WeBS Low Tide Counts

AIMS

Despite involving only a relatively small number of sites, estuaries collectively represent the most important habitat for non-breeding waterbirds in the UK. The influence of the tide means that the birds have to be much more mobile, both within and between sites. WeBS Core Counts on estuaries have, in general, been based around high tide roosts. Although important in themselves, roost sites are usually secondary in importance to the manner in which waterbirds make use of a site for feeding. Therefore, information gathered about these sites at high tide will only provide part of the picture. The WeBS Low Tide Counts scheme, which was initiated in the winter of 1992–93, aims to monitor, assess and regularly update information on the relative importance of intertidal feeding areas of UK estuaries for wintering waterbirds and thus to complement the information gathered by WeBS Core Counts on estuaries.

WeBS Low Tide Counts provide the crucial information needed to assess the potential effects on waterbird populations of a variety of human activities which affect the extent or value of intertidal habitats, such as proposals for dock developments, recreational activities, tidal power barrages, marinas and housing schemes. The data gathered contribute greatly to the conservation of waterbirds by providing supporting information for the establishment and management of the UK network of Ramsar sites and Special Protection Areas (SPAs), other site designations and whole estuary conservation plans. In addition, WeBS Low Tide Counts enhance our knowledge of the low water distribution of waterbirds and provide the data that highlight regional variations in habitat use. In particular, WeBS Low Tide Counts should help us to understand, predict and possibly plan for compensation for the effects of sea-level rise on the UK's internationally important estuarine waterbird populations.

METHODS

The scheme provides information on the numbers of waterbirds feeding on subdivisions of the intertidal habitat within estuaries. Given the extra work that Low Tide Counts entail, often to the same counters that carry out the Core Counts, WeBS aims to cover most individual estuaries about once every six years, although on some sites more frequent counts are made. Co-ordinated counts of feeding and roosting waterbirds are made by volunteers each month between November and February on pre-established subdivisions of the intertidal habitat in the period two hours either side of low tide.

DATA PRESENTATION

Tabulated Statistics

Table 5 presents three statistics for 18 of the more numerous waterbird species present on eight estuaries covered during the 2000–01 winter: the peak number of a species over the whole site counted in any one month; an estimate of the mean number present over the winter for the whole site (obtained by summing the mean counts of each species for each count section) and the mean density over the site (in birds per hectare), which is the mean number divided by the total area surveyed (in hectares). The area value used for these calculations is the sum of the inter-tidal and non-tidal components of each count section but omits the sub-tidal areas (i.e. those parts of the count section which are under water on a mean low tide).

Dot Density Maps

WeBS Low Tide Count data are presented as dot density maps, with subdivision of count sections into basic habitat elements, as was introduced in the report for 1998–99. The reason for such a subdivision is to overcome the situations encountered in the past in which, for example, flocks of Great Crested Grebes are plotted on mudflats or flocks of Dunlin are plotted on open water. Both of these cases obviously look wrong but more importantly can give an unrealistic density value by using a nonsensical area for the calculations. To deal with this issue, each section for which a count has been made has been divided into up to three different habitat components:

Inter-tidal: Counted areas which lie between mean high water and mean low water.

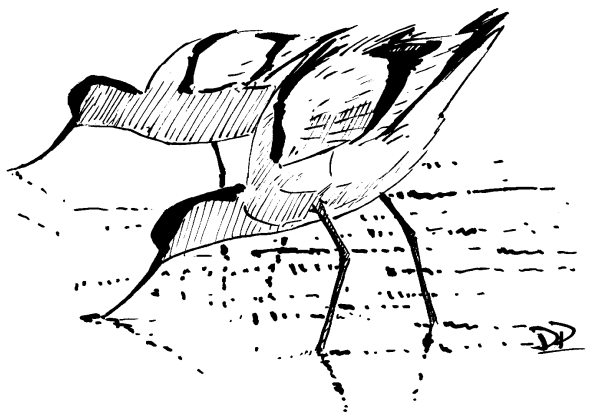
Sub-tidal: Counted areas which lie below mean low water. In more 'open-coast'-type situations, a subtidal zone reaching 500m out from the intertidal sections has been created arbitrarily, to indicate the approximate extent of visibility offshore from land-based counts.

Non-tidal: Counted areas which lie above mean high water (usually saltmarsh although some grazing marshes are also counted).

The mean count for the sector is then divided amongst a varying number of the different components, dependent on the species involved. For example, Dunlin dots are plotted exclusively on inter-tidal sections whereas Wigeon dots are spread across inter-tidal, sub-tidal and non-tidal areas (in proportion with the relative areas of these three components).

Currently, throughout all WeBS Low Tide Count analyses, mean low tide and mean high tide are taken from the most recent Ordnance Survey Pathfinder maps. It is recognised, unfortunately, that these maps represent the current real shape of the mudflats, water channels and saltmarshes to varying degrees of accuracy. However, in the interests of uniformity across the UK, the Ordnance Survey outlines are adhered to throughout the analyses.

The maps display the average number of birds in each count section as dots spread randomly across habitat components of count sections, thus providing an indication of both numbers and density. **It is important to note that individual dots do not represent the precise position of individual birds; dots have been arbitrarily assigned to habitat components and are then randomly placed within those areas. No information about the distribution of birds at a finer scale than the count sector level should be inferred from the dot density maps.** For all maps in the present report, one dot is equivalent to one bird. The size of individual dots has no relevance other than for clarity. Additionally, any count sections that were not counted during the 2000–01 winter are marked with an asterisk. The dot density maps enable a clearer depiction of actual bird density, instead of the arbitrary grouping into bands of densities that was presented in previous years. It is hoped that dot density distributions and habitat components will lead to an easier and fuller appreciation of low tide estuarine waterbird distribution. More detailed information concerning analysis and presentation of WeBS Low Tide Counts can be obtained from the National Organiser (WeBS Low Tide Counts) at the BTO.



ESTUARY ACCOUNTS

WeBS Low Tide Counts were carried out at 12 sites during the 2000–01 winter, namely Belfast Lough, Breydon Water, Dornoch Firth, (partial), Lindisfarne, Loch Fleet, Morecambe Bay (partial, mid-tide counts only), Orwell Estuary, Severn Estuary (partial), Solway Firth, Southampton Water, Stour Estuary and Strangford Lough (data unfortunately not submitted in time for incorporation into this report). Accounts are not presented for the sites for which only partial coverage was obtained, but all of the datasets can be accessed via the WeBS National Organiser (Low Tide Counts) if required.

Data for each of the estuaries cover the period November to February inclusive. In each case, a list of species present in nationally and internationally important numbers, based on Core Counts (five year peak means as presented within this report) and a description of the estuary are given. This is followed by an outline of the key results. Distribution maps are presented for two species for which that site is of particular importance or interest. Background information for the estuary accounts has been provided by local organisers and other counters, in addition to information obtained from key references such as *An inventory of UK estuaries* (JNCC 1993–1997) and *Coasts and seas of the United Kingdom* (JNCC 1995–1998).

ACKNOWLEDGEMENTS

Many thanks go to all of the following counters who took part in WeBS Low Tide Counts during the winter of 2000–01; apologies to anyone who inadvertently may have been missed.

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Species	Belfast Lough			Breydon Water			Lindisfarne		
	Peak No.	Mean No.	Mean Dns.	Peak No.	Mean No.	Mean Dns.	Peak No.	Mean No.	Mean Dns.
Brent Goose	40	16	0.03	2	1	+	1,941	1,941	0.68
Shelduck	319	211	0.42	488	335	0.83	1,219	1,219	0.43
Wigeon	132	110	0.22	9,490	5,502	13.55	1,100	1,100	0.38
Teal	170	141	0.28	691	250	0.62	56	56	0.02
Mallard	388	268	0.54	516	233	0.57	304	304	0.11
Pintail	0	0	0	221	120	0.30	41	41	0.01
Oystercatcher	5,354	4,863	9.78	67	54	0.13	856	856	0.30
Ringed Plover	113	69	0.14	21	11	0.03	37	37	0.01
Golden Plover	700	309	0.62	2,700	2,232	5.50	726	726	0.25
Grey Plover	1	0	+	47	24	0.06	486	486	0.17
Lapwing	1,509	1,212	2.44	6,540	3,142	7.74	1,041	1,041	0.36
Knot	43	27	0.05	310	157	0.39	3,130	3,130	1.09
Dunlin	1,366	925	1.86	2,895	2,365	5.83	3,866	3,866	1.35
Black-tailed Godwit	383	315	0.63	810	669	1.65	0	0	0
Bar-tailed Godwit	169	83	0.17	0	0	0	1,339	1,339	0.47
Curlew	955	649	1.31	788	684	1.68	1,431	1,431	0.50
Redshank	1,575	1,279	2.57	1,456	1,059	2.61	766	766	0.27
Turnstone	208	166	0.33	5	2	+	55	55	0.02

Species	Loch Fleet			Orwell Estuary			Solway Firth		
	Peak No.	Mean No.	Mean Dns.	Peak No.	Mean No.	Mean Dns.	Peak No.	Mean No.	Mean Dns.
Brent Goose	0	0	0	1,228	821	0.66	0	0	0
Shelduck	105	67	0.12	637	467	0.37	1,791	1,627	0.08
Wigeon	1,005	761	1.31	1,936	1,515	1.21	2,268	1,585	0.08
Teal	509	376	0.65	661	389	0.31	793	540	0.03
Mallard	629	353	0.61	800	469	0.38	1,385	1,031	0.05
Pintail	0	0	0	179	78	0.06	2,818	1,372	0.07
Oystercatcher	1,290	1,089	1.88	1,570	1,220	0.98	26,449	22,810	1.13
Ringed Plover	49	25	0.04	198	115	0.09	133	73	+
Golden Plover	0	0	0	620	220	0.18	8,065	3,880	0.19
Grey Plover	1	0	+	289	238	0.19	520	313	0.02
Lapwing	108	42	0.07	1,487	833	0.67	8,596	5,701	0.28
Knot	600	188	0.32	1,824	804	0.64	9,159	5,276	0.26
Dunlin	293	179	0.31	2,852	2,236	1.79	12,628	9,960	0.49
Black-tailed Godwit	0	0	0	73	58	0.05	63	38	+
Bar-tailed Godwit	187	106	0.18	1	0	+	556	258	0.01
Curlew	268	202	0.35	718	639	0.51	4,200	3,217	0.16
Redshank	168	111	0.19	1,637	1,510	1.21	2,578	2,328	0.11
Turnstone	1	0	+	170	149	0.12	64	55	+

Table 5i. Peak and mean counts, and mean density (birds per hectare), of 18 waterbird species present on estuaries covered by the 2000–01 WeBS Low Tide Counts. "+" indicates non-zero densities of less than 0.01 birds per hectare.

Species	Southampton Water			Stour Estuary		
	Peak No.	Mean No.	Mean Dns.	Peak No.	Mean No.	Mean Dns.
Brent Goose	1,742	900	0.60	1,717	1,194	0.73
Shelduck	163	97	0.06	2,164	1,621	0.99
Wigeon	2,207	1,728	1.15	4,218	3,478	2.12
Teal	2,096	1,365	0.91	2,413	1,203	0.73
Mallard	240	157	0.10	496	328	0.20
Pintail	63	52	0.03	686	511	0.31
Oystercatcher	1,445	1,367	0.91	1,040	966	0.59
Ringed Plover	207	129	0.09	493	257	0.16
Golden Plover	517	316	0.21	6,620	2,708	1.65
Grey Plover	246	171	0.11	2,123	1,787	1.09
Lapwing	1,034	956	0.64	3,813	2,004	1.22
Knot	2	1	+	8,036	4,694	2.86
Dunlin	4,736	3,781	2.53	14,111	11,610	7.08
Black-tailed Godwit	21	13	0.01	2,846	1,635	1.00
Bar-tailed Godwit	2	2	+	88	52	0.03
Curlew	575	462	0.31	915	873	0.53
Redshank	457	414	0.28	2,038	1,773	1.08
Turnstone	293	242	0.16	350	330	0.20

Table 5ii. Peak and mean counts, and mean density (birds per hectare), of 18 waterbird species present on estuaries covered by the 2000–01 WeBS Low Tide Counts. "+" indicates non-zero densities of less than 0.01 birds per hectare.

BELFAST LOUGH
Co. Antrim / Co. Down

Internationally important: Great Crested Grebe, Redshank

Nationally important: Mute Swan, Shelduck, Scaup, Eider, Goldeneye, Red-breasted Merganser, Oystercatcher, Ringed Plover, Knot, Dunlin, Black-tailed Godwit, Turnstone

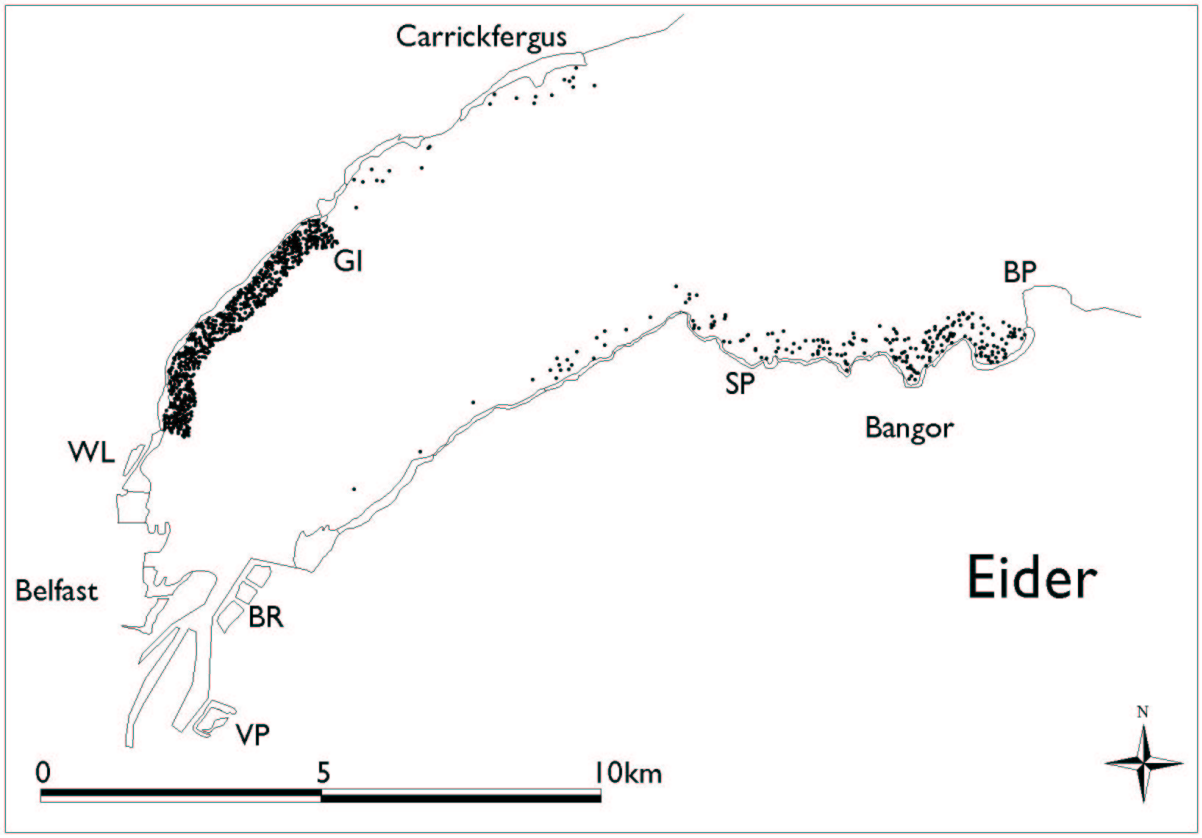
Site description

Belfast Lough is a large sea lough in the north-east of Ireland, with the city of Belfast at its head. The outer parts of the lough's shore are generally rocky with some sandy bays, but more extensive areas of intertidal mud are located toward Belfast. Industrial land claim has, however, reduced the area of the mudflats over the last 150 years, and Belfast has become the main port in Northern Ireland for heavy cargo. More recently, some of the area, including the RSPB Belfast Lough reserve, has been given a degree of protection, but there is a continuing threat to the remaining intertidal mudflats from potential future harbour expansion. The wash from the shipping activities, including high-speed passenger ferries, may also cause increased erosion of intertidal habitats. Additionally, a proposed new water-taxi service which would operate outside the main shipping lanes could cause increased disturbance. There has been a loss of disturbance-free high-tide roosts within the inner lough, along with problems of refuse disposal and pollution, as would be expected at a highly urbanised and industrialised site. Recreational activities only occur over relatively small, localised parts of the lough. However, extensive areas of Belfast Lough are licensed for shellfish aquaculture, the impact of which is currently unclear.

Bird Distribution

The greatest concentrations of Oystercatchers and Ringed Plovers were to be found within the southwestern section of the lough, with the latter also favouring the flats off Carrickfergus and Bangor. Golden Plover were only present on the RSPB Belfast Lough reserve. Lapwing also favoured the various pools in the southwestern end of the lough. By far the highest densities of Dunlin were found close to Belfast city (Figure 66). Knot were present in very low numbers this winter on the inner estuary. Both Black-tailed and Bar-tailed Godwits were also confined to the extreme southwestern end of the lough. Curlew, which declined over the winter, were to be found scattered throughout much of the inner two-thirds of the lough. Redshank were the most widespread of all the waders, distributed throughout, but concentrated within the western half of the lough. The numbers of Redshank increased during the course of the winter. Turnstone were also widespread but in low numbers compared to core count maxima. Other waders occasionally recorded during the course of the winter included Grey Plover, Purple Sandpiper, Ruff and Snipe.

Small numbers of Light-bellied Brent Geese were recorded during the second half of the winter. Shelduck were confined to the extreme southwestern end of the lough. Most of the small numbers of Wigeon, Teal and Shoveler were to be found at the RSPB Belfast Lough reserve, whilst Pochard and Tufted Duck were only found in Victoria Park, also the favoured area for most of the Mute Swans and Greylag Geese. Mallard were more generally distributed within the lough. Scaup numbers peaked at an impressive 323 in January, exceeding numbers recorded during recent winters. Goldeneye were scattered along much of the coastline within the southwestern part of the estuary and also occurred on the RSPB Belfast Lough reserve. Eider numbers rapidly increased to a staggering 2,219 in January, considerably higher than previous low tide counts at the site. Figure 66 shows that the greatest concentrations of Eider occurred along the coastline between Green Island and Whitehouse Lake (on the northern shore), with smaller numbers favouring the area between Swineley and Ballymacormick Point (on the southern shore). Red-breasted Mergansers were widely distributed but peak numbers were much lower than during other recent low tide counts, reflecting recent UK declines. Up to 12 Long-tailed Ducks frequented the northern shoreline, whilst the occasional Smew and Goosander were also noted. A relatively low peak count of 970 Great Crested Grebes was made in February, their distribution within the lough being similar to previous winters with the greatest concentrations between Carrickfergus and Whitehouse Lake. The Core Counts also recorded a decrease, with numbers down by 20% compared to the 1999–2000 peak count. Cormorants preferred the flats between Swineley Point and Bangor, with a scatter along the northern shoreline and a similar pattern was seen for Shags. Of the five regular species of gull recorded, Black-headed was the most abundant, followed by Herring Gull. Red-throated Diver, Little Grebe, Grey Heron, Moorhen and Coot were also recorded, mostly in small numbers.



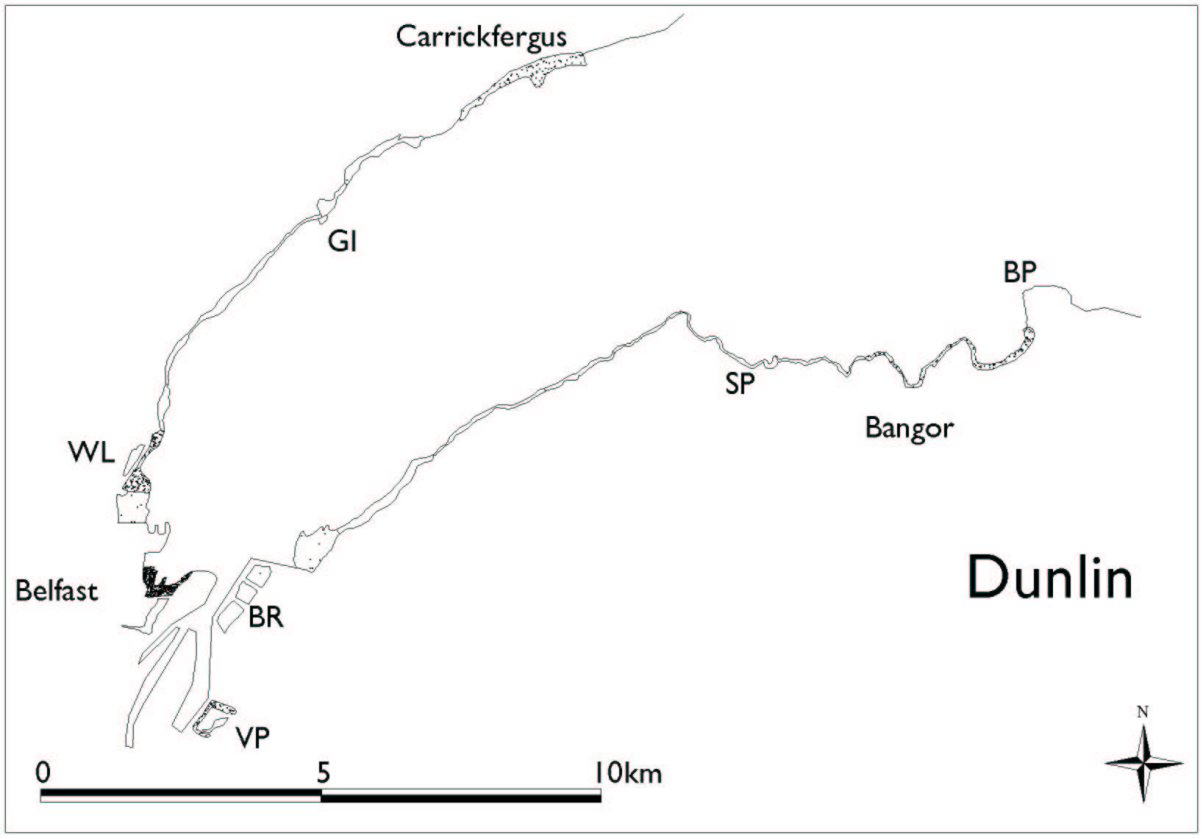


Figure 66. WeBS Low Tide Counts of Eider and Dunlin at Belfast Lough, winter 2000–01. (BR=RSPB Belfast Lough reserve, VP=Victoria Park, GI=Green Island, WL=Whitehouse Lake, SP=Swineley Point, BP=Ballymacormick Point).

BREYDON WATER
Norfolk

Internationally important: Bewick's Swan, Pink-footed Goose, Lapwing, Black-tailed Godwit

Nationally important: European White-fronted Goose, Wigeon, Gadwall, Teal, Shoveler, Avocet, Golden Plover, Ruff

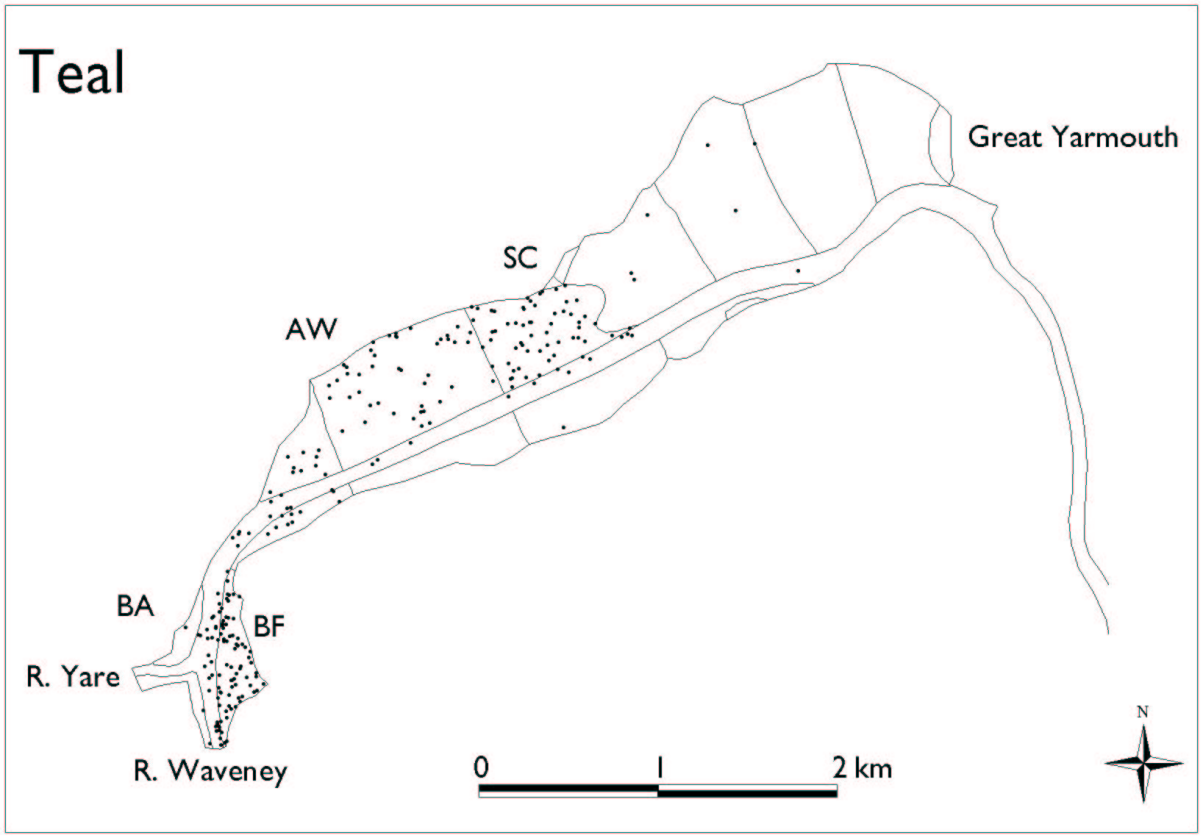
Site description

Breydon Water is a bar-built estuary separated from the North Sea by the spit of land on which Great Yarmouth sits and forms the lower reaches of the Yare and Waveney rivers which drain much of central East Anglia. With the renowned flatness of the land around the Norfolk Broads, the rivers are tidal for many miles inland but only the estuary proper (from the confluence of the rivers) is considered here. At high tide, Breydon Water forms a large lake but as the tide recedes, all the water that remains is a narrow channel, well-marked by buoys for the numerous leisure cruisers which travel through between the northern and southern Broads. There are some fairly small areas of saltmarsh, principally at the eastern end. To the north of the estuary stretches the huge expanse of the Halvergate Levels, Breydon Marshes and Berney Marshes, a massive area of grazing marshes although much 'improved' by increased drainage in recent years. Breydon is surrounded by linear sea-defences. The main high tide roosts occur at the RSPB reserve at Berney Marshes and in the eastern saltmarsh. The main conservation issues in the area involve boating, shooting and grazing marsh management although, being a major port, the river channel leading out from Breydon through Great Yarmouth to the sea is very industrialised.

Bird distribution

Lapwing were fairly widely distributed within the estuary, both to the north and south of the River Yare. However, the greatest numbers occurred at the southern end of Breydon Water on the Burgh Flats. Whilst large numbers of Lapwings were recorded at low tide, the peak of 6,540 in January was much lower than recorded by the core counts (23,300), the latter also including the surrounding non-tidal marshes which support large flocks of this species. Similarly, the counts of up to 2,700 Golden Plovers were also far fewer than for the core counts. The greatest concentrations were to be found at the eastern end of the estuary. Black-tailed Godwits favoured the mudflats in the southeast corner and also those north of the river adjacent to Acle Marshes (Figure 67). The numbers recorded by both core and low tide counts at this site have increased dramatically over recent years, and currently exceed the threshold for international importance. Another species wintering at the site in increasing numbers is Avocet, numbers of which peaked in January. The birds were found exclusively on the flats north of the Yare, adjacent to the Acle Marshes windmill. Dunlin, Curlew and Redshank were generally scattered throughout the estuary, but avoided or were present in very low numbers on the flats in the southwest corner around the Berney Arms. The greatest concentrations of Curlew were present to the north of the Yare, especially on the flats off the Acle Marshes windmill, with the greatest concentrations of Redshank to be found south of the river in the southeast corner of the estuary. Small numbers of Ringed Plover and Knot favoured the northeast corner of the estuary and the few Oystercatcher the northern mudflats off Stone Corner. Snipe, Sanderling, and Turnstone were also occasionally recorded.

Wigeon numbers built up to 9,500 by January and was concentrated on the mudflats to the north of the Yare, particularly on the western flats. Teal were found mostly at the western end, especially on Burgh Flats (Figure 67). Mallard occurred mostly in the southwestern corner or at the eastern end of the estuary towards Great Yarmouth. Pintail were virtually confined to the eastern half of Breydon, mostly on the flats north of the Yare; peak numbers at low tide were considerably higher than during the two previous winters, which was contra to the national trend of a continued decline. Shoveler and Gadwall were thinly scattered throughout the estuary. Virtually all of the Shelduck were confined to the eastern half of the estuary. Greylag and Canada Geese favoured the areas off the Berney Arms in the southwest corner. White-fronted, Dark-bellied Brent and Egyptian Geese were recorded occasionally, along with small numbers of Mute Swan. Up to 60 Cormorants frequented the southwestern corner and the River Yare channel. Grey Heron, Black-headed, Common, Lesser Black-backed, Herring and Great Black-backed Gulls and a single Kingfisher were also recorded. However, no Bewick's Swans, Pink-footed Geese or Ruff were recorded on the estuary; the important wintering populations of these species occur on the adjacent non-tidal habitats.



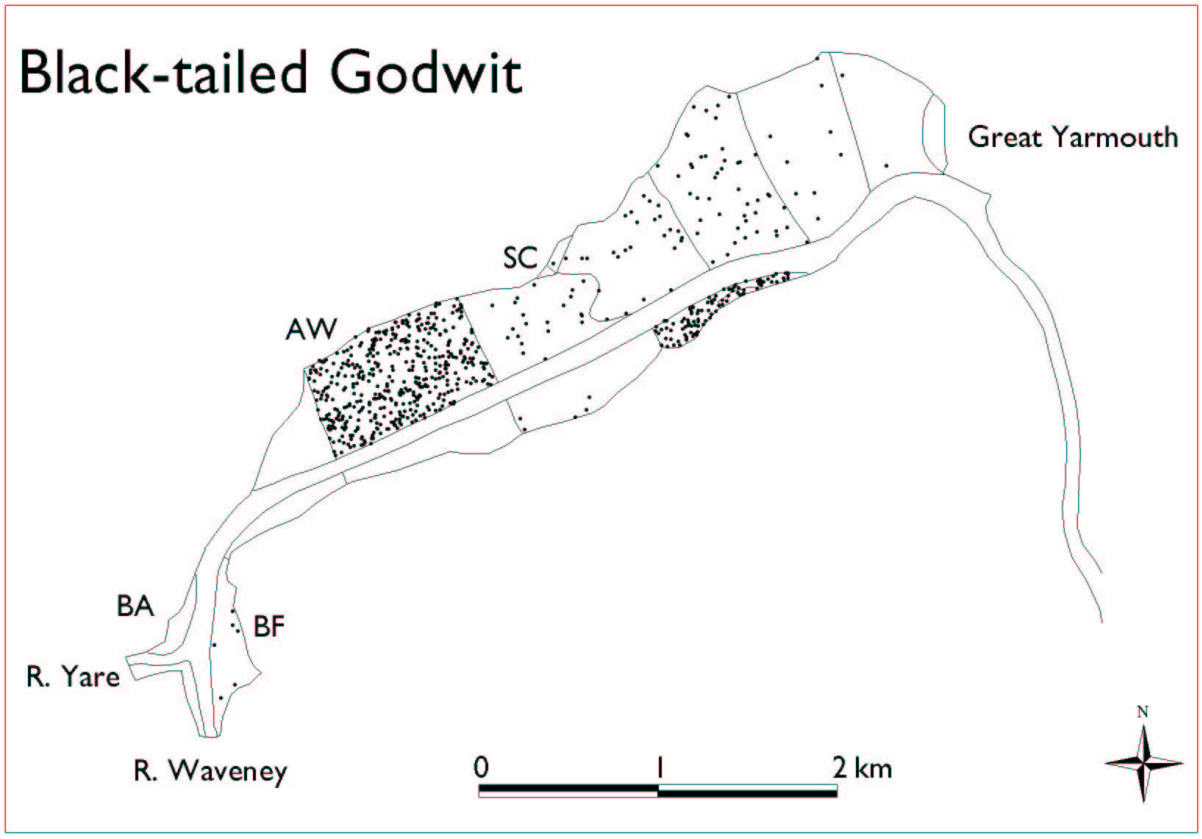


Figure 67. WeBS Low Tide Counts of Teal and Black-tailed Godwit at Breydon Water, winter 2000–01. (BF=Burgh Flats, SC=Stone Corner, BA=Berney Arms, AW=Acle Marshes windmill).

LINDISFARNE
Northumberland

Internationally important: Pink-footed Goose, Light-bellied Brent Goose, Grey Plover, Knot, Bar-tailed Godwit

Nationally important: Cormorant, Shelduck, Wigeon, Eider, Common Scoter, Golden Plover, Dunlin, Curlew

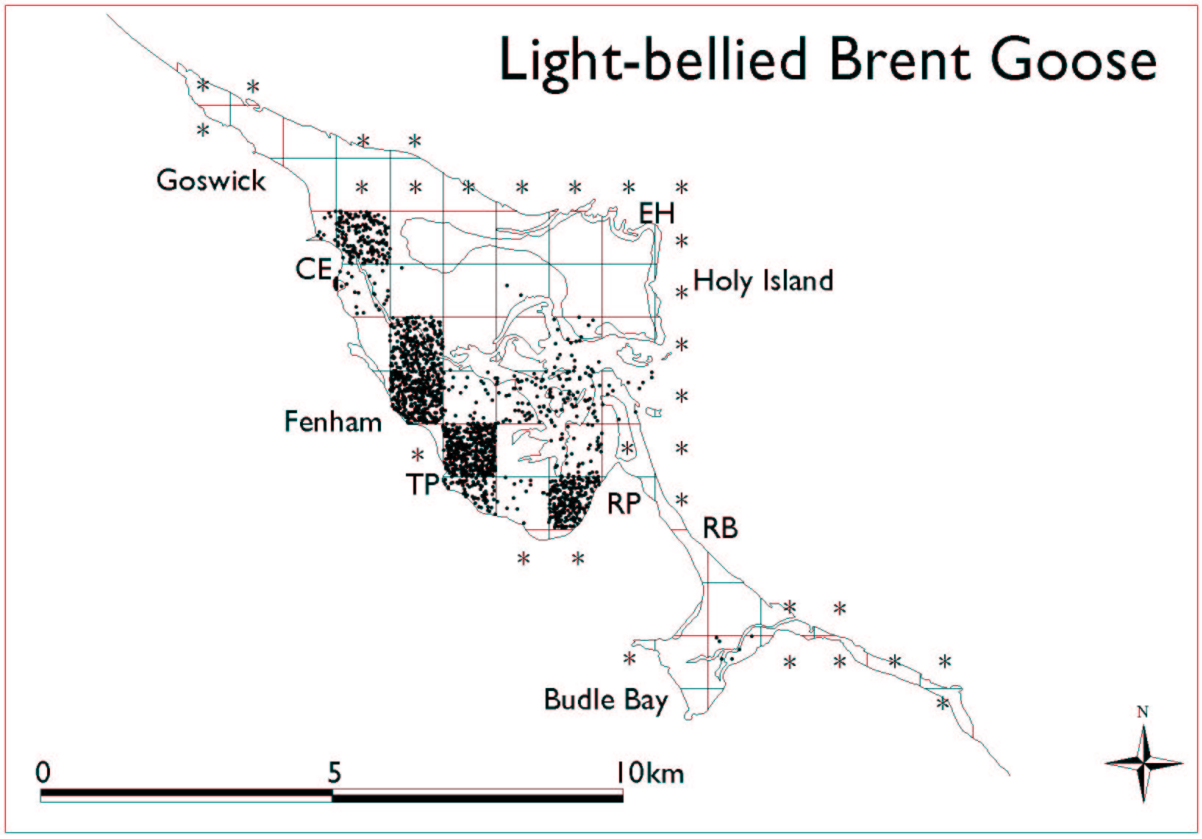
Site description

Lindisfarne, along with Budle Bay, forms one of the largest intertidal areas in north-east England. It is also unusual in being one of only two barrier beach systems in the UK. The majority of the site is sandy, but with increasing amounts of silt in parts of Budle Bay and Fenham Flats. Several freshwater creeks traverse the flats at low tide. There is a fringe of saltmarsh between Goswick to Fenham, around the causeway to Holy Island, and along the southwestern shore of Budle Bay. Extensive sand dunes occur on several parts of the site, with dune slacks, dune heath and dune pasture also represented. The eastern shorelines of Holy Island are mainly rocky, with a few patches of shingle. There is a small harbour on Holy Island but no other industry present, with most activities recreational in nature. Wildfowling occurs in some parts of the site but others are designated as refuges.

Bird distribution

It should be noted that only a single count was made during the winter, in December 2000, as part of an ongoing Northumberland Atlas project (hence the regular 1km grid squares used as count sections). Lindisfarne is the only regular British wintering site for the Svalbard population of Light-bellied Brent Goose, which were distributed over the flats from Crag End to Ross Point (Figure 68). Some of the densest concentrations occurred on parts of the Fenham Flats, whilst Budle Bay was mostly avoided. Small numbers of Pink-footed and Barnacle Geese along with more than 170 Greylag Geese were mostly confined to the western side of Budle Bay. Both Mute Swans and Whooper Swans were present, with the former favouring South Low Channel around the Causeway, and the latter Fenham Flats. Shelduck favoured Fenham Flats and the western end of Budle Bay and tended to avoid the sandier parts of the estuary such as Goswick Sands. Budle Bay was the most important area for Wigeon, with small numbers also using the part of Fenham Flats in the vicinity of Tealhole Point. Mallard were widely distributed both within Budle Bay and on the eastern end of Holy Island itself as well as on Fenham Flats. Small numbers of Teal frequented the southeastern corners of Budle Bay and Holy Island, whilst Pintail preferred the inner part of Fenham Flats. A few Goldeneye and Red-breasted Merganser were recorded from South Low creek and the harbour off the southern end of Holy Island, whilst the few Tufted Duck were confined to The Lough on the east side of the island. Eiders were mostly concentrated around Holy Island, off Emmanuel Head and in the harbour off the southern end; the December count was of over 1,800 Eiders, somewhat higher than the equivalent core count. Cormorant and Shag were mostly to be found on or adjacent to Holy Island, along with Moorhen and Coot. Other species noted were Red-throated and Great Northern Divers, Slavonian and Red-necked Grebes, Grey Heron, Gadwall and Long-tailed Duck.

Oystercatchers were generally scattered throughout the area, but the greatest concentrations were to be found along the northern and southern shorelines of Holy Island, on Oyster Scap in the harbour and along the sandy shore north of Guile Point. Ringed Plover were found almost exclusively on Holy Island Sands, adjacent to the island. Favoured areas for Golden Plover included Fenham Flats and some of Holy Island Sands, as well as in Budle Bay and Ross Black Sands on the north side of the mouth of the bay. Grey Plover, however, showed a much wider scatter on Holy Island Sands and Fenham Flats as well as the southern end of Budle Bay. Lapwing were concentrated into three main areas: the southern end of Budle Bay and Holy Island, and the outer part of Fenham Flats. Knot were widely scattered over Holy Island Sands and Fenham Flats, but very few fed in Budle Bay. Dunlin showed a generally similar distribution to the previous species, but with large concentrations in the southern part of Budle Bay and along Ross Back Sands to the north of the mouth (Figure 68). Bar-tailed Godwits were distributed over most of the flats, with the densest concentrations off Goswick links and fewest in Budle Bay. Curlew exhibited a similar distribution but with the greatest numbers at the southern end of Holy Island and in the south east part of Fenham Flats. Curlew were also present in Budle Bay in reasonable numbers. Redshank were widely distributed, but favoured Holy Island Sands adjacent to the island itself, and also Goswick Sands. A few Turnstone were present around the parts of the causeway and on some of the more stony shorelines of Holy Island. Other species of wader present either occasionally or in very low numbers included Sanderling, Snipe and Jack Snipe.



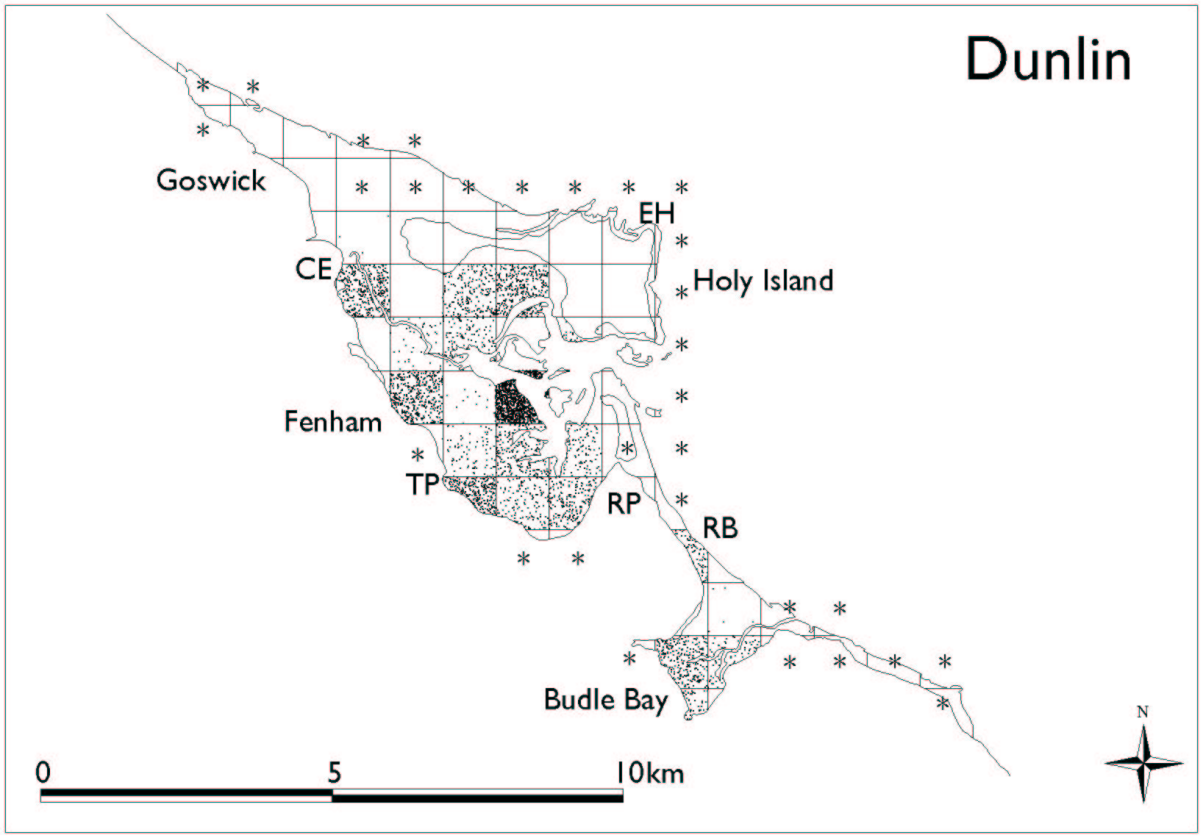


Figure 68. WeBS Low Tide Counts of Light-bellied Brent Goose and Dunlin at Lindisfarne, winter 2000–01. (CE=Crag End, RP=Ross Point, TP=Tealhole Point, EH=Emmanuel Head, RB=Ross Black Sands, * = not counted).

LOCH FLEET
Sutherland/Highland Region

Internationally important: Greylag Goose

Nationally important: None

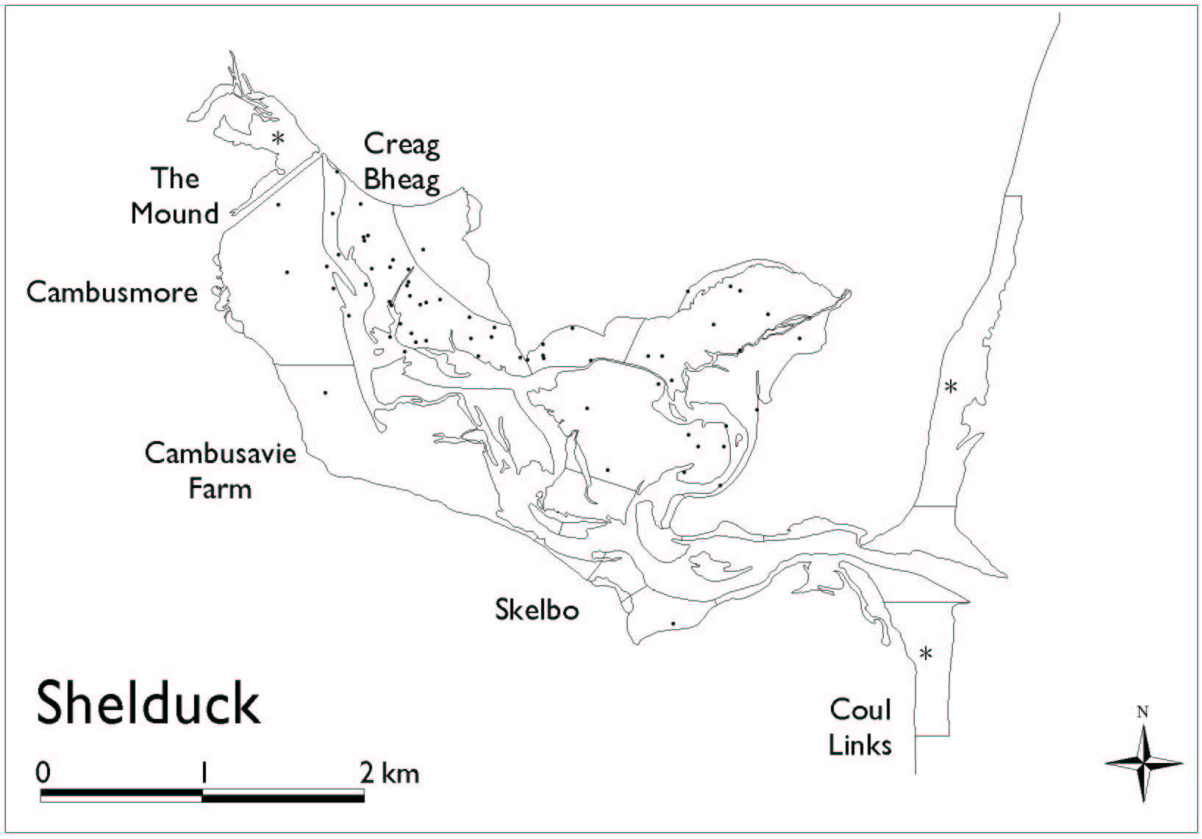
Site description

Loch Fleet is an enclosed estuary with the mouth now reduced to a narrow tidal channel as a result of the slowly advancing shingle spits, to the north and south. During low tide, extensive areas of mud and sandflat are exposed. Shingle has developed along the southern edge of the estuary, and also in the western part of the loch. Narrow bands of saltmarsh are present along several parts of the shoreline, with the largest area at the head of the bay. At Cambusmore, the saltmarsh is much drier and grades into grassland. An area of dune slack on the seaward side of the Coul Links dune system also contains some saltmarsh. Loch Fleet supports a rich marine fauna, whilst the surrounding dunes and links are important for their plant assemblages, including lichen-rich and moss-rich heaths. The inner part of the loch was separated from the main intertidal area by the construction of an embankment in 1816 called the Mound. This area rapidly developed extensive alder and willow woodland over what was formerly an intertidal part of the estuary. Brackish conditions still prevail in some places due to leakage of saltwater from Loch Fleet. The estuary is in a very rural position, with no industry and very few settlements.

Bird distribution

Although internationally important for roosting Greylag Geese, only small numbers were intermittently recorded during the low tide counts, and these were scattered on the north-western sandflats. Shelduck gradually built up during the winter peaking at 105 birds in February and were generally distributed to the north of the main estuary channel, with the greatest numbers on the flats off Creag Bheag (Figure 69). More than 1,000 Wigeon were present in December, with numbers rapidly decreasing towards the end of the winter. Wigeon were very widely distributed within the estuary with the greatest densities in the eastern half. However, the species appeared to shun the sandy flats between Cambusmore Lodge and Cambusavie Farm along the western fringes. Teal showed a similarly wide distribution, but with the western area of the estuary holding the most birds, and the Cambusavie Flats the least. Mallard numbers steadily climbed during the first part of the winter to peak at over 600 in January, before declining rapidly again the following month. Mallard were present in most parts of the estuary, but favoured the eastern half, and the area off Skelbo in particular. Small numbers of Eider, Goldeneye and Red-breasted Merganser frequented the main channels, mostly towards the estuary mouth.

Oystercatcher numbers reached 1,290 during December, and although widely distributed within the estuary, favoured the sandy flats towards and around the mouth, particularly those on the northern side. There was also a small concentration around the shingle off Skelbo. The small numbers of Ringed Plover were virtually confined to the large sandflat in the centre of the estuary towards the mouth. Lapwing were rather sporadic in their presence on Loch Fleet, frequenting the stony beach adjacent to Skelbo Castle. The largest count was of 108 birds in February. Up to 600 Knot (Figure 69) and 300 Dunlin fed on an area of sandflat in the main channel adjacent to the mouth and on the shingle adjacent to Skelbo Castle. The largest count of Curlew was made in January, when 268 were present, very evenly distributed all over the estuary. Conversely, Bar-tailed Godwits were rather confined to the flats off Skelbo and just west of the estuary mouth. Redshank were distributed throughout much of the eastern half of the estuary, peaking at 168 individuals in December, but declining to only 15 birds by February. Only singles of Grey Plover and Turnstone were noted all winter. A few Cormorant and Grey Heron were also present.



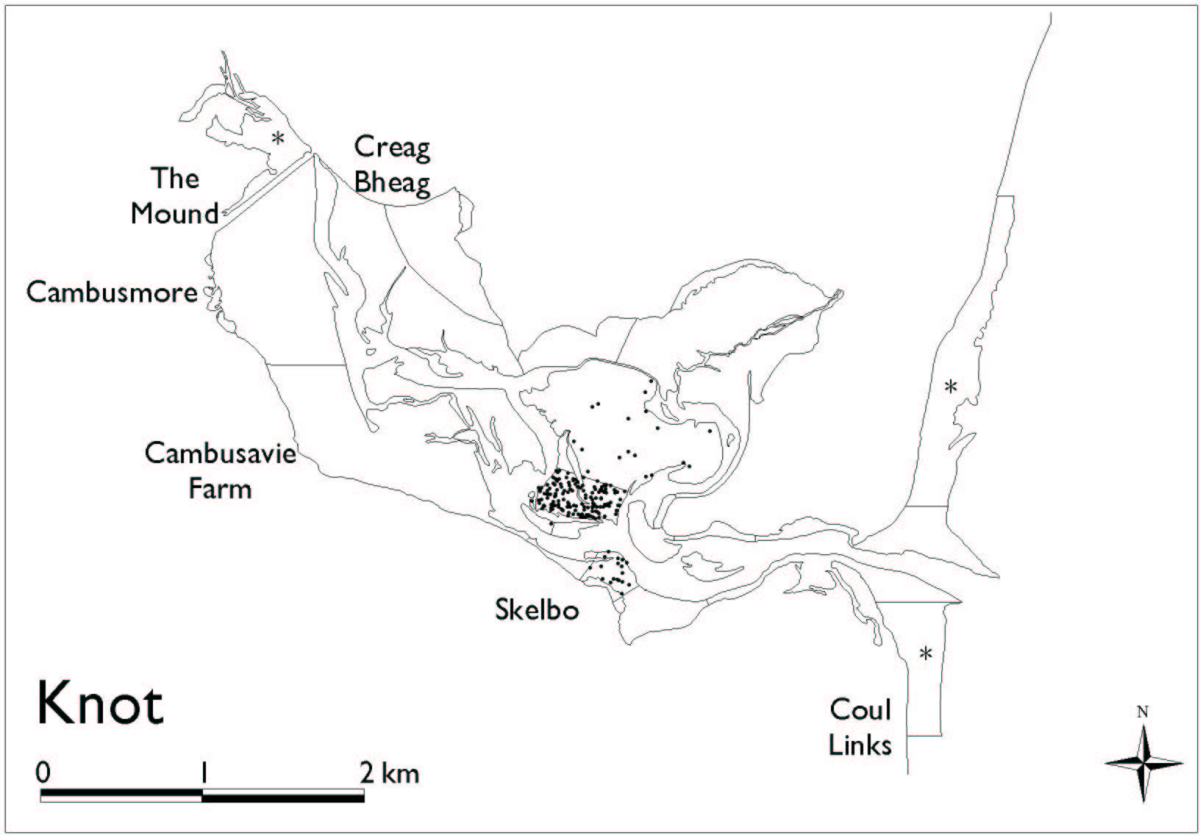


Figure 69. WeBS Low Tide Counts of Shelduck and Knot at Loch Fleet, winter 2000–01 (* = not counted).

ORWELL ESTUARY
Suffolk

Internationally important: Redshank

Nationally important: Dark-bellied Brent Goose, Shelduck, Gadwall, Grey Plover, Dunlin, Black-tailed Godwit

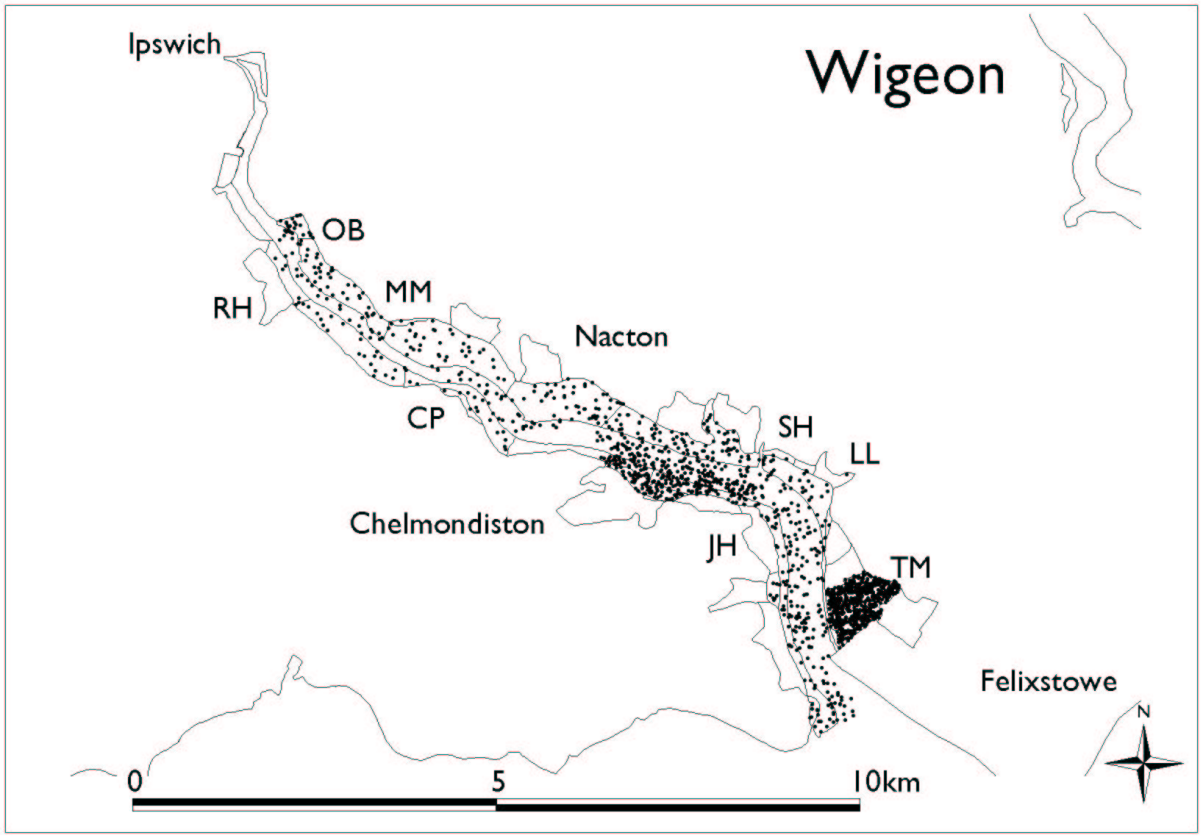
Site description

The Orwell Estuary extends from Ipswich to the Port of Felixstowe where it meets the Stour Estuary. Much of the intertidal substrate is fairly muddy but it becomes sandier towards the mouth. There is a patchy distribution of saltmarsh, whilst freshwater marshes and fields around the estuary provide an important habitat component. In the past, the main conservation concerns were about dockland expansion schemes and marina developments. Dockland expansion at Felixstowe, since around 1964, has claimed all of the outer reaches of the Orwell's northern shore. As a result of the latest development and as legal mitigation for the loss of an important intertidal habitat, the Felixstowe Dock and Railway Company had to lease an area of land and provide the finances to establish a nature reserve at Trimley Marshes. The reserve, established in 1989, is managed by the Suffolk Wildlife Trust. Although the reserve does not replace the lost estuarine habitat it does provide a roost and safe refuge site for several thousand waterbirds during the winter period. Other problems confronting the Orwell include pollution and heavy disturbance from sailing and other leisure activities.

Bird distribution

As in previous years, Dark-bellied Brent Geese were concentrated around the southern end of the estuary, particularly Jill's Hole and Trimley Marshes. A single Black Brant was also noted in January. Large numbers of re-established Greylag and feral Canada Geese, along with occasional White-fronted Geese and feral Snow Goose, were also recorded, mostly from Loompit Lake and Trimley Marshes. Virtually all of the Mute Swans were to be found on the upper part of the Orwell, particularly in the vicinity of Ipswich. Shelduck were generally distributed throughout the estuary but, as usual, the greatest densities were in the northern part of the Orwell. The peak low tide count for Shelduck was the lowest at the site for seven years. Nationally however, the Core Count totals showed a slight increase, although still well below the population levels of the last decade. Wigeon were distributed widely within the estuary, with Trimley Marshes and Jill's Hole being the most favoured areas whilst the northern end of the estuary beyond the Orwell Bridge was avoided (Figure 70). Most of the Gadwall, Pochard, Tufted Duck, Coot and Moorhen were found on Loompit Lake and Trimley Marshes. Mallard were present throughout much of the estuary, with the greatest concentrations on Loompit Lake, Trimley Marshes and in the vicinity of Ipswich at the northern end of the estuary. Teal, Shoveler and Ruddy Duck were only recorded in the southern half of the estuary, especially Trimley Marshes. Although Pintail were found across the Orwell, Cathouse Point, Stratton Hall and Trimley Marshes were the favoured areas. Both Goldeneye and Red-breasted Merganser were widely distributed. Small numbers of Cormorant, Grey Heron, Great Crested Grebe and Little Grebe were found throughout. A Garganey in November was unusual and there were also records of Slavonian Grebe, Common Scoter, Goosander, Water Rail and Kingfisher.

Oystercatcher and Grey Plover favoured the northern shoreline of the estuary, with the greatest concentrations of the former between Mulberry Middle and Nacton. The favoured areas for Golden Plover were the flats off Redgate Hard and Stratton Hall although numbers varied greatly between months. Lapwing displayed a similar distribution, but with the flats off Chelmondiston also favoured. Ringed Plover were found throughout, with a small concentration around the Orwell Bridge. Dunlin were found throughout the greater part of the estuary, with the northern shore holding the greatest numbers, and particularly the mudflats between Nacton and the Orwell Bridge. Curlew showed a very similar distribution to Dunlin, but also fed on the mudflats between Jill's Hole and the mouth (Figure 70). Redshank were widely distributed throughout much of the estuary, with the greatest concentrations between the Orwell Bridge and Nacton on the eastern side, and from Redgate Hard to Cathouse Point on the western side. Numbers of Black-tailed Godwit were at their lowest level for the last seven winters and this was also reflected in the Core Count totals. Most of the birds were encountered in the northern half of the Orwell, with a distinct preference shown for the flats adjacent to Cathouse Point. Knot were virtually confined to the mudflats in the northern half of the Orwell. Turnstone were widely distributed along much of the estuary, with the greatest concentrations between the Orwell Bridge and Mulberry Middle. Other waders recorded either singly or in very small numbers included Avocet, Sanderling, Snipe, Bar-tailed Godwit, Greenshank and Common Sandpiper. Six species of gull were recorded, with Black-headed by far the most abundant whilst a single Mediterranean Gull was present in December.



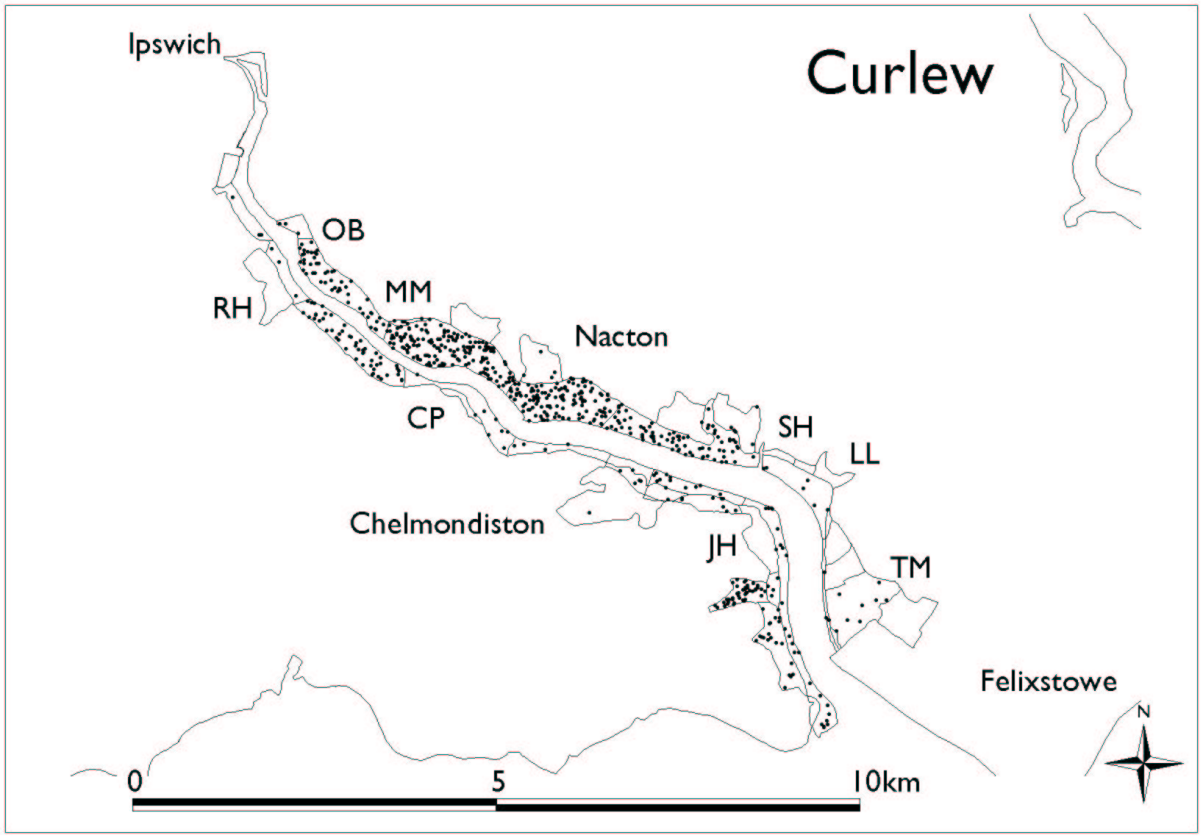


Figure 70. WeBS Low Tide Counts of Wigeon and Curlew at the Orwell Estuary, winter 2000–01. (TM=Trimley Marshes, JH=Jill's Hole, LL=Loompit Lake, OB=Orwell Bridge, CP=Cathouse Point, SH=Stratton House, MM=Mulberry Middle, RH=Redgate Hard).

SOLWAY FIRTH

Dumfries & Galloway / Cumbria

Internationally important: Whooper Swan, Pink-footed Goose, Barnacle Goose, Shelduck, Pintail, Oystercatcher, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank

Nationally important: Great Crested Grebe, Cormorant, Scaup, Common Scoter, Red-breasted Merganser, Ringed Plover, Golden Plover, Grey Plover, Black-tailed Godwit

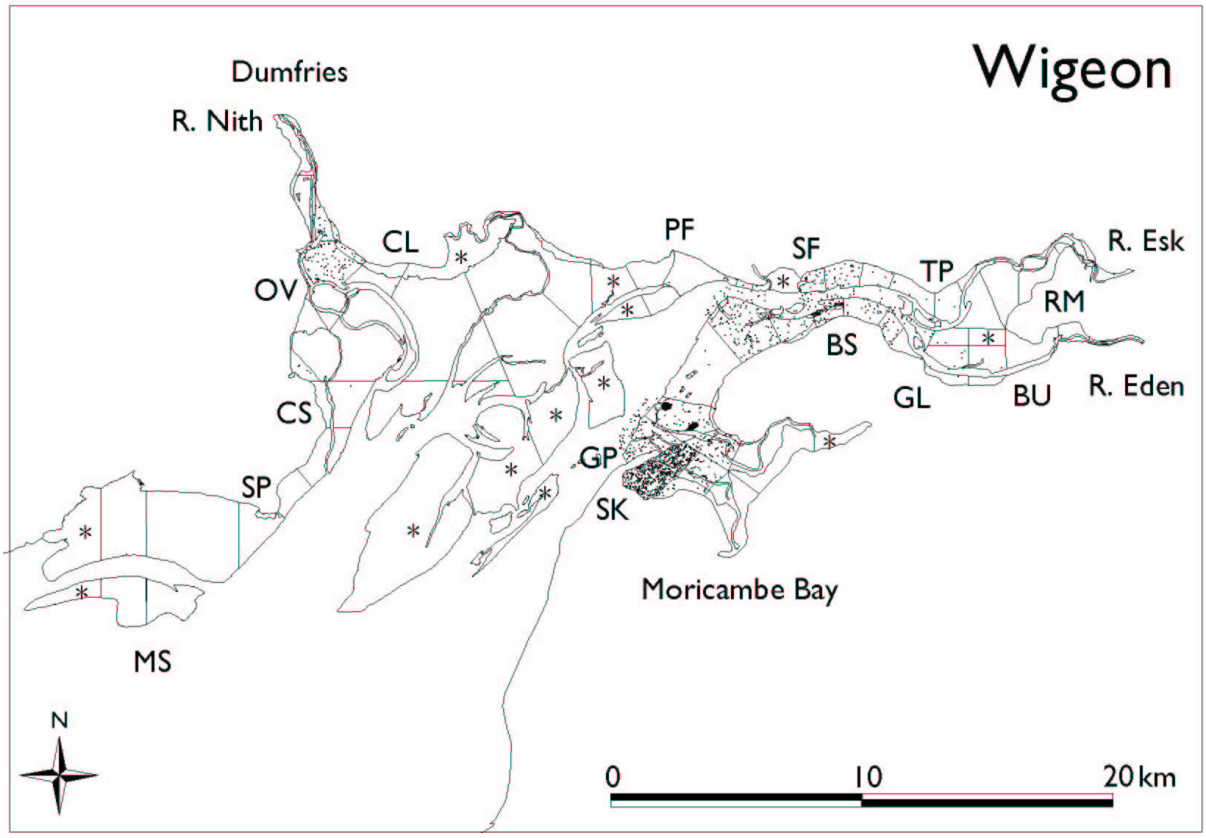
Site description

The Solway Firth, as considered by WeBS, comprises the coastline between Mersehead Sands on the Scottish coast to Workington in Cumbria. Much of this extensive area was covered during winter 2000–01, the main exceptions being the south shore south of Grune Point and some of the more extensive central intertidal banks south of Caerlaverock. The principal inputs to the estuary are from the rivers Esk, Eden, Nith and Annan. The majority of the site is sandy in character with several isolated rocky scars, principally at the mouth of Moricambe Bay. Huge areas of saltmarsh are found along the south side of Moricambe, between Glasson and Burgh and along the Caerlaverock shoreline. However, Rockcliffe Marsh, the most extensive of the saltmarshes, was not covered by the survey. Most of the estuary is surrounded by low-lying farmland and there is little industry in the area. The main issues concerning waterbird conservation on the Solway concern exploitation of natural resources, especially commercial shellfish harvesting. In addition, the issue of siting wind-powered turbines for electricity generation is one which will need careful consideration in the future.

Bird distribution

The greatest concentrations of Knot were on the flats off Carsethorn and Seafield and also adjacent to the mouth of the Annan (Figure 71), whilst other important areas were the mudflats south of Caerlaverock and the area between Grune Point and Bowness-on-Solway. Dunlin displayed a similar distribution, but with greater concentrations at the eastern end of the Solway, particularly off Powfoot. Oystercatcher were widely distributed, but avoided the extreme eastern mudflats. Both Lapwing and Golden Plover favoured Moricambe Bay and the eastern end of the Solway from Powfoot to Torduff Point on the northern side, with Lapwing also concentrated off Bowness-on-Solway on the southern side. Grey Plover mostly preferred the area between Grune Point and Bowness-on-Solway with a few off Carsethorn Point. Moricambe Bay was the main area for the small numbers of Ringed Plover. Curlew were widely distributed throughout the Solway, with the greatest densities in Moricambe Bay and at the eastern end of the estuary. The numbers of Bar-tailed Godwit were again low compared to core counts, mostly due to the lack of coverage of the outermost parts of the English shore; the species was mostly recorded at low tide on the flats at Grune Point. Up to 63 Black-tailed Godwits frequented Moricambe Bay and the flats off Torduff Point. This compares to a maximum count of only four birds during the equivalent Core Counts. Redshank were concentrated within the inner part of the estuary, including Moricambe Bay, with smaller concentrations between Southerness Point and Overton. Small numbers of Purple Sandpiper and Turnstone occurred off Southerness Point, with a few of the latter also to be found off Carsethorn and Powfoot. Small numbers of Snipe and the odd Greenshank were also recorded over the winter.

Pink-footed and Greylag Geese typically use estuaries as nocturnal roosts but those present during the Solway low tide counts favoured Moricambe Bay. Barnacle Geese peaked at more than 7,000 in November, concentrated along the flats of the River Nith, on Mersehead Sands and around Glasson, but well below the 23,000 birds observed during dedicated goose counts at the site. Shelduck were concentrated within Moricambe Bay, with lesser numbers off Overton and from Powfoot eastwards. Both Teal and Wigeon (Figure 71) favoured the flats off Skinburness in Moricambe Bay, with smaller numbers in the inner part of the estuary, and at the mouth of the Nith. The majority of the Mallard on the Solway were to be found within Moricambe Bay and the inner part of the estuary whilst most Pintail were found in the middle sections of the estuary, with smaller numbers at the mouth of the Nith and off Skinburness and Powfoot. The flock of over 1,800 Scaup was typically concentrated between Carsethorn and Southerness Point, and was substantially higher than the peak Core Count of 832 birds. Most of the Great Crested Grebes were also in the outer estuary. Small numbers of Whooper Swan and Goldeneye frequented the inner part of the estuary, as did most of the Cormorants. Also recorded were Red and Black-throated Divers, Grey Heron, Mute Swan, Greenland White-fronted Goose, Canada Goose, Gadwall, Shoveler, Tufted Duck, Red-breasted Merganser, Goosander, Moorhen and Kingfisher. Black-headed was the most abundant of the five species of gull recorded.



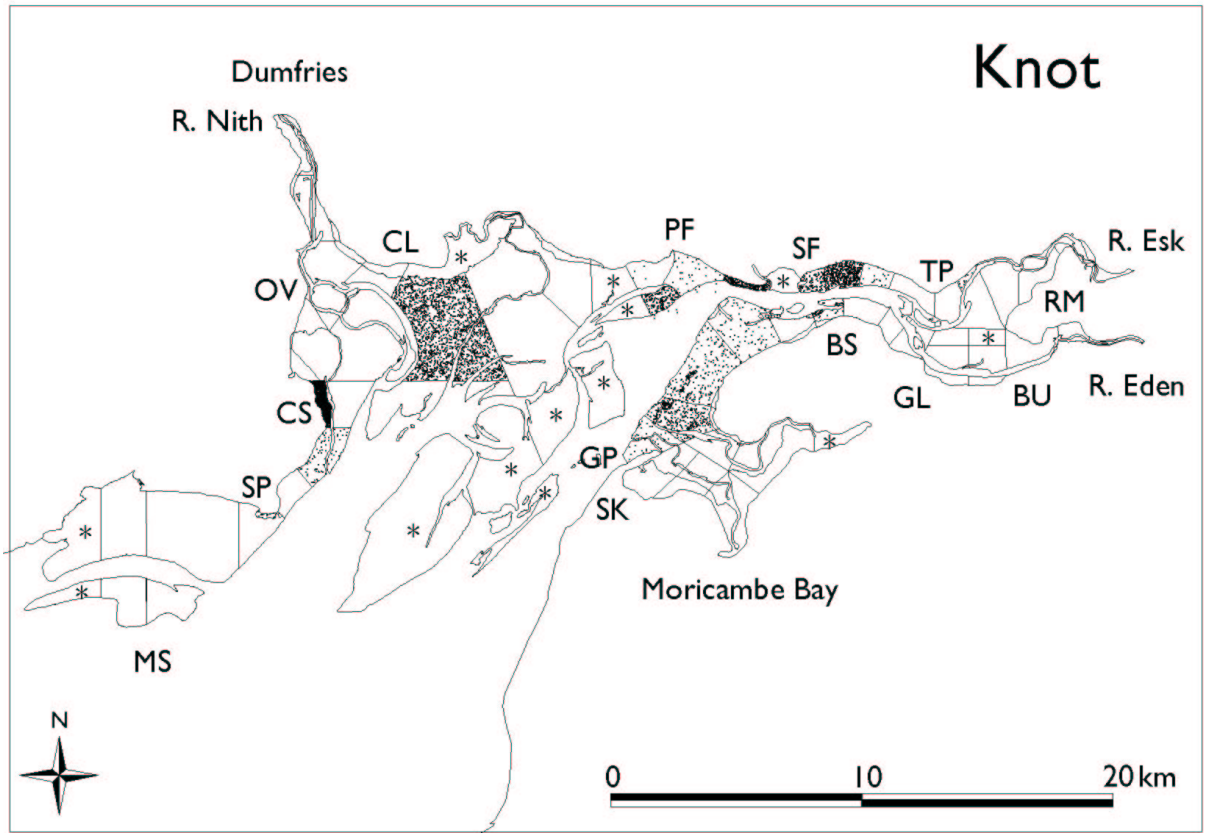


Figure 71. WeBS Low Tide Counts of Wigeon and Knot at the Solway Firth, winter 2000–01. (MS=Mersehead Sands, SP=Southerness Point, CS=Carsethorn, OV=Overton, CL=Caerlaverock, PF=Powfoot, SF=Seafield, TP=Torduff Point, RM=Rockcliffe Marsh, BU=Burgh by Sands, GL=Glasson, BS=Bowness-on-Solway, GP=Grune Point, SK=Skinburness, * = not counted)

SOUTHAMPTON WATER
Hampshire

Internationally important: Black-tailed Godwit

Nationally important: Great Crested Grebe, Cormorant, Dark-bellied Brent Goose, Wigeon, Teal, Dunlin

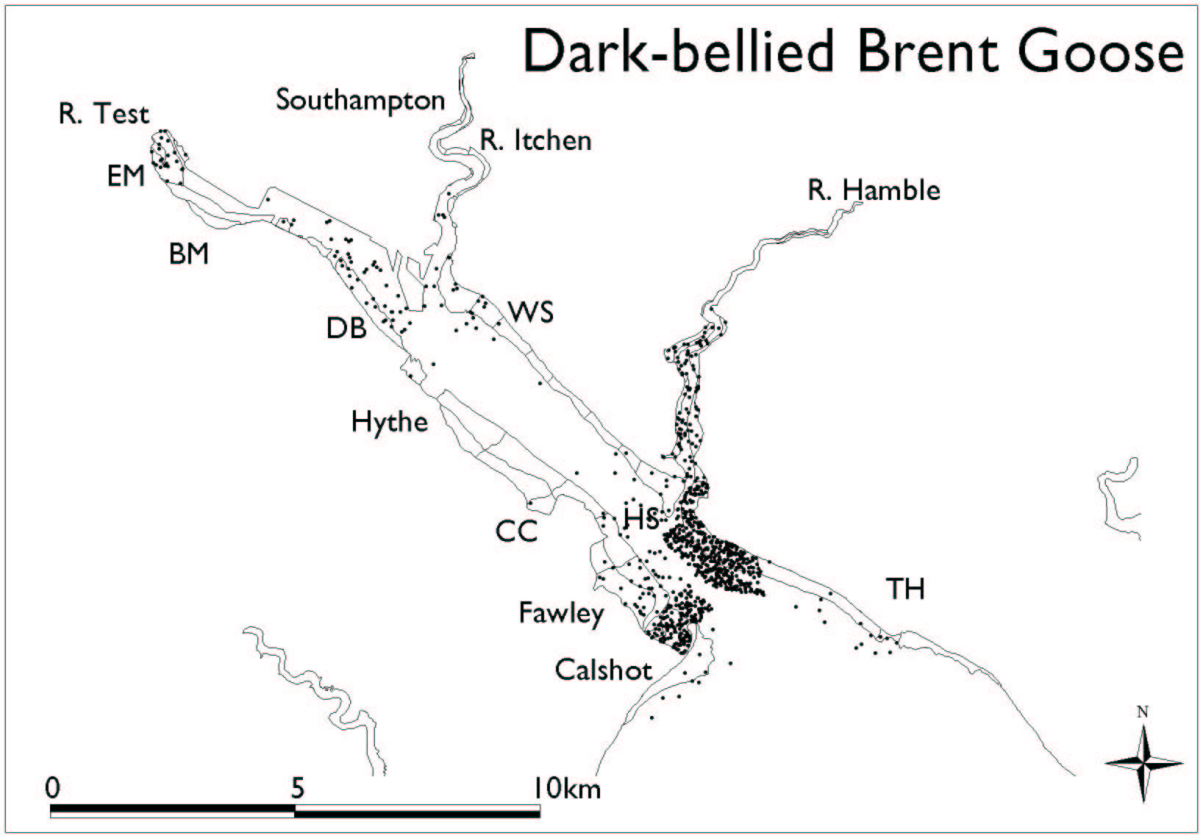
Site description

Southampton Water is part of the Solent complex and lies between the city of Southampton and the New Forest. The three principal rivers entering Southampton Water are the Test, Itchen and Hamble. There are extensive areas of mud on both shores of the estuary, with a large area of Spartina saltmarsh along the western shore. Southampton Water is one of the most heavily developed estuaries in Britain and, as well as being adjacent to a large city, also has important docks, an oil refinery and a power station along its shores. The area is also extremely heavily used by sailing enthusiasts. One of the most significant current development issues is at Dibden Bay, which is actually no longer a bay since dredgings were pumped onto the land here. This area now supports an extensive area of coastal wet grassland. Development plans, for port expansion, would result in the loss of this grassland and the remaining intertidal mud.

Bird distribution

The distribution of Brent Geese within the estuary was similar to recent winters, with the favoured feeding areas towards the mouth of the estuary. The densest feeding concentrations occurred between Titchfield Haven and the confluence of the Hamble (Figure 72). Canada Geese were recorded in fluctuating numbers, particularly around Eling Marsh, along with the odd Egyptian Goose. Shelduck were mainly present on the flats between Hythe and Calshot, and also in the vicinity of Eling Marsh. Wigeon numbers built up during the winter; the greatest concentrations of birds were off Eling and Bury Marshes and off Hythe and Fawley. The distribution of Teal was broadly similar to that of Wigeon, with the greatest numbers around Eling and Bury Marshes, and around Cadland Creek and Fawley, with lesser numbers on the River Hamble. Mallard were widely distributed throughout the estuary, with the greatest concentrations within the Rivers Itchen and Hamble. Conversely, most of the Pintail were to be found as usual at Cadland Creek. Up to 33 Red-breasted Mergansers frequented the estuary, along with small numbers of Gadwall, Shoveler, Tufted Duck, Goldeneye and Common Scoter. As in previous years, virtually all the records of Moorhen were from the River Itchen and most of the Coot were found near Fawley Power Station. A couple of Water Rail were also noted. The majority of the Mute Swans were on the River Itchen, while Great Crested Grebes were widely distributed within the estuary. Most of the Little Grebes were to be found off Fawley and along the Itchen. Occasional Red-throated and Great Northern Divers were also recorded.

Oystercatcher were widely distributed, with the greatest concentrations off Fawley and around Dibden Bay. Curlew were also widely distributed, but appeared to prefer the flats along the western shoreline, and along the River Hamble. Golden Plover were confined to mudflats around the River Hamble and the flats just to the south, whilst Grey Plover preferred the flats off Weston Shore, Hamble Spit and the area between Cadland Creek and Fawley on the western shoreline. Lapwing numbers remained generally constant at around 1,000 individuals, and were to be found principally around Eling and Bury Marshes, between Cadland Creek and Fawley and along the lower reaches of the Hamble (Figure 72). The peak numbers of Dunlin recorded at low tide were relatively low for a second year running; the birds were widely distributed over much of the estuary. Small numbers of Black-tailed Godwit congregated mostly on Eling and Bury Marshes although, as usual, it should be noted that the key area for this species (non-tidal grasslands at Titchfield Haven) were not covered by the low tide counts. Redshank and Turnstone were widely scattered, with the former favouring Eling and Bury Marshes, the intertidal flats between Fawley and Calshot and along the Itchen and Hamble Rivers and the latter the south-eastern part of the estuary. The distribution of Ringed Plover was very similar to that of Turnstone, with a definite southeastern bias. Very small numbers of Knot, Snipe, Bar-tailed Godwit and Greenshank were also present, whilst single over-wintering Whimbrel and Common Sandpiper were of interest. Cormorants were especially concentrated between Hythe and Cadland Creek, and Little Egrets peaked at 18 individuals in November, exceeding the numbers of Grey Heron present. Seven species of gull occurred, including up to 12 Mediterranean Gulls in December and up to five Yellow-legged Gulls in November.



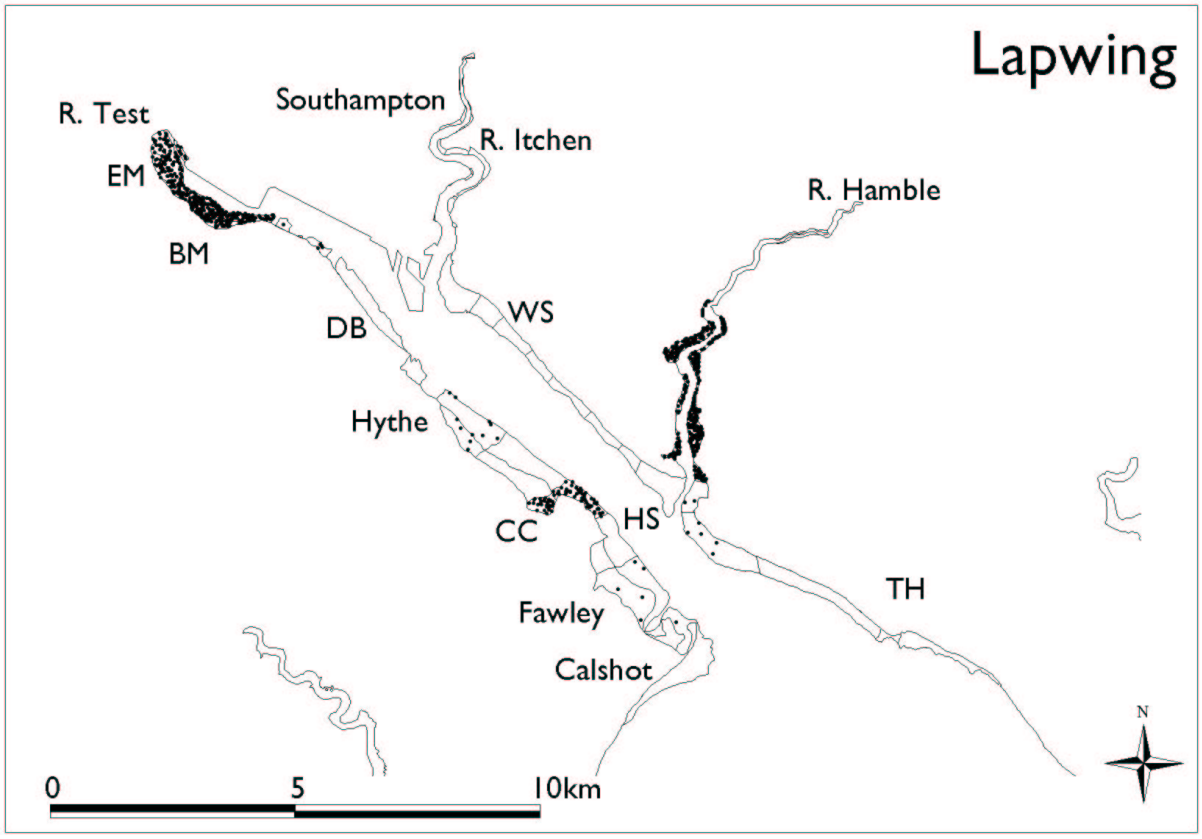


Figure 72. WeBS Low Tide Counts of Dark-bellied Brent Goose and Lapwing at Southampton Water, winter 2000–01. (DB=Dibden Bay, TH=Titchfield Haven, EM=Eling Marsh, BM=Bury Marsh, CC=Cadland Creek, WS=Weston Shore, HS=Hamble Spit)

STOUR ESTUARY
Suffolk/Essex

Internationally important: Pintail, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Redshank

Nationally important: Great Crested Grebe, Cormorant, Mute Swan, Dark-bellied Brent Goose, Shelduck, Wigeon, Goldeneye, Ringed Plover, Curlew

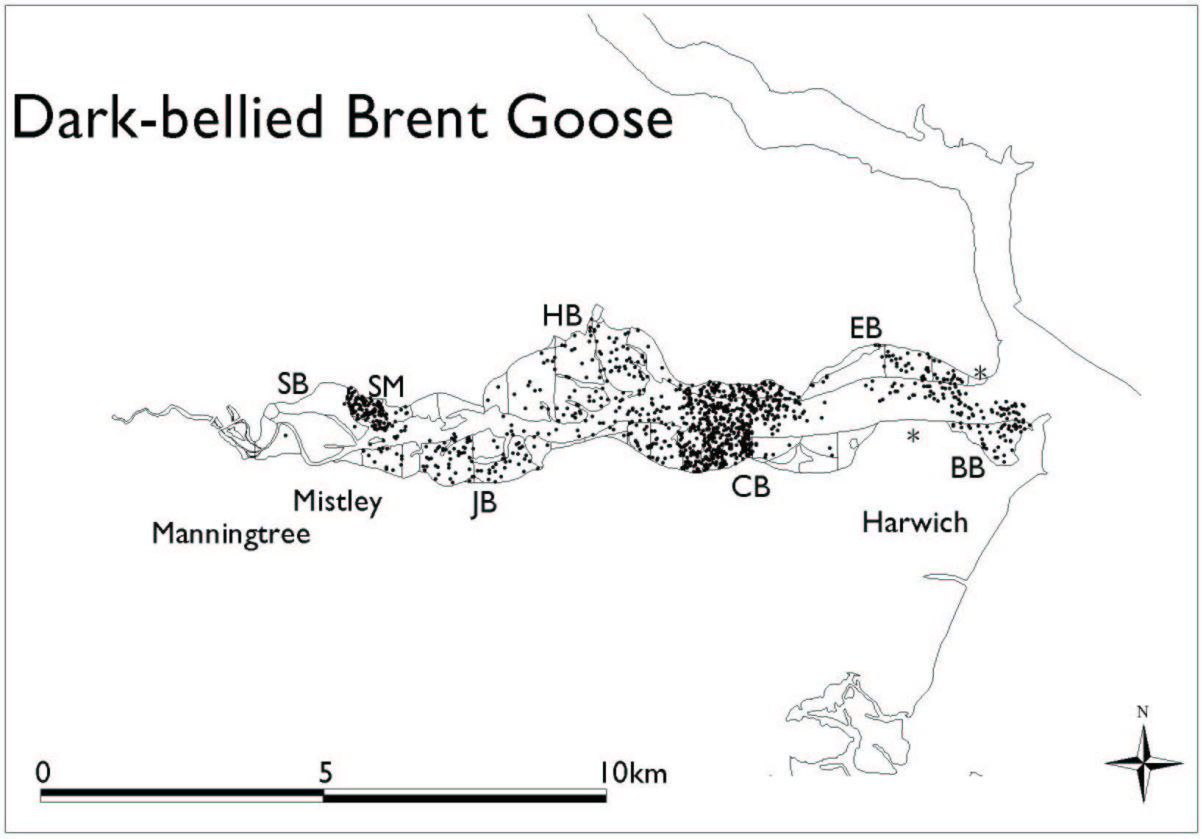
Site description

The Stour Estuary is a long, relatively straight estuary which forms the eastern end of the border between Suffolk and Essex. The estuary's mouth joins that of the Orwell as the two rivers enter the North Sea between Felixstowe and Harwich. The outer parts of the site are sandy, but shores become progressively muddier further upstream. There are five shallow bays; Seafield, Holbrook and Erwarton along the north shore and Copperas and Jacques on the south side. The estuary is backed by wooded cliffs and agricultural land. Since much of this land is private, there is very little disturbance to most of the estuary. Some sailing and shooting occurs. Most of the industrial activity occurs around Harwich, where there is a proposed port development at Bathside Bay.

Bird distribution

Great Crested Grebes peaked at 222 birds during December, the majority of the birds gathering in the middle of the estuary. As in previous years, Cormorants were distributed along most of the estuary but in lower numbers than during Core Counts. Mute Swans were principally concentrated off Manningtree, with smaller numbers around Harwich. Dark-bellied Brent Geese were distributed widely within the estuary with the greatest concentrations found within the eastern part of Seafield Bay and on the flats to the north of Copperas (Figure 73). Canada Geese preferred the upper reaches, from Seafield Bay westwards. Shelduck were widely distributed within the Stour, with the lowest numbers towards the mouth and the largest numbers in Copperas Bay and Jacques Bay. The peak low tide count of over 4,000 Wigeon was the highest at the site in recent winters. The greatest numbers occurred in the western half of the estuary, particularly the flats off Stutton Mill and within the vicinity of Jacques Bay. The majority of the Teal were to be found either at the eastern side of Copperas Bay and off Manningtree at the western end. Pintail favoured Copperas Bay and the western end of the estuary, particularly the flats off Manningtree, whilst most of the Mallard were on the southern shore of the Stour from Jacques Bay eastwards. The creeks and channels around Manningtree were the most important area for Goldeneye, with none recorded towards the eastern end of the estuary at all. Conversely, Red-breasted Mergansers were fairly evenly scattered along the length of the estuary. Other wildfowl recorded were small numbers of Greylag Goose, Gadwall, Shoveler, Pochard, Velvet Scoter and up to nine Smew, whilst an escaped Chiloe Wigeon added a taste of the exotic. Single Light-bellied Brent Goose and Greenland White-fronted Goose were also noted. Black-throated Diver, Little Grebe, Shag, Water Rail, Moorhen, Coot and Kingfisher were also recorded. Up to three Little Egrets were present all winter, along with a few Grey Herons.

Oystercatchers were found throughout much of the estuary with the greatest concentrations present in Seafield Bay and, to a lesser extent, both Holbrook and Erwarton Bays. Peak numbers of Ringed Plover, both at low tide and during core counts, were at a relatively high level during this winter, with most of the birds using Erwarton Bay and the flats off Harwich towards the mouth of the estuary. A short-lived influx of Golden Plover took place on the estuary during December, when over 6,000 birds were present, mostly at Seafield, Jacques and Erwarton bays. Grey Plover were distributed across much of the Stour, but concentrated mainly on the mudflats at Mistley, along with both Holbrook and Copperas Bays. Lapwing numbers fluctuated during the winter and the western half of the Stour held the most birds, although mudflats to the west of Erwarton Ness and Harwich were also important. Figure 73 shows that Dunlin were found virtually throughout the estuary, whilst Knot were more scattered, with the densest concentrations of the latter at the western end of the Stour. A similar distribution was shown by Black-tailed Godwit, the peak count of over 2,800 being well in excess of the peak core count for the winter. Conversely, the small numbers of Bar-tailed Godwit present were distributed within the eastern half of the estuary. Curlew and Redshank were scattered throughout most of the Stour, with the latter species recording a fall in numbers compared to the previous winter. Turnstone frequented the northern shoreline of the eastern half of the estuary. Other wader species occasionally present included Avocet, Sanderling, Ruff, Snipe, Spotted Redshank and Greenshank. Of the five species of gull present, Black-headed was the commonest.



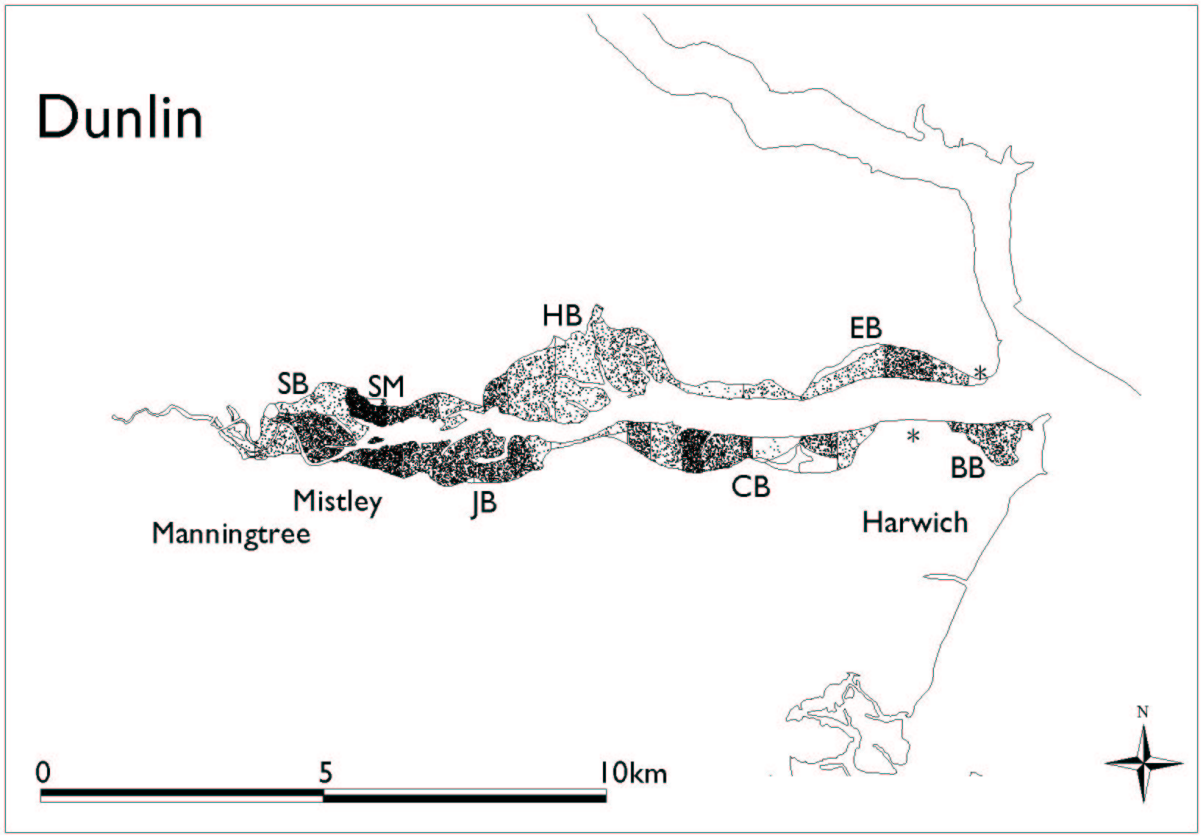


Figure 73. WeBS Low Tide Counts of Dark-bellied Brent Goose and Dunlin at the Stour Estuary, winter 2000–01. (SB=Seafield Bay, HB=Holbrook Bay, EB=Erwarton Bay, CB=Copperas Bay, JB=Jacques Bay, BB=Bathside Bay, SM=Stutton Mill, * = not counted).