

**JOINT  
NATURE  
CONSERVATION  
COMMITTEE**



# Birds of the Solent



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# Summary

This report summarises the results of a study of the Solent carried out between December 1990 and January 1992. The study was designed to locate important areas for waterfowl (wildfowl and waders) and seabirds breeding and visiting the Solent. A literature review provided most of the information on waterfowl in estuarine sites. Survey work in 1991 was mostly directed toward seabirds and concentrated on the non-estuarine shoreline and offshore areas.

The Solent holds nationally important populations of seventeen species of waterfowl, of which eight are

recognised as being of international importance. These are dark-bellied brent goose, shelduck, ringed and grey plover, dunlin, black-tailed and bar-tailed godwit and redshank. Most of these occur in the Hampshire harbours in winter. Ryde Sands and Southsea beach are the only non-estuarine sites regularly holding a nationally important concentration of any waterfowl species (sanderling). In addition the breeding colonies of cormorant, black-headed gull, Sandwich, common and little tern are nationally important. The cormorant population is nationally important both during the breeding and non-breeding seasons.



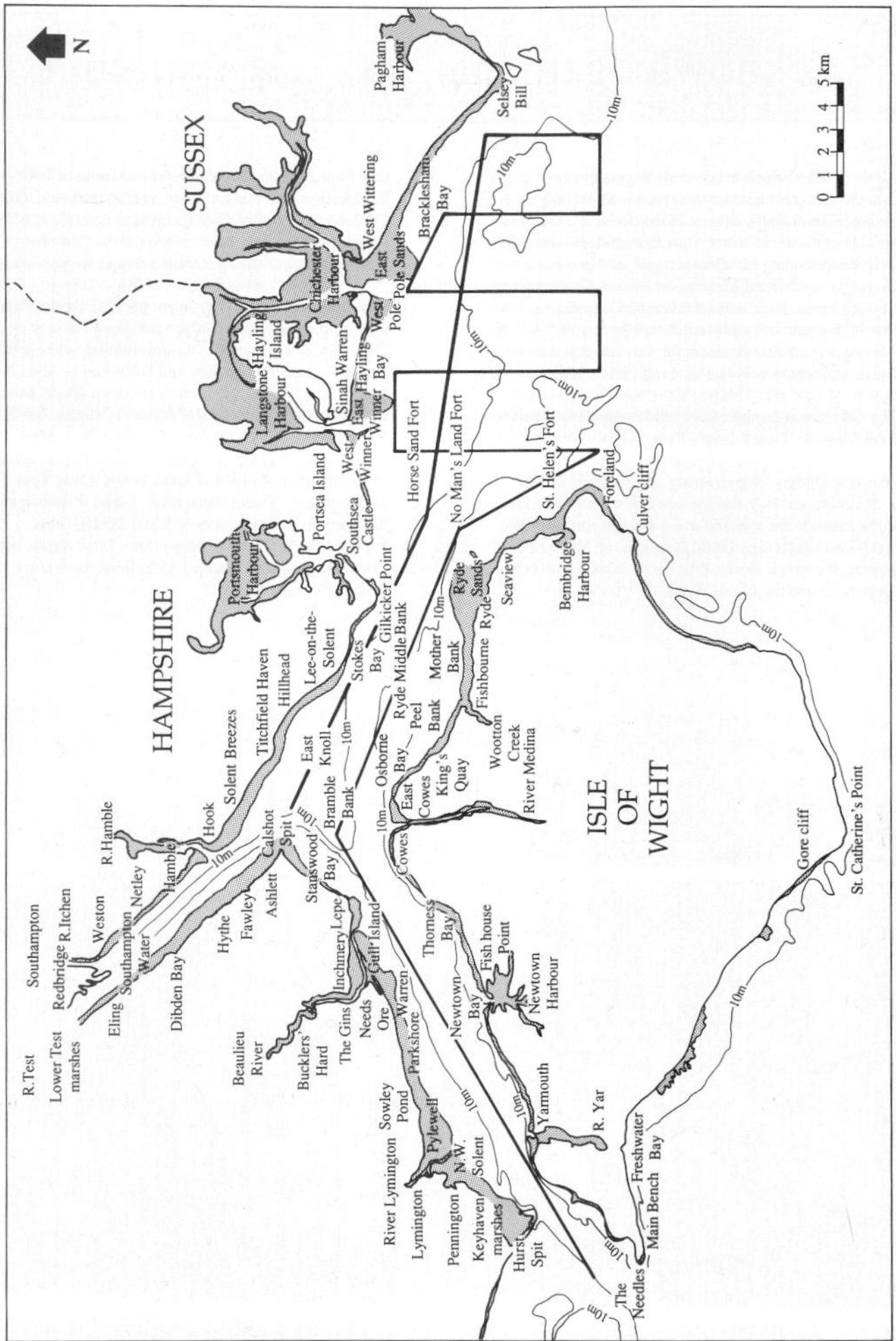
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Figure 1 The Solent showing offshore transect route, intertidal areas, submarine bathymetry and the main locations mentioned in the text



# Introduction

This report summarises the results of an ornithological study of the Solent. The area reviewed includes all intertidal areas, the littoral and nearshore zone and offshore waters from Hurst spit and The Needles in the west to Selsey Bill in the east (Figure 1). It has been produced by the Seabirds Team of the Joint Nature Conservation Committee. The study was commissioned and jointly funded by BP Exploration Operating Limited and Esso Petroleum Company Limited and was designed to document the year-round occurrence and distribution of all coastal waterfowl and seabirds and to assess the importance of different areas at different times of year to these birds.

Prior to this study the importance of the intertidal areas of the Solent to wildfowl and waders was already known. Some seventeen species of waterfowl occur in

nationally or internationally important numbers in one or more sites. Similarly the numbers of breeding seabirds are documented, with five of the species at least of national importance. However, prior to this study little was known of the occurrence, distribution and numbers of seabirds offshore. Even counts made from land or observations of the feeding and roosting behaviour of these species in the Solent were relatively sparse. In addition, the non-estuarine shoreline had been largely disregarded or only received sporadic attention from ornithologists.

The main aim of this study was thus to survey areas that had received relatively little attention in the past and to summarise the mass of information that was already in existence for other parts of the area.



# Methods

Information on bird numbers in estuarine sites relied on the data gathered during British Trust for Ornithology (BTO) and Wildfowl and Wetlands Trust (WWT) Birds of Estuaries Enquiry (BOEE) counts. All species of wildfowl and waders are counted once each month through the winter (September to March inclusive) under the BOEE scheme. At some sites counts have been carried out in all months of the year. The counts from the last five available years were analysed for each of the major sites on the Solent. Cormorants, grebes and coot are often included in counts but gulls are usually omitted. Most counts are of birds at high tide roosts. For analytical purposes the BTO divides the year up as follows; winter: November to March inclusive; spring: April to June and autumn: July to October. The WWT recognise the entire period of counts from September to March as winter and, due largely to the lack of counts, have not differentiated the other seasons. Seasonal use of the area varies between the different species and in some cases between sections of the population of a single species.

To complement counts of estuarine sites already made by the BOEE, all intertidal areas and inshore waters to about two kilometres from the shore along the open coast were counted, usually twice each month, from December 1990 to December 1991. Both day and night-time roosts and the principal feeding areas of many species were located in the course of these surveys. Night-time roosts were found by observing birds at dawn or dusk. All species were counted including those in the littoral zone, which often served as a roost site for gulls and waders at high tide. Numbers of birds pursuing different activities (feeding, roosting or flying) were recorded separately. The year was divided up into three parts; winter: November to April; summer: May to July and autumn: August to October. The counts themselves were made either from suitable elevated count positions or by walking along lengths of the shoreline.

All species were counted during nearshore surveys of the open coast. However it was not possible to visit all sites at all states of the tide on different tidal series in all months of the year. Any short-lived concentrations may have been missed as a result.

A boat survey, using the method of Tasker *et al.* (1984), of waters more than two kilometres from the land was completed twice each month (weather permitting) from January to December 1991 inclusive. At least one such survey was made every month. A standard series of north-south transects were followed on each occasion between Selsey and Bembridge with a middle line being taken through the main part of the Solent (Figure 1). A 12 metre motor cruiser which allowed an observation height of approximately 4 metres was used on each occasion. The boat travelled at a constant 14 knots (26 kilometres/hour) when on survey. Approximately 9% of the total sea area was surveyed in this way. Observations were also made from ferries crossing between Lymington and Yarmouth and Fishbourne and Portsmouth.

A variety of other additional surveys were made during the year. These included separate counts of all seabird colonies, counts of breeding wildfowl and waders and also of moulting wildfowl and waders. A single coordinated count of roosting gulls was made in January 1992.

A full assessment of the area would not have been possible without observations made by local ornithologists, both in 1991 and before. Much of this information was gleaned from the relevant county bird reports and various historical accounts but more was learned from informal conversation and discussion with observers in the field.

In the following accounts, Chichester, Langstone and Portsmouth Harbours are collectively referred to as the three large eastern harbours.



# The physical environment and general bird distribution

## Introduction

The Solent can be regarded as a single estuarine system. It is biologically rich and contains over 9000 hectares (ha) of intertidal sediment of which 6191 are mud flats, 729 are sand flats, 430 are ancient saltmarshes and 1710 are *Spartina* marshes, of which 650 ha are in an advanced state of degeneration (Tubbs 1990). *Spartina* began to invade intertidal areas, following hybridisation between the native *S. maritima* and *S. alterniflora* from North America, as recently as the late nineteenth century. The resulting sediment accretion formed elevated marshes at the expense of mud flats which, whilst reducing the feeding area for waders, provided nesting sites for seabirds. The estuary mud flats hold high densities of invertebrates which support large numbers of visiting waterfowl. Nutrient enrichment encourages a vigorous algal growth in the area, which provides suitable grazing for some wildfowl. There is a complex pattern of double tides resulting from water entering the Solent, initially from the west through the Hurst Narrows and later also from the east around the Isle of Wight. The flood tide lasts for about seven hours and stands for up to two. Seawater exits entirely westward on the ebb tide in about half this time. The tidal stream can reach 3.4 knots in places. The tidal range increases from west to east: in the western Solent the range is from 2.8 m on spring tides to 1.0 m on neap tides, whilst in the east the corresponding figures are

4.8 m and 1.5 m respectively. It has been estimated that the waters of the Solent take less than a week to flush (change) completely, thus ensuring a rapid and efficient redistribution and dilution of the nutrient and pollutant load entering the system. The mean salinity is reduced in the central part of the Solent, which receives the bulk of the freshwater entering the system.

The Solent boasts probably the largest recreational sailing fleet in the world, which together with continuous ferry services, cruise ship movements and commercial shipping, combine to make this one of the busiest seaways anywhere. Most large vessels enter and exit the area via the main channel to the east of the Isle of Wight.

The Solent is of national importance for seventeen species of wintering waterfowl, of which the populations of eight qualify as internationally important (see Appendix 2 for qualifying levels). Five species of seabird breed in nationally significant numbers in and around the Solent. Much of the Solent coast is recognised for its importance to nature conservation. There are a large number of Sites of Special Scientific Interest (SSSI); each is named in the appropriate following section. Following the Ramsar Convention and 1979 European Directive on the Conservation of Wild Birds respectively (see Appendix), Chichester and Langstone Harbours have already been designated as



A yacht passes through the Hurst narrows (Fort Albert beyond). The Solent has probably the largest recreational sailing fleet in the world.

B.Carter



The sands off West Wittering are an important feeding site for terns in summer and autumn.

Ramsar sites and Special Protection Areas (SPA). Southampton Water, the North-west Solent and Newtown Harbour together, are proposed as both a Ramsar site and SPA. In terms of the average peak count of waders for the last five winters, Langstone and Chichester Harbours were 11th and 15th respectively in a league table of estuaries counted for the BOEE, and the entire Solent complex, with an average of over 100,000 waders present in winter, is third in the U.K. behind the Wash and Morecambe Bay. The average number of wildfowl exceeds 50,000 annually, although this is relatively less important in a national context. There has been a trend of increasing numbers of most species of wildfowl in the Solent in recent years but waders have exhibited mixed fortunes, some species increasing whilst others have declined.

Although individual sites within the Solent may hold the bulk of the population of a particular species, the entire complex of interconnected harbours, saltmarsh, beach and offshore waters can be considered as a single unit as bird movements between sites in winter occur commonly and different sites may be preferred in successive winters.

Some intertidal areas are used extensively for bait digging, cockle collecting, birdwatching, walking with dogs and other recreational uses. This disturbance may prevent birds from feeding in these areas, at least for some of the tidal cycle. The most important mud flats generally remain relatively undisturbed, either due to bye-laws or by being unsuitable for these activities. Recreational pursuits, particularly motorised watersports in inshore waters, can significantly reduce the value of areas to wildlife. Feeding and roosting waterfowl and breeding seabirds are particularly susceptible to this sort of disturbance. Offshore activities such as tanker movements, ferry crossings and sailing, appear however not to disrupt the activity patterns of feeding seabirds.

The following accounts outline the importance of each site in the Solent in a national or international context. Information from recent and historical sources has been incorporated where appropriate.

#### **Bracklesham Bay**

Bracklesham Bay is bounded by sandbanks off Selsey Bill at the eastern end and the entrance to Chichester Harbour in the west. The high shingle beach, which is continuous from Selsey to East Wittering is an SSSI. The beach narrows to the west and becomes sandy with intertidal sand flats at West Wittering; this area is part of Chichester Harbour SSSI.

Regular large scale movements of divers, seaduck, waders and seabirds pass Selsey Bill in spring and autumn. There is a wintering flock of eider off Selsey, although numbers fluctuate widely from year to year. In recent years up to 200 have been seen (March 1984). Red-breasted merganser is the only other species of wildfowl regularly making use of the bay itself.

The East Pole Sands and Winner Bank occasionally hold large numbers of waders. Of the waders recorded here in 1991, only sanderling and bar-tailed godwit fed actively.

Very few seabirds use Bracklesham Bay despite the large migratory passage offshore. An outfall near the centre of the bay attracts feeding gulls and terns two hours after high tide in summer. The East Pole Sands and The Winner bank are important feeding sites for terns and some black-headed gulls, particularly on the ebb tide and to a lesser extent on the flood tide. From late May until early September, gatherings of terns rest and feed here (as the tide drops) with the largest numbers during this study (305 common terns) in August 1991. The sands are also used by roosting gulls, particularly herring gulls, throughout the year. At high water terns continued to feed in and off the harbour mouth, even in rough seas. Late summer recreational



activity may disrupt this daily activity pattern especially on hot weekends and Bank Holidays. The sandbanks off Selsey are not disturbed in this way and regularly hold resting cormorants, herring and great black-backed gulls.

### **Chichester Harbour**

The Hampshire-Sussex county boundary bisects Chichester Harbour. The entire harbour, which covers nearly 3700 ha, is an SSSI, Ramsar site and SPA. It is the least developed of the 3 large eastern harbours. The harbour holds internationally important concentrations of brent goose, shelduck, ringed and grey plovers, dunlin, black-tailed and bar-tailed godwits and redshank and nationally important concentrations of five other species. Five species of wildfowl or wader breed in the harbour. Large numbers of great-crested grebes are often present in winter.

Seabirds breed mostly on South Stakes Island (Table 5) and feed in the harbour. The maximum number of cormorants in the harbour is often in October, when over 130 may occur. In summer large flocks of black-headed gull feed on fish shoals within the harbour. A gull roost uses the harbour in winter. In 1991, the roost reappeared in mid-August and at first held many common gulls; the roost was counted later in the winter when it comprised mostly black-headed gulls. Terns fish in the harbour throughout the breeding season.

### **Hayling Bay**

Hayling Bay, to the south of Hayling Island, has a shoreline predominantly of sand and shingle, with housing backing the beach for much of the eastern end. The undeveloped area at Sandy Point is included in the Chichester Harbour SSSI. A nationally important population of sanderling frequents the western end of Hayling Bay (and Portsea Island) in winter.

Both divers and grebes use the bay in variable numbers each winter. The largest numbers are of great crested grebe. Typical counts include 30 in February 1986 and 34 in November 1986.

Hayling Bay is visited occasionally by brent geese when the harbours are disturbed. Small numbers of eider and common scoter sometimes appear in winter, for instance, 50 eider in April 1987 and 34 scoter in January 1984.

When the freshwater Sinah gravel pit lake freezes, as in February 1991, the duck there are forced onto the sea at the mouth of Langstone Harbour. Scaup, tufted duck and pochard all moved across to the Eastney outfall at this time.

The West Winner Sand off eastern Hayling Island is only exposed at low water on some spring tides and waders may occasionally assemble there. In 1991 up to 166 turnstone and more than 200 sanderling used the bay to feed. Both species also roost here. The latter may

alternatively cross to Portsea Island. Those feeding on Ryde Sands are part of the same group but they usually return to the mainland to roost.

Hayling Bay holds large feeding flocks of both black-headed and common gulls between November and April. Shag are seen occasionally in winter. Usually only a few terns fish in Hayling Bay but there is a remarkable record of 210 little terns feeding in the bay on 2 August 1986; in 1991 a maximum of 34 was seen here in August. Several hundred common terns have been seen resting on East Winner Sands in previous autumns.

### **Langstone Harbour**

Langstone Harbour is a 2045 ha SSSI, and included in a Ramsar site and SPA. Much of the western shore is now developed. A local nature reserve at Farlington Marshes falls within the SSSI boundary. The harbour holds internationally important numbers of brent geese, ringed and grey plovers, dunlin and black-tailed godwit and nationally important populations of five other species. This is the principal site in Britain for the black-necked grebe in winter, with 30 or more birds each year. The little tern colony is nationally important.

Over 100 great crested grebes are present in most winters. Goldeneye and red-breasted merganser are numerically the most abundant seaduck, with recent maxima of 96 and 334 respectively. Flocks of eider make sporadic appearances; over 50 birds were present in March 1985, but very few have been seen since.

Many waders that feed in Langstone Harbour fly to roosts on the east side of Portsea Island in Chichester Harbour. More than 30 pairs of ringed plover and 40 pairs of redshank breed each year around the harbour.

In summer, black-headed gulls and terns feed in the harbour and to about two kilometres off the harbour mouth. Young sprat are reported to enter Langstone Harbour in very large numbers in June and these probably form some of the prey of the harbour population of breeding terns (103 pairs of little tern and 38 pairs of common tern in 1991). As with Chichester Harbour, Langstone is an important site for roosting gulls. Cormorants use the harbour to feed and rest in all months of the year; numbers usually peak in August or September.

### **Portsea Island**

The south facing shore of Portsea Island is composed entirely of shingle. The beach narrows in the west and, between Southsea Castle and Portsmouth Harbour, is covered at high tide. Most of the seafront is developed. In winter a nationally important population of sanderling feeds and roosts between Southsea and Eastney.

All three species of diver are occasional visitors here. The great-crested grebe is the commonest grebe (seldom more than 10 individuals).

The sea wall and rampart at Southsea Castle is the only site in Hampshire where purple sandpiper is regularly recorded. A flock of 213 ringed plovers was found roosting on the beach at Southsea in November 1991.

In winter several hundred common gulls regularly gather at Southsea, for instance 500 in January 1986, although they are usually outnumbered by the black-headed gull. The outfall at Eastney discharged a large volume of sewage and attracted many gulls before it was decommissioned in favour of a long sea outfall in the spring of 1991. Up to 1500 black-headed gulls were present in mid-winter 1990/91. During a cold period in February 1991, many duck moved here from the nearby frozen Sinah lake.

Shags are commoner here outside than anywhere else on the Hampshire coast outside the breeding season. Up to 32 common terns and 10 Sandwich terns fed here in summer 1991.

### Portsmouth Harbour

Most of Portsmouth Harbour is an SSSI. It is a proposed SPA and it may soon be added to the existing Langstone and Chichester Harbours Ramsar site. It is internationally important for brent goose and nationally so for grey plover, dunlin and black-tailed godwit. The 1100 ha harbour is the most developed of the 3 large eastern harbours and houses a large naval base and ferry terminal serving both the Isle of Wight and continent.

Few divers or grebes use this harbour in comparison to those of Langstone and Chichester. Lower numbers of almost all species of wildfowl and wader (Tables 1 & 3) are found here compared to the other two large eastern harbours.

Only a few common terns ever attempt to nest around Portsmouth Harbour, although fishing birds are seen in summer. In winter a very large gull roost assembles in the harbour and Fareham Creek, with black-headed gulls predominating.

### Gilkicker Point to Titchfield Haven

A wide shingle beach extends from Gilkicker Point to Lee-on-the-Solent after which it narrows and has been built on. A narrow intertidal strip starts at Hill Head and widens progressively northwards. Titchfield Haven and Browdown ranges are SSSIs, the former for its wetland flora and fauna and the latter for its botanical and geomorphological value. Gilkicker Lagoon is an 4 ha SSSI primarily for its invertebrate fauna but also has an ornithological interest.

Stokes Bay and the waters off Lee-on-the-Solent are the 'best' waters of the Solent for divers, although compared to other sites in Britain, the one to three individuals of each species is trifling. A few great crested grebes are present from the autumn and throughout the winter months. Over 200 birds have been counted in winter between Hill Head and Brownwich, further up the eastern shore of Southampton Water.

Flocks of up to 30 common scoter occur off Lee-on-the-Solent and Hill Head. They can be seen in any month but particularly during passage periods. Small flocks of red-breasted merganser, usually less than 30, occur every year. Eiders appear only sporadically.

The narrow intertidal zone and shingle beach between Gilkicker and Titchfield holds small numbers of waders, particularly turnstone and oystercatcher and sometimes 100 or more brent geese.



Lee-on-the-Solent beach proves popular in summer.



Over 120 herring gulls gather on the Rainbow Bar off Titchfield in most years, with up to 258 in October 1985. Common gulls can be more numerous with over 1000 here in December 1984, although less than 500 is more normal. Several thousand black-headed gulls may be found in mid-winter. The tidal overfall about a kilometre off Gilkicker Point regularly attracts a small number of foraging black-headed gulls. A freshwater inflow cutting across the beach at the northern end of Stokes Bay is used for bathing by gulls.

A tern flock (up to 1200 in 1990), occurs in summer and autumn in the central Solent between Calshot spit and Lee-on-the-Solent. Highest numbers are present in autumn. Sometimes birds can be seen feeding close inshore in this area. They regularly assemble on the sand bars and beaches at low water (more rarely at high water) and at Titchfield Haven. Most of the flock is common terns, but both arctic and roseate terns are regularly seen. This is probably the same flock as seen fishing over the offshore banks at other times.

### Southampton Water

Southampton Water includes most of the tidal reaches of the Hamble, Test and Itchen valleys in addition to the waters downstream of Southampton as far as Calshot Marshes and Titchfield Haven. At its head lies a complex of dock and port facilities and a ferry terminus. BP operate a marine terminal at Hamble and Esso have a refinery at Fawley. A power station lies just downstream from Ashlett. Unlike the eastern harbours, the entrance is wide and the main channel dredged. Most of the

surrounding area is flat and low-lying, at or just above mean sea level, but between Titchfield Haven and Solent Breezes are low (10 m) sand and gravel cliffs. All of the intertidal flats and saltmarshes on the western shore together with much of the eastern shore, the Lower Test Valley and Hamble Marshes and Upper Estuary are SSSIs. Mercury Marshes and Hook-with-Warsash are local nature reserves. Together with the North-west Solent and Newtown Harbour, the area is a proposed Ramsar and SPA site. The wintering brent goose population is internationally important. Nationally important populations of teal, ringed and grey plover, dunlin, black-tailed godwit and redshank are all present in Southampton Water in winter.

Flocks of great crested grebes are regular in three or four sites in winter. There were up to 217 between Brownich and Hill Head in January 1987, but half this number or less is normal. Over 50 are regular off both Hythe and Warsash and about 25 occur at Eling/Marchwood. A few, usually less than 10, are present in the summer months. Little grebes congregate at Eling and numbers here surpass those at any other site. The maximum number recorded here was 110 in November 1988. There is a regular gathering of herons at Eling, since it is close to an active heronry.

From late June onwards, Mute swans moult between Eling Great marsh and the Lower Test marshes (91, July 1987). The southern part of Southampton Water seems to be the most important site in the Solent for overwintering common scoter although variable numbers appear each year; up to 40 have wintered off Warsash. About 30 goldeneye feed throughout



Hook spit, at the mouth of the Hamble, is a quiet undeveloped part of Southampton Water.

Southampton Water in winter, coming together at dusk to roost. The small outfall at Netley appears to attract feeding goldeneye.

Brent geese feed throughout much of Southampton Water but roost overnight at Calshot. Teal feed and roost in Calshot Marshes. Counts of wildfowl in Southampton Water are given in Table 1.

Larger numbers of some waders, for example ringed plover, curlew, oystercatcher and black-tailed godwit, roost between Calshot and Ashlett than feed there. The converse is true for other species, such as grey plover and dunlin (which roost on the Beaulieu estuary) and redshank, which arrive to feed in the area as the tide drops and the muds become exposed. Total counts of waders in Southampton Water are given in Table 3. Bait digging, particularly off Weston and north of Hythe, not only inverts the sediment profile and reduces some prey, but may also prevent waders from feeding.

There is a regular early morning movement of brent geese, curlew, oystercatcher and black-tailed godwit across Southampton Water from their Calshot roosts to feed at Titchfield or even further afield, with a corresponding return in the evening or at high tide.

Southampton Water is an important roost site for gulls. More than 10,000 black-headed gulls roost off Weston in winter. The two large gulls, herring and great black-backed gull, also assemble and roost here, just as they do in the eastern harbours. Numbers of both peak usually in winter or occasionally in late autumn, with the highest numbers to date standing at 550 and 1000+ respectively. In the Solent area, the lesser black-backed gull is only at all numerous at Eling where over 100 birds may gather each evening in the winter. Prior to industrial development and land-claim, the saltmarshes between

Dibden and Calshot held breeding and roosting black-headed gulls.

Four sewage outfalls discharge into Southampton Water, at Netley, Hamble, Hook and Ashlett. The first three are small and attract few birds. Maximum numbers were recorded at the Ashlett outfall in winter (230 black-headed gulls) with less than 100 at most other times of the year.

In summer 1991, common terns regularly fed off Southampton's Western Docks and may have been breeding in the Test valley as they arrived and departed from this direction. They also fished off Marchwood and similarly departed northwards. Further downstream, at the confluence of the Test and Itchen off Dockhead, feeding common terns arrived from the south and were perhaps therefore from the Beaulieu estuary colony. Later in the summer, numbers of fishing common terns (and black-headed gulls) increased here and also off Hythe pier and marina. Little terns fed off Hook spit at the mouth of the Hamble and within a mile or so in either direction along the shore here. Common, little and Sandwich terns from Needs Ore regularly fished inside Calshot Spit in the summer.

In the late summer and autumn most of the terns feeding off Calshot Marshes and power station were probably immigrants as numbers in the Solent had decreased between mid-July and mid-August. Over 400 common terns were observed feeding or roosting here in August and September.

#### **Calshot spit to Lepe**

Stanswood Bay, between Calshot spit and Sconce Point is a shingle and pebble beach with a foreshore of variable width. To the west of Calshot village is a short



The intertidal area off Calshot is valuable for waterfowl and terns.





Gull Island holds nationally important colonies of black-headed gulls, Sandwich and common terns.

length of low sandy cliff and thereafter the shingle beach continues to Sconce Point. Two strips of woodland and the wet valleys adjacent to the beach are in the North Solent NNR.

At low spring tides a considerable area of sand and mud flat is uncovered at both Calshot and Lepe. Although the intertidal area is normally narrow here, its use by feeding wildfowl and waders is restricted by activities such as bait-digging, dog-walking or other recreational pursuits. Disturbance is normally greatest at weekends. In the winter there is some respite at the Calshot end and reasonable numbers of feeding birds can occur: brent goose (312), oystercatcher (63) and ringed plover (135).

During the ebb tide, shallow lakes form on this area which can trap shoals of small fish which are fed on by terns. Such occasions must depend on the movements of the fish shoals. In May and June 1991 frenzied fishing activity was observed here on a number of occasions with more than 100 common terns fishing at any one time. Black-headed gulls usually joined in the melee (with 900 birds on one occasion in May). Feeding by similar numbers of terns recommenced here in late July and included fledged juveniles. Most, if not all, were presumably from the Needs Ore breeding colony. In August, a marked influx of common terns must have included many birds (if not most) from colonies outwith the Solent. Numbers of Sandwich and little terns declined rapidly following their breeding seasons.

Flocks of terns, together with black-headed gulls, also regularly fished off Stone Point at Lepe Country Park in May and early June but not thereafter. On these occasions, feeding occurred within a metre of the beach. Recreational activity, even on busy weekends, appeared not to bother the fishing terns either here or off Calshot (unlike wildfowl and waders).

### Beaulieu estuary

With the exception of the two woodland outliers to the east, the Beaulieu estuary, which extends from Inchmery to Warren shore and upstream to beyond Beaulieu, is synonymous with the 1035 ha North Solent NNR. Although the estuary holds less wildfowl than other mainland sites, it supports nationally important numbers of wintering grey plover and black-tailed godwit and large breeding populations of black-headed gulls and sandwich, common and little terns (Table 5). The entire area is included in the proposed West Solent SPA and Ramsar site.

Brent geese and mallard regularly (and pintail occasionally) sit on the sea off Gull Island, and up-est to feed on the seabed at low-water. Most other wildfowl frequent the freshwater pools and floods at The Gins and Blackwater although they are often found on the Beaulieu river when disturbed from these sites. Some waders also feed in the damp pasture, for example black-tailed godwit and curlew. Over 400 grey plover feed in the estuary.

The Needs Ore and Exbury colony of black-headed gulls is one of the largest in Britain. Productivity is reduced by spring tides which flood at least part of the colony annually. The lower parts of the saltmarsh (Warren shore and Exbury marshes) are then deserted in favour of Gull Island, where replacement clutches are laid. In some years, the highest astronomical tides combine with low atmospheric pressure and then often also strong SW winds (which backs-up even more water in the Solent) and cause repeated flooding; very few young may then fledge. Only part of Gull Island may stand proud on some occasions. The shingle beach ridge affords some protection for the Warren shore saltmarsh, but the fetch across to Exbury is clearly sufficient for increased wave action to washout most of the area.

Common terns from the colony at Needs Ore will feed in the estuary mouth or occasionally upriver. Such occurrences were noted near low water on neap tides in May and June. Prey at these times was thought to be bass fry. One or two birds regularly travelled upriver as far as Beaulieu. Common and Sandwich terns were recorded flying towards Needs Ore carrying fish from as far away as Gilkicker Point; most foraging from the colony appeared to be to the east. Small flatfish were carried back past Calshot and Lepe or overland from Southampton Water. Sandwich terns were also seen returning to Needs Ore from successful fishing trips to the north shore of the Isle of Wight. Little terns generally fished along the shore close to their nest sites or in estuarine creeks, occasionally as far upstream as Buckler's Hard.

#### **Park shore to Keyhaven Marshes (North-west Solent)**

The Hurst Castle and Lympington River estuary SSSI covering over 1000 ha takes in the complete extent of intertidal mud flat, *Spartina* saltmarsh, shingle and shell beach from Sowley boom in the east to Sturt Pond in the west. Much of this stretch of coast is relatively undisturbed (and partly private) beach and salting. Erosive losses to both the intertidal area and saltmarsh in recent years is due in part to rising sea-levels and to dredging which has cut off the supply of material. The width of mud flat exposed on differing tides appears to have an important bearing on both the number and species of wader that can be supported. The tidal range is small, especially on neap tides, and in winter a small area of mud flat may be exposed for only a short period of daylight. In February 1991, cold and this relative lack of feeding opportunity probably caused the death of several hundred dunlin. Included in the SSSI are the grazing marshes and brackish lagoons behind the sea wall at Keyhaven and Pennington. The non-tidal lagoons

are used by various waders, particularly those on passage, such as greenshank, little stint and curlew sandpiper, and allow feeding to continue through high water.

In winter, numbers of brent goose reach international importance, whilst those of grey plover and black-tailed godwit are nationally so. The populations of breeding black-headed gull and common and little terns are also nationally important.

Flocks of seaduck are present in some years, for example (in the last decade) 38 scaup in February 1986 (the largest flock ever recorded in Hampshire) and 32 eider in August 1989. Several hundred common scoter are regularly seen on passage in April (particularly off Hurst Spit) but only exceptionally settle. The eider flock, when present, moves between Lympington and Hurst spit.

There is a nearly continuous record of breeding numbers of wildfowl and waders available for the last twenty five years, thanks to staff of Hampshire Recreation and the Hampshire and Isle of Wight Wildlife Trust. Two or three broods of shelduck are usually raised each year. Numbers of waders in this stretch are particularly important in a Solent context with more than 90 pairs of oystercatcher, 30 of ringed plover and 20 of redshank present each year.

Breeding black-headed gulls are the most numerous, with nearly 6000 pairs in 1991 (Table 5). They nest mostly on the Pylewell saltmarshes, with fewer on the Keyhaven marshes. As at Needs Ore, productivity is reduced by flooding. Unlike the Beaulieu gully the saltmarshes here do not benefit from the protection of a shingle beach and consequently can suffer badly from wave action especially during spring tides. The Keyhaven gully is protected to some extent from wave action during south-westerlies by Hurst spit.



Pylewell saltings; a now degrading *Spartina* marsh.





A shell bank at Keyhaven colonised by grass-leaved orache, sea-beet and common terns.

The sewage outfall at Pennington attracted variable numbers of feeding black-headed gulls throughout the year. Up to 260 birds fed here in winter. The lowest numbers were from late July to the end of October. The high numbers from November onwards was perhaps due to an arrival of immigrant birds rather than to any seasonal change in feeding habits. A proposed sewage treatment plant will remove this food supply in the future.

Resting flocks of gulls use the isolated saltings at Pennington; the flocks include up to 600 herring gulls in winter (January 1987) and less than 300 in summer, with more than 60 great black-backed gull throughout the year. Almost all are immatures or subadults. Numbers of both species are gradually increasing. Black-headed gulls roost in the Lymington river, with highest numbers present in late winter.

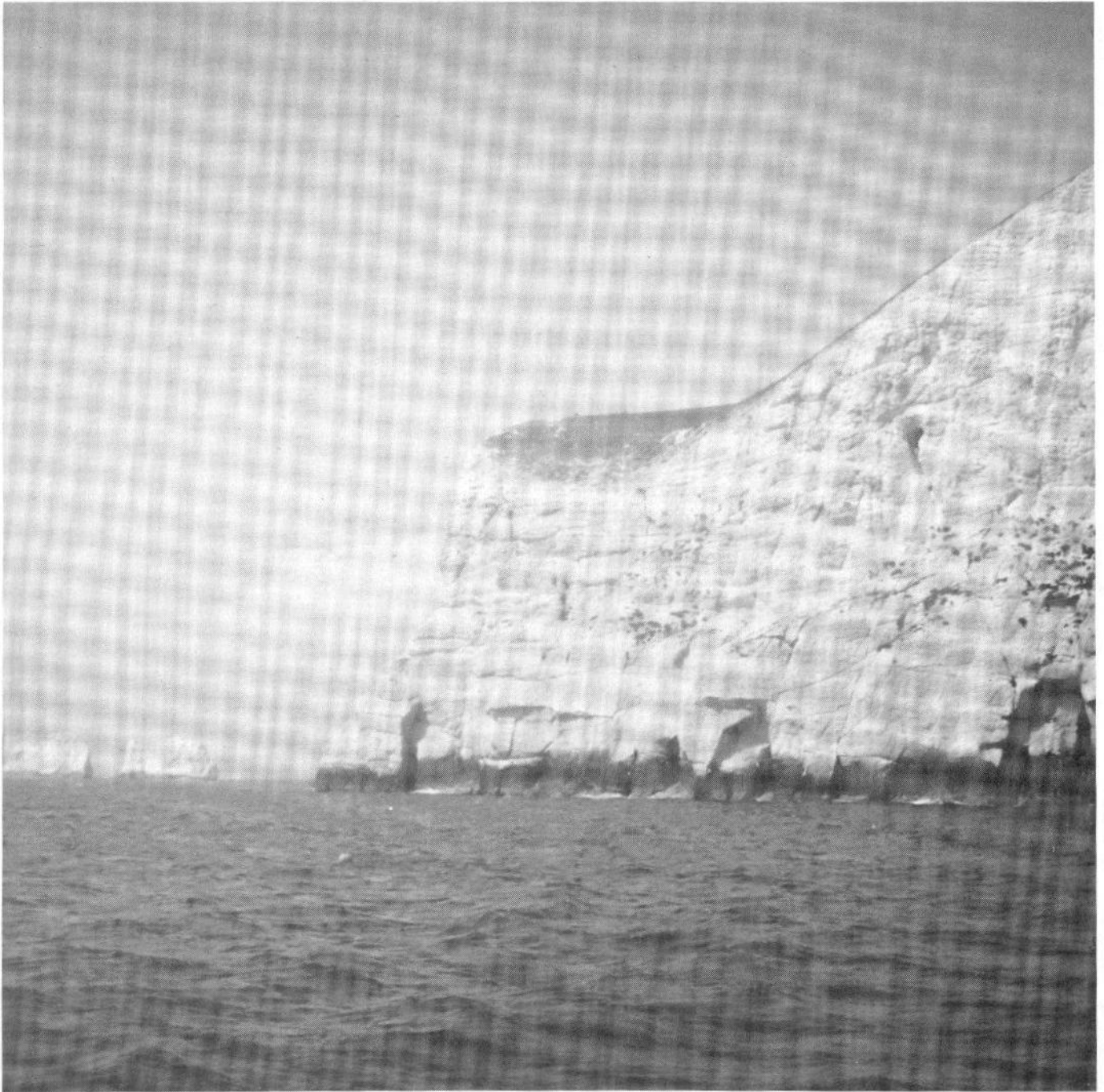
Terns nest in several places on shingle or shell banks in the saltmarsh. Common and Sandwich terns were recorded returning to these colonies following successful fishing trips to the Isle of Wight and also returning (with sprats) from the western Solent near Hurst spit. Little terns nest annually in one or more sites between Lymington and Keyhaven marshes.

#### **Freshwater Bay to the Needles**

The chalk downland and cliffs are an SSSI (Tennyson and West High Down) for the superlative flora and invertebrate community and breeding seabirds. The chalk cliffs of Main Bench hold breeding fulmars, cormorants, shags, herring gulls, great black-backed gulls and guillemots. Two or more pairs of shelduck nest in holes in the cliff-face. Fulmars are often present at the beginning of the year and guillemots appear early in the morning from February onward. Both cormorants and shags and the two gulls roost here at night after the breeding season, whereas guillemot and fulmar are typically absent from July and September onwards respectively.

#### **Needles to Newtown Bay**

The series of sandy bays and unstable cliffs from the Needles to Fort Victoria and from Yarmouth to Newtown are primarily of geological interest. The Yar estuary is an SSSI but supports only relatively small numbers of waterfowl, with the exception of teal in winter. The foreshore is narrow and sandy in the west but mainly clay in the east. Headon Down and Bouldnor and Hamstead cliffs are SSSIs. Few birds use the coastal waters and shoreline in this section; there being only



The chalk cliffs of Main Bench, with the Needles beyond, hold breeding cormorants, shags, guillemots and gulls.

occasional records of divers, grebes and seaduck and few waders. There is a small outfall discharging treated sewage at Norton which attracts just a few feeding black-headed gulls. Around forty five were normally recorded feeding here, with the exception of midsummer when fewer were seen.

A pair of shelduck, four or more pairs of oystercatcher and 30 or more pairs of redshank usually breed around the Yar.

Black-headed gulls gather and bathe in the estuary but it is clearly of only limited value to seabirds. About 1000 black-headed gulls sometimes roost in Totland Bay in winter, many of which cross to the mainland to feed.

Sandwich terns were seen foraging occasionally along this stretch of coast but only rarely appeared to plunge successfully. Little terns have been seen fishing off Fort Albert (32 on one date in June 1985) but very few terns were seen on any survey in 1991. The submarine boom at Hamstead, like that opposite at Sowley, is used by resting cormorants together with immature herring and great black-backed gulls.

#### **Newtown Harbour**

Newtown Harbour SSSI of 120 ha is of national importance for brent goose, black-tailed godwit and teal. The estuary was extended by the breaching of the old sea wall in 1954 and the wintering populations seem to



have benefited accordingly. The convoluted series of creeks provide the least disturbed riparian habitat anywhere in the Solent.

Up to 5 little and great crested grebes are not unusual here. The estuary is the premier site on the Isle of Wight for wintering wildfowl and wader populations. The lack of disturbance due partly to the presence of a warden is probably important. The numerous creeks provide ideal feeding sites for teal in winter. The estuary appears relatively self-contained, most birds feeding and roosting here throughout the winter, although curlew and Canada geese commute between here and the Beaulieu estuary fairly often. Brent geese may wander to Thorness Bay to feed on occasion.

As with the other parts of the northern Isle of Wight coast red-breasted merganser is the commonest seaduck species, with numbers approaching 30 in recent winters. Goldeneye winter here in small numbers.

Breeding wildfowl and waders include about 10 pairs of shelduck, 10 pairs of oystercatcher, between 12 and 20 pairs of redshank and often a pair of ringed plover.

Cormorants use the harbour but in small numbers compared to the mainland harbours. Breeding seabirds include black-headed gull (329 pairs in 1991) and in most years one or two common and little terns attempt to nest.

Up to 800 herring gulls roost in the harbour in July and August. Between 10 and 25 great black-backed gulls reside here in most months. In late summer and autumn several thousand black-headed gulls may come in to roost, for instance 3800-4075 in August 1989. This roost was counted in January 1992 (Table 6).

#### **Fishhouse Point to Cowes**

Between Newtown Harbour and Gurnard the intertidal zone is narrow and is backed by soft cliffs, after which it largely disappears and becomes a developed esplanade up to Cowes. Gurnard Ledge to Saltmead Ledge SSSI is adjacent to that of Newtown Harbour. In the mid-19th century the intertidal flats were relatively wide, but nowadays mud and sand flat is exposed only during low spring tides. Cockle-collectors disturb waders feeding here on these occasions.

All divers, grebes and seaducks are rare along this stretch of coast, with the exception of red-breasted merganser (21 in January 1987). Brent geese feed on the mud flats in Thorness Bay and have increased annually, with up to 233 present in December 1989.

Thorness Bay supports small numbers of waders. Over 30 turnstone occur in autumn or winter. Maxima of other species include 123 ringed plover (January 1988), 67 grey plover (January 1989), 36 curlew (December 1988) and 12 bar-tailed godwit (April 1988). A pair of ringed plover attempts to breed in most years.



The Yar estuary; a site valuable for wildfowl in winter and breeding redshanks in summer.

An outfall off Prince's Esplanade attracts up to 50 feeding black-headed gulls throughout the year, with five common terns on one occasion in June. In summer and early autumn terns, mostly commons, feed off the eastern spit of Newtown over the shallow wave cut platform.

### **Medina estuary**

The Medina estuary is linear, small and narrow, heavily urbanised along the shore and an extremely busy ferry terminal and marina. Not surprisingly therefore it is rather devoid of wildfowl and waders. There is a small wintering population of little grebes. Of the seaduck, only goldeneye and scaup visit regularly. The flooded fields on the reserve at the Medina Valley centre support most of the wildfowl and waders counted during monthly BOEE counts. A nationally important number of black-tailed godwit have fed here on occasion. A few oystercatchers and redshank breed around Werran.

### **East Cowes to Wootton Creek**

The intertidal zone narrows eastwards from the Shrape at East Cowes, with very little exposed except at low spring tides. As with the area west of Cowes, there were formerly extensive mud flats along this entire stretch of shore. Cockle-collecting disturbs birds here at low spring tides. There is restricted public access to the foreshore in the western half of Osborne Bay so the area is relatively undisturbed. Despite this there are few birds here anyway. At the mouth of Wootton Creek is Wightlink's Fishbourne ferry terminal. The upper reaches of the estuary have suffered from an alteration to the hydrological regime and the tidal influence has been reduced considerably. This situation is about to be changed back to its original state on public health and conservation grounds.

Occasional individuals of all three diver species occur here and this is one of the most regular sites for great northern and black-throated divers in the Solent. Up to ten great crested grebes may be seen although 38 appeared in Osborne Bay in February 1988. Four Slavonian grebes were present in January 1986.

The relatively few wildfowl that use the area occur either below Osborne House or at King's Quay SSSI. These may involve birds that have been disturbed from the Medina, for example 64 mallard in Osborne Bay in March 1986. A wintering group of brent geese, normally at Ryde, often roam westward along the coast as far as here. Wootton Creek normally supports about 100 brent geese and 90 mallard, the latter being resident here.

Red-breasted mergansers are the most numerous of the seaduck with around 30 each winter (maximum of 34 January-April 1986). Common and velvet scoter have both been seen in recent winters.

Few waders feed or roost in this stretch. The 'quiet' area around King's Quay is a favourite roost site for curlew. A maximum of 116 were here in February 1988 for example. About 70 of both curlew and redshank feed in Wootton Creek in winter.

The East Cowes breakwater regularly holds roosting cormorants, for instance 30 in December 1984. Shags make very occasional appearances too. Wootton Creek is important locally for feeding waders and is an important site for gulls, mostly black-headed, gathering to bathe prior to assembling at the overnight roost on Ryde Sands. In August 1991 up to 50 common terns fished in the mouth of Wootton Creek and roosted on the navigation posts. They also fed off Woodside, mostly over the offshore banks (see below).

### **Fishbourne to Ryde pier**

The relatively wide intertidal zone between Fishbourne and Ryde changes from clays and muds in the west to sand between Binstead and Ryde. There is no beach at high water. The entire foreshore is included in the Ryde Sands SSSI.

Single great northern and red-throated divers are often recorded here. The great crested grebe is the most numerous of the grebes with up to 9 found in winter, with 2 or 3 Slavonian grebes also regularly present.

Brent geese feed on the eelgrass *Zostera* beds between Binstead and Ryde at low-water; up to 300 have been counted here in the last few years. Occasional records of mallard flocks on the sea here probably relate to birds disturbed from the Quarr Abbey pond.

As with the preceding section there was formerly a wider intertidal zone here, with regular cockle-collecting on suitably low tides. The irregular exposure of the mud flats is clearly reflected in the number of visiting waders.

A maximum of 50 oystercatchers occur in winter and over 80 grey plover have been counted. There are regularly 150 redshank off Quarr in mid-winter and up to a dozen turnstone mostly during passage periods. Curlew have reached a maximum of 150 at Quarr (January 1988). However, the lack of systematic counts in the past make it difficult to assess the overall importance of this site for waders.

Gulls regularly gather off Quarr. Resting flocks of herring gulls are especially numerous from late summer to the year end. Usually only a small number remain in spring and summer, when the great black-backed gull is more numerous. In all months virtually all are immature and sub-adult individuals. Over 150 common gulls may be seen on occasion.

### **Ryde pier to Foreland including Bembridge Harbour**

Ryde Sands SSSI extends seaward for over 2 km. Invertebrate populations appear high and there is a





Ryde Sands support a nationally important number of sanderling in winter.

vigorous growth of eelgrass for over a kilometre eastward of the pier. Ryde Sands supports a nationally important population of sanderling in winter; within the Solent this is the most important non-estuarine site for waders in winter. This flock is 'shared' with Portsea and Hayling Islands. St. Helen's duver is an SSSI for its botanical interest, while St. Helen's Ledges, Bembridge Ledges and Whitecliff Bay SSSIs are important for marine invertebrates, feeding birds and for geological reasons. The Yar estuary (Bembridge Harbour) interrupts the sandy beach which is continuous at low water from Seaview to St. Helen's.

All three species of diver have been recorded here and the area off Seaview is one of the better places in the Solent to find them. There are regularly about 10 (maximum of 15) great crested grebes and 4 (maximum of 16) Slavonian grebes.

When the freshwater Brading marsh pools freeze wildfowl move into Bembridge Harbour as happened in February 1991. Apart from these occasions the only wildfowl normally present are seaducks. The area off Bembridge to Seaview is the best locality for seaducks in this part of the Solent. Several species are normally recorded each winter. Red-breasted mergansers are most numerous with, to date, a record count of 76 here. Twenty to forty is more normal.

Between 200 and 300 brent geese may be found between Ryde and Bembridge with most feeding activity taking place immediately to the east of Ryde pier where dense eelgrass beds can be grazed at or near low-tide. A separate and smaller flock (of about 100) overwinters on the Foreland foreshore.

A nationally important sanderling population feeds on Ryde Sands in winter. These birds roost on the mainland but regularly cross to the Sands as the tide falls. Up to 100 bar-tailed godwits show a similar pattern of arrival and departure. Fifty to a hundred ringed plovers are also usually present in winter. In winter about 100 oystercatchers usually feed between Bembridge and the Foreland ledges and over 300 dunlin and 100 redshank feed around Bembridge Harbour. A flock of about 20 purple sandpipers overwinter between Bembridge lifeboat station and Foreland.

Cormorants roost during the day on St. Helen's fort with thirty or more a typical count (maximum of 72 in October 1987). Shags are seen regularly off Bembridge in the winter months. More than 10,000 black-headed gulls and more than 1000 common gulls gather to roost on Ryde Sands in winter. If it is low tide at dusk they assemble on the furthest exposed sands and if the tide is high they sit on the sea closer in. This area of coast is important in winter for common gulls, with peak

numbers occurring during the passage period, for example, 1250 in March 1986. Only 200-300 are usually present during the day in the winter months.

Black-headed gulls bathe at the small freshwater inflow at Seaview at low water. The Ryde sewage outfall, which discharges offshore midway between Ryde and Gilkicker Point over Sturbridge Shoal, attracts a feeding melee of up to 400 black-headed gulls and 85 common gulls.

Common terns feed over the shallows on Ryde Sands on the flood tide. No terns breed nearby and these birds may well have crossed from the mainland.

#### **Offshore parts of the Solent and Spithead**

The 1991 offshore survey showed the waters east of a line drawn between Horse Sand Fort and No Man's Land Fort to be unimportant for seabirds throughout the year. Only black-headed, common, herring and great black-backed gulls were regularly recorded there. To the west of these forts, in what is regarded as the Solent proper, the situation is quite different. In summer and autumn this area assumes considerable importance for feeding terns. The importance of the Solent to terns can be partly assessed from the land and has already been mentioned. All of the following sites were important at some point of the summer or autumn. The mouth of Southampton Water around the Fairway buoy held at

least 70 common terns in July, the Bramble Bank and East Knoll more than 50 in late May and early June and the Peel, Mother and Ryde Middle Banks off Woodside over 110 in August. At the Bramble Bank and East Knoll feeding birds included a large concentration of black-headed gulls (maximum of 700), 3 little gulls and 4 black terns all dipping and shallow diving for prey. This flock fed from 3 hours before high tide on neap tides. Similar activity was again visible in August over the group of three banks named above and although smaller numbers overall were involved there were more terns than gulls (at least 60 common terns and about 20 black-headed gulls). In September up to 500 black-headed gulls were again feeding over the Bramble Bank/East Knoll area, together with about 20 herring and great black-backed gulls.

The Palmerstonian forts in the Solent and Spithead are used by roosting gulls (up to a total of 200 herring and great black-backed gulls) and cormorants (Horse Sand and St. Helen's Forts each hold about 20 birds). Navigation buoys, posts and wrecks also provide suitable daytime resting places for these species.

The distribution and numbers of seabirds offshore are described for each species in the species accounts, with their relative abundance throughout the year presented in Figure 2. No concentrations were located in the furthest areas from land.

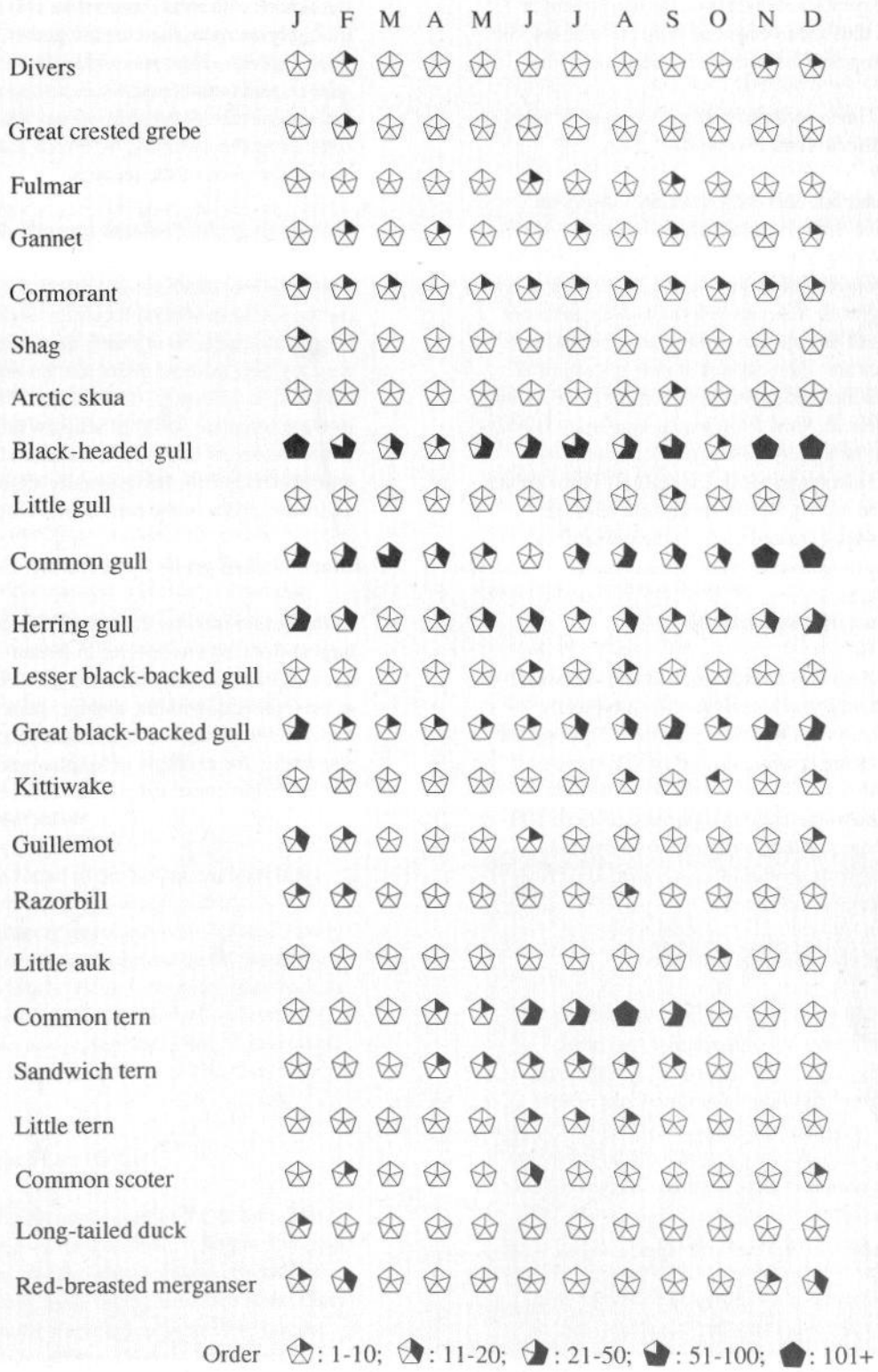


Horse Sand Fort. This uninhabited fort is popular with roosting cormorants and herring gulls, with some of the latter nesting here.

*I. Scott*



Figure 2 Relative abundance of seabirds offshore, January to December 1991 (Higher monthly count given)



# Species Accounts: Divers and grebes

Of the eight species of diver and grebe recorded regularly in the Solent, only great crested and black-necked grebes occur in nationally important numbers. Several of the species however are considered rare or vulnerable and thus receive special protection under both British and European Community legislation.

## **Red-throated *Gavia stellata*, black-throated *G. arctica* and great northern divers *G. immer***

Divers are regular but uncommon winter visitors to many parts of the Solent coast. Certain localities, such as Southampton Water, Titchfield to Gilkicker and Hayling Bay appear favoured, but in some instances this may be a reflection of greater observer effort. Seldom are more than three birds of any species seen in any one site in a winter. Numbers are often highest at passage times. A record of 23 red-throated divers between Stokes Bay and Lee-on-the-Solent in April 1956 was exceptional. Birds also often enter the eastern harbours. Considerable numbers can be seen passing St. Catherine's Point on the Isle of Wight and Selsey Bill in spring and autumn. In the Solent the black-throated diver is the rarest of the three species.

## **Little grebe *Tachybaptus ruficollis***

This species favours freshwater but moves to saltwater sites during freezing weather. Even then it typically haunts those sites with a freshwater inflow. This and the following species are counted during BOEE surveys. Counts from Chichester Harbour and Southampton Water (Eling/Redbridge area) occasionally exceed 100 birds in hard winters. All estuarine sites around the Solent hold some little grebes in winter (Tables 1 & 2) but they are absent off open coasts.

## **Great crested grebe *Podiceps cristatus***

The great crested grebe is the commonest grebe in the Solent in winter, with a few remaining in all other months. The most important sites are Chichester and Langstone Harbours and Southampton Water (Table 1). Counts at the former pair of sites suggest that birds preferentially select between the two in different winters. Small flocks (usually less than 20) occupy sites along the open coast, for example in Osborne Bay and off Seaview on the Isle of Wight and in Hayling Bay on the mainland. Every winter there is a movement of some birds out of Chichester and Langstone Harbours into Hayling Bay. Numbers on the open coast also usually increase during severe cold as birds are forced out of the harbours.

## **Red-necked grebe *Podiceps grisegena***

This is the scarcest of the five species of grebe to visit the Solent with rarely more than two in any site and probably no more than ten altogether, even in a good year. Numbers fluctuate widely between successive winters and not necessarily in relation to the coldness. Individuals can appear almost anywhere along the open coast or in the harbours, with well watched sites producing most of the records.

## **Slavonian grebe *Podiceps auritus***

Individuals or small groups, mostly of five or less birds can be found in several localities during each winter. Larger numbers, 20 or more, have been observed in Hayling Bay in some years but the average winter peak for the five winters prior to that of 1989/90 was 17. Two or three birds are seen off Seaview at some point each winter. Over 30 occur each winter at Church Norton, just east of Selsey Bill. Birds usually appear in late October and leave again in the following February or March.

## **Black-necked grebe *Podiceps nigricollis***

In the winter months, Langstone Harbour supports the largest flock of this species in Britain. The peak count each winter is usually in January or February rather than at the year end, with the average peak between 1985/86 and 1989/90 being 36. Individuals occasionally occur elsewhere, for example in Southampton Water or off the Isle of Wight coast, usually in early or late winter.



# Wildfowl

The wildfowl community of the entire Solent 'catchment' currently contains six populations of national importance: brent goose, shelduck, gadwall, teal, shoveler and red-breasted merganser. Numbers of the first two species are of international importance. Numbers at sites within the Solent are indicated in Tables 1 and 2. The average wintering population of all wildfowl in the Solent exceeds 50,000 individuals annually.

## Mute swan *Cygnus olor*

This resident breeding species can be found on saltwater throughout the year. Breeding pairs mostly retire to freshwater sites upriver, for example on the Test and Itchen, but many move to sheltered coastal waters to moult or for the winter months. At most sites numbers in winter are generally lower than in other months. Several sites regularly hold large herds, the largest being in Southampton Water and in Langstone and Chichester Harbours. The Lower Test/Redbridge area and Itchen holds a moulting assemblage of over 100 birds in summer. Peak numbers of mute swans in the Solent occur outside the winter period. Chichester Harbour does not follow this general rule and often holds its highest numbers in winter, when more than 100 may gather there. Nine pairs bred in Chichester Harbour in 1990 whilst several other coastal sites each held one or two pairs.

## Greylag goose *Anser anser*

Most greylag geese found in the Solent are feral birds originating from formerly captive individuals. A self-sustaining and increasing population now exists, mostly in the western half of the area centred on the Beaulieu river and estuary. Pairs breed in freshwater sites such as at Sowley pond as well as in saltmarshes. In June 1991 a moulting flock of 85 adults, together with 34 juveniles was counted in the Beaulieu river near The Gins.

## Canada goose *Branta canadensis*

Canada geese were also introduced to the Solent. The population is centred on the North-west Solent and Southampton Water and is partly regulated by periodic round-ups of moulting birds on the Beaulieu river. Only 24 were counted on the Beaulieu in June 1991 but the population is certainly higher. There is a frequent cross-Solent movement of Canada geese between here and Newtown Harbour. A population at Chichester gravel pits occasionally visits Chichester Harbour.

## Brent goose *Branta bernicla*

The dark-bellied brent goose is a winter visitor to the Solent from breeding grounds in Siberia. It is numerically the most abundant species of wildfowl in the Solent in winter. The two principal sites are Langstone and Chichester Harbours which, along with Portsmouth Harbour, Southampton Water and the North-west Solent, each support internationally important concentrations (Table 1). Newtown Harbour holds a nationally important number. The populations at each site within the Solent appear to remain separate from each other throughout the winter and also show strong site fidelity from year to year. Birds arrive mostly in October and numbers peak usually in January, with most departing in March. Feeding sites change during the course of the winter as the eelgrass *Zostera* beds, which they graze, become exhausted. Many geese now feed instead on grassland sites shortly after arriving. They live and feed almost exclusively around the harbours seldom visiting the open coast except where a suitable intertidal area exists. If disturbed brent geese may fly-off and settle on the sea.

## Shelduck *Tadorna tadorna*

Immigrant birds add to the breeding population of shelduck in the Solent in winter and Langstone and Chichester Harbour hold concentrations of national and international importance respectively.

Breeding shelduck are hard to census due to their habit of nesting underground or in dense reedbeds. Creches



Brent geese and black-headed gulls feeding on a harbour mud flat.  
Bob Gibbons/Natural Image



The Solent is internationally important for shelduck in winter.  
*R.Wilmshurst/RSPB*

composed of several broods are a regular summer feature in the harbours and coastal saltings, for example a creche of 65 young (produced by an unknown number of pairs) was in Chichester Harbour in July 1991. This site probably holds more breeding pairs than any other in the Solent. On the Isle of Wight, about ten pairs breed at Newtown annually with probably less than five pairs at any other site. Interestingly, two or three pairs nest in holes high up in the chalk cliffs of Main Bench.

#### **Wigeon *Anas penelope***

Wigeon start arriving in the Solent in August but most appear in October and November. Despite being present in very large numbers each winter no site regularly supports a nationally important population. However in severe winters, most recently in February 1991, an influx often occurs on the coast as inland sites ice up. At these times flocks at both Titchfield Haven and the Lower Test marshes can exceed 2500. Southampton Water normally produces the highest winter count in the Solent, largely because of the presence of the two suitably managed and protected sites named above. Most birds depart in February or March.

#### **Gadwall *Anas strepera***

The number of gadwall wintering at Chichester Harbour exceeds the qualifying level for national importance. In part this is due to a local complex of gravel pits which attracts this species. Otherwise only the Beaulieu estuary and Southampton Water regularly support more than ten

birds, both sites also having freshwater nearby. As with wigeon, higher numbers arrive in the Solent in freezing weather. At some localities numbers of migrant birds in spring or autumn may be higher than those present in winter.

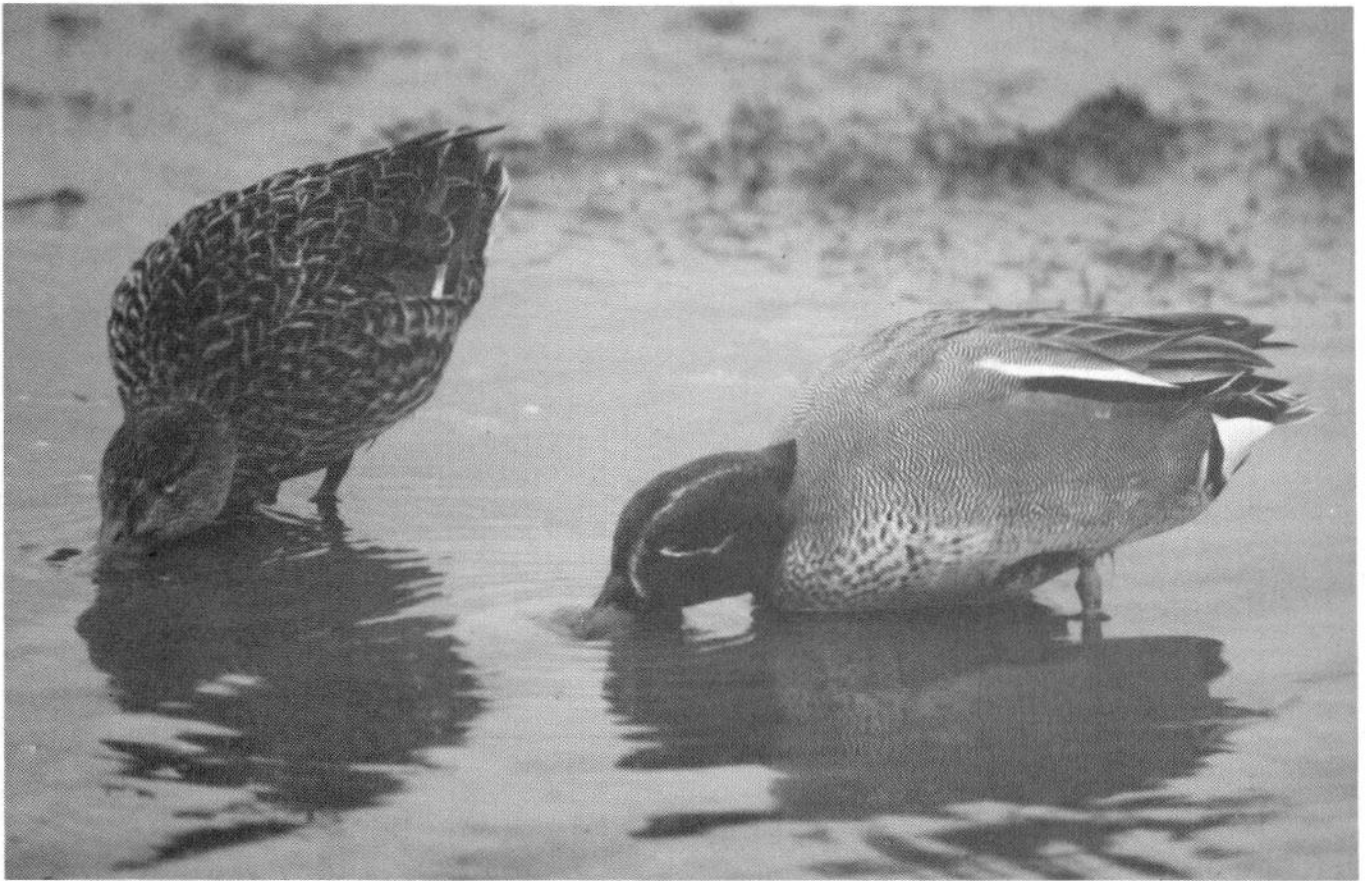
#### **Teal *Anas crecca***

Chichester Harbour, Southampton Water and Newtown Harbour support nationally important numbers of teal in winter. In the second site, Calshot marshes and the Lower Test marshes are the most important areas for feeding and roosting birds. The Meon valley together with Titchfield Haven forms an important non-tidal site. The presence of freshwater near to the coastal resorts is clearly important. Several hundred birds overwinter at the other estuaries around the Solent (Tables 1 & 2). Teal begin arriving for the winter in August but most appear in October or later and depart again in late February and March.

#### **Mallard *Anas platyrhynchos***

The mallard population of the Solent is composed of a resident breeding stock added to by incoming birds from the early autumn onwards. Peak numbers occur at some sites in the autumn rather than in the winter months. Most birds reside in the enclosed estuaries and harbours, one notable exception being a regular gathering off Gull Island at the mouth of the Beaulieu river. The principal sites for mallard are the three eastern harbours and the Beaulieu estuary, all of which hold an average winter





Teal are small dabbling duck favouring undisturbed sites.  
G.Downey/RSPB

peak of more than 350 birds. Mallard feed and roost mainly on fresh rather than salt water but may spend an equal or greater amount of time feeding on 'dry' land.

#### **Pintail *Anas acuta***

The Solent holds relatively few pintail and no one site is of national importance. Langstone Harbour is the most important site ahead of Chichester Harbour, the Beaulieu estuary and Newtown (Tables 1 & 2). The pattern of arrival and departure is similar to that described for the other dabbling duck such as wigeon and teal.

#### **Shoveler *Anas clypeata***

This species primarily favours freshwater sites; this is reflected by the mostly low numbers in sites in and around the Solent. Despite this Langstone Harbour supports a nationally important population. There is a spring passage noted in many Solent sites in late February and March each year. One or two pairs may breed each year by coastal grazing marsh pools in the North-west Solent.

#### **Pochard *Anas ferina***

The pochard is found primarily on freshwater and normally only visits coastal sites which have a large freshwater input. In freezing weather, they move from inland sites to the closest coastal site. Southampton

Water and Brading marshes support the largest concentrations in the Solent with average winter peak counts of 154 and 68 respectively.

#### **Tufted duck *Aythya fuligula***

Tufted duck occur rarely on saltwater except in freezing weather. The population away from inland waters is low but over 400 have been noted in the Lower Test marshes and Redbridge area (together with pochard) in severe winters such as that of 1963. A small population breeds in the Beaulieu saltmarshes.

#### **Scaup *Aythya marila***

Scaup are relatively scarce in southern Britain. The small total number recorded in the Solent each year (rarely more than a dozen) are usually from the same favoured localities, with larger numbers only appearing irregularly and in a variety of sites such as Portsmouth Harbour, off Dibden/Hythe and off the saltings east of Lymington. A few birds are recorded on passage.

#### **Eider *Somateria mollissima***

The eider appears in variable numbers each year, most often in the winter months. In southern Britain the pattern of occurrence is one of relatively large numbers suddenly appearing each year, often for a period of several years, followed by a dearth of records for several



more. In 1991 only very few birds were recorded; this compares with a record year in 1989 when 130 gathered in Chichester Harbour and Hayling Bay in January (equalling the Hampshire county record), and a summering flock off Pennington which peaked at 32 in August. Nearly all birds were females or immatures.

#### **Common scoter *Melanitta nigra***

There is a very large scale eastwards movement of common scoter in the English Channel in spring with a corresponding but smaller return westward in autumn. Passage occurs mostly to the south of the Isle of Wight often with several thousand passing St. Catherine's Point and Selsey Bill in a single season. Large numbers pass through the Solent only occasionally. Birds have been seen in all months of the year. In 1991, small numbers (up to 30) were noted off Lee-on-the-Solent and Hill Head in a number of months. Calm weather is essential to locate these groups as they are always some distance offshore. Individuals and small groups (usually of less than 10) can occur anywhere along the open coast and, less often, in the estuaries and harbours.

#### **Goldeneye *Bucephala clangula***

Goldeneye visit a number of sites in the Solent in winter. The eastern harbours and Southampton Water each hold an average winter peak of more than 40, but no one site reaches national importance for this species. By day goldeneye spread out and feed around the harbours and estuaries but reform into tight and discrete flocks at nightfall to roost, for example off Weston near

Southampton. Only very few are found feeding along stretches of the open coast. Almost all individuals are females or immatures. The main arrival each year is normally in November or later, with the highest numbers appearing in the coldest winters. The absence of motorised watersports in sites currently occupied by goldeneye is essential for their continued presence in the Solent.

#### **Red-breasted merganser *Mergus serrator***

This species is a winter visitor, arriving from October each year and with some remaining until the spring, although the majority of birds leave in the late winter. The most favoured resorts are Langstone and Chichester Harbours which both hold nationally important numbers. The former harbour held 334 in March 1989, a Hampshire county record. Smaller groups of birds, mostly numbering less than 20 birds, are not uncommon along the open coast, again with certain localities preferred. Osborne Bay and the waters off Seaview held maxima of 44 and 33 respectively in the winter of 1990/1 whilst markedly fewer were found along the mainland coast. Numbers at all sites can fluctuate appreciably between winters even in the 'best' sites.

#### **Other species of wildfowl**

Other species which occur in very small numbers or more rarely off the coast or in the harbours include: Bewick's swan, white-fronted goose, garganey, long-tailed duck, velvet scoter, smew and goosander.



Divers, grebes and seaduck can all be found between Seaview and Bembridge lifeboat station in winter.

Table 1. Average peak winter counts (1985/6 to 1989/90) of wildfowl in the Solent: Hampshire and West Sussex.

	N.W. Solent	Beaulieu Estuary	Southampton Water	Portsmouth Harbour	Langstone Harbour	Chichester Harbour	Total
Little grebe	3	4	30	8	15	37	97
Great crested grebe	10	8	80	4	94	30	226
Cormorant	(28)	(16)	(88)	(37)	(107)	(99)	(375)*
Mute swan	34	4	49	20	32	93	232
Canada goose	20	112	282	30	71	68	583
Brent goose	2210**	718	1737**	2080**	7977**	10288**	25010
Shelduck	462	216	323	179	1468*	2802**	5450
Wigeon	769	424	2221	174	1554	1278	6420
Gadwall	3	21	46	3	3	91*	167
Teal	635	524	1432*	376	688	1697*	5352
Mallard	114	442	532	375	107	615	2185
Pintail	47	91	8	15	242	138	541
Shoveler	31	43	81	38	125*	29	347
Pochard	2	2	154	44	8	18	228
Tufted duck	0	17	105	81	25	30	258
Eider	8	5	3	0	1	23	40
Goldeneye	11	2	48	40	70	64	235
Red-breasted merganser	34	7	46	94	203*	110*	494
Coot	0	12	203	92	55	246	608
Total (excluding cormorants)	4393	2652	7380	3653	12738	17657	48473

Table 2. Average peak winter counts of wildfowl for the five most recent years of data in the Solent: Isle of Wight.

	Yar Estuary	Newtown Harbour	Medina	Wootton Creek	Bembridge Harbour	Total
Little grebe	15	2	9	2	6	34
G.c. grebe	0	2	1	0	1	4
Cormorant	(3)	(5)	(9)	(8)	(26)	(51)
Mute swan	8	8	12	0	11	39
Canada goose	0	43	0	0	19	62
Brent goose	144	1059*	37	99	105	1444
Shelduck	54	482	51	3	47	637
Wigeon	278	834	45	1	17	1175
Gadwall	1	0	0	0	3	4
Teal	708	680	4	17	88	1497
Mallard	39	47	59	93	112	350
Pintail	1	70	0	0	0	71
Shoveler	0	6	0	1	3	10
Pochard	2	1	2	7	30	42
Tufted duck	1	1	3	2	24	31
Goldeneye	2	9	7	0	1	19
Red-breasted merganser	5	25	1	2	1	34
Coot	12	0	16	1	105	134
Total (excluding cormorants)	1270	3269	247	228	573	5587

\* & \*\* Exceeding national and international importance respectively.

# Waders

Six species of wader occur in internationally important numbers at one or more sites in the Solent: ringed and grey plovers, dunlin, black-tailed and bar-tailed godwits and redshank, with a further three represented by nationally important numbers - golden plover, sanderling and curlew (Tables 3 & 4). Chichester Harbour holds all six of the former group and all three of the latter with Langstone Harbour holding four of international importance. Various other sites hold nationally important populations: Southampton Water has five such species, Portsmouth Harbour three, Beaulieu estuary and the North-west Solent two each and Newtown Harbour one. The average wintering population of all waders in the Solent exceeds 100,000 annually.

## Oystercatcher *Haematopus ostralegus*

Oystercatchers are most abundant in autumn and winter, with often more birds recorded in the former season. Although the total wintering population numbers over 4000, no one site achieves national importance. Langstone and Chichester Harbours both hold over 1000 each winter. Few birds use non-estuarine shores, with immatures predominating.

The Solent holds a breeding population of about 200 pairs. Of these about 125 breed between the Beaulieu estuary and Hurst spit; at least 30 in Langstone Harbour

and ten or more in both Chichester Harbour and along the north shore of the Isle of Wight annually. Additional pairs nest away from the coast in arable fields and gravelly areas.

## Ringed plover *Charadrius hiaticula*

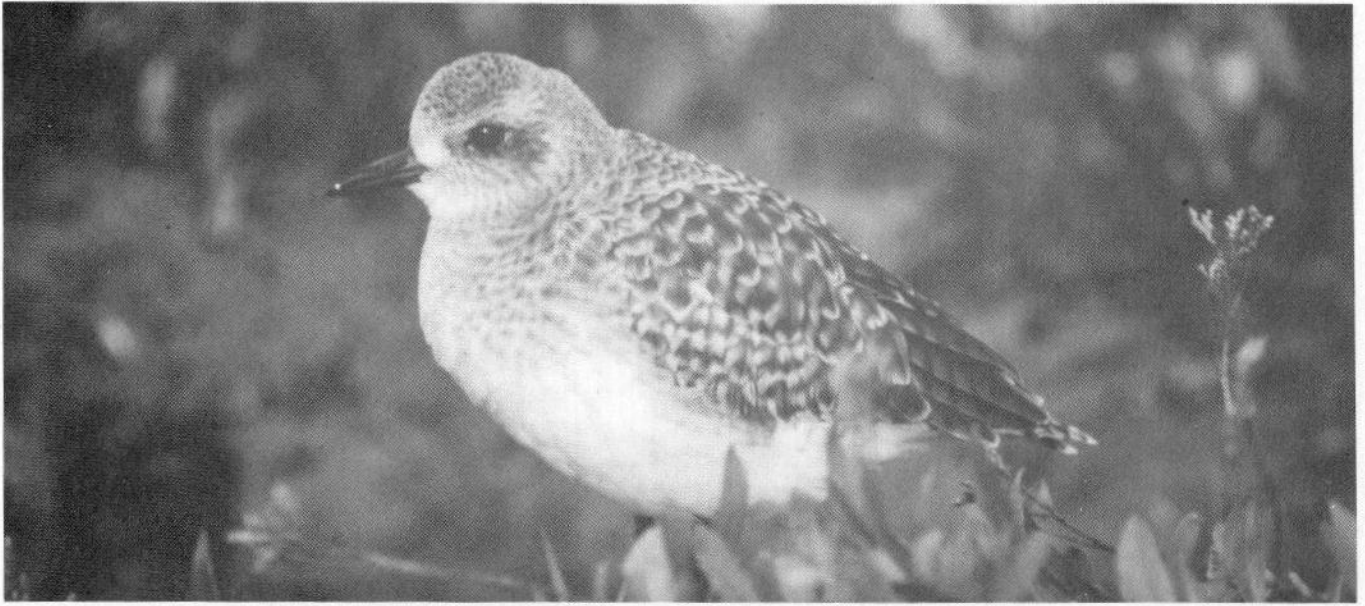
Langstone and Chichester Harbours and Southampton Water hold the most important concentrations of ringed plovers in the Solent. Peak numbers at all sites are usually present between August and mid-November and many are clearly passage birds which overwinter elsewhere. The return passage in the spring is not pronounced. The numbers of birds in the three sites mentioned above are all of national importance with the first two internationally important.

A population of about 150 pairs breeds around the Solent. Important areas include Hurst spit to Pitts Deep (30 pairs), Park shore to Needs Ore (40 pairs), Langstone Harbour (35 pairs) and Chichester Harbour (at least 8 pairs). Many otherwise suitable shingle beaches are subjected to a level of human activity which the plovers find intolerable. Trampling of clutches and desertion following disturbance are doubtless the most frequent causes of failure. As noted previously, there appears to be a retraction of breeding pairs to less disturbed sites, these mostly being nature reserves.



Ringed plovers breed on undisturbed shingle beaches (which are mostly in nature reserves) around the Solent.  
A. Webb





The population of grey plover in the Solent, as elsewhere in the U.K., has trebled in the last twenty years.  
G.Downey/RSPB

**Golden plover *Pluvialis apricaria***

Golden plovers overwinter mainly on arable land, grasslands and airfields although a certain number are always to be found on mud flats. In hard weather, numbers frequenting the latter increase. Recently numbers in and around Chichester Harbour have exceeded the qualifying level for national importance.

**Grey plover *Pluvialis squatarola***

The numbers of grey plover are of national importance in six Solent sites (Table 3) and internationally so in Langstone and Chichester Harbours. There is evidently some movement between mostly neighbouring estuarine sites in the autumn and throughout the winter. Numbers are highest at some sites in the autumn, for example Chichester Harbour, and after declining may then increase again in the late winter. These local movements between Solent estuaries have yet to be fully unravelled. Several hundred non-breeding birds may remain in the Solent in the summer. The main arrival starts in August. A flock of over 200 were recorded at low-tide on the East Pole sands in May 1991.

**Lapwing *Vanellus vanellus***

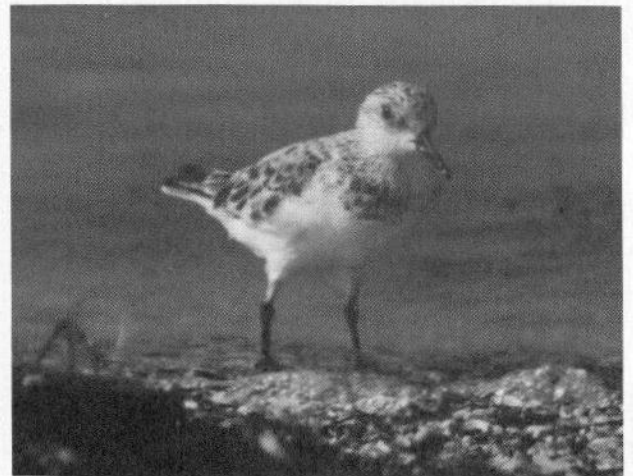
Like the golden plover the lapwing is characteristically a bird of open agricultural landscapes with a minority of the national total feeding on intertidal mud flats. About 10,000 use the Solent in winter, with Chichester and Langstone Harbours, Southampton Water and North-west Solent holding the highest numbers. In hard weather, numbers the unfrozen mud flats can increase substantially, whilst in protracted cold spells lapwings often leave for milder climes such as southern Ireland or Spain.

**Knot *Calidris canutus***

The knot is only ever abundant in the Solent in the three large eastern harbours (Table 3). Numbers vary markedly between winters and have on occasion topped the qualifying level for national importance (2200) at Langstone Harbour. Chichester Harbour is the next most important site although the average peak here is less than half that of Langstone. Most birds arrive in November and depart again in or before the following March.

**Sanderling *Calidris alba***

Almost the entire population of sanderling in the Solent is normally found in Chichester Harbour. Numbers are variable between winters but nonetheless a nationally important number is still present every year. The peak numbers are in September or October after which the estuary counts show a decline and then a rise again. The



In the Solent, the sanderling is the only species of wader also found in nationally important numbers on the open coast.  
M.Lane/Natural Image

March count closely approaches that of the late autumn peak. During 1991 variable numbers of sanderling visited Ryde Sands on the Isle of Wight, before flying back across to Portsea or Hayling Islands to continue feeding or to roost, returning once again as the tide fell. There appears not to be a suitable roost-site in the Ryde area. This cross-Solent movement has not been systematically recorded. A peak of 225 sanderling were counted feeding here in the winter of 1990/91 (which is itself a nationally important number) with even more in October and November 1991 (up to 300). Over 300 sanderling roosted on Southsea beach in early December 1990 and thereafter a feeding flock was often present near the Eastney outfall until late January 1991 (maximum of 180 in December 1990). Two hundred or more were found feeding at Sinah Warren in November, and at Southsea beach again in December, 1991. An alternative roost exists on groynes and pilings at HMS Dolphin, just inside Portsmouth Harbour. Four Solent sites are thus important for this species despite just two flocks being involved. Elsewhere only small numbers were recorded, more particularly on spring passage.

### **Dunlin *Calidris alpina***

The Solent is primarily a wintering area for dunlin (unlike many British estuaries) with apparently little onward movement in autumn or return spring passage. Dunlin mostly arrive from September onward and reach a relatively stable population size from December to February inclusive, departing in March. Adults arrive later than juveniles, having remained in continental sites to moult. Langstone and Chichester Harbours support internationally important concentrations. Two other sites, Portsmouth Harbour and Southampton Water hold nationally important numbers. The number at each site within the Solent is clearly related to the area of available mud flat and specifically that which is the last to flood, thus enabling a longer feeding period for this short-legged wader. The mean numbers wintering annually at North-west Solent, the Beaulieu estuary and Newtown Harbour exceed 3000, 2000 and 1000 respectively.

### **Snipe *Gallinago gallinago***

It is virtually impossible to census the total number of snipe using an area as they often remain concealed in wet grassland and saltmarshes. Birds counted during the BOEE are usually flushed out of grazing marshes beside the estuary. The counts therefore underestimate the Solent population. The qualifying level for national importance has yet to be established.

### **Black-tailed godwit *Limosa limosa***

This elegant, long-legged wader breeds in Iceland and visits the Solent in winter. Seven sites hold at least nationally important concentrations, two of them (Langstone and Chichester Harbours) holding numbers

of international importance. This species feeds on worms in flooded and waterlogged fields as well as on mud flats, and frequents the former mostly following heavy rains. Due to this opportunistic feeding habit the overall total for the Solent varies between successive winters. Peak numbers as a whole are usually in October or November although individual sites often deviate from this pattern of occurrence. There is some evidence, pointed out by previous authors, of a progression of birds from east to west during the winter with peak numbers at the Beaulieu and North-west Solent generally in the spring. A small population remains in the Solent through the summer, with additional birds arriving from the late summer onwards.

### **Bar-tailed godwit *Limosa lapponica***

Bar-tailed godwits from Siberia overwinter in internationally important numbers in Chichester Harbour and nationally important numbers in Langstone Harbour. Peak numbers of this species in the Solent each year are in mid-winter. The peak count at individual sites however, varies between December and February. Very few are seen outside these two harbours. Up to 130 cross from the mainland (probably from Langstone Harbour) to feed on Ryde Sands. A small number spend the summer in the harbours. A flock of godwits including some feeding birds was occasionally seen on East Pole Sands (maximum of 60 in May 1991) and on East Winner Sands at low-water.

### **Curlew *Numenius arquata***

The Solent holds a large wintering population of curlew but only a single site, Chichester Harbour, supports a nationally important assemblage. Overall numbers are highest in the autumn. Although many feed on intertidal mud flats probably more feed inland on arable fields and pastureland. During freezing weather, birds typically remain to feed in coastal sites (where they always roost even if feeding inland by day). Curlew are still numerous in many sites in summer and large moulting concentrations occur on undisturbed saltings and coastal grazing marsh then. Movements of curlew from the mainland to the Isle of Wight or vice versa are a daily feature in the western Solent in winter.

### **Spotted redshank *Tringa erythropus***

Although this species only overwinters in very small numbers, the population in late summer and autumn, either passing through the Solent or remaining to moult, makes the area one of the top five such sites in the United Kingdom. Numbers have declined considerably in recent years. This is largely through drainage changes at the premier site of Needs Ore and The Gins (Beaulieu). Langstone Harbour is often as important as the Beaulieu estuary, with recent counts of some 30 or more at each in summer or early autumn; this being only about half the previous peak counts for the latter site.





A few hundred pairs of redshank breed in Solent saltmarshes, with about 4000 visiting in the winter months.  
*D.Element/Natural Image*

### **Redshank *Tringa totanus***

There is a large scale autumn arrival of redshank to the Solent estuaries with numbers at some sites higher than in any of the winter months. The peak month is generally November, with Chichester Harbour the dominant resort. The numbers present are partly controlled by the prevailing weather conditions with birds leaving the area during particularly cold spells.

An unknown number of redshank breed locally in the purslane *Halimione portulacoides* dominated saltmarshes fringing many intertidal areas with a probably smaller number in sites predominantly of cord-grass *Spartina*. The highest density and largest numbers of breeding birds are in Langstone Harbour where 42 pairs bred on the islands alone in 1991. The Beaulieu estuary holds about 40 breeding pairs and Chichester Harbour and the North-west Solent each about another 20 pairs. Recent estimates of breeding numbers are mostly lacking from other sites, but apart from Newtown Harbour and the Yar estuary with more than 20 and about 30 pairs respectively in 1985, none is as important as any of those already mentioned. Many more redshank nest alongside dykes in the freshwater grazing marshes.

### **Greenshank *Tringa nebulosa***

The greenshank is a passage visitor to the Solent. Langstone and Chichester Harbours are the most important sites and in late summer or autumn support over 100 individuals in the peak period. There must be an element of turnover involved so the true number visiting in a season could well be far higher. In addition

ten to twenty are usually seen at Southampton Water, Beaulieu estuary, and in the Pennington and Keyhaven area. The passage populations in the two eastern harbours mentioned are probably of national importance.

### **Turnstone *Arenaria interpres***

Turnstone locate their invertebrate prey under seaweed or pebbles and are therefore often found along rocky or pebbly shores with stranded wrack as well as on mud flats. The majority of birds are found in just a few estuarine sites in the Solent with non-estuarine sites numerically relatively unimportant. No one site supports the 450 birds required for national importance although they do not fall far short in Southampton Water and Langstone Harbour in some years. These two sites each support over 300 on average with Chichester Harbour, the next most important site, holding about 200.

Away from the harbours in 1991, the only sites with fifty or more birds were Calshot to Lepe (66 in August), Gilkicker and Titchfield (107 in January) and Hayling Bay (207 in January and 90 in November). Proportionately more turnstone use non-estuarine shores in the Solent than any other wader species.

### **Other wader species**

Other species regularly recorded in the harbours and along the coast, mostly only in small numbers at all times, include avocet, little stint, curlew sandpiper, purple sandpiper, ruff, whimbrel, common sandpiper and grey phalarope.



Table 3. Average peak winter counts (1985/6 to 1989/90) of the most abundant waders in the Solent: Hampshire and West Sussex.

	N.W. Solent	Beaulieu Estuary	Southampton Harbour	Portsmouth Harbour	Langstone Harbour	Chichester Harbour	Total
Oystercatcher	136	210	543	367	1914	1147	4317
Ringed plover	122	71	360*	170	564**	995**	2282
Golden plover	39	77	600	24	11	2141*	2892
Grey plover	389*	437*	430*	244*	1441*	1888**	4829
Lapwing	1125	596	1605	381	1475	2487	7669
Knot	3	0	0	326	1877	721	2927
Sanderling	0	0	0	15	7	307*	329
Dunlin	3685	2025	5346*	7409*	31152**	21885**	71502
Snipe	131	3	262	27	102	144	669
Black-tailed godwit	111*	254*	577*	138*	888**	715**	2683
Bar-tailed godwit	27	7	2	4	615*	1096**	1751
Curlew	420	336	643	399	794	1606*	4198
Redshank	316	113	746*	350	715	1721**	3961
Turnstone	194	50	364	82	320	198	1208
Total	6698	4179	11478	9936	41875	37051	111217

Table 4. Average peak winter counts (1985/6 to 1989/90) of the most abundant waders in the Solent: Isle of Wight.

	Yar Estuary	Newtown Harbour	Medina	Wootton Creek	Bembridge Harbour	Total
Oystercatcher	1	30	68	21	4	124
Ringed plover	11	7	3	5	38	64
Golden plover	0	262	0	0	0	262
Grey plover	5	154	12	23	16	210
Lapwing	131	646	252	29	459	1517
Knot	0	0	0	0	30	30
Sanderling	0	0	0	0	32	32
Dunlin	124	1193	283	55	356	2011
Snipe	0	17	3	0	29	49
Black-tailed godwit	7	114*	8	0	0	129
Bar-tailed godwit	6	1	0	0	0	7
Curlew	29	259	38	67	13	406
Redshank	21	117	98	76	109	421
Turnstone	5	9	13	2	3	32
Total	340	2839	778	278	1059	5294

\* & \*\* Exceeding national and international importance respectively.

# Seabirds

The Solent saltmarshes support nationally important breeding colonies of black-headed gulls and common, Sandwich and little terns. Cormorant, shag and guillemot breed on the chalk cliffs at the western end of the Isle of Wight; this being the most easterly breeding site on the English Channel coast for all three species. Herring and great black-backed gull breed here also and fulmars attempt to do so. Many seabirds visit the Solent on migration or in the winter months.

## **Fulmar *Fulmarus glacialis***

Fulmars first colonised the cliffs on the south of the Isle of Wight in 1953 but successful breeding has only ever been confirmed at Gore cliff. In 1991, eleven occupied sites were found between the Needles and Freshwater, with none at Culver cliff (a previously tenanted site). Fulmar are present on the cliffs between January and September.

Fulmars rarely enter the Solent itself and, on the offshore surveys, single birds were recorded on only two occasions (June and September). More were seen from land during nearshore surveys, particularly in Bracklesham Bay. Large numbers regularly pass Selsey Bill in the spring and early summer.

## **Cormorant *Phalacrocorax carbo***

At least 132 pairs of cormorant nested on the chalk cliffs of Main Bench in 1991; this being a nationally important colony. Breeding success was high, with fledging lasting

for over two months in 1991: from the last day of May until early August. Cormorants were seen returning to the colony during the breeding season from their shallow water feeding areas throughout the Solent.

This species is counted systematically in winter but numbers in many sites were highest in late summer and autumn, which is outside the main BOEE counting period. Langstone and Chichester Harbours and Southampton Water hold the highest daytime numbers. Southampton Water supports a night-time roost of birds, mostly on a single electricity pylon at Eling, with a smaller number at Hythe. Most other cormorants left the harbours and estuaries to roost on Culver cliff, Main Bench or the Palmerstonian forts. Yet others flew south-westwards across the New Forest in the evening, and were probably also heading to Main Bench, although some may have been flying to a tree roost in the Avon valley. In recent years, an increasing number appear to remain in the eastern harbours at night. The nocturnal roost site of many cormorants is not known with any surety and additional 'new' sites may yet be found.

Feeding cormorants are widespread at all times of the year and can be observed diving and catching prey beneath their colony, in the harbours and river mouths, at inland sites and waters mostly within two kilometres of the shore. Prey included garfish *Belone belone*, flatfish (dab/flounder) *Limanda/Platichthys* and eel *Anguilla anguilla* amongst others. Most birds seen on the offshore survey were either flying across the Solent or sitting on navigational buoys and posts.



Cormorants feed in shallow water around the Solent and breed on the West Wight cliffs.

### Shag *Phalacrocorax aristotelis*

Ten pairs of shag nested on the Main Bench cliffs in 1991. Shags seldom enter the Solent and the only observations away from the colony were of singles off Portsea Island, between Yarmouth and Newtown and in Osborne Bay in winter and in Hayling Bay in the autumn and winter and a regular wintering site off Bembridge lifeboat station, which held a peak of 6 in February 1991. Only one was seen during the offshore survey, this also being off Bembridge.

### Mediterranean gull *Larus melanocephalus*

This species is a rare visitor to the Solent although it is becoming more numerous. Pairs have occasionally bred in the North-west Solent gulleries, including on the first ever recorded occasion in Britain in 1968. Adults and subadults still sometimes hold territory in the black-headed gull colonies. There is a small wintering population and a greater number of migrants visiting in early spring and autumn. The area from Bembridge to Ryde Sands was easily the most popular with this species. Birds fed only occasionally at the sewage outfalls. No more than two were seen at any time away from the Bembridge to Ryde area, where a peak of 11 was recorded in August 1991.

### Black-headed gull *Larus ridibundus*

The entire Solent population represents about 18% of the British and Irish total of coastal nesting black-headed gulls. All Solent colonies were counted in 1991 (Table 5) and the grand total, just short of 16,000 pairs,

represents about 70% of the English Channel population (and 1% of the world population).

Black-headed gulls feed along the coast on mud flats and outfalls and inland on fields throughout the year. Scavenging in seafront carparks is commonplace. Numbers increase at all sites away from breeding sites from July onwards. The use of intertidal mud flats for feeding also increases markedly immediately post-breeding. A number regularly feed on the mud flats at the wash edge resulting from the passage of the Wightlink ferry at Lymington. The numerous freshwater streams and rivulets crossing the foreshore at low water are used by bathing gulls.

Numbers of birds counted on the land-based nearshore survey were highest in the winter months. Over 1000 birds were recorded on one or more occasion from five stretches of coast in the Solent (Appendix 3); these being exclusive of sites where birds gathered to roost. The number of juvenile and immature birds seen on nearshore surveys, at the outfalls or during offshore surveys rarely reached double-figures. Young birds fledging successfully from Solent colonies leave the area in autumn.

Roosting birds gather at a number of coastal sites. At Langstone Harbour, Southampton Water and Ryde Sands more than 10,000 may gather at dusk in the winter months. A large but unknown number will be immigrants. These roosts breakdown for the summer when migrants have left the Solent and when breeding birds remain at or near their colony overnight. They begin to reconvene at winter roost sites from August

Table 5. Seabird colony counts in the Solent, 1991 (pairs unless stated otherwise)

#### a. Beach & saltmarsh sites

	North-west Solent	Beaulieu Estuary	Langstone Harbour	Chichester Harbour	Newtown Harbour	Total
Black-headed gull	5930	8726	41	942	329	15927*
Sandwich tern	10+	151	0	5	0	166*
Common tern	120	140	38	22	2	322*
Little tern	4	33	103	11	1	154*(a)

(a)- Includes 2 other nesting pairs.

#### b. Cliff-nesting and buildings

	The Needles to Freshwater Bay	Culver cliff	Horse Sand Fort
Fulmar	11 sites	0	0
Cormorant	132*	0	0
Shag	10	0	0
Herring gull	33+	0	1+
Great black-backed gull	5	1	0
Guillemot	202 individuals	0	0

\* Nationally important



onward. A coordinated count of all roosting gulls was conducted in January 1992 (Table 6).

The boat-based survey found that most black-headed gulls were in the more sheltered and shallow parts of the Solent, west of Spithead, and were scarce further offshore in the eastern part of the area. Highest numbers were seen from July to September and in winter; nearly all were adult birds.

#### **Common gull *Larus canus***

In the winter months common gulls are the second most numerous gull in the Solent. Only a few birds remain in other months and these are mostly immatures. Single pairs have occasionally attempted to breed in recent years in at least two sites. Returning birds begin to appear in late July or August and, in contrast to earlier observations, in recent years these birds have moved away from the area. Four sites held more than 100 in winter. The two most important were Hayling Bay and Portsea Island (although many of the same birds may have been involved). Numbers declined here after January. About 200 common gulls were present continuously from January to March between Ryde and Bembridge.

Common gulls fed on the coast and inland but were seldom seen at outfalls. One exception to this was off Ryde, where birds combined scavenging behind the Fishbourne to Portsmouth ferry with foraging on the discharged waste from Ryde outfall. Up to 60 common gulls fed in the turbulent waters off the ferry stern and then either returned to the outfall or sat on the sea awaiting the next ferry.

Far more common gulls roost in the harbours than are counted along the coast or offshore, indicating that most feed inland. Birds feeding inland return to the coast to roost. In winter 1990/91, the greatest numbers were present in March when there were about 11,000 in Langstone Harbour and 1140 off Ryde. This was considered to be coincident with a large scale arrival of migrant birds in the former site, very few having been seen at roosts there earlier in the winter. Any seasonal changes during the course of the winter would only be detected by regular counts at these roosts. A single count of all roosts was conducted in January 1992 (Table 6).

This species is not restricted to coastal and inshore areas. Common gulls were frequently seen some considerable distance from land during offshore surveys. The highest numbers offshore were again in March and in November and December. Most offshore records were from the waters off the eastern end of the Isle of Wight.

#### **Lesser black-backed gull *Larus fuscus***

The lesser black-backed gull is a migrant gull to Hampshire and Isle of Wight, with highest numbers

present on the coast in winter. Many birds feed inland by day and roost on the coast at night. The only site on the coast that regularly held more than ten birds was Eling Great Marsh at the head of Southampton Water. The peak count here in the 1990/91 winter was of over 160 in mid-February.

One or two pairs have bred at Culver cliff and Main Bench on the Isle of Wight and non-breeding pairs occasionally summer elsewhere. None were located during the survey of breeding seabirds in 1991.

Only one to three birds were seen at any site during nearshore surveys or at outfalls during 1991. A total of six individuals were seen on offshore surveys (in June and August).

#### **Herring gull *Larus argentatus***

At least 33 pairs of herring gull bred on the Main Bench cliffs in 1991. Numbers have declined here since the 1970s when several hundred pairs bred. Pairs have also bred at Culver cliff but none was nesting here in 1991 (despite a large number being present throughout the summer). At least one pair bred successfully on Horse Sand Fort, and probably many more, but it was unsafe to land to conduct a thorough search. Breeding attempts are sometimes made at Newtown Harbour, Southampton Town Quay (3 pairs in 1990) and also formerly at Needs Ore Point and the north-west Solent saltmarshes.

Feeding birds are commonly found along the open coast but more typical are regular flight-lines to rubbish tips inland. Resting flocks, mainly of immature birds, are regular in certain undisturbed parts of the foreshore. There was an influx of adult and immature yellow-legged herring gulls in July and August 1991, particularly around Southampton Water, off the Isle of Wight and in Bracklesham Bay. These birds, which some authorities consider to be a separate species, breed no nearer than south-west France.

Total numbers recorded on the nearshore counts were highest in the late autumn and winter. Over two hundred were recorded on the East Pole Sands but a count of over 500 between Fishbourne and Seaview in October involved a number of birds preparing to roost. The herring gull was included in the roost count of January 1992 (Table 6).

Some herring gulls occur around fishing and angling boats and clam-dredgers offshore in winter. Offshore numbers are lowest in poor weather. However the majority feed at inland sites, often at rubbish dumps and landfills, and return to the harbours, Lee-on-the-Solent and Southampton Water to roost.

#### **Great black-backed gull *Larus marinus***

In 1991, five pairs of great black-backed gull nested in the Needles-Main Bench area of the Isle of Wight, with a solitary pair at Culver cliff. Single pairs have

Table 6. Coordinated count of gulls roosting in the Solent, 11 January 1992.

Mainland							
	Lymington river	Beaulieu estuary	Southampton Water	Portsmouth Harbour	Langstone Harbour	Chichester Harbour	Total
Black-headed gull	850	375	20002	4825	8500	2624	37176
Common gull	0	0	44	1200	1700	97	3041
Lesser black-backed gull	0	0	65	15	0	0	80
Herring gull	3	15	224	200	167	3	612
Great black-backed gull	8	4	26	60	62	15	175
Unidentified/others	0	0	560	2	0	2685	3247
<b>Total</b>	<b>861</b>	<b>394</b>	<b>20921</b>	<b>6302</b>	<b>10429</b>	<b>5424</b>	<b>44331</b>
Isle of Wight							
	Totland Bay	Newtown Harbour	Ryde Sands	Bembridge	Total	Solent Total	
Black-headed gull	970	425	5000	850	7245	44421	
Common gull	0	0	163	48	211	3252	
Lesser black-backed gull	0	7	0	0	7	87	
Herring gull	0	38	76	120	234	846	
Great black-backed gull	0	6	0	0	6	181	
Unidentified/others	0	0	2	0	2	3249	
<b>Total</b>	<b>970</b>	<b>476</b>	<b>5241</b>	<b>1018</b>	<b>7705</b>	<b>52036</b>	

occasionally attempted to nest elsewhere in recent years, for example at Newtown Harbour.

The greatest numbers of birds recorded during nearshore surveys were in late summer and were mostly immature birds. Gatherings are regular at low water at undisturbed saltings, private beaches, sandbanks and on shingle islets and bars. The main venues are off the eastern harbour mouths, Titchfield/Hill Head shore, Park shore and the Pennington/Keyhaven area. Visits to rubbish dumps, such as that near Pennington, are normal throughout the year. Winter roosts of over 200 are known from Southampton Water (specifically at Hill Head and on the barges off Hythe) and Portsmouth and Langstone Harbours.

Feeding birds are regular offshore particularly around fishing boats. The highest numbers there were in January, July, September November and December. Lower numbers fed offshore in foggy and rough weather. Most offshore feeders were adult.

#### **Kittiwake *Rissa tridactyla***

Kittiwakes first bred on the Main Bench cliffs in 1969. The colony grew to a peak of 90 pairs in 1977, but five years later had reduced to 8 pairs, with none at all the following year. This is a curiously rapid history of colonisation and extinction. The nearest presently extant colony is at Durlston Head near Swanage in Dorset.

The few birds seen during either the land-based or offshore surveys, were in the autumn and winter months.

Kittiwakes occasionally visit the Solent in large numbers. Generally this is during and following gales, particularly in the autumn and winter months (when gales are more likely anyway) and at such times several hundred birds may arrive. Kittiwakes are regularly seen on spring migration passing Selsey Bill and on rarer occasions off Gilkicker Point and Hurst Castle.

#### **Sandwich tern *Sterna sandvicensis***

Nesting Sandwich terns were present in three localities in 1991 (Table 5) and the total of 166 pairs represents about 2% of the British breeding population. The largest colony was at Needs Ore where 151 clutches were counted in 1991. The two other Solent colonies, in north-west Solent saltmarshes and Chichester Harbour held about 10 and 5 pairs respectively. In 1991 young birds fledged before the end of June.

In May Sandwich terns returned to the Needs Ore colony with unidentified display fish caught in Newtown Bay. Foraging birds were seen throughout the Solent in summer, although many of these may have been non-breeding individuals. Bracklesham Bay, Hayling Bay, Portsea Island and between East Cowes and Bembridge appeared to be favoured localities. Some birds also fed in the harbours. In the autumn, Stanswood Bay (between Calshot and Lepe) became important, as did the coast between Newtown and Cowes. Many birds in the autumn may have been immigrants as the local breeding birds disappeared rapidly after the young fledged in June, with few then being seen until a subsequent influx

in August. Sandwich terns return to the Solent in late March or early April.

There were few offshore records of Sandwich tern and almost all were off the harbour mouths or in the western Solent.

#### **Roseate tern *Sterna dougalli***

This internationally rare and threatened seabird has bred on the Hampshire coast in the recent past and passage birds are often seen in late May and June and again in late summer or early autumn. Most sightings are in the western Solent. In 1991, five birds were seen off both Titchfield Haven and Calshot spit in August and included three adults that had been colour-ringed at an Irish Sea colony. The few other sightings were almost invariably of individuals seen in large flocks of common terns.

#### **Common tern *Sterna hirundo***

Breeding common terns were present in six localities in the Solent in 1991 (Table 5). The total of 284 pairs represents over 2% of the British breeding population. The two largest colonies are at Needs Ore and the north-west Solent saltmarshes. In 1991 the young fledged mostly from the last week of July onward.

Foraging common terns were widely distributed along the coast and, unlike the sandwich tern, frequently hunted in sizeable fishing flocks, sometimes numbering over 100 individuals. In the autumn some very large flocks (holding more birds than could be accounted for by the local breeding population) gathered on sand bars.

The largest of these gatherings were off West Wittering on the East Pole Sands (over 300 birds) and off Titchfield or Calshot (over 400). Over 100 were recorded at this time between Cowes and Wootton. Similar post-breeding flocks of birds have been noted in Newtown Bay and Harbour mouth (100+) and at the Kench/Sinah or on the East Winner bank in Hayling Bay (400+) in other years. In 1990, more than 1200 were off Titchfield Haven in late August and about 1000 were between Sowley and Gilkicker in mid September. The Solent is clearly extremely important for this species.

Offshore areas were relatively unimportant with the exception of the area encompassed by East Knoll/Bramble Bank and Ryde Middle, Peel and Mother Banks (Figure 4). The boat surveys encountered feeding flocks of common terns (including many juveniles) here in July, August and September. The northern half of the area was important also in late May and June. This was the most important fishing ground for common terns in the Solent in 1991.

#### **Little tern *Sterna albifrons***

About 8% of the British population breeds in the Solent (Table 5). Numbers at the various colonies can vary widely between years. In 1991, the islands in Langstone Harbour formed the most important site with 103 pairs. At Needs Ore and Chichester Harbour there were a further 33 and 11 pairs respectively. Three other sites held four or less pairs in 1991. At another site, 50 to 60 birds arrived late in June (perhaps having already failed elsewhere) but made no nesting attempt. At Needs Ore breeding success was poor in 1991, with only 4 or 5 pairs with young from over 30 breeding attempts.



Little terns breed on virtually bare sandy beaches but are only successful when undisturbed.  
*M. Powles/Natural Image.*



Little terns appear each year in mid to late April and only rarely remain until September, most having departed by mid-August. For much of the summer, little terns fed very near their colonies, in river mouths, in the harbours or along the shore adjacent to the colony. The most constant feeding site and time was off West Wittering at the mouth of Chichester Harbour during ebb tides.

Offshore sightings were unusual with only three records of a total of seven birds between late June and early August.

#### **Guillemot *Uria aalge***

A count of breeding guillemots at Main Bench on 8 June 1991 found a maximum of 202 individuals. Numbers have been declining here, for unknown reasons, from the 3000 birds present here in 1937; 1200 birds were present in 1946 with less than 250 in any year since 1967.

Young leave the colony from mid-June onwards. During the breeding season, no adult guillemots were seen either from land or at sea in the Solent itself, so birds from this colony must feed somewhere to the south of the Isle of Wight. In other months very few birds were seen during nearshore surveys. The maximum count offshore was of 12 birds in January 1991 but since they (and two birds in late February) were all still in non-breeding plumage they were presumably immature. The Solent is clearly not an important wintering area for guillemots.

#### **Razorbill *Alca torda***

A few pairs of razorbill may still breed at Main Bench although none was recorded there on the visit in June 1991. The population has declined progressively: there were about 1000 in 1937; 200 in 1946; 120 in 1957 and less than ten in any year in the last decade. Single razorbills were seen on three offshore surveys; twice in the winter and once in August. The last individual was a juvenile (from an unknown breeding station).

Single razorbills were recorded on the nearshore surveys on three occasions in midwinter. As with guillemots, it is evident that the Solent is unimportant as a wintering area for this species.

#### **Other seabirds**

Many other species of seabird were seen on either nearshore or offshore surveys during 1991 or have been recorded in previous years. These include gannet, little, Sabine's, ring-billed, glaucous and Iceland gulls, pomarine, arctic, long-tailed and great skuas, little auk and puffin (which also formerly nested at Main Bench). Most records of these species are either during migration periods or in the winter months. Manx and sooty shearwaters and storm and Leach's petrels being 'oceanic' species are, not surprisingly, rare in the Solent but have been recorded off Selsey Bill and St. Catherine's Point and very occasionally elsewhere (and then most often during or after gales).

#### **Other species**

Many other species live in coastal habitats throughout the year and yet others may visit during the winter months or on migration. Coots and moorhens have a similar lifestyle to some species of wildfowl. They usually frequent rivers, freshwater dykes and pools but, during hard weather especially, will congregate on the intertidal fringe of estuaries and harbours. Kingfishers and herons will fish in fresh or salt water and both were regularly recorded during surveys. The highest numbers of the latter were in the autumn or first half of the winter. More than fifty have been counted at Eling Great Marsh and Langstone Harbour, with ten or more at several other sites. Ospreys are frequent passage visitors to the harbours and estuaries. Individuals were seen at Pennington, Beaulieu estuary, Southampton Water and Chichester Harbour in spring or autumn 1991. Various passerines inhabit saltmarshes, especially in winter. Flocks of linnets often number several hundred. Other species which regularly congregate here include reed buntings, skylarks, rock and meadow pipits. Small numbers of twite occasionally winter as far south as the Solent. Starlings roost overnight in *Spartina*-dominated saltmarshes and coastal reedbeds from late July or early August onward. The rock pipit occurs as a resident and a winter visitor to the Solent coast. Pied wagtails are also frequent on the foreshore. Three species of corvid (rook, carrion crow and jackdaw) are encountered regularly, foraging for marine invertebrates on the Solent foreshore. The rook is easily the most numerous. The north-west Solent, Thorness Bay and Seaview duver are the most popular sites.

# Discussion

## Counting problems

The BOEE counts are made once a month during winter. Higher counts of some wildfowl and waders may be obtained on dates other than on the official count date or in months outside the normal count period of September to March. Similarly counts of birds at their roost (as with most BOEE counts) may give a false impression of the importance of a nearby feeding site; more birds may feed nearby than are actually present at a roost or vice versa. Low water feeding studies were undertaken by the Hampshire Ornithological Society in Southampton Water during the winter of 1990/91 (Unsworth 1991).

All species were recorded and counted during nearshore surveys of the open coast. However it was not possible to visit all sites at all states of the tide on different tidal series in all months of the year. Any short-lived concentrations may have been missed as a result.

At most sites along the open coast, gulls and waders were most numerous at or approaching low water except when the site was used primarily as a roost. It is probable therefore that on occasion higher counts than those given in the tables could be obtained at individual sites.

The offshore survey used a standardised method for recording birds at sea. This sampling survey was likely to have missed some short-lived local concentrations, but would have detected large-scale gross changes in numbers of birds using the area. The 1991 offshore survey results may not be representative of all years.

## Natural variation in numbers of birds

The numbers of seabirds present in summer and early autumn are likely to be comparable between years, as the birds derive mostly from colonies in the Solent. Their exact distribution within the Solent may vary from year to year due to variation in colony location. However, terns (whose colony locations move most frequently) were using clearly identifiable habitats within the Solent for feeding. The shorelines close to the colony sites and the waters over the sandbanks in the centre of the Solent will probably remain important as feeding sites regardless of colony location.

The number of seabirds, seaducks, divers and grebes present in winter may vary widely between years. For example, large numbers of kittiwakes have appeared in the Solent following severe gales. Equally the offshore and nearshore areas are likely to become much more important for seabirds if similar areas to the north and east become frozen in winter. Numbers of wildfowl and

waders also vary dependent on the weather to the north and east of the Solent. The relatively mild south coast harbours and mud flats are much less prone to freezing than those in Germany or the Netherlands for example.

Bird feeding and roosting distribution may change. For example, in recent years red-breasted mergansers have both fed and roosted in the eastern harbours, whereas formerly they flighted out onto the open sea for the night. The counts and observations in this report indicate the present situation and should not therefore be used to predict future changes in numbers of birds or their distribution.

## Conservation importance of areas within the Solent

Figures 3 and 4 summarise the most important breeding, feeding and roosting sites for wildfowl, waders and seabirds in the Solent. Conservation of these areas is essential to preserve the overall importance of the Solent. Within those areas identified as being of international importance (the SPA's in the eastern harbours and west Solent), this is a statutory requirement. Assessment of the pressures and risks to these areas is beyond the scope of this document, and has been carried out elsewhere (e.g. Davidson *et al.* 1991). Obvious past and present pressures on the area include land-claim, industrialisation, recreation and waste discharge.

The importance of different parts of the Solent to birds throughout the year is summarised in Figure 5. The three large eastern harbours, Southampton Water, the Beaulieu estuary, the North-west Solent and Newtown Harbour are important in all months of the year, primarily for wildfowl and waders in autumn and winter and for seabirds in summer. The Solent estuaries are vital staging areas for waders stopping to feed before continuing on migration. Ryde Sands and Southsea beach are important for sanderling in winter. Offshore areas in the Solent are important in summer and autumn for flocks of feeding terns (including many migrants in autumn); the same birds also forage in nearshore waters: between Newtown and Cowes, off Wootton, Calshot and Titchfield Haven and in the mouths of Langstone and Chichester Harbours. Gull roost sites are the most important areas for seabirds in winter.

All commercial, industrial and recreational activities in the Solent should be encouraged to adopt a sympathetic attitude toward wildlife conservation, in what is one of the top sites for waterfowl and breeding seabirds in north-west Europe. In future, UK implementation of European Wildlife Directives will extend statutory regulation into offshore areas.

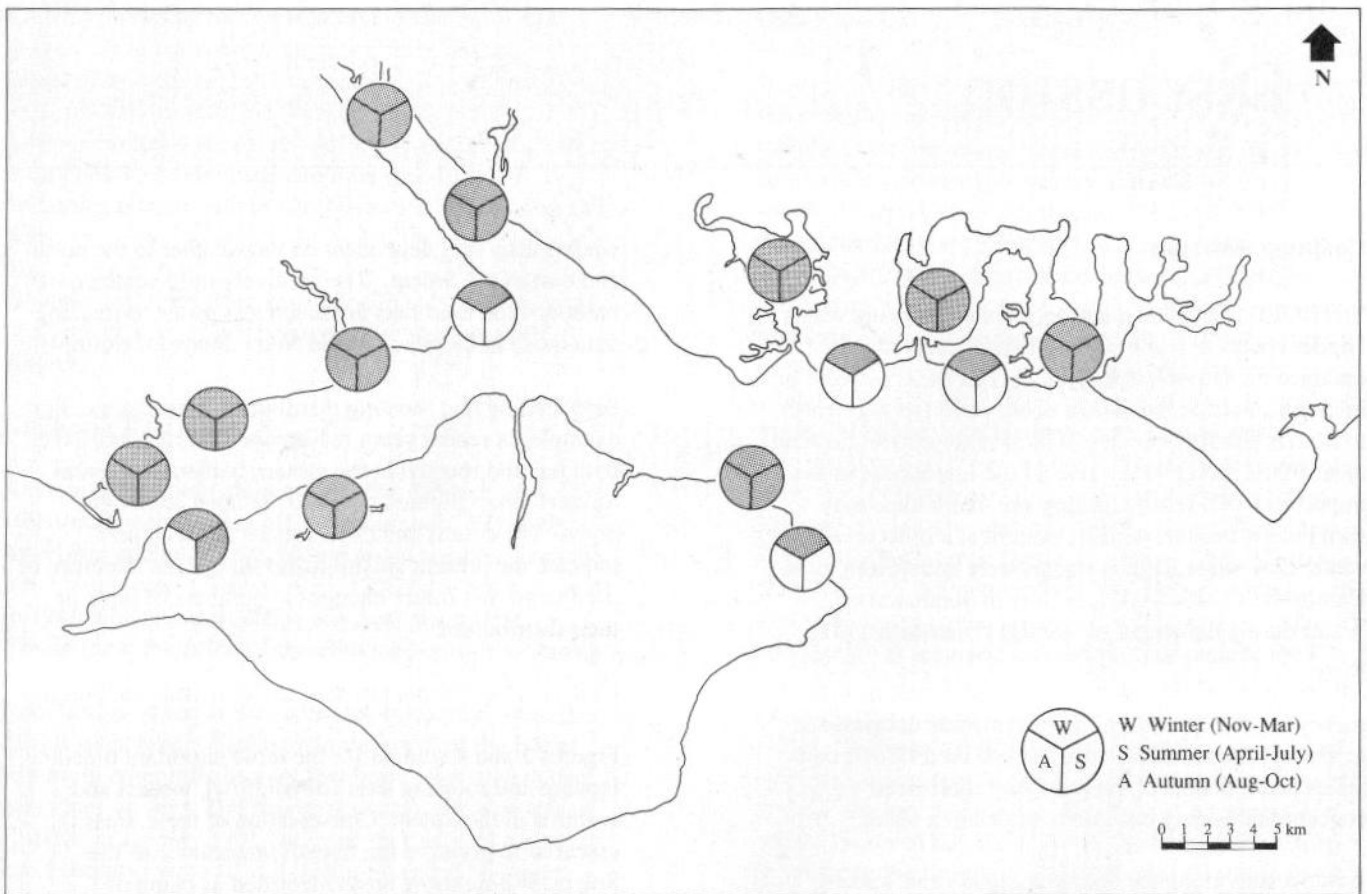


Figure 3 Important breeding, feeding and roosting sites for wildfowl and waders in the Solent

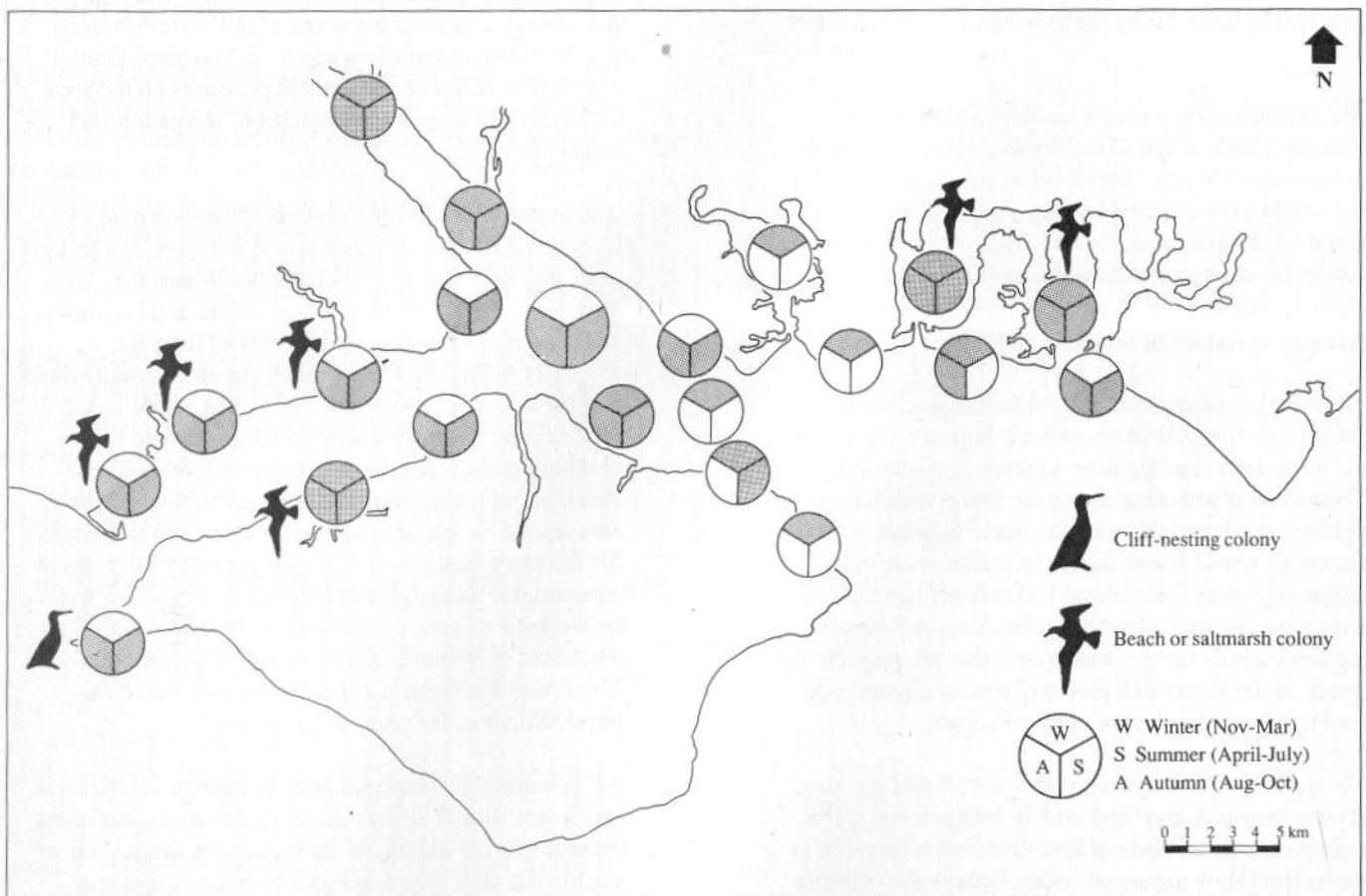
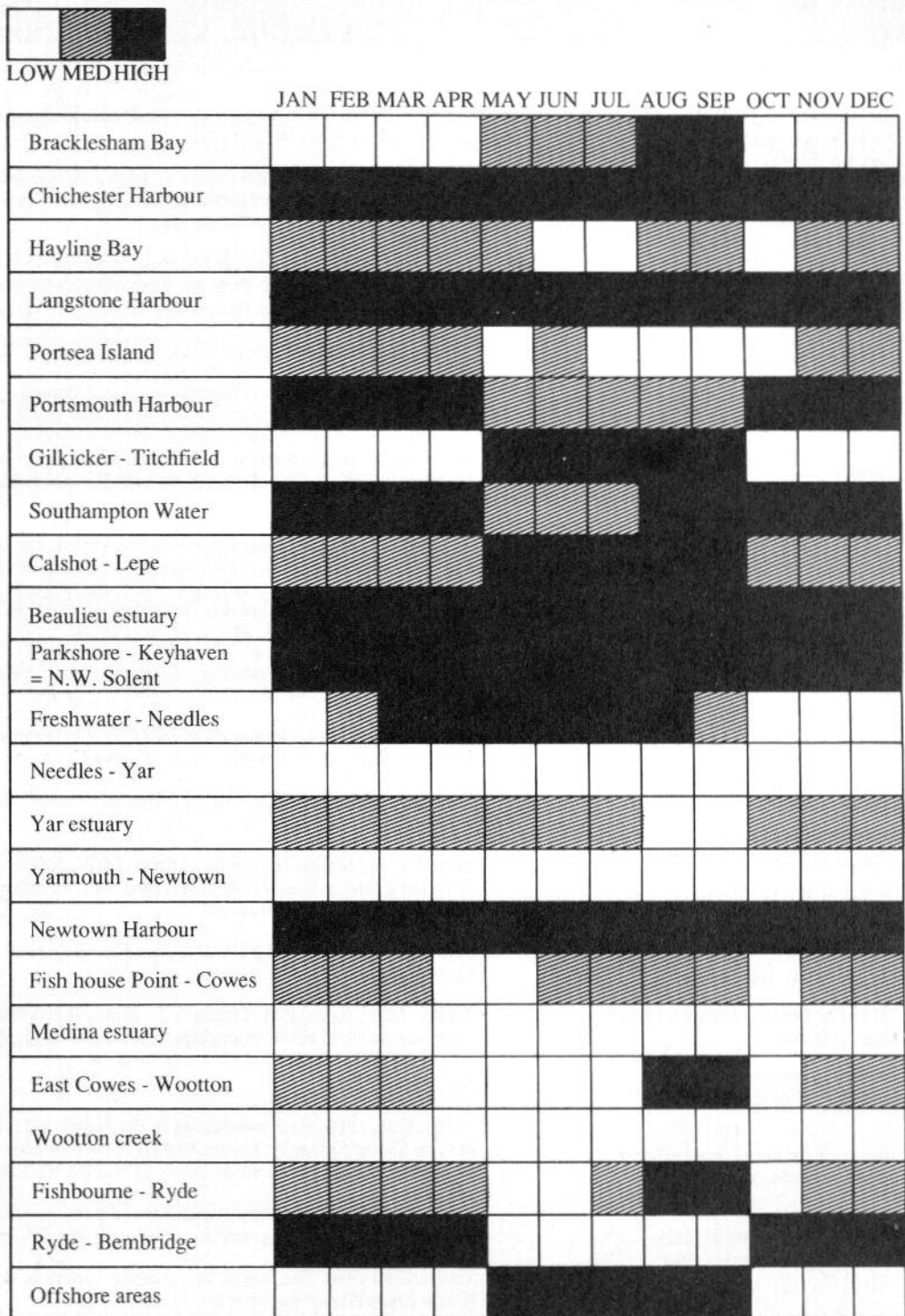


Figure 4 Important breeding, feeding and roosting sites for seabirds in the Solent



**Figure 5** Summary of the relative importance to birds of different parts of the Solent throughout the year



**Further studies**

Clearly there is much still to be learnt about bird populations in the Solent. Quantifying the use of different intertidal areas by feeding waders would be a particularly valuable study. For the same reasons an attempt should also be made to unravel movements of wildfowl and waders between different sites in the

Solent in winter. The breeding success and population size of all seabirds colonies should be monitored annually both to follow the health of these important populations, and as a method of following changes in the marine environment. The importance of the offshore feeding areas of terns, identified during the course of this study, and identification of prey taken, would both be worthy of further investigation.

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# Appendix 1. Glossary of abbreviations and explanation of terms

LNR Local Nature Reserve  
NNR National Nature Reserve  
SPA Special Protection Area (see EC directive)  
SSSI Site of Special Scientific Interest

**National Importance:** a site is nationally important if it regularly holds 1% of the estimated British wintering population of one species or subspecies of waterfowl. See appendix 2 for 1% levels.

**International importance:** a site is internationally important if it regularly holds 1% of the individuals in a population of one species or subspecies of waterfowl. Sites regularly holding a total of 20,000 or more waterfowl also qualify. See appendix 2 for 1% levels.

**Ramsar site:** named after the Convention on Wetlands of International Importance especially as Waterfowl

Habitat which convened at Ramsar, Iran in 1971. The United Kingdom is party to the convention. Part of the convention is a commitment to conserve sites identified as being internationally important for waterfowl.

**EC 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 Solent (see species accounts) as either breeding species or as migrant or winter visitors. Special measures include the designation of Special Protection Areas (SPAs). The government has indicated that sites proposed by English Nature and the Joint Nature Conservation Committee should be treated for planning purposes as if they have already been designated.



# Appendix 2. Qualifying levels for national and international importance

(from Salmon, Prys-Jones & Kirby, 1989)

Species	National	International
Great crested grebe	100	?
Mute swan	180	1800
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)
Golden plover	2000	10,000
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 the minimum qualifying level for national importance.

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

## Appendix 3. Highest count (December 1990 to December 1991) for all species in mainland non-estuarine sites

	Selsey to West Wittering	Hayling Bay	Portsea Island	Gilkicker to Titchfield	Calshot to Lepe
Red-throated diver	1A	0	0	1W	1W
Great crested grebe	17W	10W	4W	11W	6W
Slavonian grebe	7W	8W	0	4W	2W
Fulmar	2S	0	0	0	0
Gannet	6A	0	0	0	1S
Cormorant	22S	12S	17W	11S	4A
Shag	0	1A0	1W	0	0
Grey heron	0	0	0	0	2W
Mute swan	0	0	8A	6S	0
Brent goose	373W	32A	135W	188W	341W
Shelduck	0	0	1W	6W	3W
Gadwall	0	0	0	18W	0
Teal	8W	0	0	0	0
Mallard	4W	0	11W	10S	12W
Shoveler	0	0	0	11W	0
Pochard	0	0	62W	0	0
Tufted duck	0	0	20W	0	0
Scaup	0	0	3W	0	0
Eider	1W	0	13W	2W	0
Common scoter	10S	0	0	30S	1A
Red-breasted merganser	25W	4W	3W	6W	6W
Coot	0	0	0	6W	0
Oystercatcher	13W	19W	22W	72W	63W
Ringed plover	1W	0	213W	11W	135W
Golden plover	0	0	0	20W	0
Grey plover	208S	1W	0	7W	12W
Lapwing	1W	0	0	2W	2W
Knot	3S	0	0	0	0
Sanderling	19S	200+W	319W	12S	11S
Purple sandpiper	0	0	4W	0	0
Dunlin	425S	5S	22W	18W	301W
Ruff	0	0	0	1W	1A
Bar-tailed godwit	60S	1W	0	0	1W
Curlew	1W	0	0	45W	18S
Redshank	1W	0	0	15W	13A
Common sandpiper	3S	0	0	0	0
Turnstone	4S	166W	110W	107W	66A
Mediterranean gull	1S	2W	2W	1W	1S
Black-headed gull	359W	1080W	1795W	1538W	122A
Common gull	39A	376W	475W	118W	25W
Lesser black-backed gull	4A	2A	0	2W	1S
Herring gull	236W	36A	45W	195W	61A
Great black-backed gull	69S	65S	3W	38W	23S
Sandwich tern	25A	28S	10S	5S	30A
Roseate tern	2A	0	0	5A	5A
Common tern	305A	68W	32S	400A	400A
Arctic tern	13S	0	0	1A	0
Little tern	30S	34A	4W	9W	16S
Black tern	1A	0	0	0	3A
Guillemot	0	0	1W	1W	1W

S = summer (May - July), A = autumn (August - October), W = winter (November - April). Individuals of a further twelve species were recorded on one or more occasion: great northern diver, little egret, Canada goose, velvet scoter, whimbrel, pomarine, arctic and long-tailed skuas, little and glaucous gulls, kittiwake and razorbill.

# Appendix 3. Highest count (December 1990 to December 1991) for all species in Isle of Wight non-estuarine sites

	Needles to Yarmouth	Yarmouth to Newtown	Newtown to Cowes	Cowes to Wootton	Fishbourne to Ryde	Ryde to Bembridge
Red-throated diver	1W	0	0	1W	0	0
Great northern diver	1W	0	0	1W	2W	1W
Little grebe	0	0	0	1W	0	1W
Great crested grebe	2W	1W	2W	6W	3W	7W
Slavonian grebe	0	0	0	1W	0	2W
Fulmar	12W	0	0	0	0	1W
Gannet	3A	0	0	0	0	0
Cormorant	6S	8S	8W	15W	3A	11W
Shag	0	1W	0	1W	0	6W
Grey heron	0	0	3W	4A	4S	2S
Mute swan	0	0	4W	1A	0	0
Greylag goose	0	0	4W	0	0	0
Brent goose	13W	86A	203W	147W	249W	322A
Shelduck	3A	2W	1W	20W	0	11W
Wigeon	0	0	4W	13W	0	0
Gadwall	0	0	0	0	0	4W
Mallard	0	0	1W	59W	20W	2W
Tufted duck	0	0	0	0	0	16W
Scaup	0	0	0	0	0	6W
Eider	3W	1S	0	0	1A	1W
Common scoter	1A	0	0	5W	0	0
Red-breasted merganser	6W	4W	13W	44W	5W	33W
Oystercatcher	2W	5W	28W	23A	22W	23W
Ringed plover	3W	0	31A	1W	4W	71W
Grey plover	0	1W	46W	1A	0	7W
Lapwing	0	0	85W	0	0	2W
Sanderling	0	0	0	0	35A	225W
Dunlin	0	10W	40W	0	1W	140W
Bar-tailed godwit	0	0	1W	0	50W	86W
Whimbrel	0	0	0	1W	1W	0
Curlew	0	2W	10A	63W	21S	38A
Redshank	1W	5W	12W	7A	6W	19W
Common sandpiper	0	1S	0	2S	0	1W
Turnstone	3W	0	23W	4A	1W	0
Mediterranean gull	2W	0	1A	0	0	11A
Black-headed gull	145W	62A	842W	1900W	595A	2141W
Common gull	4W	1W	10W	68W	60W	300+A
Lesser black-backed gull	0	1W	1A	1S	1A	2W
Herring gull	16S	6S	12W	114A	222A	520A
Great black-backed gull	4W	8S	3S	11S	8W	29S
Kittiwake	0	0	0	0	0	3W
Sandwich tern	2A	1A	22A	11S	8S	8S
Common tern	11A	17A	21A	114A	53A	7A
Little tern	0	0	3S	0	0	0
Guillemot	1W	0	0	0	0	1W

S = summer (May - July), A = autumn (August - October), W = winter (November - April). Individuals of a further seven species were recorded on one or more occasion: pintail, pochard, coot, purple sandpiper, ring-billed and Iceland gulls and razorbill.