NATURE CONSERVANCY COUNCIL

Coastal birds of east Dorset

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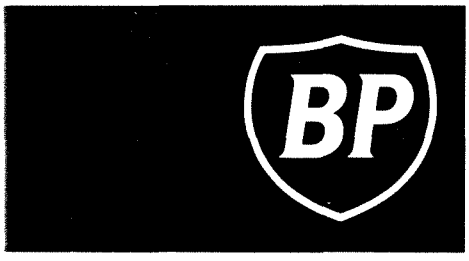
Nature Conservancy Council
1990



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Contents

Summary

This report summarises the results of a survey, carried out between October 1989 and July 1990, to locate important areas for breeding and visiting seabirds, waterfowl and shorebirds in east Dorset and western-most Hampshire.

The survey was undertaken by the Nature Conservancy Council (NCC) on behalf of British Petroleum Development Limited (BP) prior to their proposed development of oil reserves under Poole Bay. Special emphasis was placed on those species of bird vulnerable to oil pollution or to oil-related developments. The offshore waters of Poole and Christchurch Bays received particular attention in the winter months. A literature review provided much valuable additional information on the birds of Poole and Christchurch Harbours.

The study area holds internationally important populations of black-tailed godwit and shelduck in winter. Twelve further species of wildfowl and wader are present in nationally important numbers in Poole Harbour. Nationally important numbers of black-necked grebe, cormorant and red-breasted merganser use areas outside Poole Harbour. These are all particularly vulnerable to oil pollution.

A series of recommendations are given to help protect those bird species that may be at risk from any future developments by BP. From an ornithological point of view, the most important areas to protect are: Durlston Head and Ballard Down (breeding seabirds in summer), Studland Bay (wintering waterfowl), Poole Harbour (breeding or visiting waders, waterfowl and seabirds throughout the year), Hook Sand (feeding seabirds in summer) and Christchurch Harbour (moulting swans in summer and autumn).

Acknowledgements

The authors thank Clive Bridgeman, skipper of the 'Anarkali' and his crew for their help and skill in carrying out the offshore surveys; all NCC staff at Slepe Farm, Aberdeen and Peterborough who have helped; Andy Webb (NCC Seabirds at Sea Team leader) for carrying out some of the counts; the Birds of Estuaries Enquiry counters past and present for their dedication to documenting bird populations in Poole and Christchurch harbours; the British Trust for Ornithology, the Wildfowl and Wetlands Trust, and Dr. Lennox Campbell and the Royal Society for the Protection of Birds for providing some of the information on birds used in this report; Peter Johnston of the Ministry of Agriculture, Fisheries and Food laboratory at Lowestoft for specially abstracting recent catch statistics on sprat for the area and Mike Mason, BP's project officer for his help and encouragement. Christchurch Borough Council, Poole Borough Council and Swanage Town Council assisted the survey by generously providing free parking.

The following ornithologists are particularly thanked for information they provided on the numbers and behaviour of birds in the area: P. Morrison and J. Morgan (Christchurch Harbour), H. Murray (Durlston), D. Wooldridge (Isle of Wight), K. Cook (Brownsea), R. Cox (Littlesea), B. Pickess (Arne), T. Haysom (Dorset) and P. Williams (Winspit). We thank Dr. Mike Pienkowski, Dr. Andrew Nicholson, Jim White and Mike Mason for improving drafts of this document with their comments.

Introduction

This report summarises the results of ornithological surveys of Poole and Christchurch Bays, bounded by Durlston Head in the west and Milford on Sea in the east (Figure 1). It has been produced by the Nature Conservancy Council (NCC) for BP Petroleum Development Limited (BP). The present work was commissioned to provide information on the ecology of seabirds using Poole and Christchurch Bays which could then be input into the proposed plans by BP to develop offshore oil reserves beneath Poole Bay in Licence Block 98/6 (Figure 1).

The report also provides recommendations designed to minimise any adverse effects of oil-related activities on birds.

The NCC is statutorily required to provide advice on developments which may affect nature conservation in Great Britain. The Seabirds at Sea Team (SAST) within the Chief Scientist Directorate of NCC was formed in 1979 to carry out research on the distribution of seabirds at sea. Surveys by SAST have been conducted in the North Sea and to the west of Britain and are just commencing in the

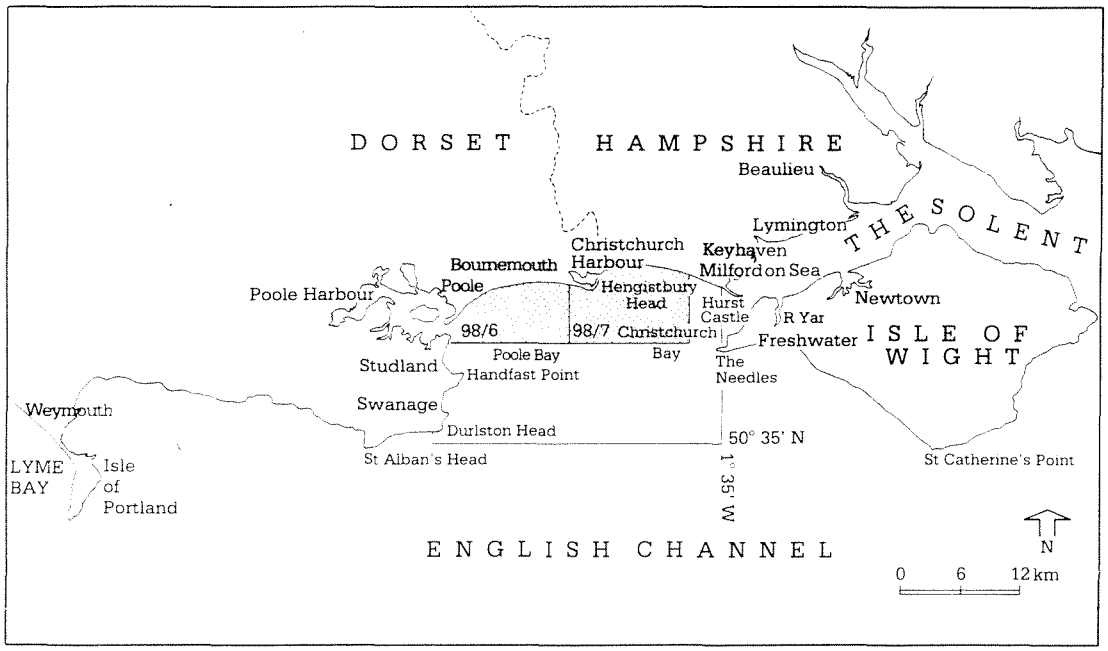


Figure 1. Licence Blocks 98/6 and 98/7 (stippled), wider survey area (unshaded box) and some localities mentioned in the text.

During the winter of 1989/90, a systematic survey was undertaken of offshore bird populations together with those of nearshore species considered to be potentially at risk from an oil spill. This document summaries this survey (full results are available in a limited number of annexes to this report). In the summer of 1990 a survey was undertaken of the feeding areas of seabirds breeding in east Dorset with particular emphasis on those utilising Poole Bay. Also included in this report is a description of the habitats of the area and a review of the birds of Poole and Christchurch Harbours, two of the principal sites of ornithological importance within the area. The main objectives of the ornithological survey were, firstly, to assess the numbers and distribution of different bird species within the area; secondly to locate their principal feeding areas; and thirdly to locate their roost sites.

English Channel. Other work carried out by NCC on seabirds includes surveying numbers of breeding birds and monitoring breeding performance. NCC also commissions work at the British Trust for Ornithology and the Wildfowl and Wetlands Trust to describe and monitor the numbers of waders and wildfowl using sites in Great Britain, including Poole and Christchurch Harbours.

In this report, the geography of the area is outlined first, with the relationship of this to bird distribution. The second section describes the methods used in this survey. This is followed by a description and analysis of the usage of the area by each main group of birds. The report is completed by a discussion of the results together with a series of recommendations to minimise the risk of damage to the main ornithological interests.

The physical environment and general bird distribution

The area comprises a series of relatively shallow sandy bays separated from each other by prominent headlands of differing geology. Each bay and headland is treated separately in the following site accounts which outline their geology, submarine bathymetry (Figure 2) and substrate, as well as their ornithological interest and conservation status. Scientific names of species mentioned in the text are given in Appendix 1. A glossary of terms and abbreviations used in conservation designations is provided in Appendix 2. Numbers of breeding birds are given as pairs unless stated otherwise.

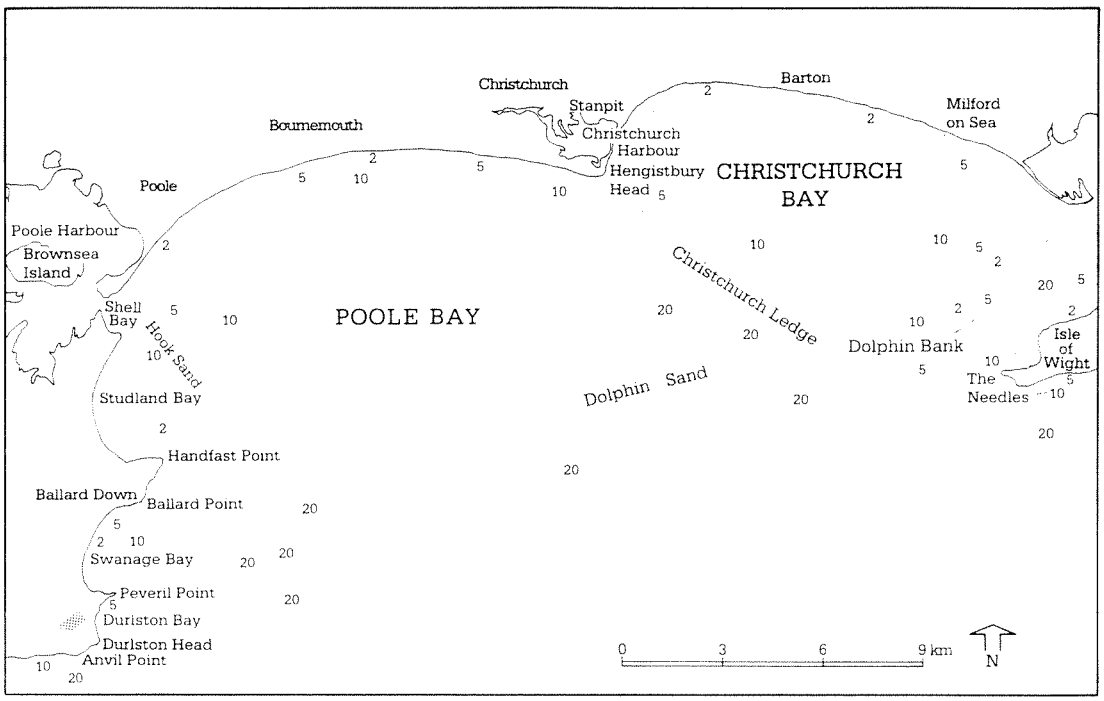


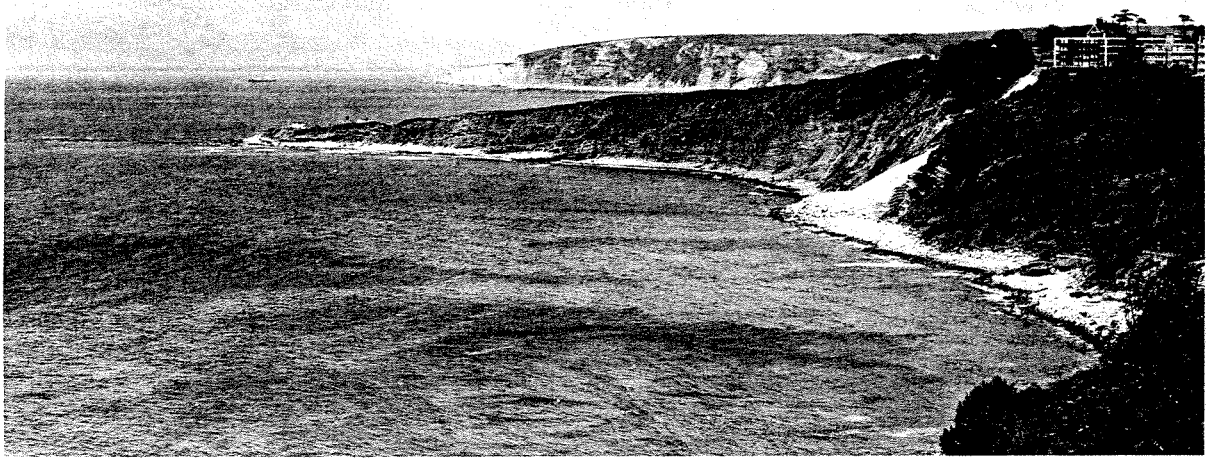
Figure 2. Bathymetry of Poole Bay and Christchurch Bay, showing some place names.

Durlston Head

This headland, composed of Portland Stone, has cliffs rising to a maximum of 40 metres. The waters offshore deepen to 20 metres within a kilometre of the cliffs at Anvil Point lighthouse. The near horizontal bedding of the limestone cliffs provides suitable ledges for several species of seabird to breed.

A count in late May 1990 gave the following figures (pairs unless stated otherwise): 2 fulmar; 8 shag; at least 3 herring gull; 1 great black-backed gull; 86 kittiwake; 257 guillemot (individuals) and 3 razorbill (individuals). A few puffins have bred on the cliffs, but no longer appear to do so. Some breed further to the west, albeit in very small numbers. Durlston is the most easterly south coast colony with auks, shags and kittiwakes and is therefore of particular importance. The auks return to the cliffs in February, and from then until the end of the breeding season in July, the birds will be vulnerable to pollution in the waters immediately offshore. No information is available on the feeding area of these birds, but from work elsewhere, it is likely to be relatively close to the cliffs, probably within 30 kilometres. However, some birds may feed as far away as Lyme Bay.

In winter, the cliffs are used as a night-time roost and daytime loafing area by shags and the larger gull species. Early winter attendance by auks has been witnessed in previous years with brief appearances inshore at dawn from mid-October and regularly ashore thereafter; full numbers reappearing by late November. Attendance was not checked thoroughly in the winter of 1989/90. The area is a good migration watchpoint, for seabirds, seaducks and landbirds.

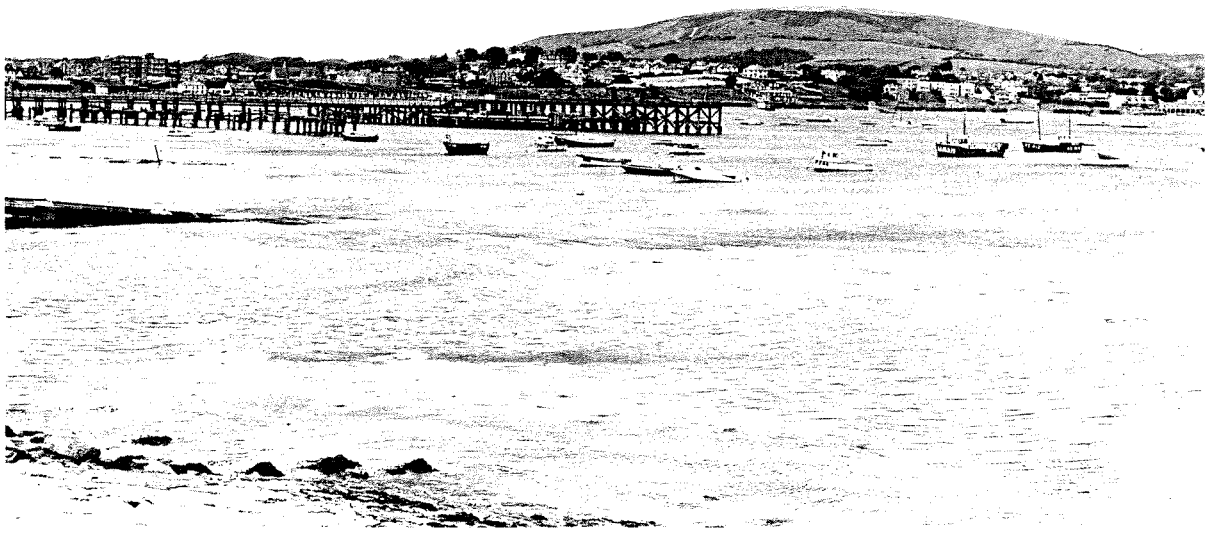


Durlston Bay with Peveril Point (centre) and the chalk cliffs of Handfast Point beyond.
(T. Hardy Katabella)

Not surprisingly the headland has many designations. It forms part of both the Dorset AONB and Purbeck Heritage Coast. As part of the South Dorset coast SSSI, it is recognised for its seabird populations and its botanical and geological interest. Purbeck Marine Wildlife Reserve, which at present stretches from Worbarrow to Kimmeridge, may eventually be extended eastwards to include most of the Isle of Purbeck coast. The cliffs form part of Durlston Country Park which is owned and managed by Dorset County Council and is a popular recreational site.

Durlston Bay

Durlston Bay has resulted from the erosion of the Purbeck Beds which were shattered by folding between the geologically more competent beds of Portland Stone below and Purbeck Building Stone above. The bay is just over a kilometre across with a mean depth of about 5 metres and has a largely sandy bed. Only a few shags, gulls and terns ever use the bay at any one time. Together with Durlston Head, the shores of the bay form part of the Dorset AONB; Purbeck Heritage Coast and South Dorset coast SSSI (geological and botanical interest).



Swanage Bay provides shelter from westerly gales.
(T. Hardy/Katabella).

Peveril Point and Swanage Bay

Peveril Point, lying at the south end of Swanage Bay, is a resistant limestone reef extending seaward for nearly 1.5 kilometres and is formed from the Broken Shell Limestone series of the Purbeck Beds. Swanage Bay is composed of easily eroded sands and clays of the Wealden Beds of Cretaceous age which pre-date the chalk at Ballard Down.

The bay itself is 2 kilometres across and shallow with a sandy floor. The bay was used throughout winter 1989/90 by large numbers of gulls (mainly black-headed). These gulls roost in the bay when not feeding at the Peveril outfall or inland. Similarly, large numbers of gulls may shelter in the bay during strong westerly winds. The northern end of the bay is included in the Purbeck Heritage Coast.

Ballard Down and Handfast Point

Ballard Cliff, Ballard Down and Handfast Point are the eastern end of the chalk monocline which forms the Purbeck Hills. The sea is deep close to the cliffs, just as at Durlston Head. The chalk ridge rises abruptly at Ballard Cliff and Down marking the north end of Swanage Bay. Handfast Point itself ends with the stack of Old Harry and the Wife. The cliffs themselves reach 65 metres at their highest point.

Breeding birds (pairs) in 1990 were: 3 fulmar; more than 25 herring gull and 2 great black-backed gull. Occasionally, a pair of lesser black-backed gulls breeds, and shags have bred in the recent past although none was found here in 1990.

A large colony of cormorants also breeds on the Ballard Down cliffs. This held 168 pairs in 1990, making it one of the three or four largest in England. Outside the breeding season, cormorants roost here by night, usually numbering over 400 individuals and including many immatures. During the winter months, most of these feed by day in Poole Harbour. Towards dusk, they fly out through the harbour entrance or across the Studland peninsula, to congregate on the cliffs, together with a lesser number of shags. They return in the morning. The number of cormorants declines as the winter progresses and was halved by January 1990 from the 395+ in November 1989 (Table 4). At all seasons, the cormorants fly directly to and from the cliffs and Poole Harbour, not landing on the waters off the cliffs. This therefore reduces the threat which would be posed by any oil spill in the area. An exception to this occurs at the end of the breeding season when young cormorants fledge onto the sea below the cliffs to be fed by their parents.

A small number of kittiwakes and fulmars are often present on the waters off Old Harry, these are joined by gulls and shags if their roosts on the cliffs and stacks are disturbed.

The scenic beauty, geology, geomorphology and ornithological interests of the area is formalised by various designations. It is part of the Dorset AONB, the Purbeck Heritage Coast and contains three SSSIs, namely Studland Cliffs, Purbeck Ridge (East) and South Dorset coast SSSIs.

Poole Harbour

Poole Harbour is the flooded estuary of the rivers Frome and Piddle and covers an area of about 3700 hectares. It is a very shallow body (except where the main channel has been dredged), with large areas exposed at low water. The harbour contains nearly 1000 hectares of mud, another 1000 hectares of saltmarsh with several areas of cord-grass *(Spartina)*. A double ebb and flow of the tides, together with variations in barometric pressure, result in a complex tidal cycle within the harbour. The east-facing entrance to the harbour is less than 400 metres across but some 20 metres deep.

Poole Harbour is one of six major sites for waders and wildfowl on the southern English coast. In winter, it is internationally important for its flocks of black-tailed godwits and shelduck and has nationally important flocks of gadwall, pochard, scaup, goldeneye, red-breasted merganser, avocet (in winter and on migration), greyplover, dunlin, curlew, whimbrel (migration) and redshank. The cormorant and black-necked grebe populations are also nationally important.

The north shore is largely urbanised but the south side is protected from development. Quite apart from being part of the Dorset AONB and Purbeck Heritage Coast, the entire harbour, including islands, is an SSSI. This SSSI includes the National Nature Reserves of Arne reedbeds and Holton Heath. The RSPB owns Arne nature reserve. Brownsea Island is owned by the National Trust with part of the island managed as a nature reserve by the Dorset Trust for Nature Conservation. Poole Harbour is a proposed 'Ramsar' site and Special Protection Area (SPA).

Poole Harbour, the second largest natural harbour in the world and of international importance to waterfowl.
(T. Hardy/Katabella).

The lagoon of Littlesea, lying within Studland Heath NNR, is important for dabbling and diving ducks in winter, in particular as an undisturbed night-time roost. There is much interchange of feeding and roosting birds between here, the man-made lagoon on Brownsea island and boating lake in Poole Park. Whilst cormorants and shags vacate the harbour at night there is a massive assemblage of gulls (20,000+), mainly black-headed and common, within the harbour. Most red-breasted mergansers and goldeneye now stay in the harbour at night through the winter, although in previous years, and in October and November 1989, the former flew out of the harbour at dusk to roost in Poole Bay and the latter often moved to Littlesea for the night. A small proportion of red-breasted mergansers continued these evening movements throughout winter 1989/90.

In the summer months, Poole Harbour is of importance for a number of breeding species, notably redshank, black-headed gull, Sandwich and common terns (both on Brownsea), shelduck and Canada goose. Redshank breed at high density in the saltmarshes, perhaps a reflection of the scarcity of suitable breeding habitat in southern counties.

Poole Harbour contains a great many sites which would be vulnerable to oil spill. However, a full shoreline and harbour clean-up manual has already been produced for the area and this subject is not considered further here.

The harbour is used heavily for recreation. For example, windsurfing, sailing, pleasure boating and bird-watching are popular activities throughout the year with wildfowling taking place in the winter months.

Poole Bay

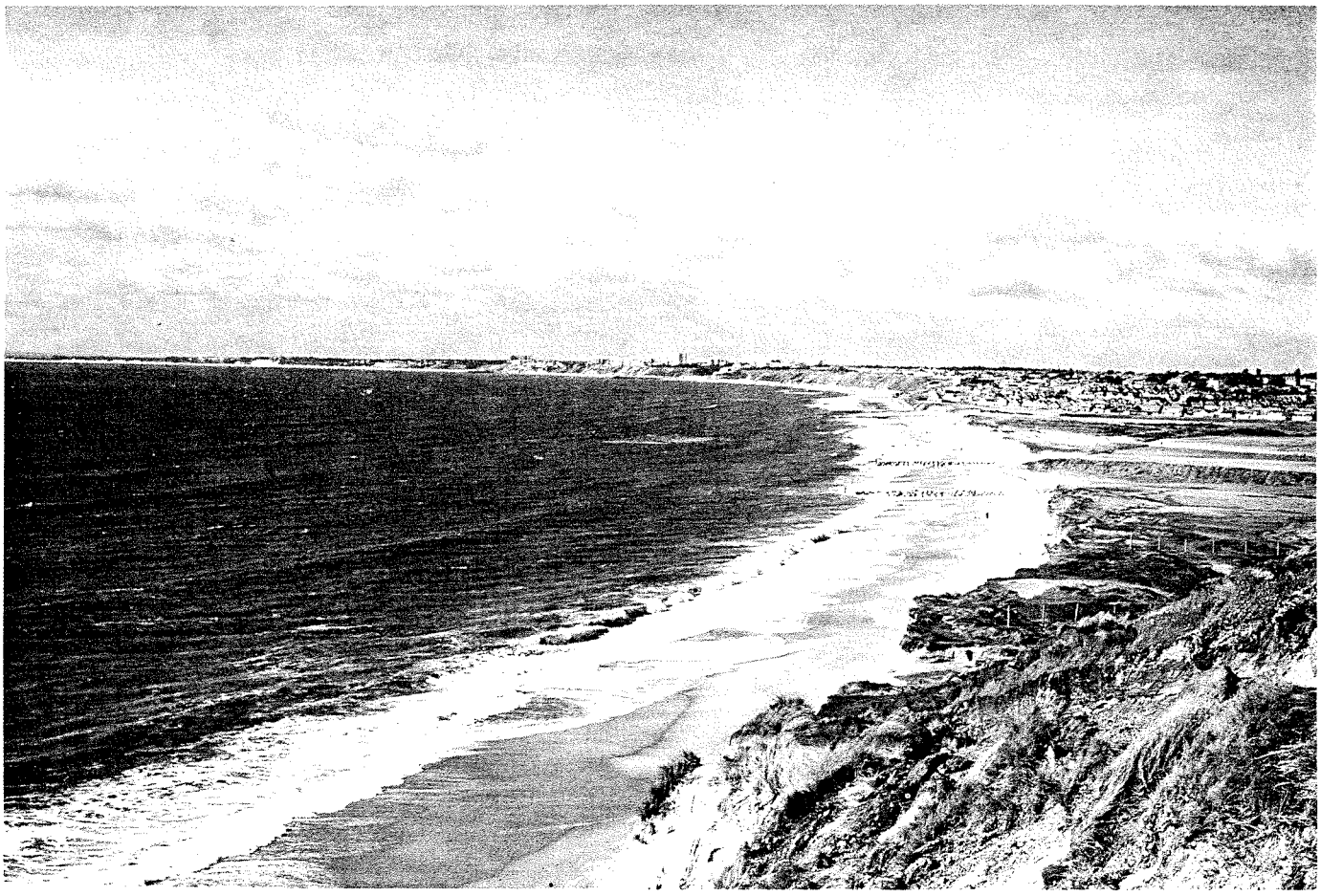
The 22 kilometre sweep of Poole Bay from Studland to Hengistbury Head is backed by Eocene sands and gravels. Hengistbury Head is an ironstone headland capped with gravels of Pleistocene age. On the Studland peninsula, these strata are topped by comparatively recent deposits of wind-blown sand. From Sandbanks to Southbourne, the conurbation of Bournemouth covers most of the underlying geology with only small patches outcropping above the esplanade where not regraded. These outcrops form the SSSI of Poole Bay cliffs.

Most of the bay deepens to 10 metres within one kilometre of the shore but then levels out, attaining a mean depth of only 16 metres at seven or eight kilometres offshore. To the south of a line running due east from Ballard Point, the depth exceeds 20 metres. The substrate in Poole Bay is largely silty clay overlain by loose sands and gravel, but with outcrops of sandstone in several locations.

The 400 metre wide entrance to Poole Harbour lies at the north end of Studland Bay, which is itself considerably shallower than the rest of Poole Bay. It is only three metres deep at three kilometres offshore. Hook Sand, immediately to the east of the main shipping channel, is similarly shallow. North and east of the entrance to Poole Harbour is a coastline dominated by residential properties and, with the exception of six wooded chines, is almost completely built-up as far east as Southbourne. The final 2.5 kilometres from Southbourne to Hengistbury Head is recreational open space with heathland at the head itself.

Studland Bay is the most important open coast ornithological site within the entire study area. Double figures of both Slavonian and black-necked grebes occur each winter in Studland Bay/Poole Harbour. This is the only such site in the United Kingdom. The national wintering population of the black-necked grebe is only about 120 individuals. South Studland Bay is used by roosting red-breasted mergansers early in the winter. The wader roost on Pilot's Point at the southern end of Shell Bay is the only wader roost of any importance outwith Poole Harbour. A total of more than 3000 birds (of up to 8 species) may roost here at high-tide and/or at night. Human disturbance often results in birds moving to Brownsea or Brand's Bay.

Part of the value of the remainder of Poole Bay is in the diversity of species recorded, albeit all in small numbers, although the irregular mid-winter occurrence of 100+ great crested grebes off Boscombe is noteworthy. The waters off Branksome are used by roosting red-breasted mergansers in early winter. Gulls feed along



Poole Bay, with its skyline dominated by Bournemouth and Poole.
(Simon Aspinall).

Studland Bay, the haunt of grebes in winter.
(T. Hardy/Katabella).

the shores of the Bay, both on the beaches and at the outfalls. Herring gulls frequently scavenge around fishing vessels offshore. The overall numbers of gulls offshore in the winter of 1989/90 were highest in December and January. Sandwich and common terns from Brownsea Island feed over Hook Sand during the summer. Hengistbury Head, like Durlston Head, is a migration watchpoint for seabirds, seaducks and landbirds.

The priority for protection is undoubtedly Studland Bay, but measures to prevent disturbance to the red-breasted merganser flock and the great crested grebes, if present, are also required.

Recreational use of the bay is extensive, in particular swimming, windsurfing, jet-skiing and sailing, in all months of the year. Sites of conservation interest around the bay are mostly in the west, notably Studland Heath NNR and the adjacent Godlingston and Studland Heath SSSIs. The Studland Cliffs SSSI is continuous with that running round the headland of Handfast Point to Ballard Point. This area, together with the Studland peninsula and southern half of Poole Harbour including islands, is part of the Dorset AONB and Purbeck Heritage Coast. The disjointed SSSI of Poole Bay cliffs has already been mentioned. Hengistbury Head which is part of Christchurch Harbour SSSI is of considerable archaeological importance and has local botanical and ornithological interest.

Christchurch Harbour and Mudeford, an area of value for recreational pursuits as well as for its birds. *(T. Hardy/Katabella).*

Christchurch Harbour

Christchurch Harbour is a considerably smaller area than Poole Harbour, occupying only 200 hectares. It is also the flooded estuary of two rivers, in this case the Stour and Avon.

It is extremely shallow and, with the exception of the two river channels, completely empties at low water. More than half of the harbour area consists of intertidal flats; the remainder being saltmarsh. Most of these flats are on the north side where there are also fresh and brackish water grazing marshes at Stanpit LNR. At the harbour mouth barely 50 metres separates Mudeford Quay from the far bank of the channel.

Hengistbury Head with the chalk cliffs of the Isle of Wight in the background. *(T. Hardy/Katabella).*

A total of nearly 300 bird species have been recorded here in the last thirty years. The harbour is nationally important for mute swan with 350-400 regularly found moulting from June to September, however only about 50 remain at the end of the year. The night-time roost of gulls, mainly black-headed, can contain up to 5000 birds in winter. Two or three hundred brent geese are regular at peak times in winter. The reedbeds support a diversity of breeding species in summer. Up to 100 non-breeding little terns spend the summer in the harbour.

Christchurch Harbour, including Hengistbury Head, is an SSSI and is popular with visitors interested in its wildlife. Hengistbury Head and the nature reserve at Stanpit are the most frequented parts of the harbour. A large amount of sailing and other water sports takes place in the harbour.

Christchurch Bay

Christchurch Bay lies to the east of Hengistbury Head. It is backed by low cliffs of sand, silt and clay (younger than those backing Poole Bay) and capped with gravel in places. The bay itself is even shallower than Poole Bay, shelving more gently and to only half the depths attained in the latter at 7 or 8 kilometres from the shore. This is partly attributable to a continuous supply of material from the rapidly eroding cliff-line. Christchurch Ledge runs for 4 kilometres south-eastwards from Hengistbury Head. It is separated to the east from the 6 metre deep Dolphin Bank by the deepest part of the Dolphin Sands.

Perhaps surprisingly, Christchurch Bay holds few wintering birds. More might be expected in such a shallow area. Possibly the waters may be too opaque for diving species of bird to locate prey easily. The area off Mudeford often holds gull flocks disturbed from Christchurch Harbour, where they roost at night, and a small number of feeding cormorants. Seabird numbers offshore were relatively low throughout the winter of 1989/90. The highest numbers of auks were found in November, December and January with those of gulls in January, February and March.

The entire coastline from Highcliffe to Milford on Sea is recognised as an SSSI due to its unique geology and geomorphology. Barton is the type locality of the highly fossiliferous Barton beds.

Adjacent areas

East of Milford on Sea is a coastline of high ecological interest. The entire coast from Milford on Sea to the Beaulieu river and beyond is an SSSI. The SSSI of Hurst Castle and Lymington River Estuary includes Keyhaven LNR, and adjoins the Beaulieu Estuary SSSI. The North Solent Marshes NNR is adjacent to this. Most of the area is part of the South Hampshire AONB. The area comprises intertidal mudflats, salt marshes, shingle ridges and spits and is important for wildfowl and waders in winter in particular, especially brent goose, and for breeding gulls and terns in summer. There are also important botanical and geomorphological features.

Much of the western end of the Isle of Wight has been notified as SSSIs, largely for geological interest, although much of the cliff top vegetation is recognised for its botanical importance, particularly on the chalk downland. The seabird breeding colony on the cliffs between Freshwater and the Needles held, in 1989: 12 pairs of fulmar; 300-400 pairs of cormorants; 4 pairs of shag; 10+ pairs of herring gulls; 1 pair of great black-backed gulls; 2 pairs of lesser black-backed gulls; about 200 guillemots (individuals) and 4 razorbills (individuals). The only other site specifically recognised for its ornithological value between the Needles and Cowes is Newtown Harbour (SSSI and LNR) with breeding and over-wintering waders and wildfowl. The Yar estuary (SSSI) is of local interest for birds. Pollution should plainly be prevented from entering the Solent if at all possible.

Most of the coast mentioned is included in the Hampstead Heritage Coast and Isle of Wight AONB. Together with the mainland areas of the Beaulieu Estuary and Lymington, Newtown Bay is included as part of the proposed West Solent SPA.

Compton to St. Catherine's Point is also an SSSI for its botanical interest and geological features and is both a Heritage Coast area (Tennyson H.C.) and included in the Isle of Wight AONB. St. Catherine's Point is a migration watchpoint.

Seabirds also breed on the cliffs to the west of Durlston Head. Totals in 1990 as far west as St. Alban's Head (excluding Durlston Head itself) were: fulmar 10 (pairs), shag 35 (pairs), kittiwake 79 (pairs), guillemots 154 (individuals), 14 razorbills (individuals) and 16 puffins (individuals).

Methods

Counts of inshore waters, up to about two kilometres from the shore, were made during calm weather on a minimum of three occasions within each month from October 1989 to April 1990. These counts were made from a series of fixed count points between Durlston Head and Milford on Sea (Figure 3). A boat survey, using standard SAST transect methods (Tasker *et al.* 1984), of waters beyond two kilometres of the shore, south to latitude 50°35′ N was conducted once or twice each month in periods of calm weather. The study aimed to make these counts once in the first half of each month, once in the second half and no closer than ten days apart.

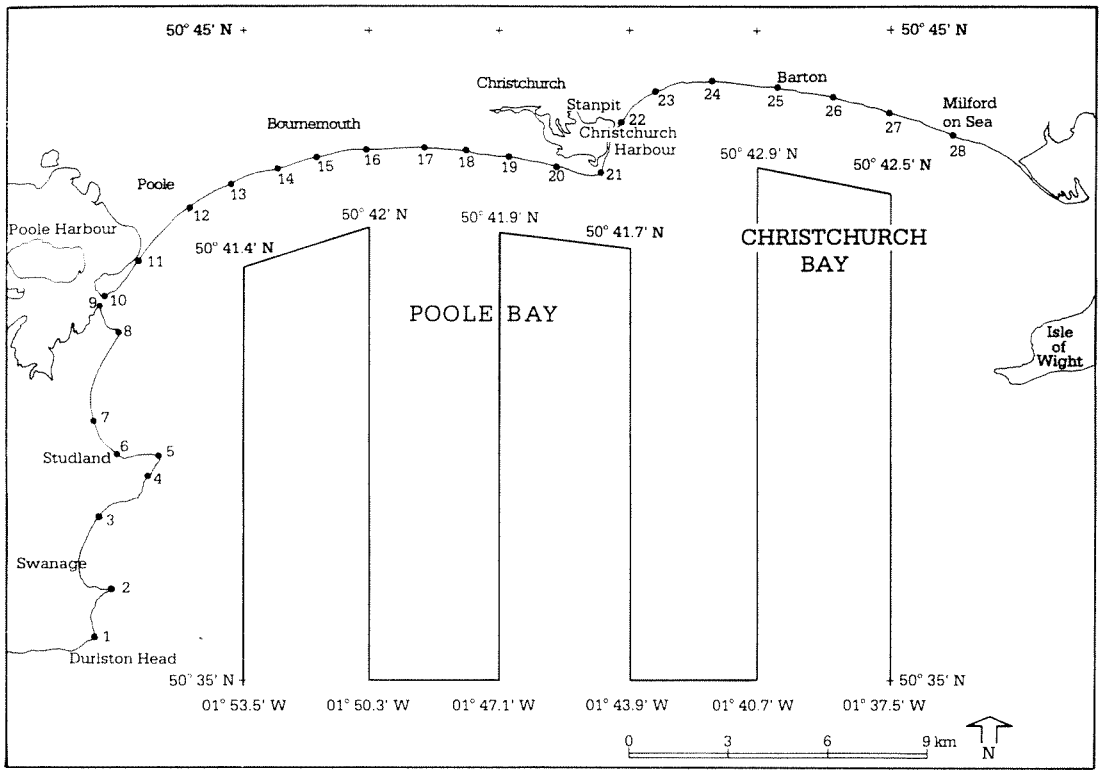


Figure 3. Offshore transect route and shore-based count positions in Poole and Christchurch Bays.

Shore-based count positions

Position	Location	Grid reference	Position	Location	Grid reference
1	Durlston Head	SZ 034773	15	Russell Cotes museum	SZ 093909
2	Peveril Point	SZ 040786	16	Boscombe pier	SZ 107912
3	Swanage	SZ 034804	17	Southbourne (west)	SZ 125913
4	The Pinnacles	SZ 052819	18	Southbourne (east)	SZ 137913
5	Old Harry	SZ 054824	19	Solent Meads	SZ 157908
6	Studland	SZ 040826	20	Double Dykes	SZ 164908
7	Knoll car park	SZ 034836	21	Hengistbury Head	SZ 179905
8	Pilot's Point	SZ 042860	22	Mudeford Quay	SZ 184918
9	South Haven Point	SZ 036867	23	Highcliffe	SZ 197928
10	Sandbanks	SZ 038870	24	Chewton	SZ 216932
11	Poole Head	SZ 051883	25	Barton	SZ 235930
12	Branksome Chine	SZ 065897	26	Barton Golf Course	SZ 245928
13	Alum Chine	SZ 075902	27	Taddiford	SZ 261923
14	West Hill road	SZ 083906	28	Hordle/Milford on Sea	SZ 276918

A standard series of north-south transect lines were followed on each occasion (Figure 3). A 12-metre motor cruiser with a flying bridge approximately 4 metres above sea-level was used for these surveys. The boat travelled at a constant 14 knots (26 kilometres/hour) when on survey. Approximately 7.5% of the sea area was surveyed in each of Poole and Christchurch Bays. The total number of each species likely to be present in the entire sea area of each bay was then extrapolated from their recorded densities.

An additional boat and land-based survey was made at the end of June and in early July 1990, in order to quantify the use of Poole Bay as a feeding area for seabirds that breed locally. The emphasis was on Poole Bay as this is where developments proposed by BP may take place. The exact locations of seabirds feeding offshore were plotted using on-board Decca navigation (Nevstar). Boat surveys in Poole Bay were carried out between 0500 and 2200 hours BST. These survey results were combined with a large number of observations made from land in May, June and July. Gannets and little terns, although not breeding in the area, regularly visit and feed in the area in summer and were thus included in the survey.

The review of the birds found in the harbours of Poole and Christchurch was based largely on previous ornithological studies, together with more recent information extracted from a variety of published and unpublished sources (see Further reading). Night-time roosts were located by watching birds towards dusk and recording their flight direction or by direct observation of birds arriving at their roost locations.

Only those species potentially at risk from water-borne pollution are considered here. These are birds which either feed in intertidal areas (waders, wildfowl and gulls) or on the sea (seabirds, divers, grebes and wildfowl).

Species accounts

Introduction

Information for each species in the area is summarised below, grouped into four categories of birds: divers and grebes, wildfowl, waders and seabirds. This information derives from the current study, several previous studies and from a review of published and unpublished literature. The maximum count made over winter 1989/90 for each species for each of the eight landward sections of the study area is tabulated (Tables 1, 2, 6 & 7). In addition, the mean winter count for waders and from Christchurch and Poole Harbours is also summarised (Table 3). Those species with asterisks are listed under Article 4.1 of the EEC Bird Directive. Almost all the other species are migratory, and therefore qualify for special protection under Article 4.2.

A large number of places within Poole Harbour are necessarily referred to in this section; these are shown in Figure 4.

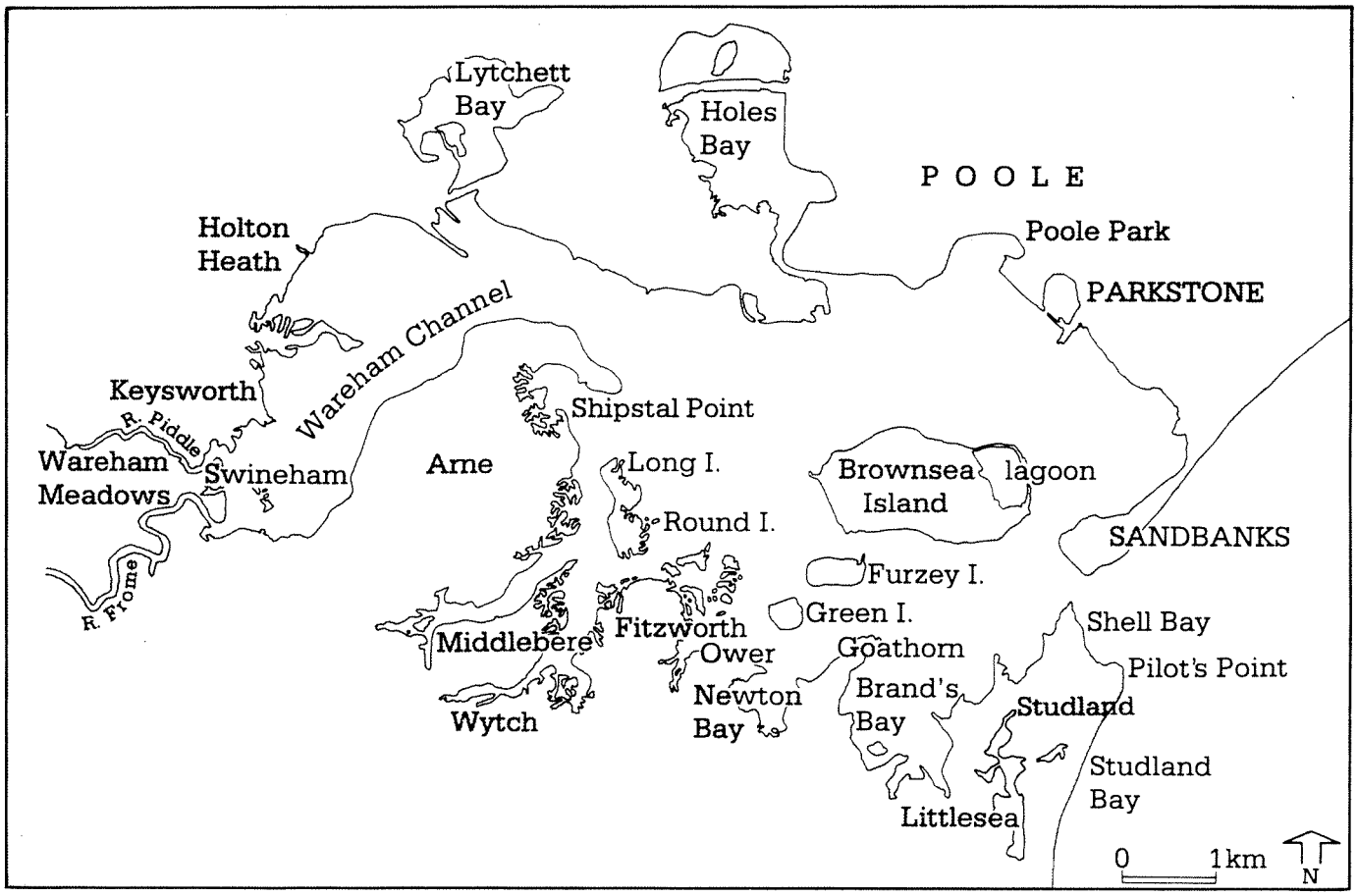


Figure 4. Poole Harbour showing places mentioned in the text.

Divers and grebes

Table 1.

Maximum land-based winter counts between Durlston Head and Milford on Sea, 1989/90: divers and grebes.

None were seen in Durlston Bay.

	Swanage Bay	Studland Bay	Shell Bay	Poole Harbour	Poole Bay	Christchurch Harbour	Christchurch Bay
Red-throated diver	1	1	1	2	2	1	1
Black-throated diver	0	1	0	0	0	0	0
Great northern diver	0	1	1	5	8	0	1
Little grebe	0	0	0	13	0	9	1
Great crested grebe	0	6	1	51	13	4	2
Red-necked grebe	0	1	0	1	2	0	0
Slavonian grebe	0	9	2	8	1	0	0
Black-necked grebe	0	15	2	15	5	0	0

Red-throated diver *

Normally only single red-throated divers occur in Poole and Christchurch Harbours, but three were present in the former in January 1979. Shell and Studland Bays are the favoured area for this species with individuals present regularly in winter. Up to four have occurred in Studland Bay (March 1983) with a maximum of 14 recorded for the whole of Poole Bay in February 1986. Individuals and groups of up to six are often seen on the sea at Hengistbury Head but there is a remarkable record of 34 here in December 1988. Greater numbers of divers are regularly seen flying past the headlands on migration (although not all have been specifically identified). Spring and autumn totals regularly approach and occasionally exceed 100 birds.

Black-throated diver *

Small numbers of black-throated divers occur annually with between one and five recorded in recent winters; these birds often occur inside the harbours, but Poole Harbour and the western half of Poole Bay are the preferred areas for this species. As with the previous species, the total number passing on migration is very much higher, although specific identification is not always possible.

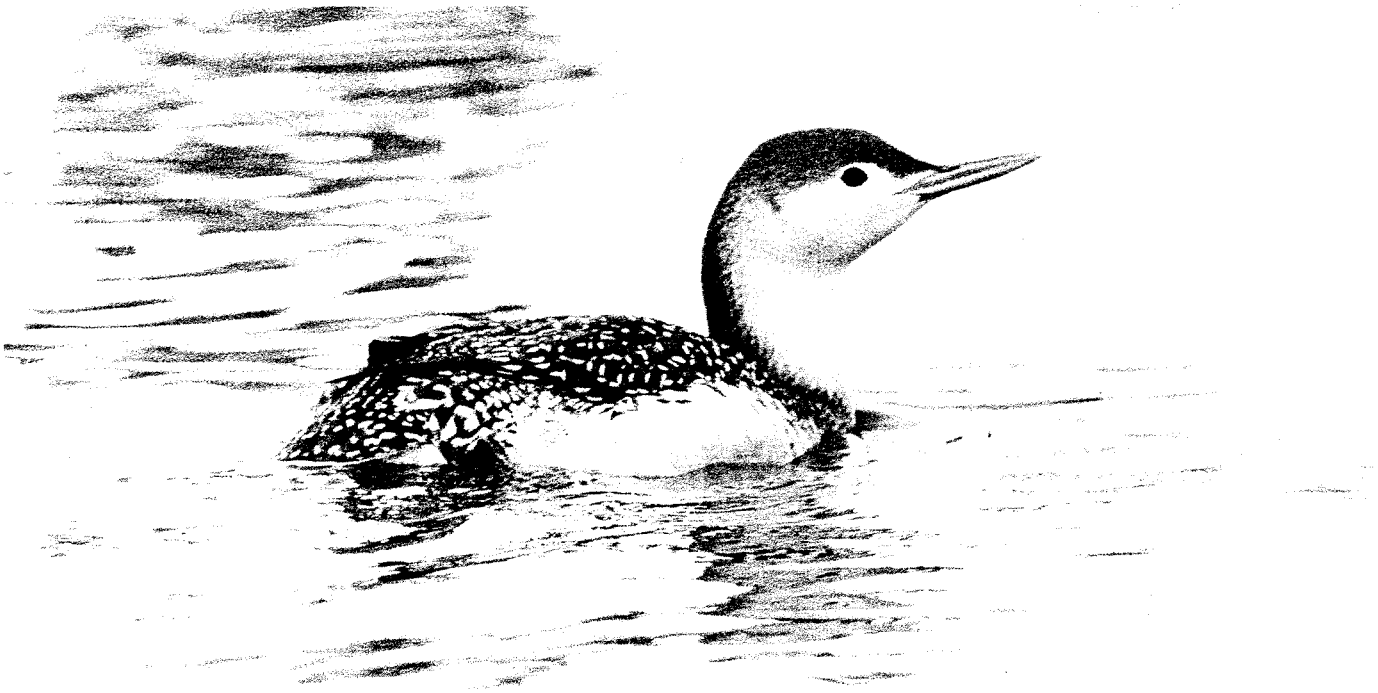
Great northern diver *

Normally fewer than five great northern divers are seen each year and almost all are in Poole Bay and Poole Harbour. A maximum of six have wintered in the harbour (December 1979) and 12 were present off Hengistbury Head from March-May 1979. A peak of eight were present in Poole Bay in April 1990 (Table 1).

Little grebe

Little grebes are typically a freshwater species that are found occasionally on estuaries in winter, especially in hard weather. In contrast to other grebe species, it is rare on more open coasts. Christchurch Harbour regularly holds 20 or more throughout the winter months with normally only about 10 found around Poole Harbour (Table 1).

Divers & Grebes



Red throated diver, a scarce winter visitor to the Dorset coast.
(Hansgeorg Arndt/RSPB).

Great crested grebe

Over a hundred great crested grebes are recorded in the study area in some winters (maximum of 150-200 in December 1961). The normal peak winter count in Poole Harbour is between 20 and 50 (a maximum of 100 in January 1984). Higher counts occur in colder winters when inland waters freeze. At least some spend the winter in Poole Bay every year. When present in larger numbers, the main group feeds and roosts between Boscombe and Alum. Normally less than ten are found in Christchurch Harbour in any winter and only ones and twos have been reported from Christchurch Bay. Very few great crested grebes were seen in the winter of 1989/90, presumably due to the mild weather throughout the period (Table 1). If, as seems likely, these birds breed locally, then these peak counts represents most of the Dorset and west Hampshire population.

Red-necked grebe

Rarely are more than four or five red-necked grebes seen in any winter (Table 1). Records on different dates from different localities often appear to relate to the same individuals. Studland Bay and Poole Harbour are the two main sites. The peak count was of 18 in Poole Bay on 24 December 1988. Birds are occasionally seen off Hengistbury Head and in Christchurch Harbour.

Slavonian grebe *

In most recent winters, a total of 20 or more Slavonian grebes have been found in Studland Bay and Poole Harbour (Table 1). Peak numbers generally occur in December or January but sometimes later. The maximum recent count was of 42 (February 1981). Numbers recorded are clearly related to the severity of the winter with the highest numbers in the coldest years. Away from these two traditional sites, Slavonian grebes are very occasionally seen in Christchurch Harbour or on the sea off Hengistbury Head.

Black-necked grebe

Studland Bay and Poole Harbour are traditional wintering sites for black-necked grebes (Table 1). The highest recent count was of 32 in December 1985. Prior to 1964, maxima of 40 or more were normal. There has been a downward trend in numbers (for unknown reasons) since then. Peak numbers generally occur earlier in the winter than with the previous species. Birds roost and feed in much the same areas: off the Knoll in Studland Bay and off Brownsea island in Poole Harbour. The estimated British wintering population is only 120 birds; the Poole Harbour and Studland Bay population is therefore of national importance. In Great Britain, only Langstone Harbour, Hampshire regularly supports more birds than here.

Over 100 great crested grebes can be seen on the sea off Bournemouth in some winters.
(C. H. Gomersal/RSPB).

Wildfowl

Mute swan

Pairs of breeding mute swan are present on many freshwater sites near the coast. Outside the breeding season, Christchurch Harbour assumes national importance for this species. A large herd, usually numbering around 400, moults here in the summer and autumn. (maximum of 538 in July 1989) but disperses again soon afterwards. In the winter months less than 100 and normally only half this number remain. Only a few birds are resident in Poole Harbour (Table 2) where numbers normally peak at around 50 in the autumn.

Christchurch Harbour is home to one of the largest moulting herds of mute swans in Britain. *(E. & D. Hosking).*

Bewick's swan *

The herd of Bewick's swan in the Poole Harbour area regularly approaches or exceeds 70 birds in severe winters. This is 1% of the national population. The birds are found mostly on the Wareham meadows or on flooded fields of the Frome valley near Wool, where they also remain at night. In view of this habitat preference, they are not considered at risk from oil pollution. Overhead obstructions, powerlines in particular, are a hazard to flying swans. A separate herd winters in the Avon valley with 60 or more often recorded on the outskirts of Christchurch town. In the winter of 1989/90, the Poole flock reached a maximum of 63 in December and the Avon valley flock exceeded 200, also in December (Table 2).

Brent goose *

A regionally important number of dark-bellied brent geese usually winters in Poole Harbour, although fewer were present in the winter of 1989/90 (Tables 2, 3).

Birds feed throughout the harbour, although some sites are preferred. These are Brand's Bay; Ower; east Fitzworth and Green Island (Figure 4).

Christchurch Harbour holds an additional 100-200 or more for at least part of each winter.

Keyhaven marshes have regularly held over 2000 birds in recent winters with a further 1000 or more at Newtown, Isle of Wight.

Table 2.

Maximum land-based winter counts between Durlston Head and Milford on Sea, 1989/90: wildfowl.

None were seen in Durlston Bay.

	Swanage Bay	Studland Bay	Shell Bay	Poole Harbour	Poole Bay	Christchurch Harbour	Christchurch Bay
Mute swan	0	0	0	26	0	52	0
Bewick's swan	0	0	0	63	0	0	0
Brent goose	0	21	13	620	6	183	0
Shelduck	0	4	0	2079	0	86	0
Wigeon	0	2	0	453	0	83	8
Gadwall	0	0	0	40	0	5	0
Teal	0	0	0	506	0	90	0
Pintail	0	0	0	92	0	0	0
Shoveler	0	0	0	84	0	0	0
Pochard	0	0	0	1020	0	0	0
Scaup	0	1	0	4	0	0	0
Eider	0	3	0	1	0	0	1
Common scoter	0	6	0	1	3	0	6
Goldeneye	0	0	0	185	0	3	0
Red-breasted merganser	3	35	2	300+	6	2	0

Shelduck

Poole Harbour supports a breeding population of about 50-70 pairs of shelduck, with Christchurch Harbour and Newtown, Isle of Wight each holding less than 10 breeding pairs. This species is found exclusively within the harbour areas. Most of the breeding population leaves Poole Harbour to moult in the German Waddensee. These return, along with others from breeding sites elsewhere, from late October onwards. Peak counts in January or February exceed 2000 birds (Table 2).

Birds feed on mudflats, preferred areas in Poole Harbour being Holes Bay; Lychett Bay; Holton Heath and Wareham Channel; east Fitzworth; Newton and Brand's Bays and Brownsea lagoon. The population wintering in Christchurch Harbour seldom reaches 100 whereas the mean winter peak in Poole Harbour approaches 2500 (Table 3); the qualifying level for international importance.

There are regularly up to 400 on the saltmarshes between Hurst and Lymington with a peak count of 663 here in January 1987. In recent winters, 400-600 have been counted at Newtown on the Isle of Wight.

Wigeon

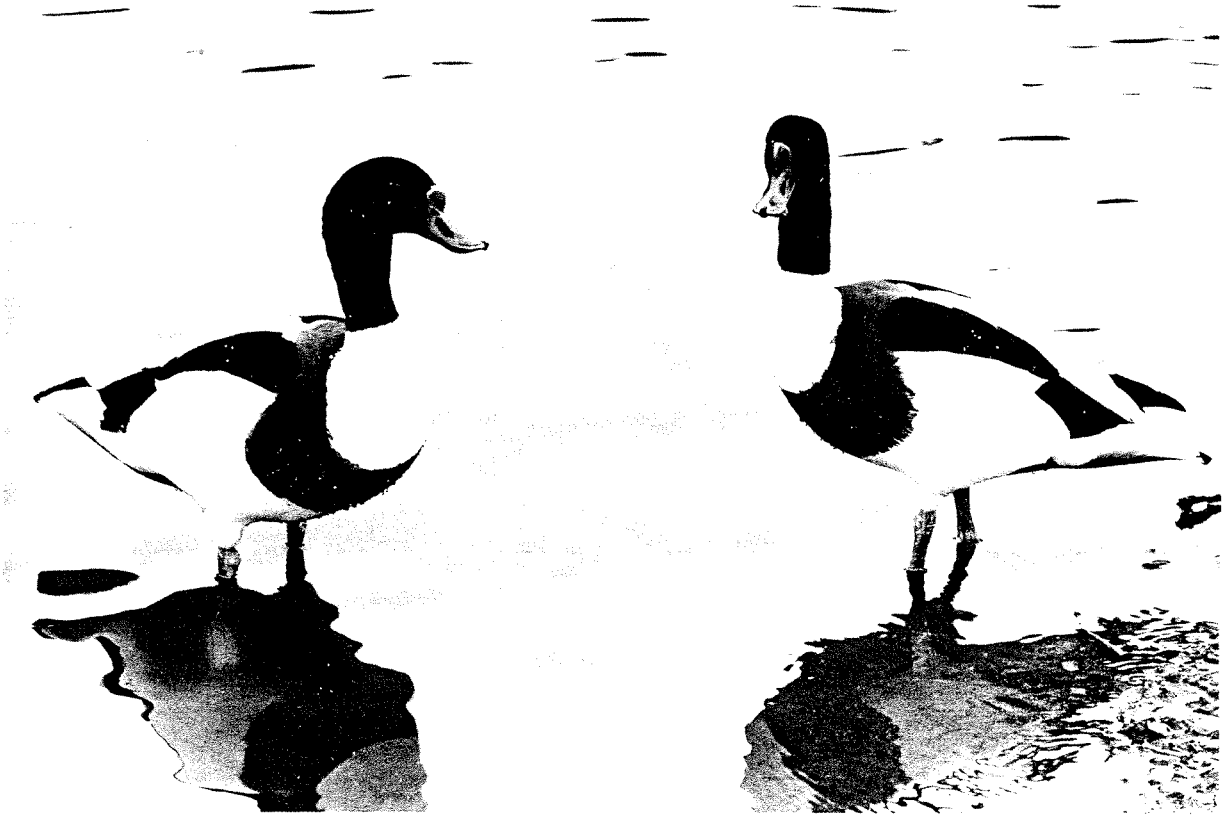
The highest count of wigeon from Poole Harbour in recent years is of 2500 in January 1985, but usually numbers are lower (Table 2). Large annual variations occur mainly in response to the prevailing weather, with the highest numbers invariably during the coldest winters. Within the harbour, Holton Heath, the Wareham Channel and Swineham are the preferred feeding areas. Fewer than 100 birds winter in Christchurch Harbour. A thousand or more have been recorded on the saltmarshes at Keyhaven, Hampshire and at Newtown on the Isle of Wight.

Gadwall

The peak number of gadwall in Poole Harbour can exceed 50 birds, the qualifying level for national importance (Table 3), but numbers are low in mild winters including that of 1989/90. No other site normally supports more than ten birds (Table 2). The Poole Harbour birds are mostly found on Littlesea.

Teal

A few pairs of teal breed around Poole Harbour, which is also easily the most important



Poole Harbour sometimes holds more than 1% of the western European population of shelduck. *(Roy Shaw/NHPA).*

Table 3.
Mean winter counts, 1985/6 to 1989/90 of wildfowl and waders in Poole and Christchurch Harbours.

Wildfowl	Poole Harbour	Christchurch Harbour	Waders	Poole Harbour	Christchurch Harbour
Brent goose	763	152	Oystercatcher	1274	76
Shelduck	2473	64	Avocet	66	1
Wigeon	1102	97	Ringed plover	178	71
Gadwall	40	13	Grey plover	363	27
Teal	829	99	Dunlin	4144	468
Pintail	179	12	Black-tailed godwit	997	25
Shoveler	55	15	Curlew	1323	16
Pochard	1201	13	Redshank	1234	91
Scaup	43	3			
Goldeneye	192	15			
Red-breasted merganser	365	8			

Mean is the average of the highest winter count from each of the five winters 1985/6 to 1989/90. Counts derived from the Birds of Estuaries Enquiry, National Wildfowl Counts and Dorset bird reports.

wintering site in the study area with an average of over 800 birds annually (Table 3). Fewer were recorded in winter 1989/90 (Table 2). At Christchurch Harbour, the normal winter peak is between 100 and 200; a similar or greater number can be found regularly at Newtown on the Isle of Wight. The numbers recorded at coastal sites increase markedly when inland sites freeze.

Pintail

Poole Harbour is the most important site for pintail in the area, with an average winter peak of 179 birds (Table 3), usually occurring in January or February; there were fewer in 1989/90 (Table 2). The maximum count was of 456 in January 1973 with 452 in the winter of 1981/82. Pintail are mostly found along the southern shore although the Wareham Channel can be important. Only a few individuals spend the winter at other coastal sites; at Newtown, Isle of Wight, there is a small but regular winter flock of just under 100 birds and between Keyhaven and Lymington, where over 50 have been noted. Important flocks occur inland, for instance on the Avon floods between Ringwood and Fordingbridge.

Shoveler

As with other dabbling duck species, the main locality for shoveler is Poole Harbour. Up to 84 (February 1990) have been recorded here in recent winters (Table 2). The principal sites within the harbour area being Brownsea; Littlesea and, on occasion, Wareham meadows. The marshes between Hurst and Lymington are the next most important area with up to 50 individuals.

Pochard

Total numbers of pochard at the two main sites, Poole Park and Littlesea, are nationally important (Table 2). Peak counts are made between December and February and as with many species, freezing conditions inland result in larger numbers at coastal sites. Some 2800 were recorded in the particularly severe winter of 1962/63.

Scaup

Scaup are rare away from Studland and Poole Harbour where more than 50 birds have occurred. The highest count was of 300 birds in Poole Harbour in February 1963; few birds were seen in the relatively mild winter of 1989/90 (Table 2). Individuals and small groups occasionally occur elsewhere in the study area during spring passage.

Eider

Eiders were formerly rare visitors to the area, but now occur regularly in low numbers (Table 2). Over 50 have been recorded at Hengistbury Head, Studland Bay and Durlston Head with birds occasionally entering and spending some time in the harbours; a record of 92 in Poole Harbour in March 1963 was exceptional. Numbers fluctuate widely between winters, especially in recent years, but this may in part reflect observer effort. There is however, a pattern of several lean years following a two or three year period when many, mostly immature, birds are present. When larger numbers are present, the flocks move freely between suitable coastal sites. Small numbers (up to 25) are present intermittently between Hurst and Lymington.

Common scoter

Wintering rafts of several hundred common scoter, and once over a thousand (March 1958), were seen regularly in Poole Bay until the early 1960s. Numbers subsequently decreased, but high numbers were found at the end of 1988, when they reached the highest levels since 1958. About 360 and 235 were off Durlston Head and in Poole Bay respectively in November and 140 off Hengistbury Head in December. Some duplication is possible within these counts. Apart from this influx, flocks have seldom exceeded 200, including in 1989/90 (Table 2) and then only briefly (particularly during migration in April and early May). Occasional individuals are met with in the harbours, but scoters are otherwise restricted to offshore areas. A small number (30-65) regularly spends the summer off Hengistbury Head. Many have been recorded flying east in spring, but only occasionally do they settle on the sea, for instance 400 off Hurst in April 1987. Smaller numbers are seen on return passage in autumn.

Goldeneye

Goldeneye occur mainly in the harbours with numbers present apparently dependent on the severity of the winter. Poole Harbour holds most birds, with regularly around 150 or more (Table 2). A count of 'about 500' was made during cold weather in February 1963. Christchurch Harbour and the open coast seldom support more than ten birds. The Poole Harbour population spreads out to feed mainly in the southern bays, but roost communally at night west of Brownsea Island (together with mergansers and grebes) or on Littlesea. This flock is of national importance.

Red-breasted merganser

Nearly all red-breasted mergansers in the study area occur in Poole Harbour. This flock is of national importance (Tables 2 and 3). Numbers generally peak in December or January; peak counts from the last five years range from 302 to 528 with the highest ever count of 535 in December 1979. Numbers are difficult to assess accurately whilst within the harbour but their habit, at some times, of flying out through the harbour mouth toward dusk (and back at dawn) makes counting easy (Tables 4 and 5). Clearly these birds roost overnight in Poole Bay.

In the winter of 1985/6, the position of a then unknown, but long-suspected, roost within the harbour was located to the east of Long Island. This night-time roost has been in use annually since, with flighting out of the harbour restricted to the early and late winter periods only, with the exception of just a few birds in mid-winter. This was again true of 1989/90, but by the time flighting began again in late February, most birds had left the area altogether. In a longer, colder winter, red-breasted mergansers are likely to remain later. The maximum count in 1989/90 at the Poole Harbour roost was of 300+ birds in December 1989 and again in January 1990. Small numbers of goldeneye and great crested grebe are mixed in with them at this roost.

The positions of roosting birds in Poole Bay are shown in Figure 6. Those birds feeding in Studland Bay roost off the Knoll. In October and November birds leaving the harbour flew east and probably roosted off Branksome-Bournemouth. The maximum of 93 in late October probably represents the harbour population at that time, with the main arrival of birds soon after this. Away from Poole Harbour and Studland Bay only small groups are encountered, for instance up to 30 off Newtown, Isle of Wight and, rarely, more than this between Hurst and Lymington.

Table 4.

Counts of birds leaving Poole Harbour at dusk, 1989/90.

Date	Time	Red-breasted merganser	Cormorant	Shag	Other species
16/10/89	1742	71	n/c	n/c	—
26/10/89	1740-1752	17	n/c	n/c	—
27/10/89	1732-1748	93	n/c	n/c	—
28/10/89	1655-1741	81	n/c	n/c	—
11/11/89	1355-1626	74	331	n/c	—
17/11/89	1440-1700	31	395+	106	—
20/11/89	1440-1700	16	n/c	n/c	Eider 1, Common scoter 1
22/11/89	1440-1700	35	374	70	—
01/12/89	1500-1630 (Fog)	7	n/c	n/c	—
14/12/89	1435-1625	2	200+	0	—
21/12/89	1440-1610	1	n/c	n/c	—
02/01/90	1450-1650	14	216	106	Great northern diver 1
16/01/90	1450-1710	16	55	67	Great northern diver 3
05/02/90	1500-1740	2	53	91	Great northern diver 5, Eider 1
14/02/90	1530-1735	11	35	54	Great northern diver 3
23/02/90	1550-1810	49	30	43	—
02/03/90	1630-1830	39	19	12	—
10/03/90	1715-1845	20	n/c	n/c	—
12/03/90	1800-1855	10	n/c	n/c	—
15/03/90	1735-1845	7	n/c	n/c	—
03/04/90	1800-2015	19	21	0	—
10/04/90	1900-2035	2	n/c	0	—
20/04/90	1930-2130	0	6	0	—

Table 5.

Counts of birds flying into Poole Harbour at dawn, 1989/90.

Date	Time	Red-breasted merganser	Cormorant	Shag	Other species
22/11/89	0630-0900	17	206	107	—
24/11/89	0710-0930	2	n/c	n/c	—
13/12/89	0750-0945	60	250+	51	Great crested grebe 1
14/03/90	0555-0800	3	n/c	n/c	—
19/03/90	0600-0745	2	6	1	—

n/c = no count.

Other wildfowl species

Other wildfowl species of local importance include Canada goose, mallard and tufted duck (all of which are resident). Their numbers may be augmented by immigrants in winter. Long-tailed duck, smew and velvet scoter appear sporadically in winter. Velvet scoter often associate with the common scoter flocks. Garganey are regular migratory visitors to both harbours. Coot occur in some numbers in the area and especially at Christchurch Harbour where up to 750 (1982) have been counted in recent years. Also worth mentioning are herons which breed locally and feed around the harbours. Most feed in freshwater sites such as rivers and dykes but a few can be seen fishing in the harbour creeks and channels at low-tide.

Waders

Waders

Most waders roost at high-tide and at night (unless feeding then). Sites of day- and night-time roosts are not necessarily coincident. The higher parts of many saltmarsh areas may be used at high-tide during the day although some species, oystercatcher and curlew in particular, may fly into fields to continue feeding. Collins (1986) surveyed and described all roost sites around Poole Harbour. During the survey period of 1989/90, the only roost of any importance outside the two harbour areas was at Pilot's Point at the north end of Studland Bay. A total of about 3000 waders of eight species may roost here, the principal species being dunlin, grey plover, bar-tailed godwit and ringed plover. The 1989/90 maxima for these species at this roost were 2000, 200, 150 and 56 respectively.

Within the harbours, waders (and wildfowl) were counted once a month during Birds of Estuaries Enquiry counts (Tables 3 and 6). These counts required a team of about 20 volunteers.

Oystercatcher

About 25 pairs of oystercatchers breed in Poole Harbour. One or two pairs usually attempt to breed elsewhere along the coast, including in Christchurch Harbour, but are generally unsuccessful. Newtown Harbour on the Isle of Wight also supports a few breeding pairs.

The area assumes a numerically greater importance in winter with Poole Harbour holding a thousand or more birds (peak count of 1832 in December 1985). Christchurch Harbour and the western parts of the Isle of Wight have substantially lower peaks (up to 200 birds at each) with highest numbers during migration periods, particularly autumn. Numbers of birds on passage may exceed those remaining to winter (Table 6).

Table 6.

Maximum land-based winter counts between Durlston Head and Milford on Sea, 1989/90: waders.

None were seen in Durlston or Swanage Bays.

	Studland Bay	Shell Bay*	Poole Harbour	Poole Bay	Christchurch Harbour	Christchurch Bay
Oystercatcher	39	20	462	46	59	45
Avocet	0	0	127	0	0	0
Ringed plover	12	20	84	20	23	22
Grey plover	0	20	200+	0	2	0
Purple sandpiper	0	0	5	5	0	0
Dunlin	0	150	2748	0	420	0
Black-tailed godwit	0	0	133**	0	91	0
Whimbrel	0	0	100+	0	0	0
Curlew	1	0	1431	0	4	2
Redshank	3	0	948	0	54	0
Turnstone	0	15	0	6	5	24

* counts exclude those from Pilot's Point roost.

** count from Wareham meadows.

Waders

Avocet*

Avocets have become increasingly regular visitors concomitant with an increase in the British breeding population. Very few are seen away from Poole Harbour, which is itself now of national importance for this species (Tables 3 and 6). Early records from this site were mainly of birds on migration and only recently has the area become a wintering ground. Additional birds still use the estuary on passage. Avocets favour only two or three feeding sites around Arne, at Wytch and Brownsea lagoon and roost at any of these sites.

Ringed plover

A few pairs of ringed plover nest each year on sand and shingle beaches, mainly in the east of the area. Peak numbers usually occur during migration, for instance 315 around Christchurch Harbour in September 1981. This species is most frequently encountered on the open foreshore, for example on Studland beach and at Hengistbury Head. Human disturbance may cause birds to move from these areas to quieter, less suitable feeding areas such as the harbour mudflats. The highest count yet recorded in the area was of 500 in Poole Harbour in December 1987.

Grey plover

The wintering population of grey plover in Poole Harbour is of national importance, with a mean of 363 (Table 3). The southern and western parts of the harbour are the preferred feeding areas although most roost either at Pilot's Point, in Brand's Bay or on Brownsea. The first of these roosts is frequently disturbed by walkers. The highest counts are in mid-winter with a peak of 685 in December 1985. Up to 500 have wintered recently between Hurst and Lymington. Christchurch Harbour may hold 20 or 30 in winter with a similar number, or more, at Newtown, Isle of Wight. Varying numbers remain in the summer months, but there is usually less than ten at any site in June or July.

Dunlin

Mean winter peak numbers of dunlin in Poole Harbour in winter approach the 1% national level (Table 3). The highest count recorded was of 7090 in December 1985. At Christchurch Harbour, more birds are seen on passage than in winter. Occasional large flocks occur, for instance 2000 in August 1986. A similar pattern is observed at Newtown, Isle of Wight, although winter numbers are often higher than at Christchurch Harbour.

Black-tailed godwit

The Poole Harbour flock of black-tailed godwit is composed entirely of birds of the Icelandic race and, as it holds nearly 2% of the total population, is of international importance. The birds feed in Poole Harbour, usually at Fitzworth, Arne, Holes Bay, Brand's Bay or Newton Bay or in the flooded meadows of the lower Frome valley. Regular roost sites are at Brownsea lagoon and at Shipstal. Peak counts from the last five winters range from 682 to 1331 individuals. The latter, in February 1990, was the largest ever flock seen in the area.

Whimbrel

The spring passage of whimbrel in April and May is particularly marked in the area, although many flocks fly over without stopping (often at night). Only in the southern and western parts of Poole Harbour do parties of birds stop to feed. A nationally important total of at least 600-700 birds has been recorded here in the spring of several recent years. Internationally important numbers may stop off in some years.

Curlew

The wintering population of curlew around Poole Harbour is of national importance (Table 3). Birds feed widely throughout the harbour on mudflats and saltmarshes and at high-tide many go to inland feeding sites. Counts made in Poole Harbour do not include those feeding inland and the overall number in the Poole Basin is likely to be much higher than just the harbour count. Only in hard weather is the entire population likely to be present in and around the harbour. The same will apply throughout the study area. At other coastal sites, rather few birds occur. For instance, the peak at Christchurch Harbour in 1988 was only 15 birds (September). More than 100 birds feed between Hurst and Lymington in fields and on the adjacent saltmarshes.

Redshank

The breeding population of redshank in Poole Harbour is estimated at 100 pairs and the harbour is the premier site in Dorset. The winter peak within the harbour is of national

importance (Table 3), and has exceeded the level for international importance; 1997 were recorded in February 1989. Birds feed throughout the harbour area, but particularly in Holes Bay, Lychett, Middlebere and Holton Heath/Wareham Channel. Up to one hundred or more are found in Christchurch and Newton Harbours in most winters.

Other species of waders

Several other species are recorded regularly on passage or in winter, but mostly only in small numbers. These include lapwing; knot; sanderling; little stint; curlew; sandpiper; purple sandpiper; bar-tailed godwit; ruff; snipe; greenshank; spotted redshank and turnstone.

This incubating redshank
was photographed on a saltmarsh in Poole harbour.
(Arthur Gilpin/NHPA).

Seabirds

Seabirds

Cliff-breeding seabird colonies are found between Durlston Head and St. Alban's, at Handfast Point-Ballard Down and between the Needles and Freshwater on the Isle of Wight.

Seabirds are present at these sites from February to September. As well as the cliff-nesting species, gulls and terns nest on shingle beaches, islands and saltmarshes in a number of areas.

All counts refer to the 1990 breeding season unless stated otherwise.

Fulmar

Small numbers of pairs of fulmars breed between Durlston Head and St. Alban's (12); Handfast Point (3) and at and around the Needles (12). This species is a relatively recent colonist to English Channel coasts and numbers are likely to increase in the future. Fulmars return to the breeding cliffs in February and remain until September. Offshore surveys found that fulmars were absent in the mid-winter period, but increased in number in March (Table 8). The few breeding and non-breeding birds found in the area are regularly on the sea below the cliffs in summer although fulmars can feed far offshore.

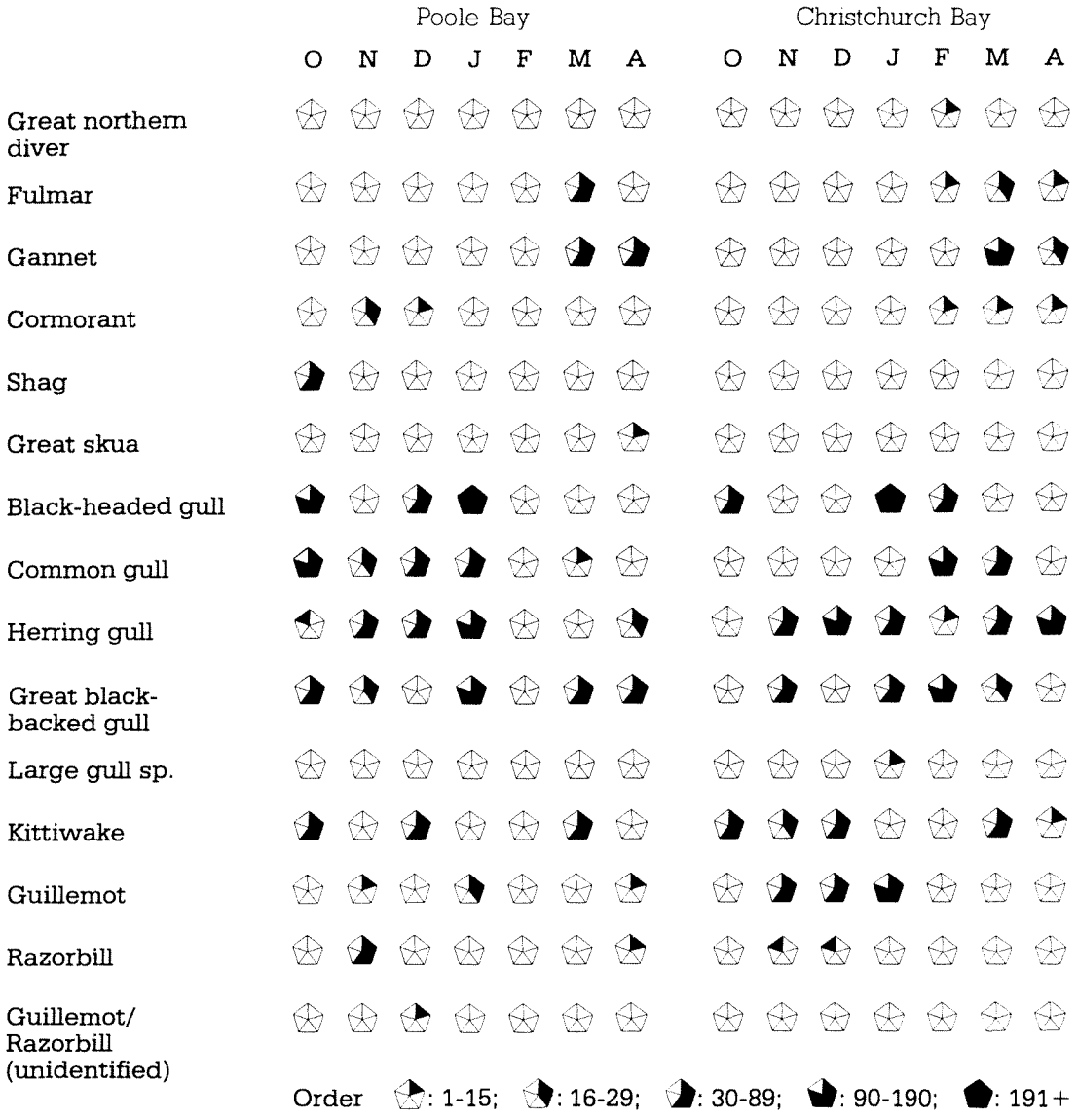
Table 7.

Maximum land-based winter counts between Durlston Head and Milford on Sea, 1989/90: seabirds.

	Durlston Bay	Swanage Bay	Studland Bay	Shell Bay*	Poole Harbour	Poole Bay	Christchurch Harbour	Christchurch Bay
Fulmar	5	17	2	0	0	1	0	0
Gannet	0	0	2	0	0	0	0	0
Cormorant	1	17	18	6	395+*	33	74	16
Shag	12	37	40	12	106+*	34	1	18
Little gull	0	0	0	0	0	8	15	0
Black-headed gull	60	730	108	29	n/c	910	n/c	1204
Common gull	4	25	42	5	n/c	10	n/c	33
Lesser black-backed gull	0	2	3	0	n/c	1	n/c	2
Herring gull	43	70	150	1	n/c	195	n/c	184
Great black-backed gull	2	22	10	2	n/c	27	n/c	35
Kittiwake	30	1	1	0	0	1	0	1
Sandwich tern	0	4	5	5	n/c	10	6	5
Guillemot	1	2	3	1	0	3	0	0
Razorbill	1	5	4	0	0	18	0	0

* Count of birds leaving Poole Harbour.
n/c = no count.

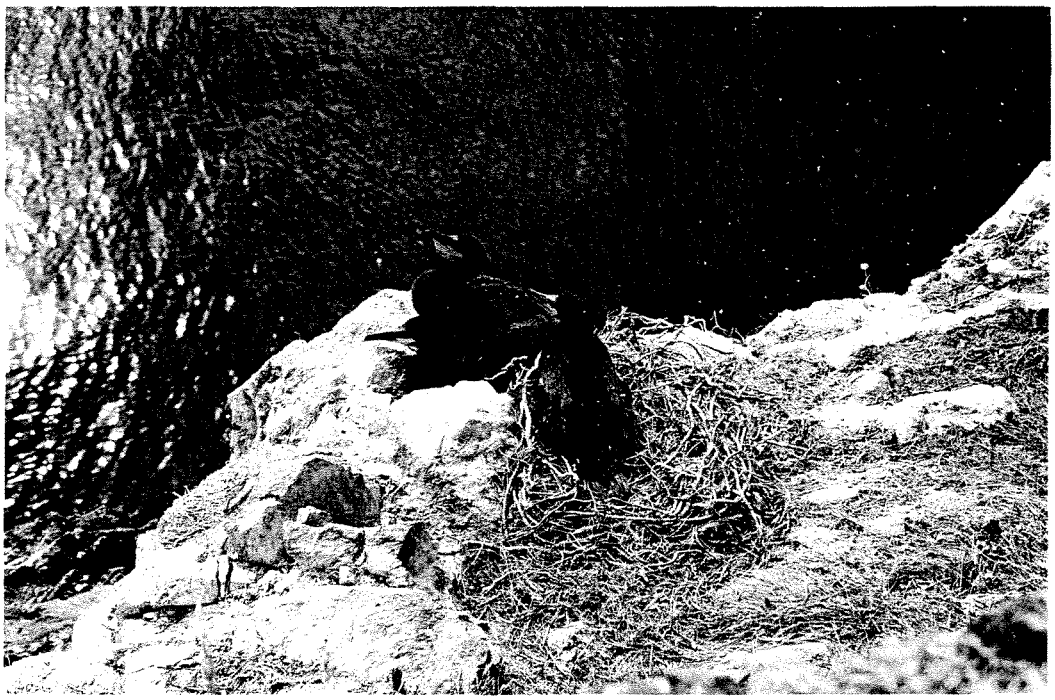
Table 8.
Relative abundance of seabirds offshore, October 1989 to April 1990 (higher estimated monthly count given).



See annexes for complete set of counts of offshore observations.

Cormorant

There are three local colonies of cormorants, at Gad Cliff (west of Kimmeridge) and Ballard Down both in Dorset, with 107 and 168 pairs respectively, and at Freshwater on the Isle of Wight which held 300-400 pairs in 1989. These colonies account for more than half of the breeding cormorants along the northern coast of the English Channel. None breed further east than the Isle of Wight. Numbers of breeding pairs at Ballard Down and on the Isle of Wight have increased in the last decade, but the number breeding at Gad Cliff has remained stable. The numbers found in Poole Harbour in winter have also increased. In the winter months, large numbers of birds feed in the two harbour areas, many of which probably derive from the local breeding population. Over 400 are recorded regularly in Poole Harbour (record count of 615 in winter 1988/89) with a peak of 100-150 in Christchurch Harbour each winter. Fewer birds were counted on the coastal or offshore surveys (Tables 7 and 8).



Cormorants are a characteristic and familiar bird of the east Dorset coast.
(Simon Aspinall).

Cormorants leave Poole Harbour at dusk to roost between Handfast and Ballard Points (Table 4). Numbers flighting out declined markedly during the winter of 1989/90 from a maximum of 395— in mid-November and also decreased on the open coast. Cormorants leave Christchurch Harbour toward dusk and head south-east to roost on the Needles and on the cliffs between Main Beach and Freshwater on the Isle of Wight. Individuals that feed further east on the Isle of Wight also roost here together with birds from the mainland between Christchurch and Lymington. A few birds leave Christchurch Harbour northwards at dusk to roost in a tree further up the Avon valley. Breeding birds still mostly flight to the harbours to feed in summer where they join a number of immature and non-breeding birds. Few birds feed on the open coast apart from in the western parts of Poole Bay and off Studland.

Cormorants were rarely encountered offshore other than individuals flying from their roost sites to feeding areas, or vice versa, in the shallower coastal waters and harbours.

Shag

Shags, unlike cormorants, are strictly marine at all times of the year. Over a hundred assemble in Poole Harbour from the early winter onward; a peak count of 106 for the winter of 1989/90 (Table 7) was made there in November and again in January. Those found on the open coast away from Poole Harbour were mostly present off rocky coasts, for instance off Handfast Point, the Pinnacles and Hengistbury Head (Table 7). Very few were seen further offshore (Table 8). Up to 100 roost with cormorants between Handfast and Ballard Points. Others roost, mostly in small groups, between Durlston and St. Alban's Heads.

In 1990 a minimum of 43 pairs bred between Durlston Head and St. Alban's, and there were 4 pairs at Freshwater, Isle of Wight, in 1989. There has been a slight decrease since the 1970s. None breed further east than the Isle of Wight. The breeding population along the northern coast of the English Channel is approximately 2300 pairs, most of which are on the Scilly Isles.

As with cormorants, offshore records were negligible but groups and individuals were regularly noted feeding close inshore during the land-based surveys. The largest numbers were found in the early winter period mostly in western parts of the area. In summer, shags fed mostly in the deeper waters along the rocky coast of Purbeck and also up to 3 kilometres offshore.

Black-headed gull

A total of over 3000 pairs of black-headed gulls breed at three sites in Poole Harbour. Several thousand pairs (up to 7000 annually) breed between Hurst and Lymington with an additional 800 pairs (1988) at Newtown marshes, Isle of Wight. Another 7500 pairs breed further east in the Solent, mainly at Needs Ore Point. Over 28,000 pairs breed on the Channel coast of Britain, the majority of these on Hampshire and Kent saltmarshes.

Night-time winter roosts of several thousand gulls of a variety of species, but mostly black-headed, occur in both harbours in the study area (Figure 6). Birds arrive at these nocturnal gatherings in fading light, often in mixed flocks making accurate counts of separate species impossible. These roosts hold up to 20,000 and 5000 in total in Poole and Christchurch Harbours respectively. Black-headed gulls will also roost on the sea off Mudeford instead of within Christchurch Harbour with about 5000 here in January and February 1990. During the day, black-headed gulls feed inland as well as throughout the harbours and along the open coast (Table 7), returning to roost at night. Relatively few were seen at sea, these were mostly associated with fishing vessels, and most were seen in mid-winter (Table 8). In summer birds continue to feed along the coastal fringe and littoral zone. The outfalls at Peveril Point and Solent Meads attract feeding birds year round. The harbours continue to be important in the summer months along with fields inland.

This species was uncommon far offshore in winter; migrating birds were occasionally encountered but this passage is far more evident from land. Nearshore numbers in 1989/90 were highest during and after wet and windy weather, particularly following strong gales.

Common gull

More than 10,000 common gulls have been recorded at the main winter night-time roost in Poole Harbour. During the day, most birds feed inland but, as with the previous species, return toward dusk. Sprat shoals in Poole Bay can attract thousands of common gulls, for instance 3000 in December 1968. At most, only a few hundred roost in Christchurch Harbour.

Moderate numbers of birds were seen in Poole Bay in the early winter (Table 8), and a few were seen offshore in Christchurch Bay in the late winter; the latter were probably on migration. Nearly all common gull records in mid-winter were from the coastal fringe with most birds feeding in fields rather than along the shore. None remain to breed.

Very large numbers of black-headed gulls breed in Dorset and Hampshire.
(E. & D. Hosking).

Lesser black-backed gull

One or two pairs of lesser black-backed gulls attempt to breed each year. Small numbers pass through the area on passage or over winter. Over 4000 pairs breed on the northern English Channel coast, almost all are on the Isles of Scilly.

Herring gull

A total of approximately 75 pairs of herring gulls breed along the mainland coast and, with the exception of Brownsea Island in Poole Harbour, all are on cliff sites. The cliffs on the Isle of Wight between Freshwater and the Needles held only about 60 pairs in 1988, having declined from several hundred pairs in the 1970s. Over 9000 pairs breed along the English south coast, mostly in south Devon and Cornwall.

Roosts of several thousand occur but with nowhere near the magnitude or regularity achieved by either black-headed or common gull. Night-time roosts occur at Old Harry stacks and on the Purbeck cliffs in winter. Interestingly this species leaves Poole Harbour to roost in Poole Bay off Branksome by night, whereas those off Christchurch Harbour roost there by night.

Herring gulls were regular offshore throughout the winter (Table 8) being attracted to vessels of any description. Numbers offshore were highest in mid-winter and it was also one of the commoner species seen on the shore-based survey (Table 7). Herring gulls are primarily scavengers and feed regularly on human refuse. They visit fishing boats, car parks and rubbish tips, etc. at all times of year.

Great black-backed gull

Thirteen pairs of great black-backed gulls nested between the Needles and Freshwater in 1986, with only one or two elsewhere in the area. Over 1500 pairs breed between Kent and the Isles of Scilly, mostly in the latter together with west Cornwall. A winter roost of between 100 and 300 occurs in Christchurch Harbour with relatively few at any other site. This scavenging species was regular offshore in small numbers throughout the survey period.

Kittiwake

The Durlston Head kittiwake colony held 86 pairs in 1990, with a total of 165 pairs between Durlston Head and St. Alban's. The breeding population of the Purbeck coast has declined from the 1970s and early 1980s. Kittiwakes formerly bred at Main Bench on the Isle of Wight; the population fell from 90 pairs in 1977 to 8 in 1982 with none since. The population of the south coast of England has however increased dramatically in the last decade. Nearly 10,000 pairs now breed in colonies both to the east and to the west of Dorset, in Cornwall, Devon and Kent.

This species is more marine than other gulls and many more were seen in the offshore survey than near the shore (Tables 7 and 8). Immature birds were more common offshore than adults until March (although none at all were seen in January or February), when the latter also reappeared at their breeding sites. This species did not feed in the northern half of Poole Bay in summer; the feeding areas remain to be found.

Kittiwake colonies are present at Durlston and on cliffs to the west; offshore waters of Poole and Christchurch Bays are used by low numbers during the winter.
(E. & D. Hosking).

Sandwich tern*

More than 90 pairs of Sandwich tern bred at Brownsea in 1989. The number of pairs breeding here varies widely from year to year, as few as 25 pairs were present in 1987 but in the previous year, 103 pairs bred. When breeding numbers are low on Brownsea, Sandwich terns are probably at an alternative site within the harbour. Poole Harbour is one of only three sites where the species currently breeds in Dorset and is easily the most important. Fifty or more pairs have bred to the east of Hurst in recent years with 70 pairs counted in 1988. A further 150+ pairs (1990) breed at Needs Ore Point. One or two pairs have attempted to breed at Newtown, Isle of Wight. These colonies are out of a total of about 950 pairs breeding between Cornwall and Kent. The largest terneries and most birds are in Kent. All terns are summer visitors to the area, none remaining in winter. A few were seen during the nearshore survey which ended in April 1990. Birds which breed on Brownsea Island feed mostly over Hook Sand or within a kilometre of the shore and were regularly observed returning there with sandeels *(Ammodytes/Hyperoplus sp.)* caught at the former. A number of non-breeding birds also spend the summer in the area.

Common tern

Up to 110 pairs (1989) of common terns have bred at Brownsea, the largest number at any of the three Dorset colonies. The colony between Hurst and Lymington held 39 pairs in 1988. A further 150 pairs breed at Needs Ore Point. These colonies represent about 20% of the total breeding population on the English south coast; Hampshire supports the largest numbers. Hook Sand is a particularly important feeding area for this species in summer and birds were often seen catching small sandeels. Common terns also fed in Poole Harbour and a few hunted close to the shores of Poole Bay.

Little tern*

Although no little terns breed in east Dorset, an important assemblage of up to 100 non-breeding birds occurs in Christchurch Harbour in early summer. These birds mostly feed within the harbour. One long established colony is present between Hurst and Lymington where 67 pairs attempted to breed in 1988. Up to seventy-five pairs breed at Needs Ore Point (36 pairs in 1990). This is out of a total of about 500 pairs breeding between Dorset and Kent. None breed on the English south coast to the west of Dorset.

Sandwich tern. The colony on Brownsea Island uses Hook Sand as a feeding area in summer. *(E & D. Hosking).*

Guillemot

Durlston Head has a colony of 257 guillemots, part of a total of 411 birds counted between Durlston and St. Alban's Head in 1990. The cliffs between the Needles and Freshwater held 200 birds in 1989. Breeding numbers in Purbeck have changed little since 1969 but have declined on the Isle of Wight, particularly in recent years. Birds are present at the breeding colonies from early February until early August. These breeding birds are the most easterly on the southern English coast and account for about 12.5% of the entire south coast population.

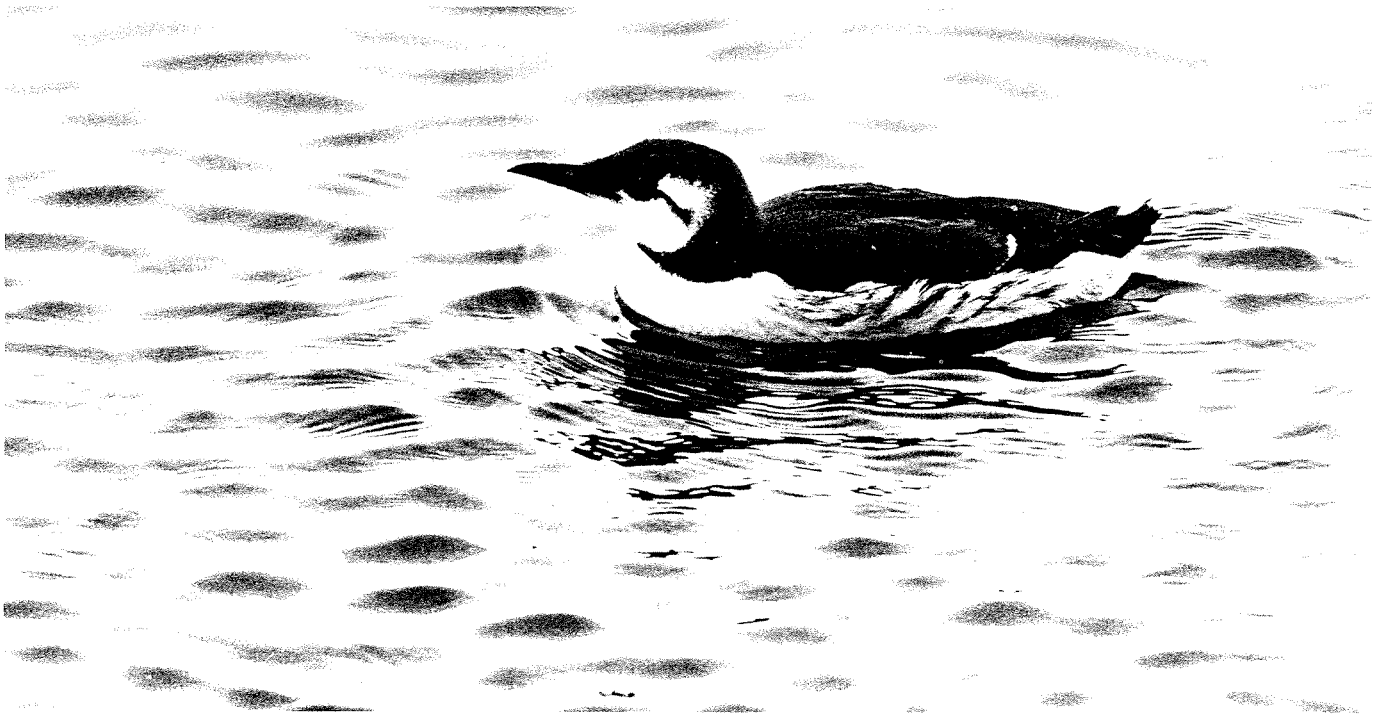
In winter, fishermen have reported 'large numbers' feeding on sprats in Poole Bay but no systematic counts had been undertaken offshore prior to the 1989/90 survey (Table 8). It appears, however, that numbers vary widely between winters with virtually none arriving in some years (see Discussion). Nearshore numbers were less than 10 in all months of the 1989/90 winter. Offshore numbers of guillemots were highest in November, December and January; these mostly being found over the Dolphin Bank in Christchurch Bay.

The summer feeding areas were not located but no birds were recorded in Poole Bay north of a line from Handfast Point to the Needles, Isle of Wight. Adult birds departed from the cliffs at Durlston Head to the south, east and west. There is a possibility that adults feed as far away as Lyme Bay since birds carrying fish have been seen flying east at Portland Bill in June, and no colonies exist between there and St. Alban's Head.

Razorbill

Razorbills breed between Durlston Head and St. Alban's Head (17 birds in 1990) and between the Needles and Freshwater (4 birds in 1989). Individuals are present on the cliffs from late February until mid-August. The numbers in both breeding areas have declined from the 1970s. On the mainland none breeds further east than Dorset. The south coast population has nearly 2200 birds, most of which are in Devon. As with guillemots, 'large numbers' have apparently been attracted to sprat shoals in Poole Bay in winter. Variation between years is clearly normal. Extremely low numbers of birds were recorded offshore in the early winter period (Table 8). Nearshore counts found a maximum of 18 in Poole Bay in April. None were seen near to the shore in Christchurch Bay.

None were recorded offshore in Poole Bay in June or July, although several birds were seen feeding close to the Durlston cliffs during the summer.



Guillemot in winter plumage. The further east nesting birds in the English Channel occur at the western end of the Isle of Wight.
(C. H. Gomersall/RSPB).

Seabirds

Puffin

A very few puffins breed in east Dorset. Just 16 birds were located between Durlston Head and St. Alban's in 1990. They also formerly bred in 'large numbers' on the Isle of Wight near Freshwater but are now probably extinct there as a breeding species. Only just over 400 birds now breed on the south coast, those in Purbeck being the most easterly population. In the summer puffins were found within 2 kilometres of the shore feeding either side of the St. Alban's race.

Other seabird species

Gannets are seen every month of the year but are most numerous in late summer and autumn. Sizeable fishing parties hunting for mackerel, are regular offshore and occasionally off Handfast Point and over Hook Sand. Large numbers were observed moving east in March and April 1990. A number of other species are recorded regularly from headlands during onshore winds particularly in summer and autumn, these include shearwaters, petrels and skuas.

Puffins retain literally a toehold as a breeding species in Purbeck, with just a few found on the cliffs west of Durlston Head.
(Stephen Dalton/NHPA).

Beached birds

Table 9.

Numbers of auks and gulls found by the Beached Birds Survey, 1972 to 1981.

	East Dorset	Southern England	National
Auks	112	473	5260
% oiled	94	86	65
Gulls	63	294	6682
% oiled	43	39	13
Total distance surveyed (km)	1175	2365	21,253
Oiled birds/km	0.11	0.22	0.20

Beached birds

A comparison of the results of the national Beached Birds Survey (organised by the RSPB) from east Dorset, southern England (Kent to Cornwall including east Dorset) and nationally, shows that relatively few birds were found on Dorset beaches (Table 9). These results cover the years 1972-1981 (the survey stopped shortly after this). The survey involved the collection of sick, dead or dying birds from beaches in five months of each winter. Birds were recorded as oiled or clean. In most instances, moderately and heavily oiled birds will have succumbed either from ingesting oil or from hypothermia.

The results show that the numbers of birds found oiled per kilometre of beach searched was only half the regional and national averages, the percentages of both auks and gulls found dead or dying and contaminated with oil was considerably higher in east Dorset than elsewhere. Although the source of the contamination was not identified in any instance the results demonstrate the vulnerability of seabirds in the immediate area. Most deaths appeared to be the direct result of oiling. The actual number of birds found per kilometre of beach may not be directly proportional to numbers dying offshore, as corpses tend to drift with the wind and tide. However, these results provide a baseline that might be useful in demonstrating any effect, or lack of effect, of future offshore developments.

Discussion

Table 10.

Vulnerability to oil pollution of species of birds in the study area.

Very high	High	Moderate
Divers (all species)	Black-headed gull	Fulmar
Grebes (all species)	Common gull	Gannet
Cormorant	Herring gull	Little gull
Shag	Kittiwake	Lesser black-backed gull
Eider	Little tern	Great black-backed gull
Common scoter	Wildfowl	Sandwich tern
Red-breasted merganser	Waders	Common tern
Goldeneye		
Shelduck		
Guillemot		
Razorbill		
Puffin		

Within the study area, the wintering populations of black-tailed godwit and shelduck are of both national and international importance. A further twelve species of wildfowl and waders are nationally important. These are mute swan, gadwall, pochard, scaup, goldeneye, red-breasted merganser, avocet, grey plover, dunlin, curlew, whimbrel and redshank. Cormorants and black-necked grebes are also present in nationally important numbers.

In addition to the breeding and the wintering populations of birds, the study area is important for a number of species on migration in spring and autumn. Some migrant species may fly through the area without stopping, or stop only briefly. Examples are whimbrel, shearwaters and skuas. These birds on migration are normally at low risk of being affected by pollution in the study area. However, adverse weather may cause birds to break their journey. Several other species use the area for feeding in autumn and spring during their annual travels to or from their breeding grounds.

Numbers of birds using an area vary between years for a variety of reasons. Those of wildfowl in particular, will normally be lower in Britain in a mild winter than in a severe one. If mudflats and coastal areas become frozen in the north and east of Britain, there is usually a large influx of birds to unfrozen parts of south-west Britain. These hard weather movements occur also on a local scale, as for example when inland sites freeze. Estuarine sites assume greater importance at these times. Counts from Poole and Christchurch Harbours show that hard weather affects numbers of wintering grebes, wildfowl and wader species but not seabirds.

Seabird numbers outside the breeding season are largely related to the presence or absence and availability of their prey. Surface-feeding species are virtually absent from the study area in the winter months, with the exception of those gull species which scavenge at sea or inland. Numbers of diving species such as guillemots and razorbills are likely to indicate the presence or absence of fish prey; although birds will mostly be absent when prey is not available, the converse is not necessarily true. Sprats are known to be a particularly important prey item in the winter months.

Fisheries data supplied by the Ministry of Agriculture, Fisheries and Food show that sprat landings from Poole Bay have fluctuated widely over the past twenty years. These statistics may not reflect abundance accurately as both bad weather and marketing problems have prevented exploitation of the shoals in some years. Poole Bay lies between fisheries exploiting two separate sprat populations, one in Lyme Bay and westwards, the other in the eastern English Channel. It appears likely that sprats arriving in Poole Bay come from a westwards extension of the eastern English Channel population. This extension has occurred on average about one year in three or four, and accounts from local fishermen suggest that increased numbers of auks occur in those winters when large numbers of sprat are present. A study of several years duration would be needed to determine any relationship between numbers of sprat and auks. The sprat fishery in Lyme Bay has been maintained for the past forty years due to the presence of both viable shoals and a healthy market. Anecdotal evidence indicates that guillemots and razorbills are found in large numbers in Lyme Bay every winter although their origin is unknown.

Vulnerability to pollution

The coasts of east Dorset and adjacent areas of west Hampshire and the Isle of Wight support important populations of wildfowl, waders and seabirds. All of these populations are potentially at risk from oil pollution, development and disturbance. However, the relative vulnerability of different species to oil pollution varies between species (Table 10). Those species spending a substantial amount of time on the surface of the sea are clearly at greatest risk. The vulnerability of a species is further increased if it habitually gathers in a single or a few restricted areas, for example to roost or feed. Special account must also be taken of nationally or internationally rare species. Many species occurring regularly in the area are included in more than one of these categories.

Species that feed from the air, and spend relatively little time in contact with the sea are at lesser risk. Shorebirds are also at less direct risk from oil pollution although their feeding areas and prey are at risk. The loss of feeding areas vital to the survival of wildfowl and waders will have a significant impact when alternative feeding areas do not exist. The results of an oil spill of nearly 62,000 gallons of fuel oil which occurred in Poole Harbour in January 1961 illustrates the potential damage to birds. A minimum of 500 birds were oiled, of which at least a third died.

Contaminated birds included 18 divers, 40 grebes, 103 ducks and swans, 191 waders (133 were partly-oiled, but live, oystercatchers) and 103 gulls.

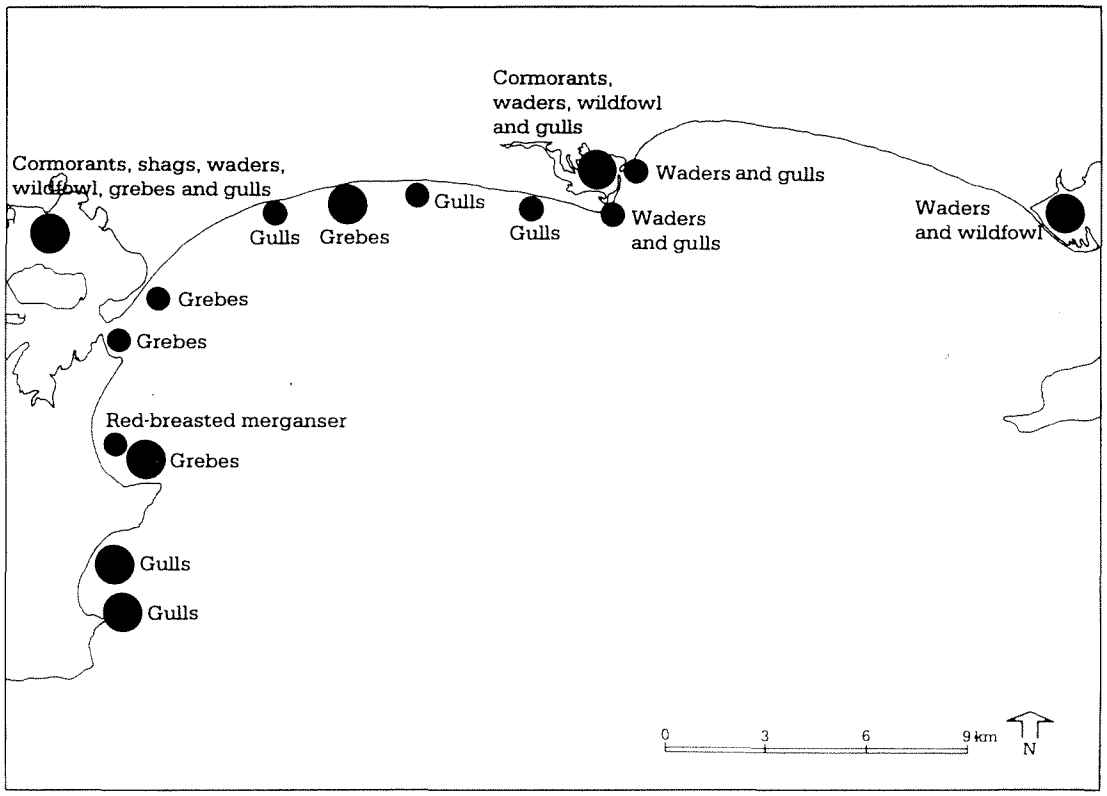


Figure 5. Location of feeding birds and/or daytime concentrations, October 1989 to April 1990 inclusive.

● Major concentration (>500 Birds) or significant population of vulnerable species.

● Minor concentration.

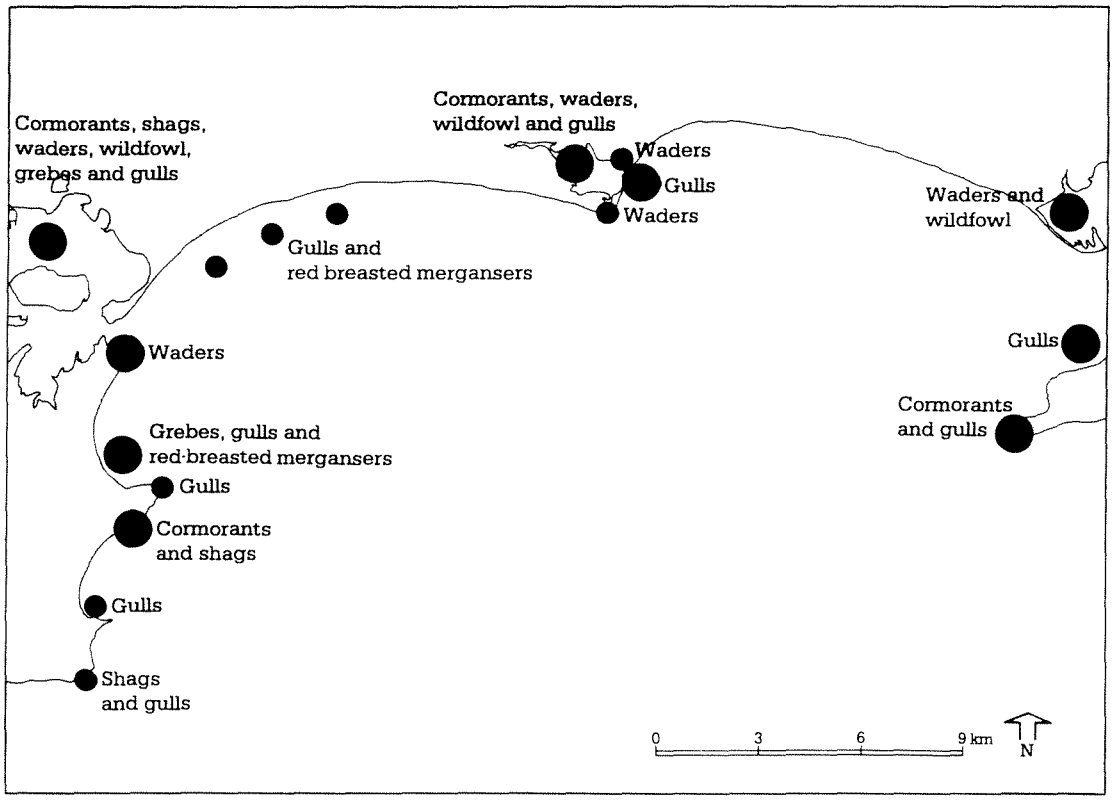


Figure 6. Location of birds at high tide and/or night time roosts, October 1989 to April 1990 inclusive.

Major roost (>500 birds) or significant population of vulnerable species

Minor roost

In compiling contingency plans for the conservation and protection of various bird species, a large number of factors need to be taken into account. These include the potential size of the spill, the type of oil, the location of the spill, the time of year, the time of day, weather and tidal conditions, likelihood of containment and conservation priorities. Figures 5 and 6 provide a summary of the important feeding and roosting areas in winter of different species. Figure 7 shows the location of seabird colonies and their feeding areas in summer. Various parts of the study area are important for different species groups at several times of the year. For instance the cliffs are most important for breeding seabirds between February and September and the harbours are important for wildfowl and waders from October to March with passage birds in April/May and August/September. The vulnerability of the sections of the study area to oil pollution is summarised in Figure 8. In terms of priority for protection, Poole Harbour is the most important area at all times of the year.

Studland Bay is important in winter; Hook Sand is important in summer. Christchurch Harbour holds vulnerable birds in summer and autumn and the colonies at Durlston Head, at Handfast Point/ Ballard Down, in Poole Harbour, in the Solent and on the Isle of Wight are vulnerable from February or March until August or September.

On the basis of the 1989/90 offshore survey, both Poole Bay and Christchurch Bay appear to be relatively unimportant for seabirds in the winter months. However, it should be stressed that the winter of 1989/90 may not be representative of all years, and there is evidence that when sprat shoals arrive in the area, a large number of seabirds may be present as well. This is particularly true for auks which are the species most vulnerable to oil pollution. Equally, the area assumes far greater importance for many other coastal species of wildfowl and wader in severe winters.

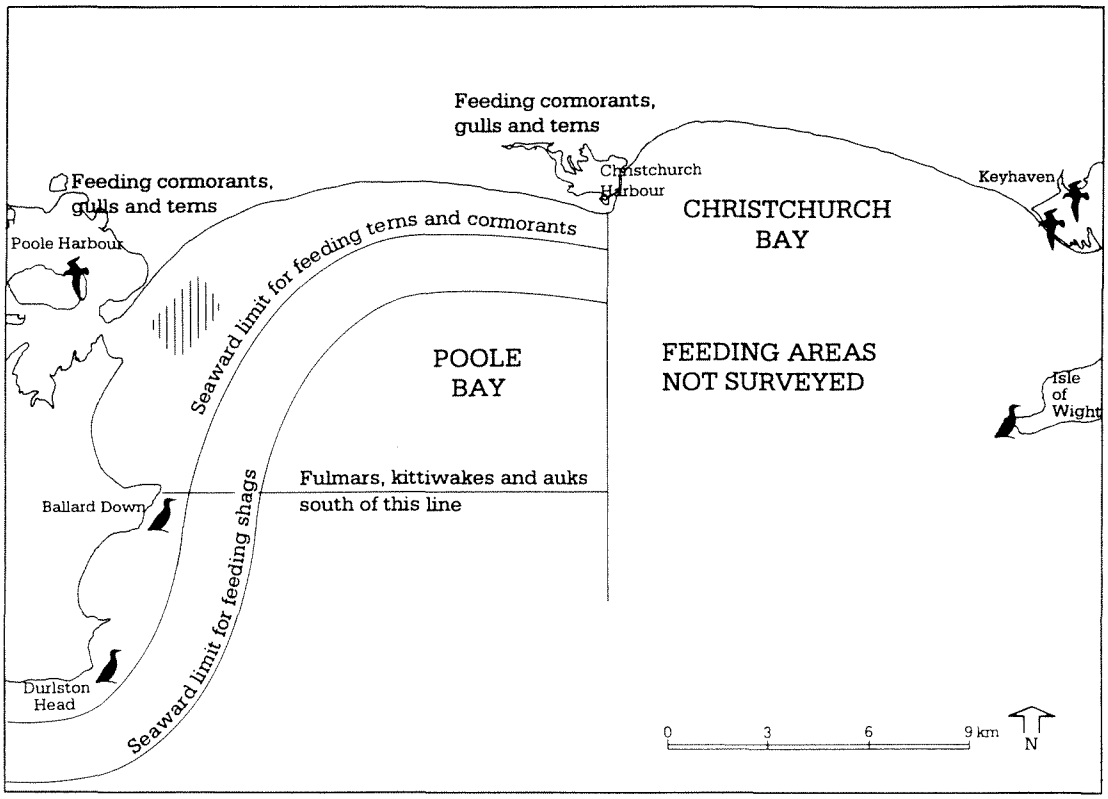


Figure 7. Location of seabird breeding colonies and their summer feeding areas.

cliff breeding colony.

beach or saltmarsh breeding colony.

main feeding area for Sandwich and common terns.

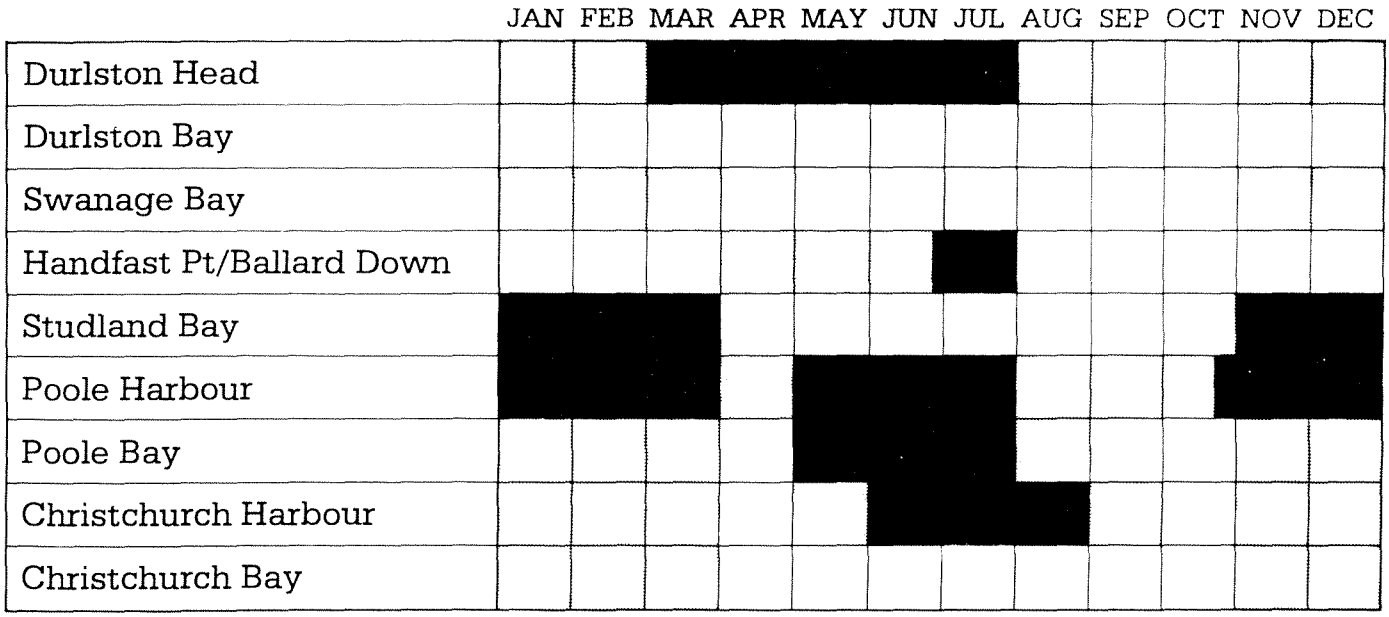
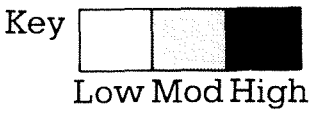


Figure 8. Summary of the relative importance of different parts of the study area throughout the year for birds vulnerable to oil pollution.



Apart from a raised risk of oil pollution, offshore developments in Poole Bay might affect birdlife in other ways. Without careful management, additional disturbance of breeding, feeding or roosting birds by various activities such as boat traffic, low-flying aircraft, noise and lighting might occur. The BP development options should take into consideration any activity which could raise the amount of sediment in suspension or increase that which settles onto the seabed thereby smothering the marine life. Sandeels, fed on by a variety of seabirds, live in clean sandy sediments; any deterioration in their habitat could subsequently affect seabirds. Similarly an increase of sediment in suspension may prevent feeding birds such as terns from actually locating prey. Any offshore development should take such indirect effects into account during planning and later implementation.

On the positive side, any oil-related developments in Poole Bay will undoubtedly require increased stockpiles of equipment and chemicals for combating oil pollution. This will, if made available, improve the potential response to any non-development related oil pollution such as from tankers in the English Channel.

The results of the 1989/90 survey, together with the available data from previous ornithological studies, confirm in particular the value of the western part of the area for birds. The conservation of several species in these areas is an international requirement.

Recommendations

1. The inshore nature of the proposed developments beside important areas for birds require that pollution prevention procedures should be as stringent as possible. The following recommendations assume a full anti-pollution response team is available in line with the Department of Energy's 'Essential Elements' for production close to environmentally sensitive areas.

2. The emergency response plan should emphasise the internationally important nature of the wildlife in Poole Harbour throughout the year, and the high importance of Hook Sand in summer and Studland Bay in winter. Other areas are generally of lower importance to birds, but note should be taken of the possibility that great crested grebes or red-breasted mergansers may be present on the water in north-western Poole Bay in winter. Large numbers of young cormorants are present on the water off Old Harry in late June and throughout July. Guillemots and razorbills spend a considerable amount of time on the sea below the Durlston Head cliffs in summer. All response staff should be fully briefed on these wildlife interests.

3. In the event of an oil spill, it is essential that all possible measures be taken to contain it at source. The proximity of the birds (and the amenity beaches) may require that most equipment be stored on site or on a nearby dedicated ship.

4. An ornithologist should advise on all oil spill responses, whether actual or exercise. In the event of the former, birds must be kept away from contaminated areas and not disturbed from uncontaminated areas. A mechanism should be found whereby wildfowling, boating and other recreation activities could be legitimately suspended or controlled at such times.

5. Considerably increased numbers of auks may be present in Poole Bay if sprat shoals arrive. Oil spill responses should be enhanced at these times.

6. From a wildlife point of view, the timing of any operations which might raise the risk of oil spill should preferably occur during the spring or autumn as least birds are at risk at this time.

7. Disturbance of birds should be kept to a minimum at all stages of any future development. The possibility of BP constructing an island in Poole Bay should not jeopardise the future of Hook Sand, the main feeding area of Sandwich and common terns. Careful consideration should also be taken to prevent an increase in sediment in suspension as this would prevent terns from fishing successfully. Installation of pipelines from any offshore construction should again be carried out in spring or autumn if possible.

8. A survey of beached birds could be restarted in order to demonstrate any effect of new developments. Such a survey could be carried out by one person or via one of the local ornithological organisations.

9. Monitoring of wintering and passage wildfowl and waders in Poole Harbour and of grebes in Studland Bay should continue. Red-breasted mergansers should be observed during coming winters to see whether they continue to roost in the harbour rather than in Poole Bay.

10. The offshore numbers of seabirds in the winter of 1989/90 may not have been typical of other years and future monitoring surveys should be made. Three or four boat surveys each winter would probably be sufficient to establish the presence or absence of any vulnerable concentrations of birds.

Further reading and main additional sources of information

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Appendix 1. Scientific names of species mentioned in the text

Red-throated diver	*Gavia stellata*
Black-throated diver	*Gavia arctica*
Great northern diver	*Gavia immer*
Little grebe	*Tachybaptus ruficollis*
Great crested grebe	*Podiceps cristatus*
Red-necked grebe	*Podiceps grisegena*
Slavonian grebe	*Podiceps auritus*
Black-necked grebe	*Podiceps nigricollis*
Fulmar	*Fulmarus glacialis*
Gannet	*Sula bassana*
Cormorant	*Phalacrocorax carbo*
Shag	*Phalacrocorax aristotelis*
Grey heron	*Ardea cinerea*
Mute swan	*Cygnus olor*
Bewick's swan	*Cygnus columbianus*
Canada goose	*Branta canadensis*
Brent goose	*Branta bernicla*
Shelduck	*Tadorna tadorna*
Wigeon	*Anas penelope*
Gadwall	*Anas strepera*
Teal	*Anas crecca*
Mallard	*Anas platyrhynchos*
Pintail	*Anas acuta*
Garganey	*Anas querquedula*
Shoveler	*Anas clypeata*
Pochard	*Anas ferina*
Tufted duck	*Aythya fuligula*
Scaup	*Aythya marila*
Eider	*Somateria mollissima*
Long-tailed duck	*Clangula hyemalis*
Common scoter	*Melanitta nigra*
Velvet scoter	*Melanitta fusca*
Goldeneye	*Bucephala clangula*
Smew	*Mergus albellus*
Red-breasted merganser	*Mergus serrator*
Oystercatcher	*Haematopus ostralegus*
Avocet	*Recurvirostra avosetta*
Lapwing	*Vanellus vanellus*
Ringed plover	*Charadrius hiaticula*
Grey plover	*Pluvialis squatarola*
Knot	*Calidris canutus*
Sanderling	*Calidris alba*
Little stint	*Calidris minuta*
Curlew sandpiper	*Calidris ferruginea*
Purple sandpiper	*Calidris maritima*
Dunlin	*Calidris alpina*
Ruff	*Philomachus pugnax*
Snipe	*Gallinago gallinago*
Black-tailed godwit	*Limosa limosa*
Bar-tailed godwit	*Limosa lapponica*
Curlew	*Numenius arquata*
Whimbrel	*Numenius phaeopus*

Redshank	*Tringa totanus*
Greenshank	*Tringa nebulosa*
Spotted redshank	*Tringa erythropus*
Turnstone	*Arenaria interpres*
Great skua	*Stercorarius skua*
Little gull	*Larus minutus*
Black-headed gull	*Larus ridibundus*
Common gull	*Larus canus*
Lesser black-backed gull	*Larus fuscus*
Herring gull	*Larus argentatus*
Great black-backed gull	*Larus marinus*
Kittiwake	*Rissa tridactyla*
Guillemot	*Uria aalge*
Razorbill	*Alca torda*
Puffin	*Fratercula arctica*
Sandwich tern	*Sterna sandvicensis*
Common tern	*Sterna hirundo*
Little tern	*Sterna albifrons*

Appendix 2: Glossary of abbreviations and explanation of terms

AONB	Area of Outstanding Natural Beauty
GCR	Geological Conservation Review
LNR	Local Nature Reserve
NCR	Nature Conservation Review
NNR	National Nature Reserve
SPA	Special Protection Area (see EEC directive below)
SSSI	Site of Special Scientific Interest

National Importance: a site is considered as such if it regularly holds 1% of the estimated British wintering population of one species or subspecies of waterfowl. See appendix 3 for 1% levels.

International Importance: a site is considered as such if it regularly holds 1% of the individuals in a population of one species of waterfowl. Sites regularly holding a total of 20,000 or more waterfowl also qualify. See appendix 3 for 1% levels.

Ramsar site: so named after the Convention on Wetlands of International Importance which convened at Ramsar, Iran in 1971. The U.K. government is party to the convention. Poole Harbour is eligible for designation as a Ramsar site under the various criteria laid down.

EEC directive: The U.K. government is bound by the European Communities Council Directive of April 1979 on the Conservation of Wild Birds. Member states are required to take special measures to conserve the habitat of a number of listed rare or vulnerable species, several of which occur in the study area (see species accounts) as well as all other migratory species. Special measures include the designation of Special Protection Areas (SPAs). The government has indicated that sites proposed by NCC should be treated for planning purposes as if they have already been designated.

Appendix 3. Qualifying levels for national and international importance

(from: Salmon, Prys-Jones and Kirby, 1989)

Species	National	International
Great crested grebe	100	?
Mute swan	180	1800
Bewick's swan	70	170
European white-fronted goose	60	3000
Dark-bellied brent goose	900	1700
Shelduck	750	2500
Wigeon	2500	7500
Gadwall	50	120
Teal	1000	4000
Mallard	5000	20,000**
Pintail	250	700
Shoveler	90	400
Pochard	500	3500
Tufted duck	600	7500
Scaup	40*	1500
Eider	700	20,000**
Goldeneye	150	3000
Red-breasted merganser	100	1000
Coot	1000	15,000
Oystercatcher	2800	9000
Avocet	5*	700
Ringed plover	230	500
	(Passage: 300)	(Passage: 1000)
Grey plover	210	1500
Lapwing	10,000	20,000**
Knot	2200	3500
Sanderling	140	1000
	(Passage: 300)	(Passage: 500)
Purple sandpiper	160	500
Dunlin	4300	14,000
	(Passage: 2000)	
Ruff	15*	10,000
Snipe	?	10,000
Black-tailed godwit	50	700
Bar-tailed godwit	610	1000
Whimbrel	(Passage: 50)	700
Curlew	910	3500
Spotted redshank	2*	?
Redshank	750	1500
	(Passage: 1200)	
Greenshank	4*	?
Turnstone	450	700

* Where 1% of the British wintering population is less than 50 birds, 50 is normally used as a minimum qualifying level for national importance.

** A site regularly holding more than 20,000 waterfowl qualifies as internationally important by virtue of the absolute numbers.

The Nature Conservancy Council is the body responsible for advising Government on nature conservation in Great Britain. Its work includes the selection, establishment and management of National Nature Reserves; the selection of Marine Nature Reserves; the identification and notification of Sites of Special Scientific Interest; the provision of advice and dissemination of knowledge about nature conservation; and the support and conduct of research relevant to these functions.

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