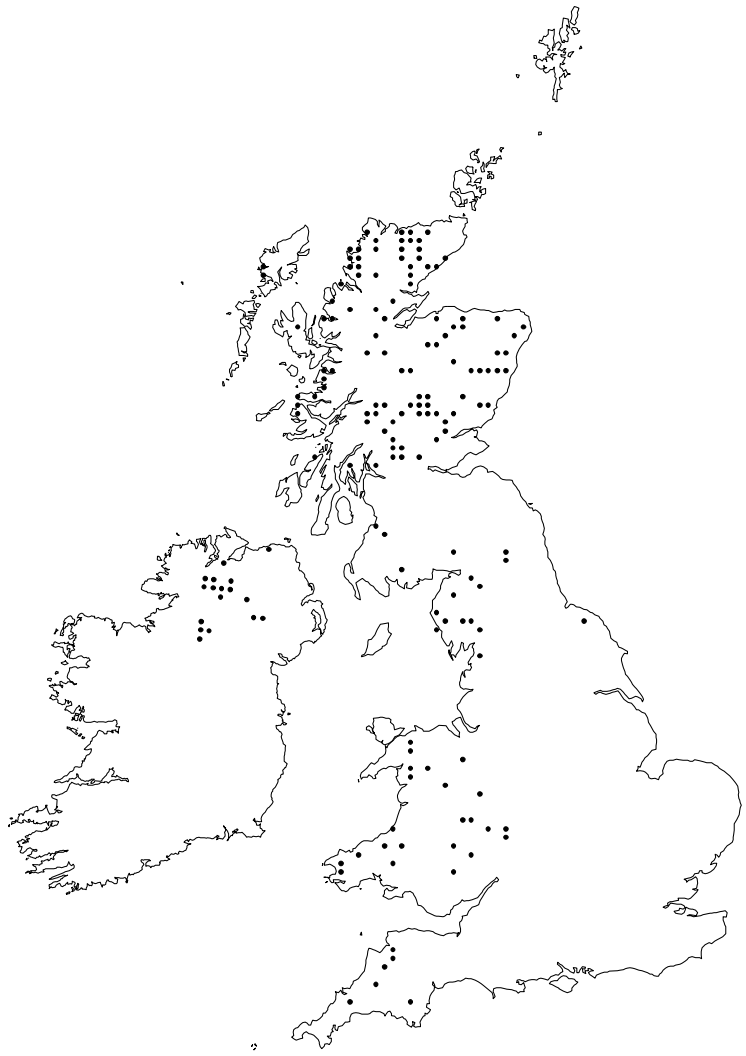
	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	57	3
Scotland	not present	–
Wales	1	3
Northern Ireland	not present	–
Total UK population:	**58**	**3**

Data source: Conchological Society; Drake (1999); Martin Drake, EN.

There are no comprehensive population size estimates for this species in the UK, and the only information available is the number of 10x10 km grid squares where this species has recently been recorded. Further survey is likely to reveal more localities for this species in the UK.

1029 Freshwater pearl mussel *Margaritifera margaritifera*

UK distribution:



Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of freshwater pearl mussel from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species. Recent surveys in all parts of the UK have confirmed that many populations have become extinct since the 1970s. For reasons of confidentiality to protect this species, publication of a distribution map showing only extant populations has been withheld.

UK population:

	Population (number of rivers supporting functional populations)	***Reliability of measure/estimate***
England	1	2
Scotland	52	2
Wales	1	2
Northern Ireland	present	–
Total UK population:	**>54**	**2**

Data source: Cosgrove *et al*. (2000); Martin Gaywood, SNH

Recent survey of all rivers with historical records has been undertaken in all four countries. Although some large, viable populations still survive, especially in Scotland, pearl mussels are extinct or have non-functional (i.e. non-recruiting) populations at the great majority of sites occupied a century ago.

1044 Southern damselfly *Coenagrion mercuriale*

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of southern damselfly from 1975 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

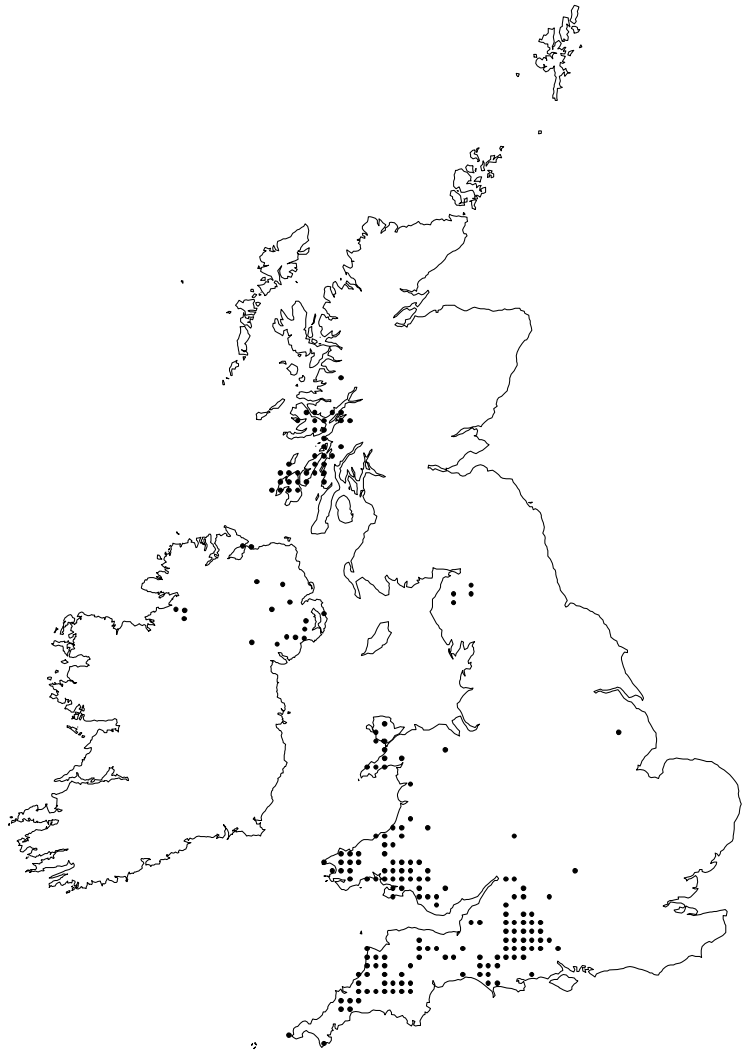
	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	17	3
Scotland	not present	–
Wales	11	3
Northern Ireland	not present	–
Total UK population:	**28**	**3**

Data source:

There are no comprehensive population size estimates available for this species in the UK. However, the largest populations (in Dorset, Hampshire and Pembrokeshire) each contain hundreds to thousands of individuals.

1065 Marsh fritillary *Euphydryas* (*Eurodryas, Hypodryas*) *aurinia*
[*Euphydryas aurinia*]

UK distribution:



Data source: Butterfly Conservation (Data from the *Butterflies for the New Millennium* survey (Asher, Warren & Fox, in press)); JNCC International Designations Database.

The map shows records of marsh fritillary butterfly from 1995-1999, together with candidate and possible Special Areas of Conservation supporting this Annex II species. Records from the *Butterflies for the New Millennium* survey have only been shown where more than one individual, or an immature form, was recorded on any one visit to any site within a square, giving some indication of whether a 10x10 km square contains a breeding colony or just vagrant individuals. Reproduced with permission of Butterfly Conservation.

UK population:

	Population (populations)	***Reliability of measure/estimate***
England	250	2
Scotland	50	2
Wales	180	3
Northern Ireland	present	–
Total UK population:	**>480**	**3**

Data source: Warren (1994); Adrian Fowles, CCW.

Records of populations thought to be extant in 1990 were gathered from all national and local recording schemes. These included all post-1980 records of populations of marsh fritillary in England, Scotland and Wales; in Northern Ireland post-1960 records were gathered. There have been more recent surveys of marsh fritillary in Wales and Scotland. Estimates of population figures are not necessarily reliable as numbers can fluctuate dramatically from year to year.

1079 Violet click beetle *Limoniscus violaceus*

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of violet click beetle from 1990 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

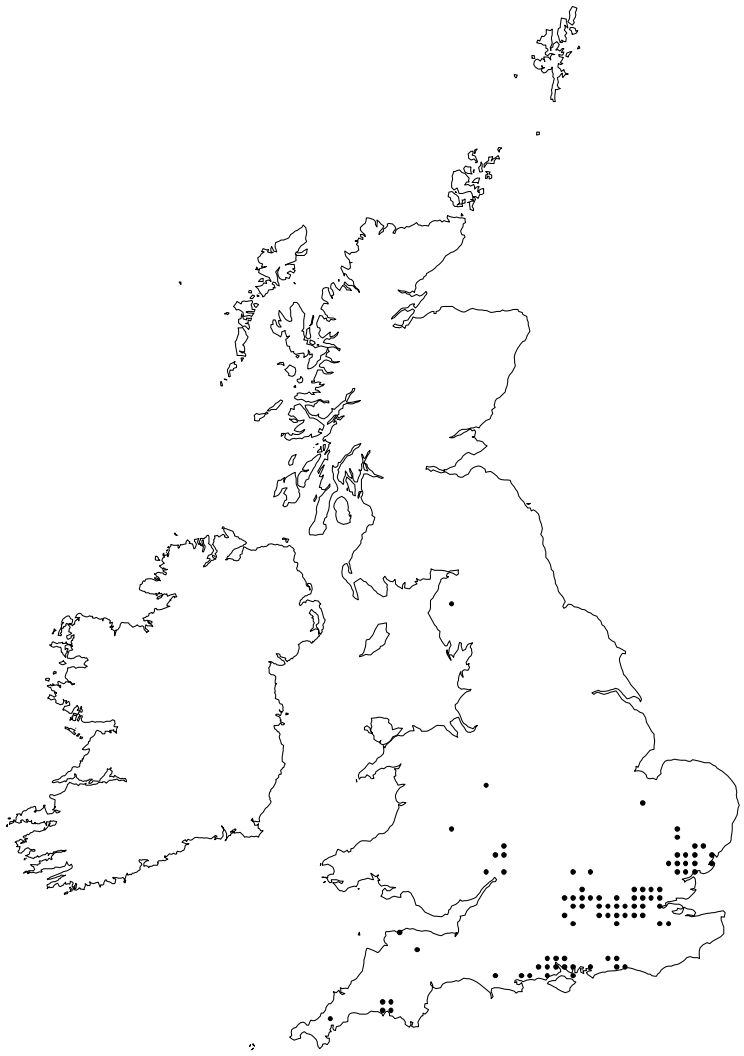
	Population (sites)	*Reliability of measure/estimate*
England	3	3
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**3**	**3**

Data source: English Nature.

There are no comprehensive population size estimates for this species in the UK. The violet click beetle breeds in hollows in the trunks of ancient trees and the only means of accurately sampling the population would involve the destruction of its habitat.

1083 Stag beetle *Lucanus cervus*

UK distribution:



Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of stag beetle from 1960 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

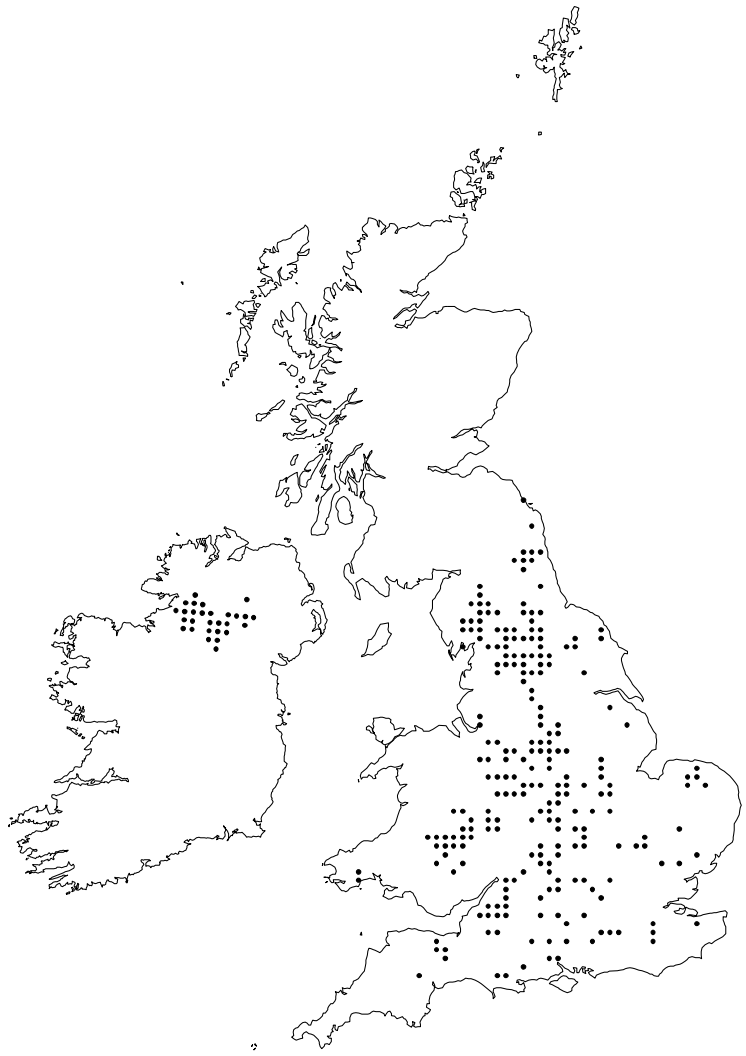
	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	86	–
Scotland	not present	–
Wales	1	–
Northern Ireland	not present	–
Total UK population:	**87**	**3**

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

UK distribution:



Data source: Biological Records Centre; CEDaR; JNCC International Designations Database.

The map shows records of white-clawed crayfish from 1990 onwards (1980 in Northern Ireland), together with candidate and possible Special Areas of Conservation supporting this Annex II species. Scottish populations are believed to result from introductions, and are therefore not shown on the map.

UK population:

	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	233	3
Scotland	introduced	–
Wales	18	3
Northern Ireland	28	3
Total UK population:	**279**	**3**

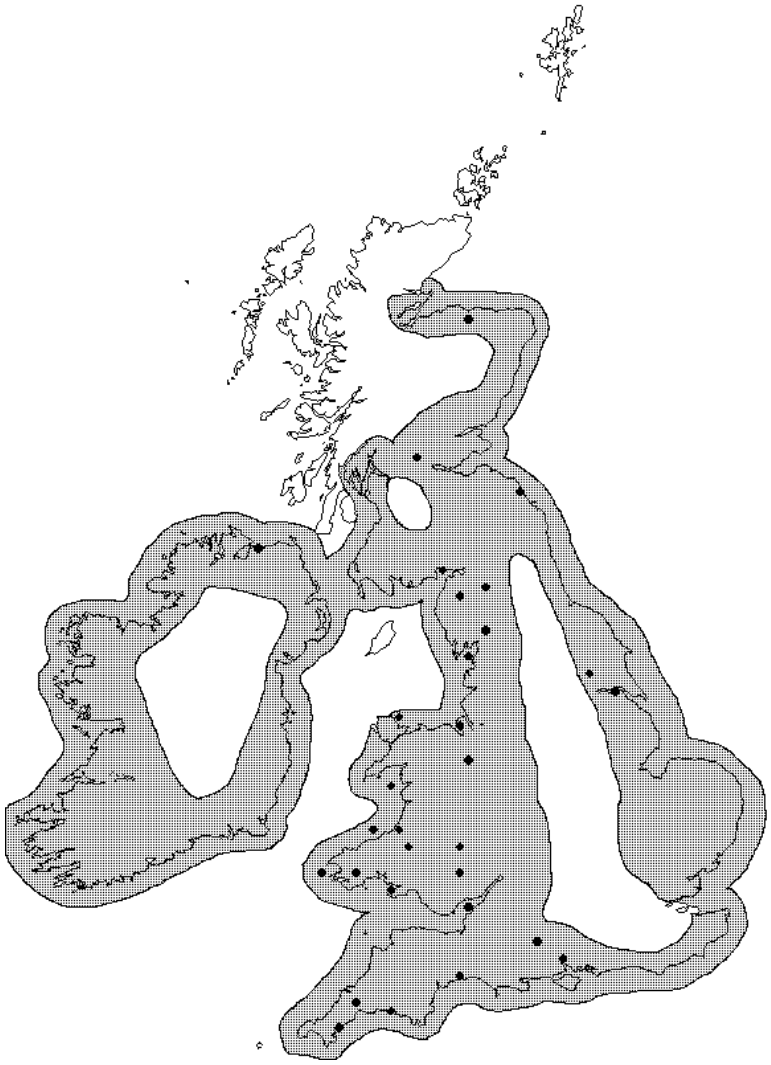
Data source:

Although there are no population size estimates for this species, there have been recent surveys in England, Wales and Northern Ireland. The Environment Agency also routinely records crayfish in invertebrate samples taken during water quality surveys at specific sites in England and Wales.

Numbers of individuals can be abundant in favourable situations, with some populations numbered in many thousands. For example, one site in Warwickshire was estimated to support a population of around 50,000 individuals.

1095 Sea lamprey *Petromyzon marinus*

UK distribution:



Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of sea lamprey distribution in freshwaters and coastal seas around the British Isles.

UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK population:	**unknown**	–

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1096 Brook lamprey *Lampetra planeri*

UK distribution:

Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of brook lamprey distribution in the British Isles.

UK population:

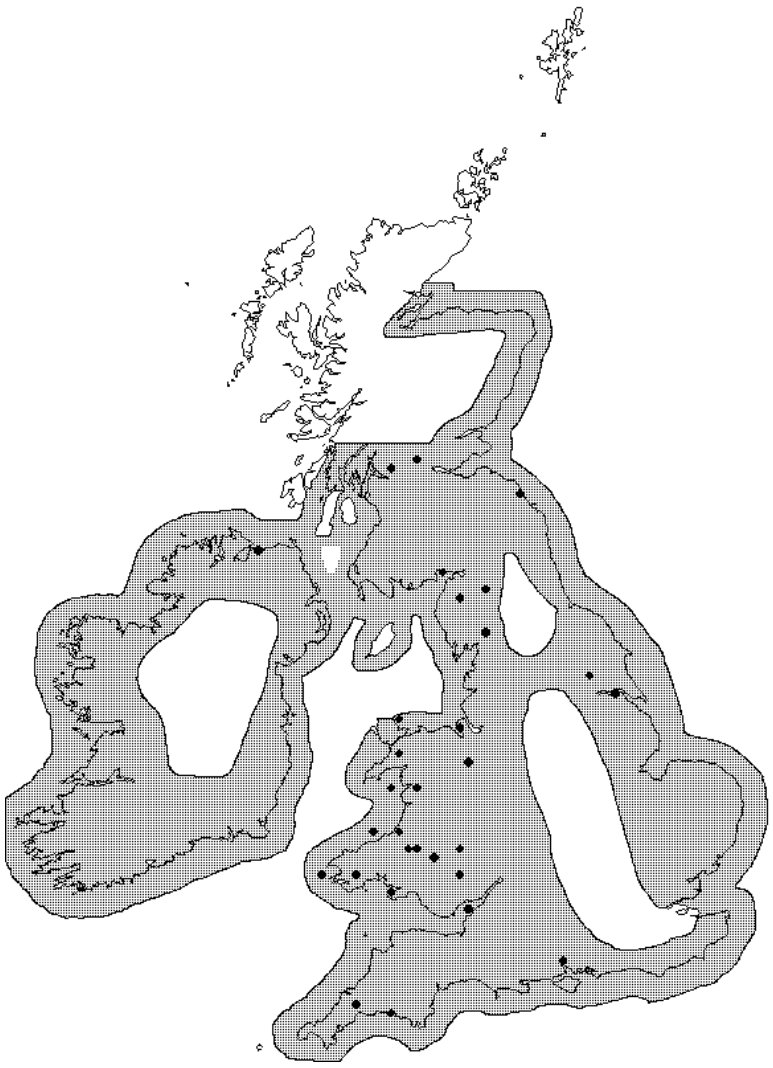
	Population	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK population:	**unknown**	–

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1099 River lamprey *Lampetra fluviatilis*

UK distribution:



Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of river lamprey distribution in freshwaters and coastal seas around the British Isles.

UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK population:	**unknown**	–

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1102 Allis shad *Alosa alosa*

UK distribution:

Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of allis shad distribution in coastal seas and freshwaters around the British Isles. There is probably an additional spawning population in the Solway Firth area, but rivers in the Severn catchment may no longer support viable breeding populations (Carstairs 2000).

UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK population:	**unknown**	**–**

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1103 Twaite shad *Alosa fallax*

UK distribution:

Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of twaite shad distribution in coastal seas and freshwaters around the British Isles. The species also occurs in the River Tywi in south Wales.

UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	present	–
Total UK population:	**unknown**	–

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1106 Atlantic salmon *Salmo salar*

UK distribution:

Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of Atlantic salmon distribution in freshwaters and coastal seas around the British Isles.

UK population:

	Population (spawning individuals)	*Reliability of measure/estimate*
England and Wales	80,000	3
Scotland	418,000	3
Northern Ireland	18,000	3
Total UK population:	**516,000**	**3**

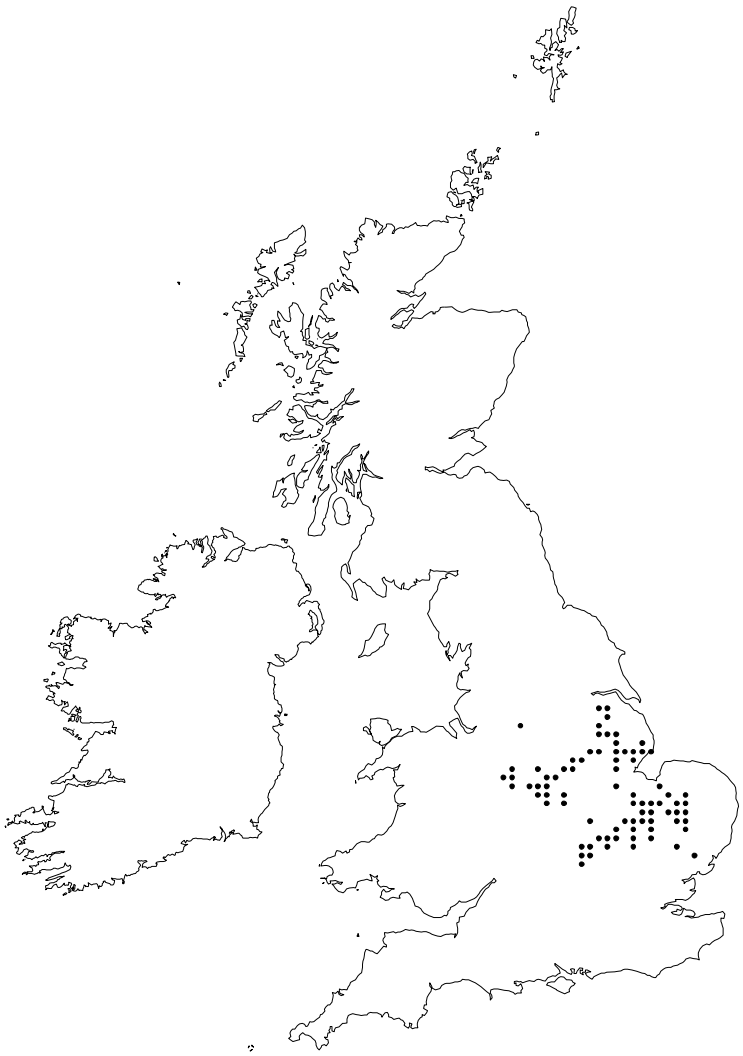
Data source: ICES (2000)

Salmon are counted at fish-passes on many rivers, but the best estimate available for Atlantic salmon in the UK as a whole is based on a mathematical model of post-exploitation numbers of first sea winter and multi sea winter spawners in UK waters developed by the International Council for the Exploration of the Seas. The figures give above refer to the estimated number of spawners in 1999

(ICES 2000). The report also gives a ten-year average of numbers of spawners, which for the UK is 1,034,660. (Figures reproduced with permission of ICES.)

1149 Spined loach *Cobitis taenia*

UK distribution:



Data source: Perrow & Jowitt (2000).

The map shows the known distribution of spined loach from 1990 onwards, including records from surveys undertaken in 1997-99.

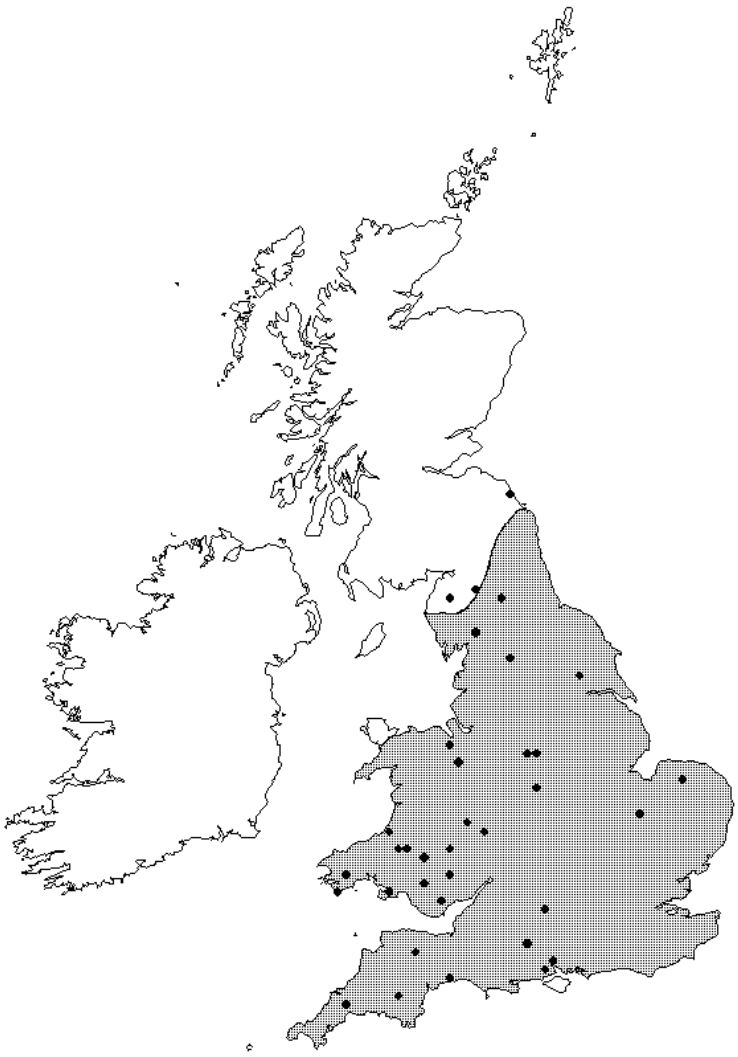
UK population:

	No. of 10x10 km squares with recent records	*Reliability of measure/estimate*
England	78	3
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**78**	**3**

Data source: Perrow & Jowitt (2000).

1163 Bullhead *Cottus gobio*

UK distribution:



Data source: Redrawn from Maitland & Campbell (1992), based on Maitland (1972); JNCC International Designations Database.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with a general indication of bullhead distribution in the British Isles. The Scottish populations in the Forth and Clyde catchments are believed to result from introductions, and are not shown on the map.

UK population:

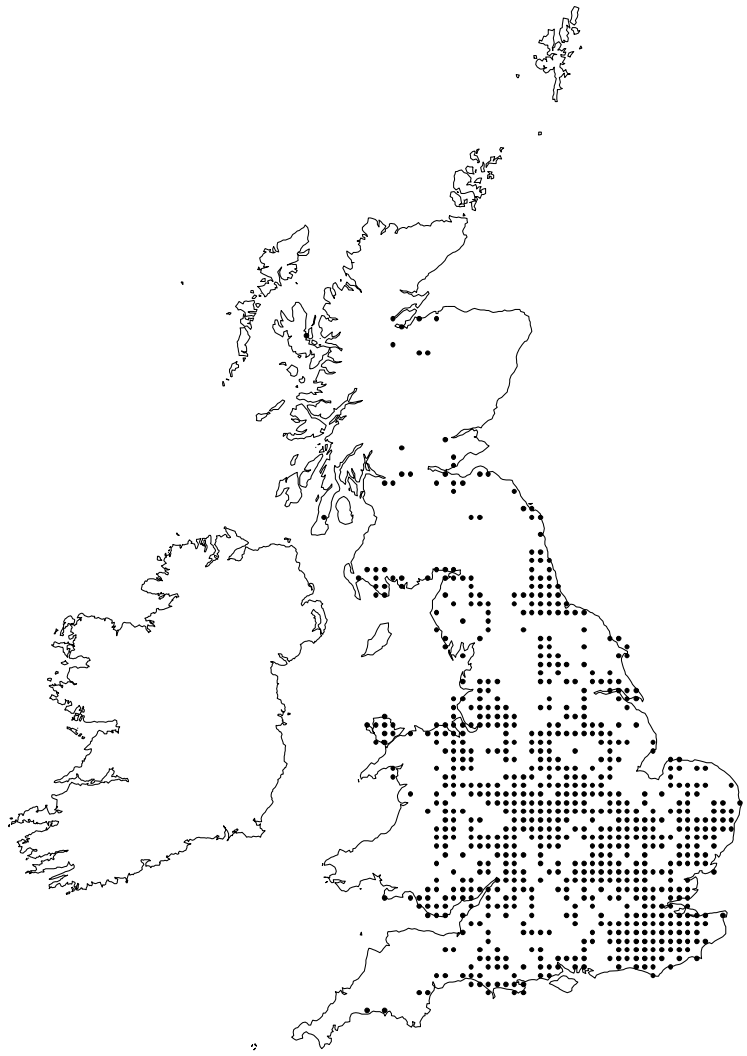
	Population	***Reliability of measure/estimate***
England	present	–
Scotland	introduced	–
Wales	present	–
Northern Ireland	not present	–
Total UK population:	**unknown**	–

Data source:

There are no comprehensive population size estimates available for this species in the UK.

1166 Great crested newt *Triturus cristatus*

UK distribution:



Data source: Biological Records Centre; JNCC International Designations Database; Martin Gaywood, SNH; Liz Howe, CCW.

The map shows records of great crested newts from 1980 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (individuals)	*Reliability of measure/estimate*
England	present	–
Scotland	present	–
Wales	present	–
Northern Ireland	not present	–
Total UK population:	**360,000**	**3**

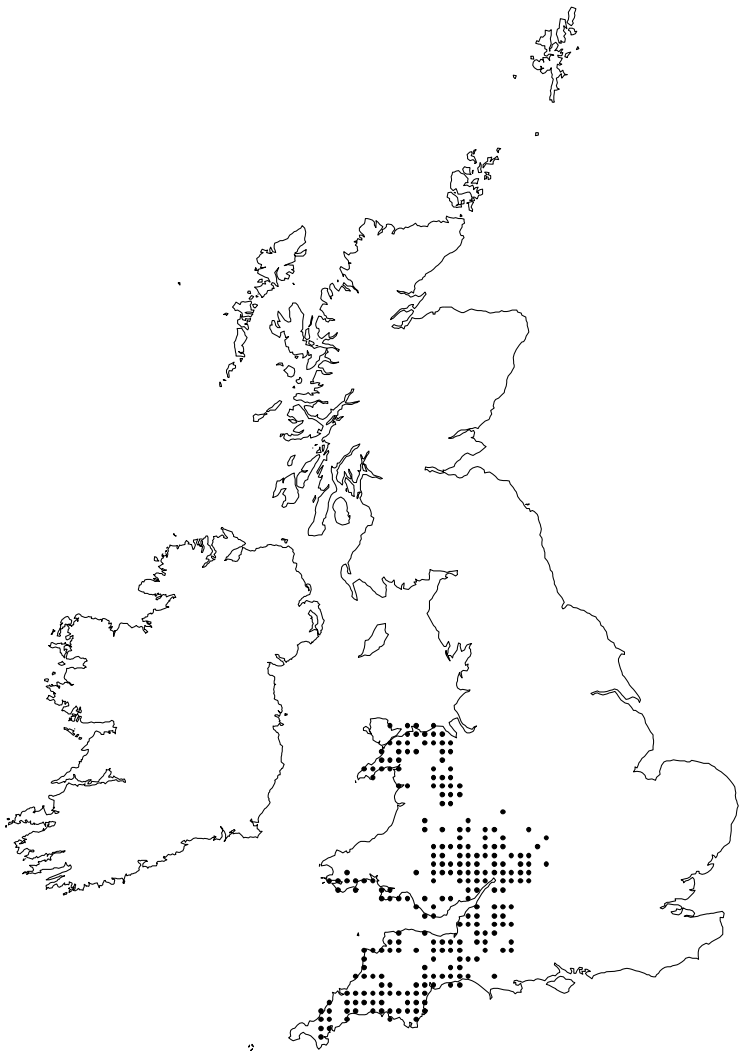
Data source: Langton & Beckett (1995 unpublished data).

The total population figure is an estimate based on records of the number of ponds occupied by great crested newts in the 1980s. It has been estimated that there are approximately 18,000 ponds supporting great crested newts in the UK. More recent survey suggests that this may be an underestimate. Surveys in 1995-96 confirmed the species as occurring in 85 water bodies in Scotland

(Gaywood 1998). Often more than one pond is present at a site, and a single population may use a complex of several or many ponds.

1303 Lesser horseshoe bat *Rhinolophus hipposideros*

UK distribution:



Data source: JNCC International Designations Database; Tony Mitchell-Jones, EN; Ruth Warren, CCW.

The map shows records of lesser horseshoe bat from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

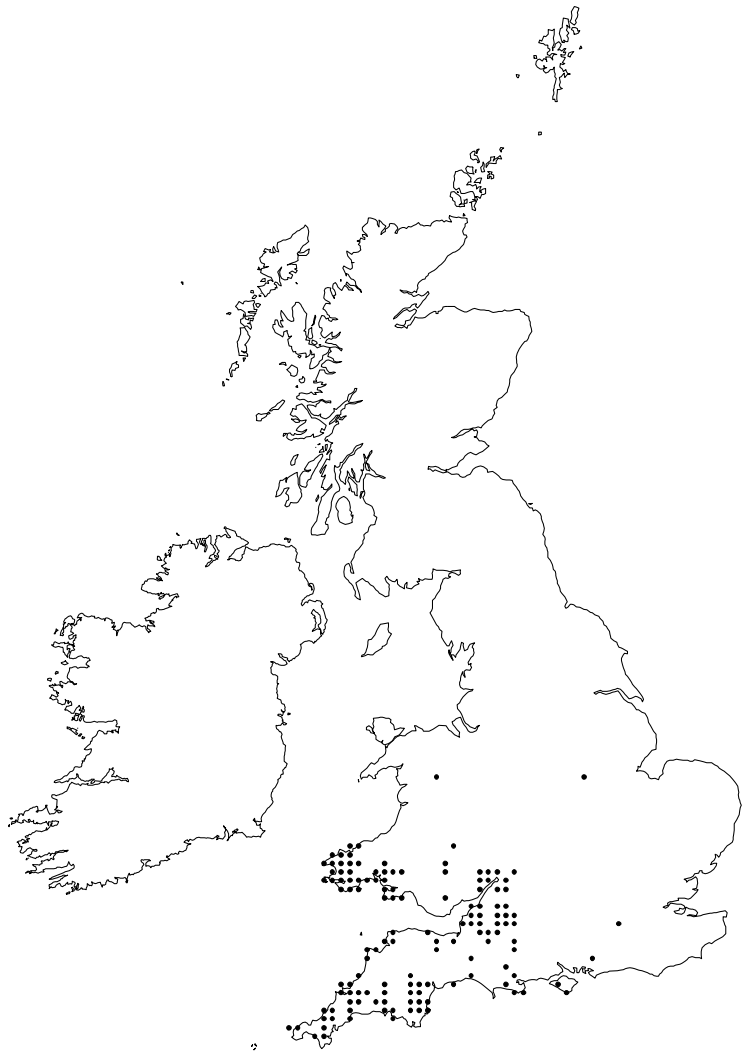
	Population (individuals)	*Reliability of measure/estimate*
England	7,000	3
Scotland	not present	–
Wales	10,000	3
Northern Ireland	not present	–
Total UK population:	**17,000**	**3**

Data source: Harris *et al*. (1995); Ruth Warren, CCW.

The figures provided are population estimates based on counts of known roosts.

1304 Greater horseshoe bat *Rhinolophus ferrumequinum*

UK distribution:



Data source: JNCC International Designations Database; Tony Mitchell-Jones, EN; Ruth Warren, CCW.

The map shows records of greater horseshoe bat from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

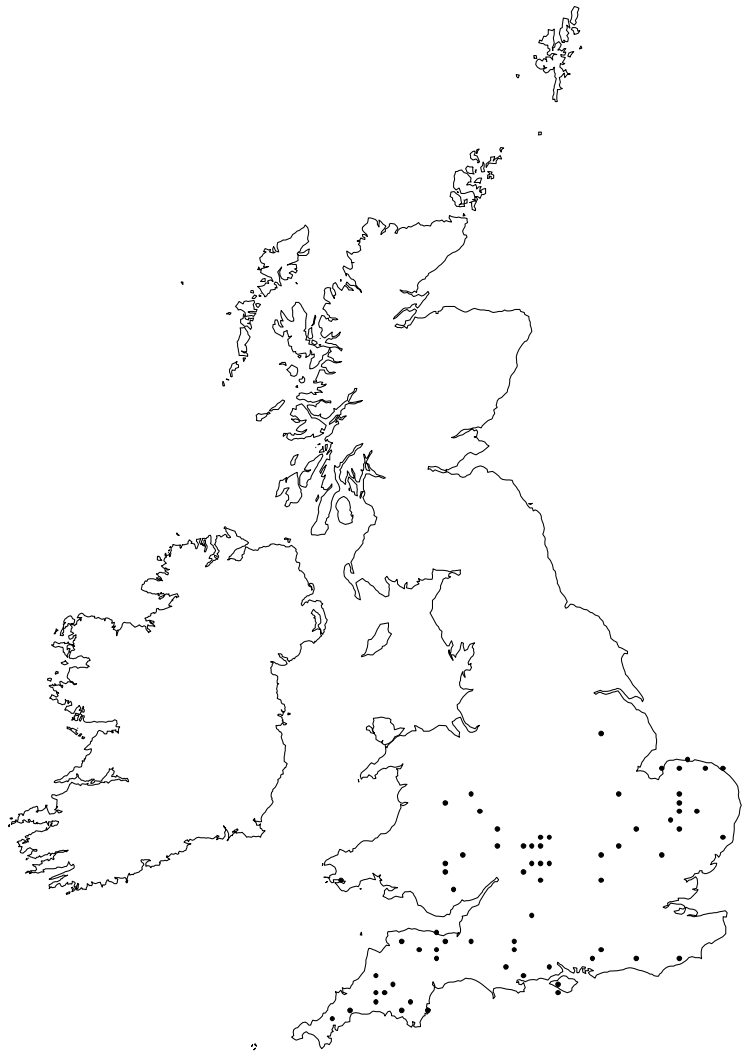
	Population (individuals)	*Reliability of measure/estimate*
England	3,650	3
Scotland	not present	–
Wales	400	3
Northern Ireland	not present	–
Total UK population:	**4,000**	**3**

Data source: Harris *et al.* (1995).

The figures provided are population estimates based on counts of individuals emerging from summer nursery roosts.

1308 Barbastelle *Barbastella barbastellus*

UK distribution:



Data source: Bat Conservation Trust.

The map shows records of barbastelle from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	not present	–
Wales	present	–
Northern Ireland	not present	–
Total UK population:	**unknown**	**–**

There is limited information available on the distribution and abundance of this species in the UK. A Bat Conservation Trust project undertaken for English Nature's Species Recovery Programme collected 78 records of barbastelle between 1986 and 1995 (Harrington *et al.* 1995). A population estimate of 5,000 individuals has been calculated, based on the minimum number considered necessary to maintain a viable population over the area from which it has been recorded, but there is very little data on which to base this estimate. Until more is known about the biology of the species it will not be possible to estimate population size more accurately.

1323 Bechstein's bat *Myotis bechsteinii*

UK distribution:

Data source: Bat Conservation Trust.

The map shows records of Bechstein's bat from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

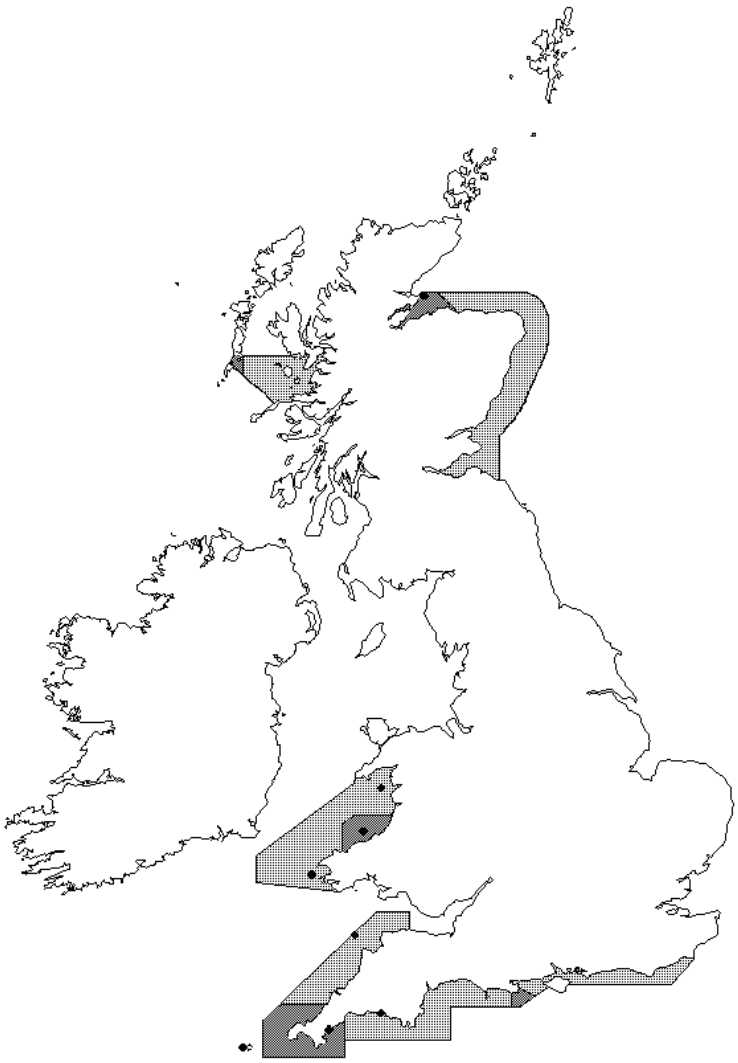
UK population:

	Population	*Reliability of measure/estimate*
England	present	–
Scotland	not present	–
Wales	present	–
Northern Ireland	not present	–
Total UK population:	**unknown**	**–**

There is limited information available on the distribution and abundance of this species in the UK. A Bat Conservation Trust project undertaken for English Nature's Species Recovery Programme collected 53 records of Bechstein's bat between 1986 and 1995 (Harrington *et al.* 1995). A population estimate of 1,500 individuals has been calculated, based on the minimum number considered necessary to maintain a viable population over the area from which it has been recorded in southern England.

1349 Bottlenose dolphin *Tursiops truncatus*

UK distribution:



Data source: JNCC International Designations Database; Mark Tasker, JNCC.

The map shows candidate and possible Special Areas of Conservation supporting this Annex II species, with an indication of distribution around these and other areas believed to support semi-resident populations around the UK. Core home ranges are heavily shaded, and areas apparently used by animals from these ranges are more lightly shaded. Individuals may be seen almost anywhere in UK waters.

UK population:

	Population (resident individuals)	***Reliability of measure/estimate***
England	105[4]	3
Scotland	134[5]	3
Wales	127	2
Northern Ireland	not present	–
Total UK population:	**<300**	**2**

[4] Includes about 70 individuals around the Channel Islands.

[5] Includes counts of 129 ∀ 15 individuals in the Moray Firth (Wilson *et al*. 1999)

Data sources: Curran *et al*. (1996); Grellier *et al.* (1995); ICES (1996); Wilson *et al*. (1999); Mandy McMath, CCW; M. Bones & J.A. Cambell, pers. comm.)

All known resident groups of this species in UK waters, excluding the Channel Islands, have had minimum numbers of recognisable individuals assessed.

1351 Harbour porpoise *Phocoena phocoena*

UK distribution:

Data source: JNCC International Designations Database; Mark Tasker, JNCC.

The map shows candidate and possible Special Areas of Conservation in which porpoise have been listed as occurring, with an indication of general population density around the UK. Areas apparently supporting higher population densities are heavily shaded, while coastal waters in which they are usually rare or absent are lightly shaded. Individuals may be seen almost anywhere in UK waters.

UK population:

	Population	*Reliability of measure/estimate*
England	unknown	–
Scotland	unknown	–
Wales	unknown	–
Northern Ireland	unknown	–
Total UK population:	**150,000**	**4**

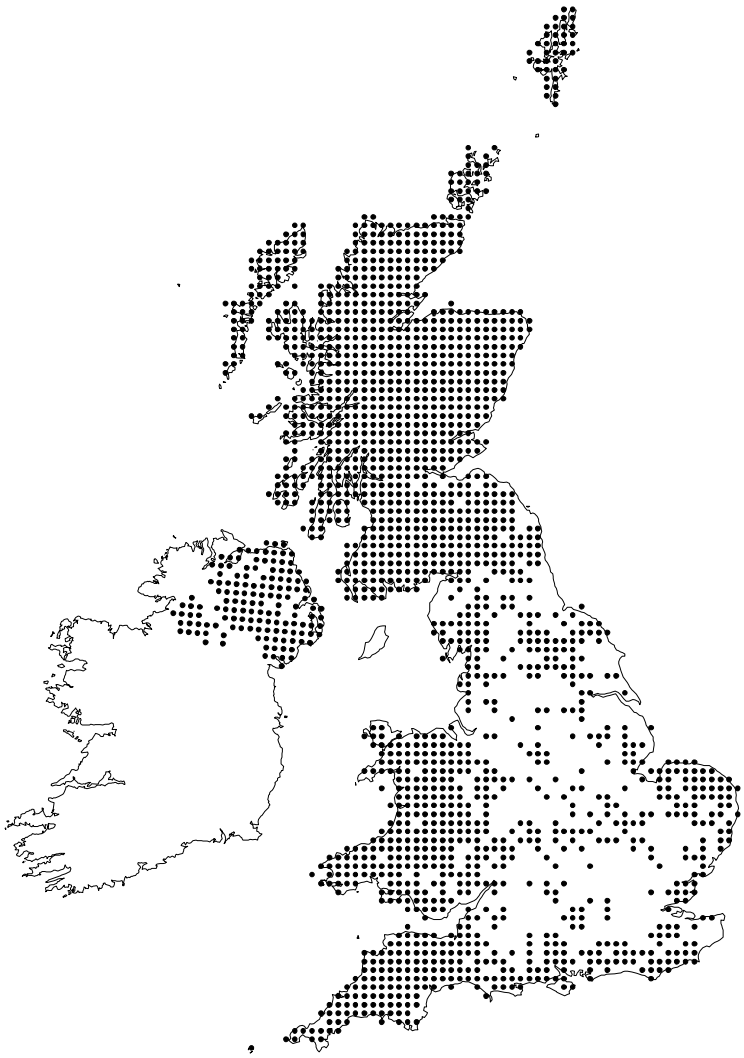
Data source: Hammond *et al*. (1995); Mark Tasker, JNCC.

There is limited information available on the overall distribution and abundance of this species in UK waters. A census of part of the UK population in the North Sea and over the Celtic Shelf, covering an

estimated 60-70% of relevant habitat in UK waters, was undertaken in July 1994 as part of the SCANS project (Hammond *et al*. 1995). The project recorded 120,000 porpoises in the surveyed areas of the UK's Exclusive Economic Zone (EEZ), which extends up to 200 nautical miles (370 km) offshore. It is therefore estimated that the total population within the UK's EEZ is approximately 150,000. However, numbers of porpoises present in UK waters vary seasonally, and more animals are likely to pass through UK waters than are present at any one time.

1355 Otter *Lutra lutra*

UK distribution:



Data source: Biological Records Centre; CEDaR; JNCC International Designations Database; Vincent Wildlife Trust.

The map shows records of otters from 1960 onwards (1970 for Northern Ireland), with records from surveys undertaken by the Vincent Wildlife Trust between 1991 and 1994 (see Green & Green 1997; Strachan & Jeffers 1996; Andrews *et al.* 1983), together with candidate and possible Special Areas of Conservation supporting this Annex II species. For England and Northern Ireland the VWT surveys only covered alternate 50x50 km grid squares, giving an impression of a more discontinuous distribution than may actually be the case. Otter distribution has expanded since the early 1990s to recolonise parts of the species' former range in England.

UK population:

	Population (individuals)	*Reliability of measure/estimate*
England	350	3
Scotland	6,600	3
Wales	400	3
Northern Ireland	present	–
Total UK population:	**>7,350**	**3**

Data source: Harris *et al.* (1995).

The figures provided for England, Scotland and Wales are estimates of the total number of pre-breeding adults based on surveys carried out in the mid-1980s and do not include immature animals living on their natal range. These estimates were calculated using the length of river in water authority regions and the percentage occupation of sites in published otter surveys. Populations are likely to have increased significantly since the 1980s.

1364 Grey seal *Halichoerus grypus*

UK distribution:

Data source: Sea Mammal Research Unit (from 1995 data); JNCC International Designations Database.

The map shows the main breeding sites of grey seals around the UK, together with candidate and possible Special Areas of Conservation supporting this Annex II species. There are further, smaller, dispersed breeding sites on the shaded sections of coast, and near the main breeding sites. Note that SMRU surveys do not cover Northern Ireland.

UK population:

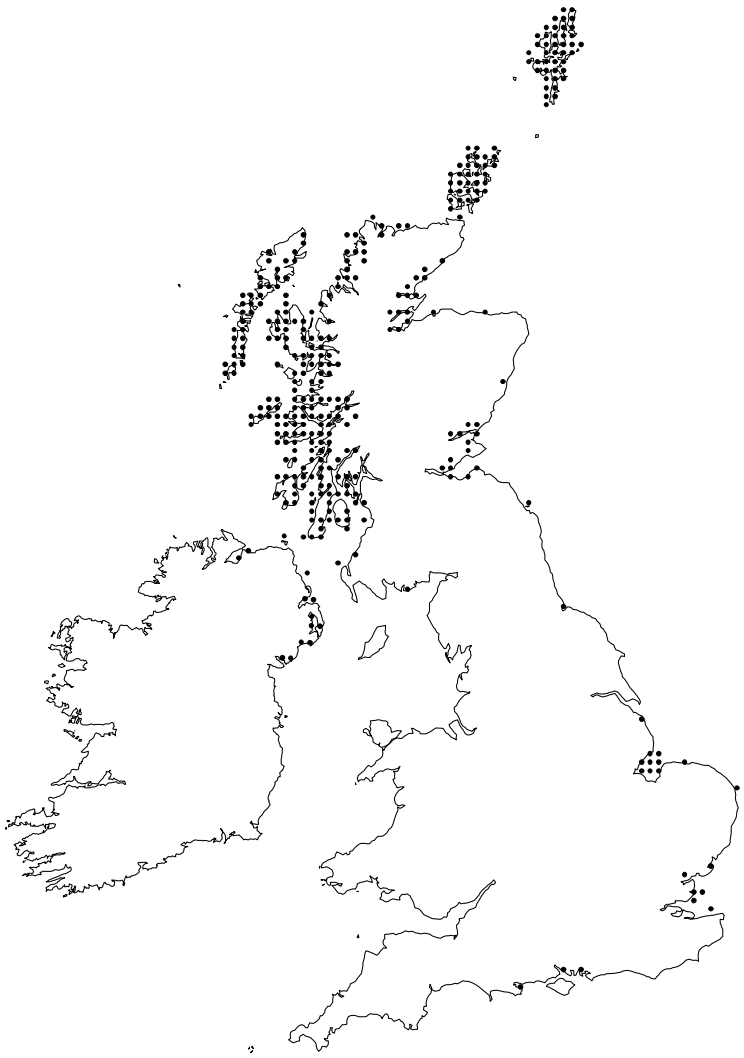
	Population (individuals)	*Reliability of measure/estimate*
England	5,200	2
Scotland	104,100	2
Wales	4,700	2
Northern Ireland	400	3
Total UK population:	**114,400**	**2**

Data source: Sea Mammal Research Unit (1998a); various sources, see Baines *et al.* (1995); Duck (1995, 1996); Bleakley (1997).

The figures provided for Scotland and the east coast of England are population estimates based on counts of total pre-breeding populations at the start of the 1997 pupping season. Figures for other areas of the UK are based on counts undertaken earlier in the 1990s, and there has since been a decline in Northern Ireland. The main grey seal breeding rookeries in the Firth of Forth, Orkney, Inner and Outer Hebrides are surveyed annually using aerial photography, and the Farne Islands are surveyed from the ground. Other sites are surveyed from the ground or from boat. Note that SMRU surveys do not cover Northern Ireland.

1365 Common seal *Phoca vitulina*

UK distribution:



Data source: Sea Mammal Research Unit; Environment and Heritage Service; JNCC International Designations Database

The map shows records of common seals from surveys of haul-outs during the moulting periods of 1996 and 1997 for Scotland. For England the map shows records from surveys undertaken in 1993, and for Northern Ireland records from surveys undertaken in the early 1990s. Note that SMRU surveys do not cover Northern Ireland. Candidate and possible Special Areas of Conservation supporting this Annex II species are also shown.

UK population:

	Population (individuals)	*Reliability of measure/estimate*
England	3,200	2
Scotland	29,600	2
Wales	not present	–
Northern Ireland	600	3
Total UK population:	**>33,400**	**2**

Data source: Sea Mammal Research Unit (1998b); various sources, see Duck (1995, 1996); Bleakley (1997).

The figures provided are minimum population estimates based on total numbers counted during the moulting season when between 60-70% of common seals are likely to be on land rather than at sea. The total population may therefore be as much as 30-40% larger than counted. Most counts are from the air using thermal imaging equipment. The extrapolation from numbers on haul-out sites to total numbers needs further validation.

1386 Green shield-moss *Buxbaumia viridis* (Moug.) Moug. & Nestl.

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of green shield-moss from 1990 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (plants)	*Reliability of measure/estimate*
England	not present	–
Scotland	>23	2
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**>23**	**2**

Data source: Scottish Nature Heritage.

This species is only known in the UK from rotting logs at two localities in Scotland.

1390 *Western rustwort *Marsupella profunda* Lindb.

UK distribution:

Data source: JNCC Plant Database; JNCC International Designations Database.

The map shows records of western rustwort from 1990 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species. Not all recently discovered localities are shown.

UK population:

	Population (sites)	*Reliability of measure/estimate*
England	12	2
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**12**	**2**

Data source: English Nature.

Recent survey work has led to the discovery of several additional sites for this species in south-west England. Twelve populations have now been recorded, four of which hold more than 95% of the UK population.

1393 Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus* (Mitt.) Warnst. [*Drepanocladus vernicosus*]

UK distribution:

Data source: JNCC Plant Database; JNCC International Designations Database.

The map shows records of slender green feather-moss from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species. A recent survey (Holyoak 1999) failed to find this species at the site where it had previously been recorded in Norfolk, and this site has therefore been excluded from the map. There are many older records of this species (particularly in northern England) which are not shown on this map but are probably extant.

UK population:

	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	4	3
Scotland	6	3
Wales	25	3
Northern Ireland	not present	–
Total UK population:	**32**	**3**

Data source:

There are no comprehensive population size estimates available for this species in the UK. It is likely to be under-recorded.

1395 Petalwort *Petalophyllum ralfsii* (Wils.) Nees & Gott.

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of petalwort from 1950 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (plants)	*Reliability of measure/estimate*
England	>24,000	3
Scotland	>24,000	3
Wales	>10,000	3
Northern Ireland	<100	3
Total UK population:	**>58,000**	**3**

Data source: JNCC Species Specialist Working Group; JNCC Plant Database.

The population estimates for the UK are based on recent surveys at a range of sites.

1421 Killarney fern *Trichomanes speciosum* Willd.

UK distribution:

For reasons of confidentiality to protect this Annex II species, publication of a distribution map has been withheld.

UK population:

	Population (populations)	*Reliability of measure/estimate*
England	<5	2
Scotland	4	2
Wales	7	2
Northern Ireland	1	2
Total UK population:	**17**	**2**

Data source: Wigginton (1999); Rob Cooke, EN; Peter Jones, CCW; Chris Sydes, SNH.

Approximately 17 populations in at least 13 localities are known to be extant in Great Britain. One locality is known in Northern Ireland. The figures refer only to sporophyte plants. Examples of the gametophyte generation are much more numerous and widespread (Rumsey *et al*. 1998).

1441 Shore dock *Rumex rupestris* Le Gall

UK distribution:

Data source: JNCC Plant Database; JNCC International Designations Database; McDonnell & King (2000).

The map shows records of shore dock from 1980 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

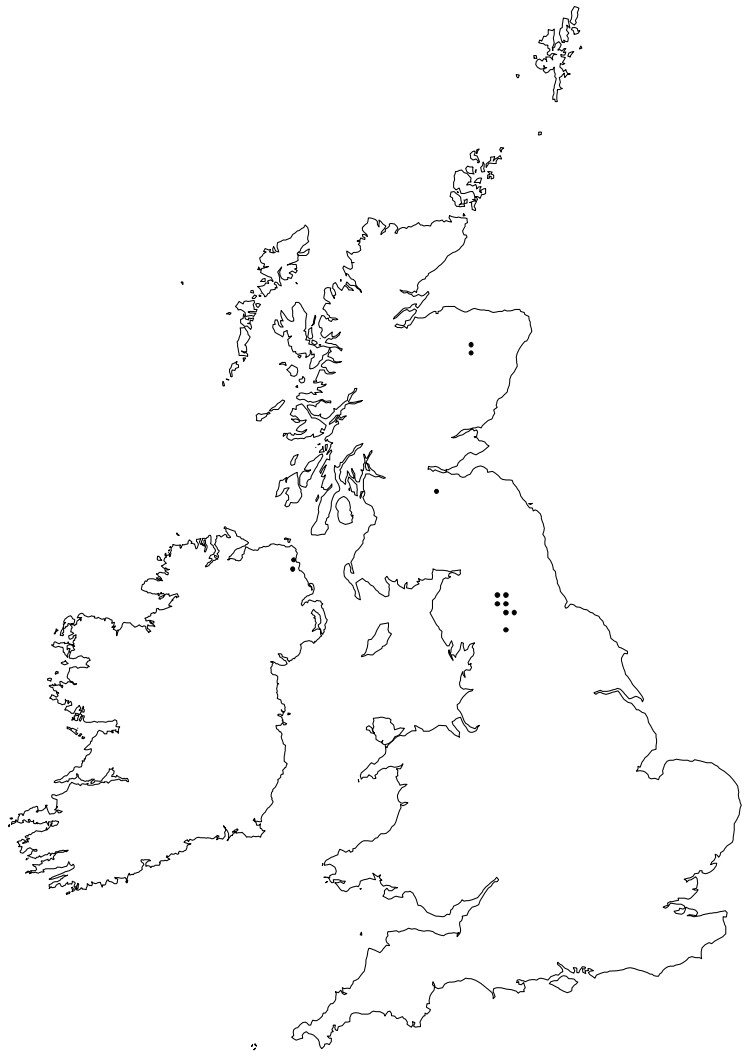
	Population (plants)	*Reliability of measure/estimate*
England	530-600	2
Scotland	not present	–
Wales	40	3
Northern Ireland	not present	–
Total UK population:	**570-600**	**3**

Data source: McDonnell & King (2000); Parslow & Colston (1994); McDonnell (1995).

The figure provided is a population estimate based on detailed surveys carried out in 1994 and 1999. Populations of shore dock are known from about 40 locations in England and Wales.

1528 Marsh saxifrage *Saxifraga hirculus* L.

UK distribution:



Data source: Biological Records Centre; JNCC Plant Database; JNCC International Designations Database.

The map shows records of marsh saxifrage from 1960 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (plants)	*Reliability of measure/estimate*
England	present	–
Scotland	930	2
Wales	not present	–
Northern Ireland	present	–
Total UK population:	**>50,000**	**4**

Data source: Wigginton (1999); Chris Sydes, SNH.

There are no comprehensive population size estimates available for this species in the UK. Survey data from a range of sites have been used to estimate the size of the total UK population.

1614 Creeping marshwort *Apium repens* (Jacq.) Lag.

UK distribution:

Data source: Biological Records Centre.

The map shows records of creeping marshwort from 1960 onwards.

UK population:

	Population (plants)	*Reliability of measure/estimate*
England	100-300	2
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**100-300**	**2**

Data source: English Nature.

This species is known to occur in the UK at one site where annual counts have shown that the numbers of plants fluctuate widely from year to year, and at a second, smaller site.

1654 Early gentian *Gentianella anglica* (Pugsley) E.F. Warburg

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database; Andy Jones, CCW.

The map shows records of early gentian from 1960 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	65	–
Scotland	not present	–
Wales	1	–
Northern Ireland	not present	–
Total UK population:	**66**	**3**

Data source:

There are no comprehensive population size estimates available for early gentian in the UK. Some individual sites (e.g. on the Isle of Wight, in Wiltshire and in Dorset) are known to support hundreds of thousands of plants.

1831 Floating water-plantain *Luronium natans* (L.) Raf.

UK distribution:

Data source: Biological Records Centre; JNCC Plant Database; JNCC International Designations Database; Chris Newbold, EN.

The map shows records of floating water-plantain from 1970 onwards, together with candidate and possible Special Areas of Conservation supporting this Annex II species. The records of this species in Scotland and Norfolk have been excluded as they are believed to result from introductions.

UK population:

	No. of 10x10 km squares with records	*Reliability of measure/estimate*
England	present	–
Scotland	introduced	–
Wales	present	–
Northern Ireland	not present	–
Total UK population:	**47**	**3**

Data source:

There are no comprehensive population size estimates available for this species in the UK. Floating water-plantain can be difficult to survey, particularly in its deep-water form. Individual populations can also fluctuate greatly in size.

1833 Slender naiad *Najas flexilis* (Willd.) Rostk. & W.L. Schmidt

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of slender naiad from 1980 onwards, with the exclusion of its only known English site in Cumbria, where it is believed to be extinct, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (sites)	*Reliability of measure/estimate*
England	extinct	–
Scotland	36	2
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**36**	–

Data source: Martin Gaywood, SNH.

All Scottish sites with historical records of this species have been surveyed since 1980 by the SNH Natura Project and Freshwater Scottish Loch Survey, which have covered around 3000 lochs (about 10% of the total); the surveys have also found previously unrecorded populations. Due to the difficulty in sampling submerged aquatic plants only presence/absence data are available. This species is believed to be extinct at the only English site where it has been recorded in recent times.

1902 Lady's-slipper orchid *Cypripedium calceolus* L.

UK distribution:

Data source: Biological Records Centre.

The map shows the only remaining locality in the UK where lady's-slipper orchid is found as a native population; sites of recent (re)introductions are not shown.

UK population:

	Population (sites)	*Reliability of measure/estimate*
England	1	1
Scotland	not present	–
Wales	not present	–
Northern Ireland	not present	–
Total UK population:	**1**	**1**

Data source: English Nature

There is only one remaining locality where lady's-slipper orchid survives as a native population in the UK, where there are approximately 60 shoots (see Wigginton 1999); artificially propagated plants have been introduced to several other localities.

1903 Fen orchid *Liparis loeselii* (L.) Rich.

UK distribution:

Data source: Biological Records Centre; JNCC International Designations Database.

The map shows records of fen orchid from 1987 onwards, with the exclusion of one site in north Devon where it is believed to have become extinct, together with candidate and possible Special Areas of Conservation supporting this Annex II species.

UK population:

	Population (plants)	*Reliability of measure/estimate*
England	<250	2
Scotland	not present	–
Wales	>10,000	3
Northern Ireland	not present	–
Total UK population:	**>10,000**	**3**

Data source: Norfolk Wildlife Trust (1996); Wigginton (1999).

The figures provided are population estimates based on recent survey of all known sites.

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Appendix 1: List of cited acronyms

BRC	Biological Records Centre
CEDaR	Centre for Environmental Data and Recording
CCW	Countryside Council for Wales
CEH	Centre for Ecology and Hydrology
CORINE	Co-ORdination of INformation on classification of the Environment
cSAC	candidate Special Area of Conservation
DGXI	Directorate General XI – Environment, Nuclear Safety and Civil Protection (now DG Environment)
EC	European Commission; also European Community with reference to the Habitats Directive
EEZ	Exclusive Economic Zone
EHS	Environment and Heritage Service
EN	English Nature
EU	European Union
GB	Great Britain (England, Scotland and Wales, excluding Northern Ireland)
GIS	Geographical Information System
IDD	International Designations Database
ITE	Institute of Terrestrial Ecology (now Centre for Ecology and Hydrology)
IUCN	International Union for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
LCS	Land Cover Survey for Scotland
MNCR	Marine Nature Conservation Review
NCC	Nature Conservancy Council
NI	Northern Ireland
NICS	Northern Ireland Countryside Survey
NVC	National Vegetation Classification
OS	Ordnance Survey
pSAC	possible Special Area of Conservation
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SCANS	Small Cetacean Abundance in the North Sea
SMRU	Sea Mammal Research Unit
SNH	Scottish Nature Heritage
SSSI	Site of Special Scientific Interest
UK	United Kingdom (England, Scotland, Wales and Northern Ireland)
VWT	Vincent Wildlife Trust

Appendix 2: Guidance on the relationship between Annex I habitat types and the National Vegetation Classification (NVC)

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
1110	Sandbanks which are slightly covered by sea water all the time				See JNCC *Marine Information Notes*, No. 8 (January 1999).
1130	Estuaries				See JNCC *Marine Information Notes*, No. 8 (January 1999). Estuaries are habitat complexes which comprise a range of other Annex I types.
1140	Mudflats and sandflats not covered by seawater at low tide				See JNCC *Marine Information Notes*, No. 8 (January 1999).
1150	Coastal lagoons				See JNCC *Marine Information Notes*, No. 8 (January 1999).
1160	Large shallow inlets and bays				See JNCC *Marine Information Notes*, No. 8 (January 1999). Large shallow inlets and bays are habitat complexes which comprise a range of other Annex I types.
1170	Reefs				See JNCC *Marine Information Notes*, No. 8 (January 1999).
1210	Annual vegetation of drift lines	SD2 SD3	*Cakile maritima-Honkenya peploides* strandline community *Matricaria maritima-Galium aparine* strandline community	partial partial	This Annex I type comprises driftline vegetation on stony substrates. Driftlines on sandy shores are not included.
1220	Perennial vegetation of stony banks	SD1	*Rumex crispus-Glaucium flavum* shingle community		The NVC only describes the pioneer phase of shingle vegetation. Other types of shingle vegetation have links to different NVC communities. A comprehensive classification can be found in Sneddon & Randall (1993a).
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	MC1 MC2 MC3 MC4 MC5	*Crithmum maritimum-Spergularia rupicola* maritime rock-crevice community *Armeria maritima-Ligusticum scoticum* rock-crevice community *Rhodiola rosea-Armeria maritima* maritime cliff-ledge community *Brassica oleracea* maritime cliff-ledge community *Armeria maritima-Cerastium diffusum* ssp. *diffusum* maritime therophyte community		More sheltered sea cliffs support communities closely related to those found on similar substrates inland such as grassland and heath, with only a minor maritime element in the flora. The vegetation of mobile soft cliffs is inadequately described by the NVC at present. Stands of H7 and H8d which are not on sea cliffs are referable to Annex I type **4030 European dry heaths**.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		MC6	*Atriplex prostrata-Beta vulgaris* ssp. *maritima* sea-bird cliff community		
		MC7	*Stellaria media-Rumex acetosa* sea-bird cliff community		
		MC8	*Festuca rubra-Armeria maritima* maritime grassland		
		MC9	*Festuca rubra-Holcus lanatus* maritime grassland		
		MC10	*Festuca rubra-Plantago* spp. maritime grassland		
		MC11	*Festuca rubra-Daucus carota* ssp. *gummifer* maritime grassland		
		MC12	*Festuca rubra-Hyacinthoides non-scripta* maritime bluebell community		
		H7	*Calluna vulgaris-Scilla verna* heath	partial	
		H8d	*Calluna vulgaris-Ulex gallii* heath, *Scilla verna* sub-community	partial	
1310	*Salicornia* and other annuals colonising mud and sand	SM8	Annual *Salicornia* salt-marsh community		No comment
		SM9	*Suaeda maritima* salt-marsh community		
		SM27	Ephemeral salt-marsh vegetation with *Sagina maritima*		
1320	*Spartina* swards (*Spartinion maritimae*)	SM4	*Spartina maritima* salt-marsh community		This Annex I type includes all species of *Spartina*. However, only stands of *Spartina maritima*, *S. alterniflora* and *S.* x *townsendii* qualify for selection as interest features.
		SM5	*Spartina alterniflora* salt-marsh community		
		SM6	*Spartina anglica* salt-marsh community		
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	SM10	Transitional low-marsh vegetation with *Puccinellia maritima*, annual *Salicornia* species and *Suaeda maritima*		Inland stands of SM16 should be considered under Annex I habitat type **1340 Inland salt meadows**.
		SM11	*Aster tripolium* var. *discoideus* salt-marsh community		
		SM12	Rayed *Aster tripolium* on salt-marshes		

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		SM13	*Puccinellia maritima* salt-marsh community		
		SM14 SM15 SM16 SM17 SM18 SM19 SM20	*Halimione portulacoides* salt-marsh community *Juncus maritimus-Triglochin maritima* salt-marsh community *Festuca rubra* salt-marsh community *Artemisia maritima* salt-marsh community *Juncus maritimus* salt-marsh community *Blysmus rufus* salt-marsh community *Eleocharis uniglumis* salt-marsh community	partial	
1340	Inland salt meadows	SM16 SM23	*Festuca rubra* salt-marsh community *Spergularia marina-Puccinellia distans* salt-marsh community	partial partial	Only inland stands of these communities on natural sites are included within this Annex I type.
1420	Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)	SM21 SM25 SM7	*Suaeda vera-Limonium binervosum* salt-marsh community *Suaeda vera* salt-marsh community *Arthrocnemum perenne* stands		No comment
2110	Embryonic shifting dunes	SD4	*Elymus farctus* ssp. *boreali-atlanticus* foredune community		The majority of this vegetation is covered by NVC community SD4 but certain stands of SD2 and SD5 may be relevant when they occur in close association with SD4.
2120	Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')	SD6	*Ammophila arenaria* mobile dune community		No comment
2130	Fixed dunes with herbaceous vegetation ('grey dunes')	SD7 SD8 SD11 SD12 SD9b	*Ammophila arenaria-Festuca rubra* semi-fixed dune community *Festuca rubra-Galium verum* fixed dune grassland *Carex arenaria-Cornicularia aculeata* dune community *Carex arenaria-Festuca ovina-Agrostis capillaris* dune grassland *Ammophila arenaria-Arrhenatherum elatius* dune grassland, *Geranium sanguineum* sub-community	 partial partial 	Inland stands of SD11 and SD12 should be considered under Annex I habitat type **2330 Inland dunes with *Corynephorus* and *Agrostis* grasslands**.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
2140	Decalcified fixed dunes with *Empetrum nigrum*	H11b	*Calluna vulgaris-Carex arenaria* heath, *Empetrum nigrum* ssp. *nigrum* sub-community		The Annex I types Decalcified fixed dunes with *Empetrum nigrum* and **2150 Atlantic decalcified fixed dunes** are similar in composition. Vegetation that is intermediate between H11a and H11b has been recorded in Scotland, and in many cases it is extremely difficult to allocate stands of dune heath to one Annex I type or the other. Decisions have to be made on a site by site basis.
2150	Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	H11a H11c H1d	*Calluna vulgaris-Carex arenaria* heath, *Erica cinerea* sub-community *Calluna vulgaris-Carex arenaria* heath, species-poor sub-community *Calluna vulgaris-Festuca ovina* heath, *Carex arenaria* sub-community		The Annex I types Atlantic decalcified fixed dunes and **2140 Decalcified fixed dunes with *Empetrum nigrum* are similar in composition**. Vegetation that is intermediate between H11a and H11b has been recorded in Scotland, and in many cases it is extremely difficult to allocate stands of dune heath to one Annex I type or the other. Decisions have to be made on a site by site basis. Other dry heath types occurring on coastal sand dunes may also be referable to this Annex I type.
2160	Dunes with *Hippophae rhamnoides*	SD18	*Hippophae rhamnoides* dune scrub		*Hippophae rhamnoides* has been widely planted in the UK and is probably only native in parts of eastern England. Non-native invasive stands are included within the habitat definition but do not qualify for selection as interest features.
2170	Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)	SD16	*Salix repens-Holcus lanatus* dune-slack community	partial	There is an overlap between Dunes with *Salix repens* ssp. *argentea* and Annex I type **2190 Humid dune slacks** where *Salix repens* is also found. Dunes with *Salix repens* ssp. *argentea* comprises vegetation where *Salix repens* is dominant, forming prominent, low scrubby growth, much of which is referable to the NVC community SD16. This habitat type is considered to be best developed in the southern half of the UK. Most examples of dune slack vegetation with *Salix repens* in Scotland are probably best considered as Annex I type **2190 Humid dune slacks**.
2190	Humid dune slacks	SD13 SD14 SD15 SD16 SD17	*Salix repens-Bryum pseudotriquetrum* dune-slack community *Salix repens-Campylium stellatum* dune-slack community *Salix repens-Calliergon cuspidatum* dune-slack community *Salix repens-Holcus lanatus* dune-slack community *Potentilla anserina-Carex nigra* dune-slack community	 partial partial partial	There is an overlap between Humid dune slacks and Annex I type **2170 Dunes with *Salix repens* ssp. *argentea***. Dune habitats which comprise vegetation in which *Salix repens* is dominant, forming low scrubby growth, should be considered under **Dunes with *Salix repens* ssp. *argentea*.** Other dune slacks should be considered under Humid dune slacks, even if *Salix repens* is dominant. Some stands of SD14 and SD15 where *Cladium mariscus* is prominent may be referable to Annex I type **7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae***.
21A0	Machairs				Machair includes a range of NVC communities, several of which are Annex I types in their own right.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
2250	Coastal dunes with *Juniperus* spp.				There are no NVC equivalents for this habitat type.
2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	SD11 SD12	*Carex arenaria-Cornicularia aculeata* dune community *Carex arenaria-Festuca ovina-Agrostis capillaris* dune grassland	partial partial	Only inland stands of these communities are included within this Annex I type.
3110	Oligotrophic waters containing very few minerals of sandy plains: *Littorelletalia uniflorarae*	A22 A23	*Littorella uniflora-Lobelia dortmanna* community *Isoetes lacustris/setacea* community	partial partial	This Annex I type is restricted to sites on lowland sandy plains.
3130	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*				This Annex I type broadly corresponds with standing water types 2, 3, 4 and 5 of the botanical classification of standing waters (Palmer 1989) in upland areas in the north and west. Non-dystrophic type 1 standing water bodies may also be referable to this type.
3140	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.				This Annex I type comprises standing water bodies with high calcium/ magnesium content and abundance of charophytes. Artificial examples (e.g. disused gravel pits) are included.
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation				This Annex I type broadly corresponds with standing water types 7, 8, 9 and 10 of the botanical classification of standing waters (Palmer 1989). However, this classification does not distinguish between lakes which are naturally eutrophic from those which are artificially enriched. Only naturally eutrophic lakes and included in this Annex I type.
3160	Natural dystrophic lakes and ponds	A24	*Juncus bulbosus* community	partial	This Annex I type broadly corresponds with standing water type 1 of the botanical classification of standing waters (Palmer 1989). It is often found within examples of Annex I types **7110 Active raised bogs** and **7130 Blanket bogs**. Non-dystrophic examples of type 1 standing water bodies may be referable to Annex 1 type **3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea***.
3170	Mediterranean temporary ponds				There are no NVC equivalents for this habitat type.
3180	Turloughs				There are no NVC equivalents for this habitat type.
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation				This Annex I type is defined by floating mats of *Ranunculus* spp. (subgenus *Batrachium*) and is widespread in rivers.
4010	Northern Atlantic wet heaths with *Erica tetralix*	M14 M15	*Schoenus nigricans-Narthecium ossifragum* mire *Scirpus cespitosus-Erica tetralix* wet heath	partial	Heath types related to M15 in the Northern and Western Isles which are rich in *Racomitrium lanuginosum*, *Schoenus nigricans* or lichens also conform to this Annex I type. M14 with *Cladium* conforms to Annex I type **7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion***

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		M16	*Erica tetralix-Sphagnum compactum* wet heath		***davallianae***.
		H5	*Erica vagans-Schoenus nigricans* heath		
4020	Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	H3 H4 M21 M16	*Ulex minor-Agrostis curtisii* heath *Ulex gallii-Agrostis curtisii* heath *Narthecium ossifragum-Sphagnum papillosum* valley mire *Erica tetralix-Sphagnum compactum* wet heath	partial partial partial partial	This Annex I type only includes vegetation with abundant *Erica ciliaris.*
4030	European dry heaths	H1 H2 H3 H4 H7 H8 H9 H10 H12 H16 H18 H21	*Calluna vulgaris-Festuca ovina* heath *Calluna vulgaris-Ulex minor* heath *Ulex minor-Agrostis curtisii* heath *Ulex gallii-Agrostis curtisii* heath *Calluna vulgaris-Scilla verna* *Calluna vulgaris-Ulex gallii* heath *Calluna vulgaris-Deschampsia flexuosa* heath *Calluna vulgaris-Erica cinerea* heath *Calluna vulgaris-Vaccinium myrtillus* heath *Calluna vulgaris-Arctostaphylos uva-ursi* heath *Vaccinium myrtillus-Deschampsia flexuosa* heath *Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium* heath	partial partial partial partial partial partial partial partial	Subalpine forms of H10, H12, H16, H18 and H21 conform to Annex I type **4060 Alpine and Boreal heaths**. H1d stands conform to Annex I type **2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)**. Some forms of H7 are referable to this Annex I type, but most should be placed within Annex I type **1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**, as should stands of H8d on sea cliffs.
4040	Dry Atlantic coastal heaths with *Erica vagans*	H6	*Erica vagans-Ulex europaeus* heath		No comment
4060	Alpine and Boreal heaths	H13 H14 H15	*Calluna vulgaris-Cladonia arbuscula* heath *Calluna vulgaris-Racomitrium lanuginosum* heath *Calluna vulgaris-Juniperus communis* ssp. *nana* heath		For H10, H12, H16, H18 and H21 only subalpine forms conform to this type.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		H17 H19	*Calluna vulgaris-Arctostaphylos alpina* heath *Vaccinium myrtillus-Cladonia arbuscula* heath		
		H20 H22 H10 H12 H16 H18 H21	*Vaccinium myrtillus-Racomitrium lanuginosum* heath *Vaccinium myrtillus-Rubus chamaemorus* heath *Calluna vulgaris-Erica cinerea* heath *Calluna vulgaris-Vaccinium myrtillus* heath *Calluna vulgaris-Arctostaphylos uva-ursi* heath *Vaccinium myrtillus-Deschampsia flexuosa* heath *Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium* heath	partial partial partial partial partial	
4080	Sub-Arctic *Salix* spp. scrub	W20	*Salix lapponum-Luzula sylvatica* scrub		This Annex I type also includes *Salix myrsinites* scrub, which is not described in the NVC, and stands of *Salix lapponum*, *S. myrsinites*, *S. lanata* and *S. arbuscula* in a variety of other vegetation types. It also includes associated stands of *S. reticulata*, *S. myrsinifolia* and *S. phylicifolia*.
5110	Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.)				There are no NVC equivalents for this Annex I type. It only includes stable stands of scrub and not successional stages reverting to woodland.
5130	*Juniperus communis* formations on heaths or calcareous grasslands	W19 W21	*Juniperus communis* ssp. *communis-Oxalis acetosella* woodland *Crataegus monogyna-Hedera helix* scrub	partial partial	For W19 and W21 this type includes only stands dominated by juniper. Stands of *Juniperus communis* ssp. *communis* on various other NVC grassland and heath types are also included. Stands of W19 within stands of W18 conform to Annex I type **91C0 Caledonian forest**. Dwarf juniper heath (NVC type H15) is referable to Annex I type **4060 Alpine and Boreal heaths**.
6130	Calaminarian grasslands of the *Violetalia calaminariae*	OV37	*Festuca ovina-Minuartia verna* community		This Annex I type is found in three main situations, namely: (i) near-natural, open vegetation of serpentine rock outcrops with skeletal soils; (ii) river gravels rich in lead and zinc; (iii) artificial mine workings and spoil heaps. As well as OV37, this type includes related vegetation types not described by the NVC, characterised by metallophyte species or races of vascular and/or lower plants.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
6150	Siliceous alpine and boreal grasslands	U7 U8 U9 U10	*Nardus stricta-Carex bigelowii* grass-heath *Carex bigelowii-Polytrichum alpinum* sedge-heath *Juncus trifidus-Racomitrium lanuginosum* rush-heath *Carex bigelowii-Racomitrium lanuginosum* moss-heath		Snow-bed communities (NVC types U11, U12 and U14) are often found in association with siliceous alpine and boreal heaths, but are not strictly referable to this Annex I type.
6170	Alpine and subalpine calcareous grasslands	CG12 CG13 CG14	*Festuca ovina-Alchemilla alpina-Silene acaulis* community *Dryas octopetala-Carex flacca* heath *Dryas octopetala-Silene acaulis* ledge community		No comment
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)	CG1 CG2 CG3 CG4 CG5 CG6 CG7 CG8 CG9 CG10	*Festuca ovina-Carlina vulgaris* grassland *Festuca ovina-Avenula pratensis* grassland *Bromus erectus* grassland *Brachypodium pinnatum* grassland *Bromus erectus-Brachypodium pinnatum* grassland *Avenula pubescens* grassland *Festuca ovina-Hieracium pilosella-Thymus praecox/pulegioides* grassland *Sesleria albicans-Scabiosa columbaria* grassland *Sesleria albicans-Galium sterneri* grassland *Festuca ovina-Agrostis capillaris-Thymus praecox* grassland	 partial	Stands of CG10 on limestone with a significant representation of *Mesobromion* species may be referable to this type; most CG10 stands are referable to Annex I type **6230 Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)**.
6211	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites)				This Annex I type combines features of both habitat and species selection. In the UK, sites hosting populations of one or more of the following rare or scarce species have been selected: man orchid *Aceras anthropophorum*, musk orchid *Herminium monorchis*, lizard orchid *Himantoglossum hircinum*, early spider-orchid *Ophrys sphegodes*, late spider-orchid *Ophrys fuciflora*, military orchid *Orchis militaris*, and burnt orchid *Orchis ustulata*.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
6230	Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)	CG10 CG11	*Festuca ovina-Agrostis capillaris-Thymus praecox* grassland *Festuca ovina-Agrostis capillaris-Alchemilla alpina* grassland	partial partial	Only stands of CG10 and CG11 on siliceous substrates are considered to be referable to this Annex I type; stands on limestone are excluded. Stands of CG10 on limestone with a significant representation of *Mesobromion* species may be referable to Annex I type **6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)**.
6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	M24 M26	*Molinia caerulea-Cirsium dissectum* fen-meadow *Molinia caerulea-Crepis paludosa* mire	partial	Some forms of M24 are referable to Annex I type **7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae***.
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	U17	*Luzula sylvatica-Geum rivale* tall-herb community		No comment
6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	MG4	*Alopecurus pratensis-Sanguisorba officinalis* grassland		No comment
6520	Mountain hay meadows	MG3	*Anthoxanthum odoratum-Geranium sylvaticum* meadow		No comment
7110	Active raised bogs	M1 M2 M18 M19	*Sphagnum auriculatum* bog pool community *Sphagnum cuspidatum/recurvum* bog pool community *Erica tetralix-Sphagnum papillosum* raised and blanket mire *Calluna vulgaris-Eriophorum vaginatum* blanket mire	partial partial partial partial	Further information on the distinction between raised and blanket bog can be found in Lindsay & Immirzi (1996). The NVC communities listed form the core of active raised bog in the UK but the list is not exhaustive. 'Active' is defined as supporting a significant area of vegetation that is normally peat-forming. This may include *Sphagnum* mosses, *Eriophorum* spp., or *Molinia* in certain circumstances.
7120	Degraded raised bogs still capable of natural regeneration	M3 M15 M16 M18 M20 M25	*Eriophorum angustifolium* bog pool community *Scirpus cespitosus-Erica tetralix* wet heath *Erica tetralix-Sphagnum compactum* wet heath *Erica tetralix-Sphagnum papillosum* raised and blanket mire *Eriophorum vaginatum* blanket and raised mire *Molinia caerulea-Potentilla erecta* mire	partial partial partial partial partial partial	Further information on the distinction between raised and blanket bog can be found in Lindsay & Immirzi (1996). The NVC communities listed form the core of degraded raised bog in the UK but the list is not exhaustive. Many sites contain areas of both active and degraded bog vegetation, and in these cases both Annex I types should be listed. M15 and M16 on shallower peats (<~0.5 m) are generally referable to Annex I type **4010 Northern Atlantic wet heaths with *Erica tetralix***.
7130	Blanket bogs	M1	*Sphagnum auriculatum* bog pool community	partial	Further information on the distinction between raised and blanket bog can be found in Lindsay & Immirzi (1996). The NVC communities listed form the

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		M15	*Scirpus cespitosus-Erica tetralix* wet heath	partial	core of blanket bog in the UK but the list is not exhaustive. This Annex I type includes both active bog (which has priority status) and non-active blanket bog. 'Active' is defined as supporting a significant area of vegetation that is normally peat forming. This may include *Sphagnum* mosses, *Eriophorum* spp., or *Molinia* in certain circumstances. Stands of M15 on shallower peats (<~0.5 m) are generally referable to Annex I type **4010 Northern Atlantic wet heaths with *Erica tetralix***.
		M17	*Scirpus cespitosus-Eriophorum vaginatum* blanket mire	partial	
		M18	*Erica tetralix-Sphagnum papillosum* raised and blanket mire	partial	
		M19	*Calluna vulgaris-Eriophorum vaginatum* blanket mire	partial	
		M20	*Eriophorum vaginatum* blanket and raised mire	partial	
		M25	*Molinia caerulea-Potentilla erecta* mire	partial	
7140	Transition mires and quaking bogs	M5	*Carex rostrata-Sphagnum squarrosum* mire		The NVC communities listed form the core of transition mire in the UK but the list is not exhaustive. Ladder-fen type mires on blanket bogs may conform to this Annex I type. When M9 is found in more base-rich conditions or in association with other rich fen communities it may be referable to Annex I type **7230 Alkaline fens**, and in stands where *Cladium mariscus* is predominant it may conform to Annex I type **7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae***.
		M8	*Carex rostrata-Sphagnum warnstorfii* mire		
		M9	*Carex rostrata-Calliergon cuspidatum/giganteum* mire	partial	
		S27	*Carex rostrata-Potentilla palustris* tall-herb fen		
7150	Depressions on peat substrates of the *Rhynchosporion*	M1	*Sphagnum auriculatum* bog pool community	partial	The relationship between this Annex I type and the NVC is not straightforward. This type can be found in hollows and depressions on blanket bogs, raised bogs, valley mires and heaths, and is usually characterised by an abundance of *Rhynchospora alba*.
		M2	*Sphagnum cuspidatum/recurvum* bog pool community	partial	
		M14	*Schoenus nigricans-Narthecium ossifragum* mire	partial	
		M15	*Scirpus cespitosus-Erica tetralix* wet heath	partial	
		M16	*Erica tetralix-Sphagnum compactum* wet heath	partial	
		M17	*Scirpus cespitosus-Eriophorum vaginatum* blanket mire	partial	
		M18	*Erica tetralix-Sphagnum papillosum* raised and blanket mire	partial	
		M21	*Narthecium ossifragum-Sphagnum papillosum* valley mire	partial	

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		M29	*Hypericum elodes-Potamogeton polygonifolius* soakway	partial	
7210	Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	S2	*Cladium mariscus* swamp and sedge beds		This habitat type comprises species-rich examples of *Cladium mariscus* fen, particularly those stands enriched with elements of the *Caricion davallianae* (i.e. small-sedge fen composed of open low-growing vegetation). A number of NVC communities can conform to this type. It can be found in the following situations: (i) on sites with a mixture of closed, species-poor *Cladium* beds, which at their margins have transitions to species-rich small-sedge mire vegetation, (ii) on sites where *Cladium* beds retain their species-richness owing to management, and (iii) in situations where *Cladium* fen is inherently species-rich. Only stands of the NVC types listed which have abundant *Cladium mariscus* should be assigned to this Annex I type.
		S24	*Phragmites australis-Peucedanum palustris* tall-herb fen	partial	
		S25	*Phragmites australis-Eupatorium cannabinum* tall-herb fen	partial	
		M9	*Carex rostrata-Calliergon cuspidatum/giganteum* mire	partial	
		M13	*Schoenus nigricans-Juncus subnodulosus* mire	partial	
		M14	*Schoenus nigricans-Narthecium ossifragum* mire	partial	
		M24	*Molinia caerulea-Cirsium dissectum* fen-meadow	partial	
		SD14	*Salix repens-Campylium stellatum* dune-slack community	partial	
		SD15	*Salix repens-Calliergon cuspidatum* dune-slack community	partial	
7220	Petrifying springs with tufa formation (*Cratoneurion*)	M37	*Cratoneuron commutatum-Festuca rubra* spring		No comment
		M38	*Cratoneuron commutatum-Carex nigra* spring		
7230	Alkaline fens	M9	*Carex rostrata-Calliergon cuspidatum/giganteum* mire	partial	The NVC communities listed form the core of alkaline fen in the UK but the list is not exhaustive. Stands of M9 in which *Cladium mariscus* is abundant are referable to Annex I type **7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae**, and less base-rich examples may conform to Annex I type **7140 Transition mires and quaking bogs**. High-altitude examples of M10 which contain arctic-alpine species should be considered under **7240 Alpine pioneer formations of Caricion bicoloris-atrofuscae**. Stands of M13 in which *Cladium mariscus* is predominant may conform to Annex I type **7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae***.
		M10	*Carex dioica-Pinguicula vulgaris* mire	partial	
		M13	*Schoenus nigricans-Juncus subnodulosus* mire	partial	
7240	Alpine pioneer formations of *Caricion bicoloris-atrofuscae*	M10	*Carex dioica-Pinguicula vulgaris* mire	partial	Stands of M10 are only referable to this Annex I type if they occur at high altitude and contain arctic-alpine species.
		M11	*Carex demissa-Saxifraga aizoides* mire		

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		M12	*Carex saxatilis* mire		
8110	Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)	U18 U21	*Cryptogramma crispa-Athyrium distentifolium* snow-bed *Cryptogramma crispa-Deschampsia flexuosa* community	partial partial	This Annex I type comprises screes of siliceous rocks, generally found at high altitude. It grades to other Annex I types where the scree is stable. As well as *Cryptogramma crispa* types, it includes screes dominated by bryophytes or lichens which are not covered by the NVC. It may be closely associated with Annex I type **8220 Siliceous rocky slopes with chasmophytic vegetation**, which can also support U18 or U21.
8120	Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)	OV38	*Gymnocarpium robertianum-Arrhenatherum elatius* community	partial	This Annex I type includes screes of calcareous or other base-rich rocks, generally found at high altitude. It grades to other Annex I types where the scree is stable. It also includes a variety of other plant communities not covered by the NVC. It may be closely associated with Annex I type **8210 Calcareous rocky slopes with chasmophytic vegetation**.
8210	Calcareous rocky slopes with chasmophytic vegetation	OV39 OV40	*Asplenium trichomanes-Asplenium ruta-muraria* community *Asplenium viride-Cystopteris fragilis* community	partial	This Annex I type includes crevice vegetation of calcareous or other base-rich rocks. A number of vegetation types with characteristic ferns, bryophytes and lichens are included which are only partly covered by the NVC. It may be closely associated with Annex I types **8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)** and **8240 Limestone pavements**. Coastal cliffs with crevice vegetation are referable to Annex I type **1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**.
8220	Siliceous rocky slopes with chasmophytic vegetation	U18 U21	*Cryptogramma crispa-Athyrium distentifolium* snow-bed *Cryptogramma crispa-Deschampsia flexuosa* community	partial partial	This Annex I type includes crevice vegetation of siliceous rocks. A number of vegetation types with characteristic ferns, bryophytes and lichens are included which are poorly covered by the NVC. It may be closely associated with Annex I type **8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)**, which can also support U18 or U21. Coastal cliffs with crevice vegetation are referable to the Annex I type **1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**.
8240	Limestone pavements				This Annex I type is defined by clint-and-grike structure. A range of calcicolous rock, heath, grassland, scrub and woodland NVC types can be found on limestone pavement.
8310	Caves not open to the public				This Annex I type includes caves not exploited for tourism. Only sites which host specialist or endemic cave species or that are of paramount importance for Annex II species (including bats) qualify for selection as interest features.
8330	Submerged or partially submerged sea caves				See JNCC *Marine Information Notes*, No. 8 (January 1999).
9120	Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)	W14 W15	*Fagus sylvatica-Rubus fruticosus* woodland *Fagus sylvatica-Deschampsia flexuosa* woodland	partial	Epiphyte richness is a key factor in defining this Annex I type. Only the more acidic stands of W14 conform to this type.

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
9130	*Asperulo-Fagetum* beech forests	W12	*Fagus sylvatica-Mercurialis perennis* woodland		Only the more calcareous stands of W14 conform to this type.
		W14	*Fagus sylvatica-Rubus fruticosus* woodland	partial	
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*				Rare type with no NVC equivalent.
9180	*Tilio-Acerion* forests of slopes, screes and ravines	W8	*Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland	partial	The relationship to the NVC for this Annex I type is not straightforward. Essentially it incorporates stands of NVC types W8d-g and W9 on rocky ground, including ravines, screes and other rocky slopes.
		W9	*Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland	partial	
9190	Old acidophilous oak woods with *Quercus robur* on sandy plains	W16	*Quercus* spp.-*Betula* spp.-*Descampsia flexuosa* woodland	partial	This Annex I type is restricted to lowland ancient oakwood, on acid, sandy or gravelly sites.
		W10	*Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland	partial	
91A0	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	W11	*Quercus petraea-Betula pubescens-Oxalis acetosella* woodland	partial	Oak need not necessarily be dominant in the stand for the woodland to conform to this Annex I type, but birch woods beyond the natural range of oak are excluded.
		W17	*Quercus petraea-Betula pubescens-Dicranum majus* woodland	partial	
		W10e	*Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland: *Acer pseudoplatanus-Oxalis acetosella* sub-community	partial	
		W16b	*Quercus* spp.-*Betula* spp.-*Descampsia flexuosa* woodland, *Vaccinium myrtillus-Dryopteris dilatata* sub-community		
91C0	Caledonian forest	W18	*Pinus sylvestris-Hylocomium splendens* woodland	partial	W18 stands may also include pine bog woodland which conforms to Annex I type **91D0 Bog woodland**. Stands of W19 are only included where they are within W18 stands; otherwise they should be considered under Annex I type **5130 *Juniperus communis* formations on heaths or calcareous grasslands**.
		W19	*Juniperus communis* ssp. *communis-Oxalis acetosella* woodland	partial	
91D0	Bog woodland	W18	*Pinus sylvestris-Hylocomium splendens* woodland	partial	The relationship to the NVC for this Annex I type is not straightforward. A key element is the relative ecological stability of the open woodland-bog or

Annex I code	Annex I habitat name	NVC code	NVC name	Correspondence with Annex I type	Comments
		W4c	*Betula pubescens-Molinia caerulea* woodland: *Sphagnum* sub-community	partial	poor fen vegetation combination. Pine types may be intermediate between M18/M19 and W18. Birch/willow/alder types may be close to W4c or other wet woodland NVC types such as W2 and W3. Secondary birchwoods on damaged raised bogs do not conform to this Annex I type, but may be referable to **7120 Degraded raised bogs still capable of regeneration**.
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	W5 W6 W7	*Alnus glutinosa-Carex paniculata* woodland *Alnus glutinosa-Urtica dioica* woodland *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland	partial partial partial	Only stands on river floodplains conform to this Annex I type.
91J0	*Taxus baccata* woods of the British Isles	W13	*Taxus baccata* woodland		No comment