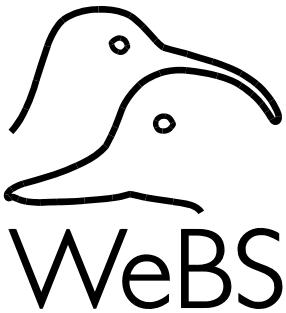
The Wetland Bird Survey 2001-03 Wildfowl & Wader Counts

Peter Cranswick, Jenny Worden, Robin Ward, Helen Rowell, Colette Hall, Andy Musgrove, Richard Hearn, Steve Holloway, Alex Banks, Graham Austin, Larry Griffin, Baz Hughes, Melanie Kershaw, Mark O'Connell, Mark Pollitt, Eileen Rees & Lucy Smith



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This report is provided free to all WeBS counters and those who participate in the other national waterbird surveys, none of whom receive financial reward for their invaluable work. Further feedback is provided to counters through the annual WeBS Newsletter. For further information please contact the BTO.

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This book represents the twenty-second report of the Wetland Bird Survey and comprises information from WeBS and complementary national and local surveys, *eg* goose censuses. It is entirely dependent on the many thousands of dedicated volunteer ornithologists who supply the data and to whom we are extremely grateful. The Local Organisers who co-ordinate these counts deserve special thanks for their contribution.

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Dedicated to the memory of

RAY WATERS, 1952-2004

WETLAND BIRD SURVEY

Organised and funded by

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OTHER NATIONAL WATERBIRD SURVEYS

Details of and contacts for many of the other waterbird surveys used in this report, and of forthcoming surveys, can be obtained via the web sites of the four WeBS partner organisations.

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Summary

Waterbird monitoring in the UK

- The Wetland Bird Survey (WeBS) aims to monitor non-breeding waterbirds in the UK: to identify population sizes, determine trends in numbers and distribution, and to identify important sites for waterbirds.
- WeBS Core Counts are undertaken at around 2,000 wetland sites of all habitats; estuaries and large still waters predominate. Monthly co-ordinated counts are made principally from September to March, mostly by volunteers. Survey data are available from the late 1960s.
- A series of other waterbird surveys complement WeBS, notably annual censuses of major goose populations, mostly counted at roost sites.
- Additional surveys are made on a less frequent basis, usually on a 5- to 10-year cycle, to address remaining gaps in information for particular species or habitats.
- This report presents total numbers counted by WeBS for all waterbirds in Great Britain and Northern Ireland. Results of other relevant surveys are summarised.
- Annual indices of changes in abundance are provided for the more numerous species. For certain wildfowl species, monthly indices, showing relative abundance during the winter, are also provided.
- WeBS Alerts are used to identify species or populations whose trends have shown declines of concern at a national level.
- All sites supporting internationally and nationally important numbers of each species or population are listed in individual *Species accounts*.
- All sites of international importance by virtue of the total numbers of all waterbirds that they support are listed in *Principal sites.*
- WeBS Low Tide Counts are made on selected estuaries to determine the distribution of birds at low tide. Results for these estuaries are presented, including distribution maps for selected species.
- This edition of *Wildfowl & Wader Counts* summarises survey results from two winters – 2001/02 and 2002/03.
- Note that international and national waterbird population sizes – and their respective 1% thresholds – have been revised since the last *Wildfowl & Wader Counts.*

Waterbird numbers in 2001/02 and 2002/03

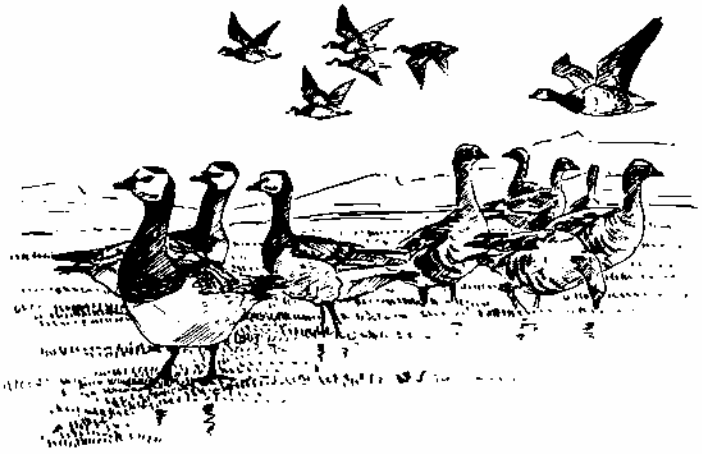
- In Great Britain, 43 species or populations of waterbird were found in internationally important numbers at one or more sites (meeting Criterion 6 for the selection of sites of international importance under the Ramsar Convention), and a further 21 species occurred in nationally important numbers at one or more sites.
- In Northern Ireland, 13 species or populations of waterbird were found in internationally important numbers at one or more sites, and a further 24 were present in numbers meeting the threshold for All-Ireland importance.
- A total of 175 sites in Great Britain and ten in Northern Ireland are of international importance for one or more species or populations of waterbirds (meeting Ramsar Criterion 6). Of these, 49 in Great Britain and three in Northern Ireland also qualify by virtue of regularly supporting more than 20,000 waterbirds (Ramsar Criterion 5).
- WeBS Alerts for 33 species or populations in Great Britain (to the end of winter 2000/01) indicated declines in seven species in at least one of the three time periods considered and increases in 15 species. Bewick's Swan and Red-breasted Merganser both exhibited an increase in one period but a decline over another.
- The index of Mute Swan *Cygnus olor* abundance in Britain continued to increase and reached a record high in 2002/03. Bewick's Swan *Cygnus columbianus* numbers remained low after a recent sharp fall. The Whooper Swan *Cygnus cygnus* index in Northern Ireland rose steeply to record levels, as did counts on the Ouse Washes (Norfolk).
- Icelandic-breeding geese continued to show mixture fortunes. The census total for Pink-footed Goose *Anser brachyrhynchus* in 2001/02 was the highest to date; numbers wintering in Norfolk continued to rise, and 62,500 at Scolt Head was the largest site count in Britain to date. Although the census total of Iceland Greylag Goose *Anser anser* in 2001/02 was the highest since the early 1990s, the long-term decline appeared to continue in 2002/03.
- European White-fronted Geese *Anser albifrons albifrons* numbers continued to decline in Britain, probably a result of global

climate change enabling birds to winter further east in Europe. The Greenland White-fronted Goose *Anser albifrons flavirostris* population has also declined in recent winters, as a result of poor breeding success, though numbers remained stable in Britain.

- An international census of Greenland Barnacle Geese *Branta leucopsis* in March 2003 recorded the highest total yet (56,400), although numbers on Islay have stabilised. Svalbard Barnacle Goose numbers also increased to record levels, with no evidence that the carrying capacity has been reached on the wintering or breeding grounds.
- Dark-bellied Brent Goose *Branta bernicla bernicla* numbers fell to the low levels of the early 1980s, as result of continued poor reproductive success. The All-Ireland census of East Canadian Light-bellied Brent Geese *Branta bernicla hrota* recorded a record high in autumn 2001. An influx in 2001/02 saw some 80% of the world population of Svalbard Light-bellied Brent Geese at Lindisfarne (Northumberland), the largest count since the reduction in population size in the early 20th century.
- Following sustained growth over 30 years, the re-established population of Greylag Geese in Britain appears to have stabilised. Annual indices showed continuing increases in introduced Greater Canada Goose *Branta canadensis* populations in both Britain and Northern Ireland. A total of 3,029 on the Dyfi Estuary (Cardiganshire/ Merioneth) was the largest site count in Britain to date.
- The national total and annual index value for Gadwall *Anas strepera* reached record highs.
- The index for Teal *Anas crecca* in Britain was the lowest for 15 years, though numbers have remained broadly stable over that period. The decline in Mallard *Anas platyrhynchos* in Britain continued, the index value being the lowest on record.
- Counts of Wigeon *Anas penelope* at Lindisfarne returned to former levels (c 20,000) after reduced numbers for two decades. The count of Pintail *Anas acuta* on the Solway Estuary was the highest in the UK since 1991/92, and high numbers of this and several other duck species were recorded on the River Avon (Hampshire). A count of 2,190 Shoveler *Anas clypeata* on the Somerset Levels was by far the highest at any UK site to date.
- Numbers of diving ducks, particularly Pochard *Aythya ferina*, Tufted Duck *Aythya fuligula*, Scaup *Aythya marila* and Goldeneye *Clangula bucephala*, declined dramatically on Loughs Neagh & Beg, in many cases halving in the last 5-10 winters. The Northern Ireland indices for these species showed corresponding crashes.
- Aerial surveys in Liverpool Bay revealed the regular presence of large numbers of Common Scoters *Melanitta nigra*, some up to 20 km from shore. A count of 79,000 in 2002/03 is 60% higher the current British estimate. Numbers in the Moray Firth were the largest since the 1970s, and counts of Velvet Scoters *Melanitta fusca* there were also high.
- Both Red-breasted Mergansers *Mergus serrator* and Goosanders *Mergus merganser* have declined nationally over the last five years, following long-term increases.
- Numbers of introduced Ruddy Ducks *Oxyura jamaicensis* appear to have stabilised nationally, though increases at individual sites continue, particularly in southeast England.
- Aerial surveys revealed some 11,000 Red-throated Divers *Gavia stellata* up to 30 km offshore from the Essex, Kent and Suffolk coasts. This figure is more than double the current estimate for the whole of Britain.
- The British index for Little Grebes *Tachybaptus ruficollis* continued to increase. That for Great Crested Grebe *Podiceps cristatus* declined, but a count of 1,600 at Lade Sands (Kent) was by far the highest to date at a UK site.
- A survey of Comorant *Phalacrocorax carbo* winter roosts located 74 new sites compared with the mid 1990s. Little Egrets *Egretta garzetta* continued to increase, numbers having tripled over the last five years.
- The annual index for Coot *Fulica atra* crashed in Northern Ireland: autumn numbers in 2002 were around normal, but declined rapidly as the winter progressed.
- Avocet *Avosetta recurvirostra* numbers and index value in 2001/02 were the highest on record.
- Following sustained growth, Grey Plover *Pluvialis squatarola* abundance has declined steadily since the mid 1990s.
- UK index values for Ringed Plover *Charadrius hiaticula* and Turnstone *Arenaria interpres* have fallen steadily for 15 years, and those in 2001/02 were the lowest

to date. Climate change is thought to be affecting distribution of these largely non-estuarine waders.

- Numbers of Sanderling *Calidris alba* rose sharply and the UK index matched the levels of the 1970s.
- Although numbers of Dunlin *Calidris alpina* have fluctuated over the last two decades, UK indices show a sustained decline over the last five years.
- The UK annual index for Black-tailed Godwit *Limosa limosa* has increased strongly, and the 2002/03 count total for Britain was the highest to date. A record count on the Ouse Washes in autumn 2002 represented 33% of the flyway population. Counted totals of Bar-tailed Godwits *Limosa lapponica* were also high, though the UK index shows stability.
- Numbers and the UK index for Curlew *Numenius arquata* dipped sharply in 2001/02 and 2002/03. Declines were also noted for Redshank *Tringa tetanus* though numbers have remained generally stable since the late 1980s.
- The counted total of Mediterranean Gulls *Larus melanocephalus* in 2002/03 was twice the previous high. A record roost count of 63,000 Common Gulls *Larus canus* was made at Bewl Water (Sussex) in March 2002.
- The number of species of escaped waterbirds recorded in 2001/02 and 2002/03 were around average for recent years. The number of sites holding these species and the total numbers of individuals were, however, slightly smaller than normal.
- Low Tide Counts were made at 23 sites in 2001/02 and at 19 in 2002/03. *Estuary accounts* are presented for survey at 11 sites in 2001/02, at nine sites in 2002/03, and for six sites where survey was undertaken in both winters.



Introduction

The UK is of outstanding international importance for waterbirds. Lying on some of the major flyways for arctic-nesting species, large numbers of waterbirds are attracted, especially during winter, by the relatively mild climate and extensive areas of wetland, notably estuaries. The UK thus has both moral and legal obligations to conserve both these waterbirds and the wetlands upon which they depend.

As a signatory to a number of international conservation conventions, and as a member of the EU, the UK is bound by international law. In particular, the 'Ramsar' Convention on Wetlands of International Importance especially as Waterfowl Habitat, the EC Birds Directive and the EU Habitats and Species Directive, between them, require the UK to identify important examples of wetland and other habitats and sites important for birds and designate them for protection. Implicit in these obligations is the need for regular survey to identify and monitor such sites. These instruments also lay particular significance on the need to conserve migratory populations, and consequently most of the waterbird populations in the UK.

The UK has ratified the Agreement on the Conservation of African-Eurasian Waterbirds (AEWA) of the 'Bonn' Convention on the Conservation of Migratory Species of Wild Animals. AEWA entered into force in 1999. It is a specific Agreement requiring nations to take co-ordinated measures to conserve migratory waterbirds given their particular vulnerability due to their migration over long distances and their dependence on networks that are decreasing in extent and becoming degraded through non-sustainable human activities. Article three of the Agreement requires, among other things, that sites and habitats for migratory waterbirds are identified, protected and managed appropriately, that parties initiate or support research into the ecology of these species, and exchange information and results. Explicit in this Agreement is that adequate monitoring programmes are set in place to fulfil these objectives and the Action Plan to the Agreement specifically requires that nations endeavour to monitor waterbird populations, individually and collectively.

AIMS AND OBJECTIVES OF WEBS

The Wetland Bird Survey (WeBS) aims to monitor all non-breeding waterbirds in the UK to provide the principal data on which the conservation of their populations and wetland habitats is based. To this end, WeBS has three main objectives:

- to assess the size of non-breeding waterbird populations in the UK;
- to assess trends in their numbers and distribution; and
- to assess the importance of individual sites for waterbirds.

These results also form the basis for informed decision-making by conservation bodies, planners and developers and contribute to the sustainable and wise use and management of wetlands and their dependent waterbirds. The data and the WeBS report also fulfil some of the objectives of the Conventions and Directives listed above. WeBS also provides UK data to Wetlands International to assist their function to co-ordinate and report upon waterbird monitoring at an international scale through the International Waterbird Census.

Structure and organization of WeBS

WeBS is partnership scheme of the British Trust for Ornithology (BTO), Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC), the last on behalf of English Nature (EN), Scottish Natural Heritage (SNH) and the Countryside Council for Wales (CCW), and the Environment and Heritage Service in Northern Ireland (EHS).

WeBS continues the traditions of two, long-running count schemes which formed the mainstay of UK waterbird monitoring since 1947 (Cranswick *et al* 1997). WeBS Core Counts are made at a wide variety of wetlands throughout the UK. Synchronised counts are conducted once per month, primarily from September to March, to fulfil all three main objectives. In addition, WeBS Low Tide Counts are undertaken on selected estuaries with the aim of identifying key areas used during the low tide period, principally by feeding birds; areas not otherwise noted for their importance by Core Counts which are normally conducted at high tide.

The success and growth of these count schemes accurately reflects the enthusiasm and dedication of the several thousands of volunteer ornithologists who participate. It is largely due to their efforts that waterbird monitoring in the UK is held in such international high regard.

AIM OF THIS REPORT

This report presents syntheses of data collected in 2001/02 and 2002/03, and in previous years, in line with the WeBS objectives. Data from other national and local waterbird monitoring schemes, notably annual goose censuses, are included where WeBS data alone are insufficient to fulfil this aim, so that the report provides a single, comprehensive source of information on waterbird status and distribution in the UK. All nationally and internationally important sites for which data exist are listed (see Appendices 1 & 2).

Changes since the 2000/01 report

The reader's attention is drawn to a number of significant developments and changes since the previous *Wildfowl & Wader Counts*. Full details are provided in the relevant section of the report, as indicated, and the reader is urged to consult these for a full explanation of the changes and for other, minor, revisions.

- To help bring reporting back in line with the intended schedule, this *Wildfowl & Wader Counts* reports on both the 2001/02 and 2002/03 count years. Certain data are presented from both winters, *eg* counted WeBS maxima for Great Britain and Northern Ireland are given in the *Species accounts*, as are significant counts from sites not meeting table qualifying criteria on the basis of their five-year peak means.
- The means of assessing count completeness has been standardised and the same technique is now applied to all species (see *Analysis*).
- A new analytical technique has been used for calculation of annual indices, and a smoothed line – indicating the underlying trend – has been included in graphs of indices based on WeBS data (see *Analysis*).
- 'Alerts' – an objective method of identifying changes of concern in trends – are included in the *Species accounts* (see *Analysis*).
- International waterbird population estimates, and estimates of waterbird numbers wintering in Great Britain, have been revised (see Appendix 2). Numbers of sites meeting and no longer meeting the relevant qualifying criteria have changed markedly for some species (see *Presentation and notation* and relevant *Species accounts*).
- Wetlands International has revised the population definitions for some waterbird species occurring in the UK – some (Mute Swan, Eider and Goosander) are now regarded as distinct populations, and others (Redshank, Bar-tailed Godwit and Ringed Plover) as comprising different sub-species – with consequent changes to the 1% thresholds used (see *Species Accounts*).
- Rarities and escaped species accounts have been moved to a discrete section at the end of the *Species accounts* (see *Presentation and notation*).
- The order of species presented in the *Species accounts* has been modified, in line with BOURC recommendations, placing wildfowl at the start of the systematic list (see *Presentation and notation*).
- Note, also, that access restrictions to the UK countryside imposed after the outbreak of Foot and Mouth Disease in February 2001 reduced the number of sites – and therefore birds – surveyed during summer months in 2001 (see *Coverage*).

WEATHER IN 2001/02 AND 2002/03

This summary of UK and European weather is drawn from the journal *Weather* and from the Meteorological Office web site at www.metoffice.gov.uk. Figures in brackets following the month refer to the Core Count priority date for the month in question. Arctic breeding conditions for birds that winter in the UK are summarised from information collated by Soloviev & Tomkovich at the web site www.arcticbirds.ru.

United Kingdom

April 2001 (8) brought changeable and generally wet weather to central and western Britain with rainfall approaching double the norm. Scotland was relatively dry and sunny. The month started warm and dry with a high of 21.5 ºC in the south east on the 2nd. A wet, unsettled period with thundery showers and strong winds followed, affecting most of the UK. North Wales and counties adjacent to the North Sea were most affected by hail, sleet and snow showers on the 18-20th. There were widespread overnight frosts, with -5.7 ºC in Highland on the 20th. The month had a drier finish as rain gave way to more prolonged sunny spells.

High pressure saw less than 50% of the average rainfall in Scotland at the beginning of **May** (27) but other areas of Britain experienced more unsettled weather. Thundery rain, hail and lightning broke out on the 9/10th mainly over Wales and southern England, but by the 11th it had become much warmer in many areas with prolonged sunshine. A peak of 27.3 ºC was recorded at Hampshire on the 12th and temperatures exceeded 25 ºC in some locations in Scotland. Low pressure then brought frequent outbreaks of heavy rain at the end of the month, especially to northern and eastern England.

Although cool and dull over Scotland and Northern Ireland, it was the driest **June** (24) in England and Wales since 1996. The month started unsettled with cool westerly winds and some heavy downpours in the south west and continued with cold nights in many regions (-1.8 ºC was recorded in Surrey on the 9th). By the 20th, warmer weather in many southern areas saw a high of 32 ºC in the West Midlands on the 26th. The month finished with cooler, fresher, more changeable weather with sunny spells interspersed with occasional outbreaks of rain and showers.

July (22) was generally warm across the UK with temperatures in the Northern Isles around 3 ºC higher than the average. A short spell of hot weather, with temperatures reaching over 30 ºC in the Midlands and London, was followed by thunderstorms and heavy rain in the west of Britain. The second and third week turned cooler and showery and night temperatures reached 0 ºC in mid Wales on the 15th. A deep depression on the 17th brought heavy rain (96 mm in Nottinghamshire) and flooding to the Midlands and East Anglia. Temperatures rose again at the end of the month to more than 30 ºC in the south east. Thundery showers occurred on the 30th in north west England and eastern England with tornadoes reported in Norfolk

For much of the UK, **August** (19) was very warm and sunny, and rainfall was below average. The month started unsettled in England and Wales, with warm spells broken by thunderstorms and windy weather. A record-breaking heat wave in the second week saw 32.9 ºC in Borders on the 9th and 38.5 ºC in Kent on the 10th. This was followed by another period of unsettled weather with thunderstorms in north, west and central regions, and mini-tornadoes and waterspouts in England. High pressure between 20-29th brought more warm weather but cooler conditions arrived at the end of the month.

September (16) was the coolest for five years. It was generally dry, particularly in Northern Ireland which experienced only 50% of its average rainfall; Norfolk, however, had more than double the norm. Despite unsettled weather during the 1-5th, temperatures in the south were relatively high, reaching 23 ºC in Hampshire and Devon. Eastern Britain experienced heavy rain and strong winds around the 17th with gusts of over 40 knots near the Wash. A period of high pressure followed, bringing calmer, sunnier weather, particularly in the south, and some frost to Scotland. The end of the month saw more unsettled but warm weather, with temperatures reaching 24 ºC in London on the 28th.

Although temperatures in **October** (7) were generally 2-3 ºC warmer than average, it was also a very wet month with more than 50% above average rainfall; only Northern Ireland had less than usual. The month started unsettled, with wet, windy and sometimes stormy conditions: Sutherland received 41 mm of rain on the 2nd and many other areas exceeded their monthly average by the 8th. A tornado caused local destruction on the Norfolk Broads and on the 7th, and 67 knot gusts were recorded in South Wales. A period of high pressure and southerly winds followed bringing high temperatures, with 25 ºC in London on the 13th. Heavy rain moved in again from the 20th,

with over 90 mm in the Cambridge on the 21st causing severe flooding, while Highland received 177 mm in two days.

High pressure dominated throughout **November** (4) and many areas saw settled weather. Parts of southern England received less than 50% of their normal rainfall. High temperatures during the first week included 17 °C in Devon on the 1st. The second week saw cold weather over central and eastern Britain and there were extensive snowfalls on the 9th, with 18 cm in Aviemore. The middle of the month was dominated by an anticyclone, with mostly dry, cool weather, although conditions became more unsettled towards the end. The 30th saw some extremely mild weather, reaching 16.9 °C in Flintshire.

It was the sunniest **December** (16) since records began in 1909. It was a dry month, with parts of England and Wales receiving only a third of their normal rainfall, while temperatures were close to average across Scotland and Northern Ireland but 1 °C below average in England and Wales. The month started unsettled and showery but by the second week, high pressure dominated bringing mostly dry, sunny weather, mild at first (16.1 °C in North Wales on the 11th) but turning colder with widespread frosts at night. Cold northerly winds brought snow to many areas after the 20th and Northern Ireland received 10 cm on the 26th. Scotland was hit by severe weather at the end of the month with cold northerly winds blizzards and sharp frosts. Temperatures dropped to -11.6 °C in Highland on the 31st and 20 cm of snow lay over much of northern Scotland.

Generally warm throughout the UK at the start of 2002, it was the mildest **January** (13) in England and Wales since 1993. Rainfall was higher than average over Scotland, but levels elsewhere were close to normal. The cold start to the month saw temperatures fall to –11.9 °C on the 1st in Powys and –15 °C in Grampian on the 2nd, but reach as high as 15 °C in parts of England and Wales by the end of the month. The last ten days saw severe gales and heavy rain, particularly in the west and north of Britain, with gusts of 74 knots recorded in the Hebrides and in Lanarkshire.

With the exception of a brief spell of quiet, dry and sunny weather in the middle of the month, **February** (10) was very unsettled, wet and windy. Western areas were the most affected, experiencing twice their normal rainfall average. Snow in the north of Britain and Northern Ireland saw 16 cm in Dumfries & Galloway on the 23rd. In the latter part of the month, there were strong winds and heavy rain, with hail and thunder in many places: gusts of over 70 knots were recorded in north Wales and 121 mm of rain in 24 hours caused local flooding in Caernarfonshire.

For much of the UK, **March** (3) was mild, sunny and generally dry, with only central parts of Scotland and the Northern Isles receiving above average rainfall. Northerly winds and frosts quickly gave way to milder and wetter weather. The south coast experienced temperatures of 17 °C on the 7th, but torrential rain saw over 80 mm in the west Highlands. An intense low produced strong winds with gusts of over 60 knots in South Wales and Norfolk on the 9th. Some areas of Northern England and Scotland saw snowfall, with 10 cm in Co Durham on the 10th. High pressure brought mild temperatures to the UK towards the end of the month and temperatures above 18 °C were recorded at London and Aberdeenshire on the 28th and 29th.

April (14) was warm (temperatures 1-2 °C above average), dry and sunny for the most part with little rain in southern or eastern areas until the 17th. All areas of Northern Ireland experienced above average rainfall and Gwynedd received 60 mm in 24 hours on the 18th. High temperatures were seen in many areas with 23.7 °C recorded in Greater London on the 22nd. Areas bordering the North Sea were cooler and some northern areas experienced sharp frosts. Heavy rain and thunder arrived at the end of the month in many areas with snow on some Scottish mountains.

Temperatures in **May** (12) were above average across the UK, with above or near normal sunshine. Much of the UK was, however, wetter than normal with some areas of Northern Ireland receiving up to two and a half times the average rainfall. The beginning of the month was mostly dry but nights were cold with -5 °C recorded in exposed areas in Scotland. A short spell of warm weather on the 15th saw temperatures reach 26 °C in Surrey and 29 °C in the Channel Islands. Thereafter, conditions were often unsettled, with some heavy hail and thunder storms: some southern areas experienced downpours of 50 mm and up to half an inch of hail accumulated in Belfast on 27th.

Much of **June** (9) was unsettled and very wet over Northern Ireland, northern England and southern Scotland. Mean temperatures across the UK were close to normal, but 2 °C above average across the Shetland Isles. The first week saw high temperatures and sunshine but heavy rain and thunderstorms soon affected southeast England and East Anglia, with 42 mm of rain in

Surrey and Greater London on the 4th/5th. Wet weather was also seen over Northern Ireland, northern England and southern Scotland, with 150-200% of average rainfall. The second half of the month saw more settled weather, particularly across England and Wales, and temperatures reached 29 °C over the southeast and East Anglia on the 17th.

July (14) began cool and unsettled. Temperatures rarely climbed above 15 °C with some areas receiving more than three times their average rainfall. A ridge of high pressure mid month brought warmer, drier weather before low pressure returned bringing more showers. The 30th saw 83 mm rainfall in 18 hours in Norfolk, and parts of Fife had their wettest July day on record. Although mean temperatures were close to the average, they had risen to 33 °C in London on the 29th, the highest July temperature for 13 years.

August (11) was generally a warm but unsettled month across the UK. Although parts of Northern Ireland and western Scotland had dry weather, the rest of the UK suffered heavy downpours. Torrential downpours brought 115 mm rain to North Yorkshire on the 1st, resulting in flash floods and the wettest recorded day since 1984. The south too suffered heavy rainfall with localised flooding in the London area on the 7th and tornadoes were recorded in the south west of Britain. Hot, humid weather came to many areas by the middle of the month with temperatures of over 30 °C in the south and east. A period of cooler wetter weather followed although high pressure brought mostly dry conditions to much of the country at the end of the month.

For the most part, **September** (8) was settled, warm and dry. It was the driest September in Scotland since 1972 and the sunniest in England and Wales since 1991. Temperature and sunshine were above average with the exception of the north of Scotland. An unsettled spell on the 4-10th resulted in squally winds, heavy downpours and localised flooding, with 121 mm in Dorset in 24 hours on the 9th. High pressure then dominated with temperatures of 21.8 °C in the Amargh area on the 11th, 25.6 °C in Highland on the 12th, and 26.5 °C in Devon on the 13th. At the end of the month, the nights became cooler with frosts in some areas.

Wet, cool and windy weather prevailed across most of the UK throughout **October** (6), with the exception of south east England and northwest Scotland. Aberdeen had its wettest October on record with 230.4 mm rainfall. The month began warm with temperatures exceeding 21 °C in Scotland and 23 °C in North Wales but Atlantic fronts brought wet weather in the second week, especially in the south west. Northerly winds brought cold weather on the 16th with the temperature in Stirlingshire dropping to -7.5 °C on the 20th. Snow fell on the 20/21st in the Peak District, Cumbria and the Highlands. More wet and windy weather was seen from the 27th across England and Wales, particularly severe in East Anglia and South Wales.

November (17) was one of the mildest on record, though generally very wet across the UK with the exception of northwest Scotland. It was the wettest November in Northern Ireland since 1963 and in central London since 1940. A series of Atlantic fronts brought warm air across the country for most of the month, temperatures regularly exceeding 17 °C in the first week, but also wind and rain, with some western and southern areas receiving three times their average rainfall: 84.5 mm of rain in Cornwall was accompanied by 70 mph winds, and there was severe flooding in northeast Scotland. A short spell of calmer weather occurred on the 17/18th with fog and frost on the 25th. More fronts brought unsettled and mostly mild and wet conditions at the end of the month.

Although **December** (8) was wet over England, Wales and southeast Scotland, it was drier then average across northwestern Scotland. Eastern Britain was generally dull while western regions were sunnier than average. It was a changeable month with some cold and dry periods followed by unsettled, wet and mild conditions. Mid month, cold winds from the east brought lower temperatures with -8 °C recorded at Dumfries. A very wet period across the country on the 20-22nd caused localised flooding. The Christmas period was one of the mildest for at least a decade with temperatures in North Wales reaching 15 °C on the 23rd. The end of the month saw very unsettled and wet weather, particularly in the south.

January 2003 (5) was generally sunny across the UK with temperatures slightly above average particularly in the south and west. The north and east experienced above average rainfall and significant snowfall in the second week and towards the end of the month. The first week saw a period of cold weather bring severe frosts to northern areas. On the 8th, London experienced its heaviest snow for 12 years (up to 8 mm in places). Wet and windy weather became established across most of the country by the middle of the month but an area of high pressure then brought warmer

temperatures to many areas with 18.3 °C near Aberdeen on the 26th being a UK January record. Blizzard conditions hit southeast England on 30th.

Predominantly warm, dry and very sunny weather was seen throughout **February** (16). The weather started changeable with severe snow storms across the Scottish highlands and moderate to heavy snowfall across Northern Ireland on 1-2nd. Milder, wetter weather followed in the second week accompanied by strong southwesterly winds. High pressure in the third week brought dry, cold weather with widespread frosts but prolonged sunny periods in many areas and continued for the remainder of the month. Scotland experienced a long period of south and southeasterly winds bringing low humidity and sunny weather; temperatures reached -11 °C in the Glens overnight but rose to 12 °C in mild afternoons.

March (23) temperatures were above average and conditions were generally very dry and exceptionally sunny. The month began with unsettled conditions with a deep depression bringing heavy rain to western areas on 7/8th. By mid month, rising pressure gave clear sunny weather over much of the country. Calm and clear skies brought cold nights with frost and patchy fog, and a low of -6.6°C in Northumberland on the 19th. Sea fogs over the North Sea coasts kept temperatures in some regions relatively low but many places had the sunniest March since 1929. The rainfall totals for most regions were about 50% below the long-term average for the month.

Northwest Europe 2001/02

The 2001/02 winter was generally mild across much of northwest Europe. September saw near to average temperatures in many areas, although they were 1-2 °C higher in Russia and Scandinavia. The month was generally wet, especially over much of northern and central Europe. Mild conditions continued into October with average temperatures up to 4 °C higher than normal in the Netherlands. Russia and Scandinavia again experienced above average rainfall, although regions elsewhere were relatively dry. Although mean monthly temperatures were close to average in November in many areas, the coldest temperatures occurred mid month in western and central Europe and towards the end of the month in eastern Europe. Temperatures fell in December with a cold spell towards the end of the month, particularly in Russia, Poland and Scandinavia, when temperatures were up to

Table 1. The percentage of stillwater count units (lakes, reservoirs and gravel pits) with any ice and with 75% or more of their surface covered by ice during WeBS counts in 2001/02 and 2002/03 (England divided by a line drawn roughly between the Humber and Mersey Estuaries).

2001/02 Region	**Ice**	**S**	**O**	**N**	**D**	**J**	**F**	**M**
Northern Ireland	>0%	0	0	0	0	0	0	0
	>74%	0	0	0	0	0	0	0
Scotland	>0%	<1	<1	<1	20	21	4	2
	>74%	0	0	0	6	9	2	<1
N England	>0%	0	0	0	8	25	<1	0
	>74%	0	0	0	2	9	0	0
S England	>0%	0	0	0	9	17	<1	<1
	>74%	0	0	0	2	4	0	0
Wales	>0%	0	0	0	9	5	0	2
	>74%	0	0	0	<1	<1	0	0

2002/03 Region	**Ice**	**S**	**O**	**N**	**D**	**J**	**F**	**M**
Northern Ireland	>0%	0	0	0	0	<1	0	0
	>74%	0	0	0	0	<1	0	0
Scotland	>0%	0	1	4	3	46	38	<1
	>74%	0	<1	<1	1	21	17	0
N England	>0%	0	<1	0	3	42	29	<1
	>74%	0	0	0	<1	12	11	0
S England	>0%	0	0	0	<1	19	12	<1
	>74%	0	0	0	<1	5	3	0
Wales	>0%	0	0	0	<1	21	8	0
	>74%	0	0	0	0	5	2	0

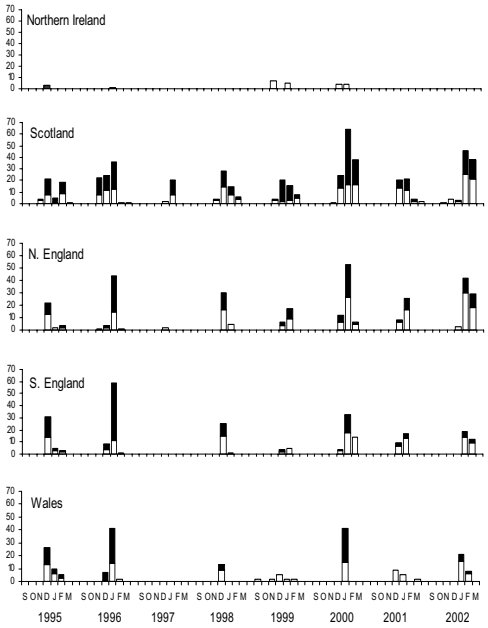


Figure 1. Percentage of still water count units in the UK with ice cover during WeBS counts 1995-2002 (white bars 1-75% ice cover, black bars >75% ice cover)

6 ºC lower than the mean minimum in some areas. A severe frost in the Netherlands resulted in extensive ice coverage of many waterbodies including the Wadden Sea.

Low temperatures continued into January 2002 over most of northwest Europe, but it became warmer in the latter half of the month, and temperatures were then generally 1-3 ºC higher than average in many areas. Rainfall was above average in Scandinavia and Poland. Mild conditions continued in the first half of February and it was generally wet over much of north and west Europe. The latter part of the month saw lower temperatures in Russia, Poland, Scandinavia and parts of western Europe. Following a cold spell in the first week, March saw above average temperatures across all of northwest Europe, accompanied by low rainfall in many areas except northern France, Poland and northern Russia.

Northwest Europe 2002/03

Mild conditions in September 2002 saw slightly higher than average temperatures in Russia, Scandinavia and western Europe. Rainfall was high in Russia and the Baltic but well below the norm elsewhere. October was generally wet in western Europe and Russia, and temperatures were 1-5 ºC below the mean minimum in Scandinavia, Russia and the Netherlands, with the lowest temperatures recorded at the end of the month. November was warmer than average, except in northern Europe where it was 1- 3 ºC lower than normal. Most areas had low rainfall, although northern France experienced wet conditions. Colder weather intruded in December, particularly in the last week, when temperatures were 6-7 ºC below average in Russia, Poland and Ukraine. Lower than average temperatures were also recorded in Scandinavia and western Europe, and northern France in particular was again wet.

Although the first ten days of January were generally cold, monthly mean temperatures were generally 2 ºC above average in Russia and Ukraine. Many areas saw below average rainfall, but the wet conditions continued in northern France, and also eastern Germany and Poland. Low temperatures occurred in the first half of February; falling 4-7 ºC below the mean minimum in eastern European countries. Temperatures remained generally below average over much of Europe for the rest of the month and low rainfall occurred in many areas. Winter closed with a dry, mild March when temperatures were close to or above average in many areas.

Arctic breeding conditions 2001

Overall breeding success was variable across the Arctic, with low productivity recorded in Canada and northeast Greenland but higher success in many parts of Russia and particularly Siberia. Early summer temperatures were average to just below average in Greenland and Iceland, with many parts of Russia, Siberia and Canada recording below average temperatures, although only Alaska and Canada had correspondingly late springs. The Taimyr Peninsula and areas further south and west had above average temperatures with spring phenology early in many areas. Northeast Greenland experienced a return of cold weather in mid June and Turnstone and Knot reproduction was thought to be particularly affected as a result. Cold rains in late June in northeast Europe coincided with the main hatching period for some species and stormy weather at the end of July impacted on chick survival in western Taimyr. Mid summer conditions were warm over much of Russia including the Kola Peninsula; a cold July in western Siberia and northeast America, however, caused a decrease in numbers and possibly nest abandonment by plovers, Bar-tailed Godwits and divers, and delayed reproduction in other species.

Rodent abundance was highest in Norway and Sweden but low over northern Russia including the Taimyr Peninsula, with few areas reporting average or high populations. Although lemming numbers were relatively low in some areas of eastern Eurasia, predation by Arctic foxes did not appear to have a major impact on breeding birds, with good reproductive success reported, particularly for some wader species. Those areas where impacts were seen included northeast Greenland, where nest predation was high, although numbers of juveniles in autumn flocks of waders indicated better reproductive success in other parts of Greenland. Western Alaska suffered a crash in rodent populations with a corresponding rise in predation, while unfavourable weather and high predation pressure affected breeding success, particularly of geese, in north and northwest Canada.

Arctic breeding conditions 2002

Contrasting patterns of reproductive success were seen in 2002, possibly reflecting a moderate but widespread prevalence of predators with locally varying rodent numbers. Rodent abundance was reported as low at several localities in Canada and Alaska, but average throughout much of Russia; there were

several areas of high lemming abundance but none was particularly widespread. Good to average breeding success was reported in northeast Greenland, the Taimyr Peninsula and parts of northern Russia, but lower in a number of areas in north Alaska, the Kola Peninsula and west of the Urals.

Early summer temperatures were higher than average in Eastern Greenland, Iceland, northwest Europe, Siberia and western Alaska. In contrast, a number of localities in northwest Canada, eastern Alaska, northern European Russia and west Siberia saw below average temperatures for June. Spring phenology was early in western Alaska, North Siberia and northeast Greenland. In mid summer, warm conditions prevailed in Sweden, Finland and the Kola Peninsula, with average temperatures occurring throughout most of Greenland in July. Lower than average July temperatures were experienced in parts of the Canadian Arctic, Alaska and the Taimyr Peninsula. Cold, wet weather in the Canadian Arctic, northeast Europe and western Siberia in mid summer reduced chick survival, particularly on Yamal and Taimyr Peninsula. Summer snowfall occurred in northern Alaska, Canada and northwest Taimyr but was not thought to have major consequences for breeding birds. Flooding, however, destroyed nests of coastal waders, especially plovers and Temminck's Stint, as well as gull and tern species, in a number of localities.

Waterbird surveys in the UK

SURVEY METHODS

The main source of data for this report is the WeBS scheme, providing regular monthly counts for most waterbird species at the majority of the UK's important wetlands. In order to fulfil the WeBS objectives, however, data from a number of additional schemes are included in this report. In particular, a number of species groups necessitate different counting methodologies in order to monitor numbers adequately, notably grey geese and seaducks, and the results of other national and local schemes for these species are routinely included.

The methods for these survey types are outlined below and more detail can be found in Gilbert *et al* (1998).

It should be noted that site definition is likely to vary between these surveys (see *Interpretation of waterbird counts*).

WeBS Core Counts

WeBS Core Counts are made using so-called 'look-see' methodology (Bibby *et al* 2000), whereby the observer, familiar with the species involved, surveys the whole of a predefined area.

Counts are made at all wetland habitats, including lakes, lochs/loughs, ponds, reservoirs, gravel pits, rivers, freshwater marshes, canals, sections of open coast and estuaries.

Numbers of all waterbird species, as defined by Wetlands International (Rose & Scott 1997), are recorded. In the UK, this includes divers, grebes, Cormorant, herons, Spoonbill, swans, geese, ducks, rail, cranes, waders and Kingfisher. Counts of gulls and terns are optional. Vagrants, introductions and escapes are included.

Most waterbirds are readily visible. Secretive species, such as snipes, are generally under-recorded. No allowance is made for these habits by the observer and only birds seen or heard are recorded. The species affected by such biases are well known and the problems of interpretation are highlighted individually in the *Species accounts*.

Most species and many sub-species are readily identifiable during the counts. Categories may be used, *eg* unidentified scoter species, where it is not possible to be confident of identification, *eg* under poor light conditions.

Species present in relatively small numbers or dispersed widely may be counted singly. The number of birds in large flocks is generally estimated by mentally dividing the birds into groups, which may vary from five to 1,000 depending on the size of the flock, and counting the number of groups. Notebooks and tally counters may be used to aid counts.

Counts are made once per month, ideally on predetermined 'priority dates'. This enables counts across the whole country to be synchronised, thus reducing the likelihood of birds being double-counted or missed. Such synchronisation is imperative at large sites which are divided into sectors, each of which can be practicably counted by a single person in a reasonable amount of time. Local Organisers ensure co-ordination in these cases due to the high possibility of local movements affecting count totals.

The priority dates are pre-selected with a view to optimising tidal conditions for counters covering coastal sites at high tide on a Sunday (see *Coverage*). The dates used for individual sites may vary due to differences in the tidal regime around the country. Co-ordination within a site takes priority over national synchronisation.

The accuracy of each count is recorded. Counts suspected to be gross underestimates of the true number of non-secretive species present are specifically noted, *eg* a large flock of roosting waders only partially counted before being flushed by a predator, or a distant flock of seaduck in heavy swell. These counts may then be treated differently when calculating site totals (see *Analysis*).

Data are input by a professional data input company. Data are keyed twice by different people and discrepancies identified by computer for correction. Any particularly unusual counts are checked by the National Organisers and are confirmed with the counters if necessary.

WeBS Low Tide Counts

This survey aims to assess numbers of waterbirds present during low tide on estuaries, primarily to assess the distribution of feeding birds at that time (see the section *Low Tide Counts* for a full explanation of methods).

This survey occasionally provides higher counts for individual sites than Core Counts, for example, where birds feed on one estuary but

roost on another. These data are then used for site assessment against 1% thresholds.

Supplementary daytime and roost counts

Supplementary counts are made at some sites where WeBS counts are known to under-represent the true value of the site. In particular, some species occur in much larger sites when using the site as a night-time roost, *eg* geese, Goosander and gulls, that are not present during WeBS daytime counts. Some sites are also surveyed more frequently than once-monthly by some observers.

Supplementary counts are collected by counters familiar with the site for WeBS survey, thus employing the same site definition and, for daytime counts, the same counting methods, and are submitted on standardised recording forms adapted from those used for WeBS Core Counts.

Goose roost censuses

Many 'grey' geese (*Anser* spp) spend daylight hours in agricultural landscapes, and are therefore missed during counts at wetlands by WeBS. These species are usually best counted as they fly to or from their roost sites at dawn or dusk since these are generally discrete wetlands and birds often follow traditional flight-lines approaching or leaving the site. Even in half-light, birds can generally be counted with relative ease against the sky, although they may not be specifically identifiable at mixed species roosts.

In order to produce population estimates, counts are synchronised nationally for particular species (see Appendix 3), though normally only one or two such counts are made each year. The priority count dates are determined according to the state of the moon, ideally conducted during a new moon since large numbers of geese may remain on fields during moonlit nights. Additional counts are made by some observers, particularly during times of high turnover when large numbers may occur for just a few days.

In some areas, where roost sites are poorly known or difficult to access, counts of birds in fields are made during the daytime.

As with WeBS Core Counts, the accuracy of the count is noted.

Additional counts

Additional, *ad hoc*, data are also sought for important sites not otherwise covered by regular monitoring, particularly open coast sections in Scotland, whilst the results of periodic, co-ordinated surveys – such as the Non-Estuarine coastal Waterbird Survey (NEWS), International Greenland Barnacle Goose Census, International Whooper & Bewick's Swan Census – are included where the data collected are compatible with the presentation formats used in this report.

The accuracy of counts of waterbirds on the sea is particularly dependent on prevailing weather conditions at the time of or directly preceding the count. Birds are often distant from land, and wind or rain can cause considerable difficulty with identifying and counting birds. Wind not only causes telescope shake, but even a moderate swell at sites without high vantage points can hamper counts considerably. The need to count other waterbirds in 'terrestrial' habitats at the site often precludes the time required for an accurate assessment of seaducks. Many sites may be best covered using aerial surveys, though this technique has been little used in the UK historically. Consequently, the best counts of most divers, grebes and seaduck at open coast and many estuarine sites are made simply when conditions allow; only rarely will such conditions occur by chance during WeBS counts. Synchronisation between different sites may be difficult or impossible to achieve, and thus co-ordination of most counts to date has occurred at a regional or site level, *eg* within the Moray Firth and within North Cardigan Bay.

The extensive use of aerial survey methods in nearshore marine waters in recent years means that data are available for a number of sites. These surveys employ a 'distance sampling' methodology (see Buckland *et al* 2001), whereby only a proportion of birds is counted, and the missed proportion calculated. Most reports published to date from these surveys provide only the counted number, not the estimated true total. Although known undercounts, these counts are used in this report, since most are nevertheless the largest to date for many sites.

Some data are provided directly by individuals (for example, reserve wardens), often undertaking counts for site survey purposes, but whose data are not formally published in a report.

A significant point is that these additional data are taken from published sources, from surveys with the specific aim of monitoring waterbirds, and where methods have been published – or where data have been collected by known individuals, usually undertaking site-based surveys, and are provided directly for use

in *Wildfowl & Wader Counts*. Casual records and data from, *eg* county bird reports, where the methods and/or site boundaries used are not documented, are not included. Reports and data for important sites from surveys that the authors know to have taken place in recent years are actively sought for inclusion in this report, but it is likely that other sources of suitable data are overlooked. The inclusion of additional data for some species and sites does not, thus, indicate that the tables in the *Species accounts* include all such suitable data.-

Irish Wetland Bird Survey

The Irish Wetland Bird Survey (I-WeBS) monitors non-breeding waterbirds in the Republic of Ireland (Colhoun 2001, Crowe 2005). I-WeBS was launched in 1994 as a joint partnership between BirdWatch Ireland, National Parks and Wildlife Service of Dúchas — The Heritage Service of the Department of Environment and Local Government (Ireland) — and WWT, with additional funding and support from the Heritage Council and WWF UK (World Wide Fund for Nature). I-WeBS is complementary to and compatible with the UK scheme. The main methodological difference from UK-WeBS is that counts are made only between September and March, inclusive.

Productivity monitoring

Changes in numbers of waterbirds counted in the UK between years are likely to result from a number of factors, including coverage and weather, particularly for European and Russian-breeding species which may winter further east or west within Europe according to the severity of the winter. Genuine changes in population size will, however, result from differences in recruitment and mortality between years.

For several species of swans and geese, young of the year can be readily identified in the field and a measure of productivity can be obtained by recording the number of young birds in sampled flocks, expressed as a percentage of the total number of birds aged. Experienced fieldworkers, by observing the behaviour of and relationship between individuals in a flock, can record brood sizes as the number of young birds associating with, usually, two adults.

ANALYSIS

In fulfilment of the WeBS objectives, results are presented in a number of different sections. An outline of the analyses undertaken for each is given here; further detail is provided in Appendix 3. A number of limitations of the data or these analytical techniques necessitate caution when interpreting the results presented in this report (see *Interpretation of waterbird counts*).

Count accuracy and completeness

Counts at individual sites may be hampered by poor conditions, or parts of the site may not be covered. This may result in counts missing a significant proportion of one or more species. It is important to flag such counts since using them at face value would under-represent the importance of the site and give misleading results, *eg* when used for trend calculations and assessment of site importance.

Counts at sites – and at individual sectors of large sites that are counted using a series of sub-divisions (known as 'complex sites') – are flagged as 'OK' or 'Low' by the counter, where 'Low' indicates that the counter feels a significant proportion of the birds present at the time of the count may have been missed, *eg* because all of the site or sector was not visited, or because a large flock of birds flew before counts were complete. Such assessments may be provided for individual species, or for all species present.

Similarly, at complex sites, one or more sectors may be missed in a particular month, again rendering the total count for the site incomplete to a greater or lesser degree for one or more species.

For single sector sites, counts are assessed as incomplete based on the information provided by the counter. For complex sites, an algorithm is used to assess whether missed sectors or 'Low' counts in some sectors constitute an incomplete count at the site level. The mean count of each sector is calculated based on 'OK' counts from a window of counts comprising the month in question, one month either side of the count, and the same three-month window in the preceding four years (*ie* a possible maximum of 15 counts). The total count for the site in any one month is considered incomplete if the sectors for which the count is missing or 'Low' in that month hold, on the basis of their mean values, more than 25% of the sum of all sector means. The assessment is made on a species-by-species basis, recognising the fact that species distribution is not uniform across a site and that a missed sector may be particularly important for some species but not for others.

Completeness assessments are made for all WeBS Core Counts, and for most goose roost counts (which, as single-sector sites, are made on the basis of the OK/Low assessment provided by the counter).

Because the completeness calculation for complex sites is based on a moving window of counts, and the use of different parts of the site by species may change, the addition of new data each year may result in counts flagged in previous *Wildfowl & Wader Counts* as complete now being considered incomplete, and *vice versa*.

Actual counts of birds obtained during aerial survey employing 'distance sampling' methods (see *Additional counts*) are also flagged as incomplete.

Counts are not flagged as 'Low' if a large number of the birds present is routinely missed, *eg* because they are cryptic, secretive, or hide in reeds – such as Snipe, Teal and Water Rail. 'Low' indicates that a significant proportion of the birds that could reasonably be expected to be counted under normal conditions was considered to have been missed. Similarly, many counts of waterbirds on the sea may be undercounts. Indeed, if the distribution of a flock stretches beyond the limits of visibility, the counter – as with birds hidden in reeds – can never know with confidence whether the count included all birds present.

Counts flagged as incomplete are treated differently in trend analysis and site importance assessments (see below).

It should be noted that this approach was applied to wildfowl for the first time in this report (although applied to data from all years, not just in 2001/02 and 2002/03). Thus, a much larger proportion of site counts in the wildfowl *Species accounts* are now identified as incomplete that in previous *Wildfowl & Wader Counts*.

Annual maxima

Different waterbird species occur in the UK at different times of year. Most occur in largest numbers during winter, some are residents with numbers boosted during winter, while others occur primarily as passage migrants or even just as summer visitors.

Although WeBS counts concentrate primarily on winter months, survey is made year-round. Accordingly, different 12-month periods are used to define a year to report upon

different species, in particular, to define the 'annual' maximum and to identify the peak 'annual' count for assessing site importance.

For most species, the year is defined as July to June, inclusive. Thus, for species present in largest numbers during winter, counts during autumn passage and spring passage the following calendar year are logically associated with the intervening winter. For species present as summer visitors – notably terns, Garganey and Little Ringed Plover – the calendar year is used to derive national and site maxima.

The different format used for column headings (*eg* 01/02 or 2001) in the 'header' and tables in each species account identify whether a 'winter' or calendar year has been used.

Note that national totals (reported in Tables 4-9) present data for the period April to March, since this corresponds to the months for which counters have traditionally been asked to submit data *en masse*. This means that data for the most recent 'winter' year are incomplete, and may lead to apparent anomalies. For example, if the peak count at a site occurred in May, this will not be apparent until the following *Wildfowl & Wader Counts*, when data for April to June 2003 have been received, and the site maxima – and site importance – will then change. In reality, this will affect very few sites or species. Deadlines for the provision of data by counters in future have been revised to correct this apparent anomaly, although the requirement to use two different 12-month periods will always mean that published data for some species will be revised in subsequent reports or a six-month lag in reporting.

National totals

Total numbers of waterbirds recorded by WeBS and other schemes are presented separately for Great Britain (including the Isle of Man but excluding the Channel Islands) and Northern Ireland in recognition of the different legislation that applies to each. Note, these are counted totals, and not population estimates, as survey covers only a proportion of the total numbers in the UK.

The count nearest the monthly priority date or, alternatively, the count co-ordinated with nearby sites if there is considered to be significant interchange, is chosen for use in this report if several accurate counts are available for the same month. A count from any date is used if it is the only one available.

Totals from different censuses are not combined to produce national totals because the lack of synchronisation may result in errors, *eg* birds counted at roost by one method may be effectively double-counted during the WeBS count at a different site in that month. Total counts from several national goose surveys are, however, used instead of WeBS Core Counts where the census total provides a better estimate of the total numbers, *eg* the national census of Pink-footed and Greylag Geese in October and November, and for periodic censuses, *eg* the international census of Greenland Barnacle Geese. Counts from site or regional-based surveys, for example of seaducks, are not included in national totals.

Data from counts at all sites are used to calculate national totals, irrespective of whether they are considered complete or not.

Numbers presented in this report are not rounded. National and site totals calculated as the sum of counts from several sectors or sites may imply a false sense of accuracy if different methods for recording numbers have been used, *eg* 1,000 birds estimated on one sector and a count of seven individuals on another is presented as 1,007. It is safe to assume that any large count includes a proportion of estimated birds. Reproducing the submitted counts in this way is, however, deemed the most appropriate means of presentation and avoids the summation of 'rounding error'.

In *Species accounts* of some scarcer species, including many escaped or introduced species, summed site maxima – calculated by summing the highest count at each site, irrespective of the month in which it occurred – have also been used. For some species, particularly more numerous ones, this is likely to result in double-counting where birds have moved between sites.

Annual indices

Because the same WeBS sites are not necessarily covered each year, changes in waterbird population sizes cannot be determined simply by comparing the total number of birds counted in each year. Consequently, indexing techniques have been developed which allow between-year comparisons of numbers, even if the true population size is unknown.

In summary, where sites have not been visited, a count for each species is calculated (imputed) based on counts in other months and years and at other sites. This effectively means that data are available for the same set of sites in each year and counts are thus directly comparable from one year to the next. Changes

in the population can be calculated and the relative difference expressed as an index.

The 'Underhill index' was specifically developed for waterbird populations and was used in previous *Wildfowl &* Wader Counts (see Underhill 1989, Prŷs-Jones *et al* 1994, Underhill & Prŷs-Jones 1994 and Kirby *et al* 1995 for a full explanation of this indexing process and its application for WeBS data). A Generalised Additive Model (GAM) is now used to generate index values (see Atkinson *et al* in prep), to match the approach used for WeBS Alerts (see below). To all intents and purposes, this produces identical values to those obtained using the Underhill technique.

The index values may show marked jumps between years, reflecting both genuine changes in numbers of birds, but also some of the limitations of the data. The underlying trend, giving a more parsimonious reflection of changes, has thus also been calculated (presented as a smoothed line in the index graphs), particularly for use in Alerts (see below). This trend is based on the same GAM used for the index values but with fewer degrees of freedom (see Atkinson *et al* in prep). This underlying trend has only been fitted for populations whose index is based on WeBS data, *ie* they are not available for many goose populations (see below).

Not all species are included in the indexing process. Notably, many of the goose populations are excluded, partly because their reliance on non-wetland sites requires different count methodologies, but also because regular census of substantially the whole of the British populations negates the need for an index to be calculated. Thus, change indices for Pink-footed, Icelandic Greylag, Greenland White-fronted and Svalbard Barnacle Geese have been derived from the highest total count obtained during censuses of the population in each year (see Appendix 3). Many seaduck are also excluded from the indexing process because of the extreme counting difficulties involved. Waders excluded from the index include those for which large numbers occur away from wetlands, *eg* Lapwing and Golden Plover, and those that are difficult to count accurately using WeBS methods, *eg* Snipe and Jack Snipe. Waterbird species which only occur in small numbers in Britain and Ireland have also been excluded.

Index values for wildfowl species have been provided separately for Britain and Northern Ireland. Values calculated for waders in Northern Ireland were, however, found to be statistically unreliable due to the small number of estuaries contributing to each index value, and consequently indices have been calculated for the UK as a whole for these species.

For all species, the index value has been constrained to equal 100 in the most recent year. In particular, this enables direct comparison of values for wildfowl in Great Britain with Northern Ireland despite the different availability of data as a consequence of the later start of the scheme in the Province (see Appendix 3 for availability of data for different species groups and countries).

The period of years for which indices are calculated has been revised slightly in the light of recent analyses. Data for wildfowl continue to be presented for the period 1966/67 to the present. Data from 1974/75 onwards have been used for waders as a high proportion of counts before this winter were imputed. For species added later to the scheme, *eg* Great Crested Grebe, Coot (see Table A3 in Appendix 3), data from the first two years following their inclusion have been omitted from indices, as take-up by counters appears not to have been complete, resulting in apparent sharp increases in numbers during this time.

Monthly indices

The abundance of different wildfowl species varies during the winter due to a number of factors, most notably the timing of their movements along the flyway, whilst severe weather, particularly on the continent, may also affect numbers in the UK. Due to differences in site coverage between months, however, such patterns cannot be reliably detected using count totals. Consequently, an index is calculated for each month to reflect changes in relative abundance during the season.

The index uses only complete WeBS Core Counts from sites covered in all seven months (September to March). Totals calculated for each month from these sites only can then be compared directly (expressed as a percentage of the maximum numbers), thus revealing patterns of seasonality for the species considered. These are presented as graphs in the *Species accounts*, giving both the value for the 2002/03 winter, and the average value from the five preceding winters, 1997/98 to 2001/02. (Note that the highest average value has been constrained to equal 100 in this report; previously, five-year average values were simply the mean of the individual index values, and thus very rarely reached 100). Monthly indices are not calculated for non-migratory, scarce or irregularly counted species.

Broad differences in the monthly values between species reflect their status in the UK. Resident species, or those with large UK breeding populations, *eg* some grebes and Mallard, are present in large numbers early in the winter. Declines through the winter result in part from mortality of first year birds, but also birds returning to remote or small breeding sites that are not covered by WeBS. The majority of UK wildfowl either occur solely as winter visitors, or have small breeding populations that are swelled by winter immigrants, with peak abundance generally occurring in mid winter.

The vast majority of the wintering populations of many wader species are found on estuaries, and, since coverage of this habitat is relatively complete and more or less constant throughout winter, meaningful comparisons of total monthly counts can be made for many species. Consequently, monthly indices are not calculated for waders. As counting of gulls and terns is optional, indices are not calculated for these species either.

Site importance

Criteria for assessing the international importance of wetlands have been agreed by the Contracting Parties to the Ramsar Convention on Wetlands of International Importance (Ramsar Convention Secretariat 2004). Under Criterion 6, a wetland is considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird, whilst any site regularly supporting 20,000 or more waterbirds qualifies under Criterion 5. Similar criteria have been adopted in the UK for identification of SPAs under the EC Birds Directive (see Stroud *et al* 2001). A wetland in Britain is considered nationally important if it regularly holds 1% or more of the estimated British numbers of one species or subspecies of waterbird, and in Northern Ireland, important in an all-Ireland context if it holds 1% or more of the all-Ireland estimate. Note, however, that for those species that are listed on Annex 1 of the Birds Directive, 1% of the national population is used as the threshold for the selection of SPAs (see Stroud *et al* 2001 for further details).

Population estimates are revised once every three years, in keeping with internationally agreed timetables (Rose & Stroud 1994). International estimates used in this report follow recent revisions of international populations (Wetlands International 2002) and of estimates for Great Britain (Kershaw & Cranswick 2003, Rehfisch *et al* 2003a). The relevant 1% thresholds are given in Appendix 2. (It should be noted that the estimates and thresholds for some species or populations which should be the same at an international and national level because all birds are found in Britain, *eg* for Pink-footed Goose, differ slightly because of the rounding conventions applied. In most *Species accounts*, these differences have been rationalised and only one or other of the estimates used.)

Tables in the *Species accounts* rank the principal sites for each species according to the mean of annual maxima for the last five years (the five-year peak mean), in line with recommendations of the Ramsar Convention, and identify those meeting national and international qualifying levels (see also *Interpretation of waterbird counts*).

In accounts for most wildfowl, divers, grebes, Cormorant, herons, gulls, terns and Kingfisher, annual maxima are derived from any month in the appropriate 12-month period (see *Annual maxima*). Average maxima for sites listed in the wader accounts that are based on a 'winter' year are calculated using data from only the winter period, November to March.

Data from other sources, often involving different methods, *eg* goose roost censuses, are used where these provide better, *ie* larger, counts for individual sites.

Five-year peak means were initially calculated using only complete counts; incomplete counts were used if they increased the mean count. Where all annual maxima were incomplete, the five-year peak mean is given as the highest of these individual counts. Averages enclosed by brackets are based solely on incomplete counts.

Principal sites

In addition to the assessment of sites against 1% thresholds in *Species accounts*, sites are identified for their importance in terms of overall waterbird numbers in the section *Principal sites*. The peak count at each site is calculated by summing the individual species maxima during the season, irrespective of the month in which they occurred, or whether counts were complete or not. Only WeBS Core Counts and national goose censuses (see Appendix 3) are included in totals. Note that non-native introduced or escaped species (*ie* those not in BOURC category A) are not included in these totals. Additional counts made using different methodologies, such as those of seaducks on the Moray Firth, are not incorporated.

WeBS Alerts

WeBS Alerts have been developed to provide a standardised method of measuring and reporting on changes in wintering waterbird numbers at different temporal and spatial scales using WeBS data (see Atkinson *et al* in prep). General Additive Models (GAMs) are used to fit smoothed trends to annual population indices (changes in population size calculated using these smoothed values are less susceptible to the effects of short-term fluctuations in population size or to errors when sampling than are results produced using raw data plots). Alerts are triggered for populations that have undergone major declines, and are intended to help identify on a consistent and objective basis where research into causes of decline may be needed and inform conservation management.

Proportional changes in the smoothed index value of a population over short- (5-year), medium- (10-year) and long- (25-year) term time-frames are categorised according to their magnitude and direction. Population declines of between 25% and 50% trigger Medium Alerts and declines of greater than 50% trigger High Alerts. Increases of 33% and 100% (values chosen to be those necessary to return a population to its former size following declines of 25% and 50% respectively) are also identified, albeit that these are rarely of conservation concern.

National Alerts are generated for species (or specific populations of a species) using data from across the WeBS site network, at UK, British and individual country levels (Austin *et al* 2004). These Alerts provide some context for understanding finer scale changes in numbers. Site Alerts are generated for selected species at individual designated sites, including SPAs, Sites of Special Scientific Interest (SSSIs) and Areas of Special Scientific Interest (ASSIs), whose boundaries overlap those of WeBS count sites. Regional trends are also given to facilitate the interpretation of site-level changes for any given species.

Alerts are calculated only for native species for which WeBS annual indices are calculated. Alerts are not available for some species because there were only relatively recently included in WeBS Core Counts. Full results from the latest Alerts report are available for download from the web (www.bto.org/webs/webs-alerts-index.htm). Alerts at the UK and Great Britain level are given in Appendix 4.

Introduced and escaped waterbirds

Many species of waterbird occur in the UK as a result of introductions, particularly through escapes from collections. Several have become established, such as Canada Goose and Ruddy Duck. The British Ornithologists' Union Records Committee have established a category 'E' for 'species that have been recorded as introductions, transportees or escapes from captivity, and whose breeding populations (if any) are not thought to be self-sustaining' (BOURC 1999).

WeBS records of these species are included in this report both for the sake of completeness and in order to assess their status and monitor any changes in numbers, a key requirement given the need, under the African-Eurasian Waterbird Agreement of the Bonn Convention 'to prevent the unintentional release of such species' and once introduced, the need 'to prevent these species from becoming a threat to indigenous species' (Holmes *et al* 1998).

INTERPRETATION OF WATERBIRD COUNTS

Caution is always necessary in the interpretation and application of waterbird counts given the limitations of these data. This is especially true of the summary form which, by necessity, is used in this report. A primary aim here remains the rapid feedback of key results to the many participants in the WeBS scheme. More detailed information on how to make use of the data for research or site assessment purposes can be obtained from the British Trust for Ornithology (see *Contacts*).

Information collated by WeBS and other surveys can be held or used in a variety of ways. Data may also be summarised and analysed differently depending on the requirements of the user. Consequently, calculations used to interpret data and their presentation may vary between this and other publications, and indeed between organisations or individual users. The terminology used by different organisations may not always highlight these differences. This particularly applies to summary data. Such variations do not detract from the value of each different method, but offer greater choice to users according to the different questions being addressed. This should always be borne in mind when using data presented here.

For ease of reference, the caveats provided below are broadly categorised according to the presentation of results for each of the key objectives of WeBS. Several points, however, are general in nature and apply to a broad range of uses of the data.

National totals

The majority of count data are collected between September and March, when most species of waterbird are present in the UK in highest numbers. Data are collected during other months and have been presented where relevant. Caution is urged, however, regarding their interpretation both due to the relative sparsity of counts from this period and the different count effort for different sites. Data are presented for the months April to March inclusive, matching the period for which data are provided *en masse* by counters.

A number of systematic biases of WeBS or other count methodology must be borne in mind when considering the data. Coverage of estuarine habitats and large, standing waters by WeBS is good or excellent. Consequently, counted totals of those species which occur wholly or primarily on this habitat during winter will approximate the true number. Those species dispersed widely over rivers, non-estuarine coast or small inland waters are, however, likely to be considerably under-represented, as will secretive or cryptic species, such as snipes, or those which occur on non-wetlands, *eg* grassland plovers. Species which occur in large numbers during passage are also likely to be under-represented, not only because of poorer coverage at this time, but due to the high turnover of birds in a short period. Further, since counts of gulls and terns are optional, national totals are likely to be considerable underestimates of the number using the WeBS network of sites. Only for a handful of species, primarily geese, do count totals approach the true number in the UK.

One instance of possible over-estimation may occur when using summed site maxima as a guide to the total number of scarcer species. For species with mobile flocks in an area well covered by WeBS, *eg* Snow Goose in southeast England, it is likely that a degree of double-counting will occur, particularly if birds move between sites at different times of the year.

The publication of records of vagrants in this report does not imply acceptance by the British Birds Rarities Committee (*eg* Rogers and the Rarities Committee 2003).

Annual indices and Alerts

For all species, the long-term trends in index values can be used with confidence to assess changes in overall wintering numbers. Because short-term fluctuations provide a less rigorous indication of population changes, care should be taken in their interpretation (although such fluctuations do occur for some species, *eg* those high Arctic species with large annual differences in breeding success). The underlying trend, denoted by the smoothed line in the annual index graphs, will give a better overall impression of trends for species with marked inter-annual variation, although it should be noted that unusually high or low index values in the most recent year will have a disproportionate effect on the trend at that point.

Caution should be used in interpreting figures for species which only occur in small numbers. Thus, numbers tend to fluctuate more widely for many species in Northern Ireland, largely as a result of the smaller numbers of birds involved but also, being at the westernmost limit of their range, due to variable use being made of Ireland by wintering wildfowl.

Caution is also urged regarding the trends for wildfowl inferred from the first few years of data for Northern Ireland. Low values in 1986/87 and 1987/88 for some species then rise sharply to periods of more normal fluctuation thereafter, suggesting that these species were initially not routinely included in counts. The sharply increasing trends shown by some species in the Province in the mid 1980s may therefore be erroneous.

It should be borne in mind that the imputed values, used in place of missing and incomplete counts, are calculated anew each year, as is the completeness calculation for 'complex sites'. Consequently, the same count may change from complete to incomplete or *vice versa* with the addition of a new year's data. Because the index formula uses data from all years, each new year's counts will slightly alter the site, month and year factors calculated by the index process. In turn, the missing counts may differ slightly and, as a result, the index values produced each year are likely to differ slightly from those published in previous editions of *Wildfowl & Wader Counts*. (Small changes may also occur as a result of the late submission of data). The indices published here represent an improvement on previous figures as the additional year's data allow calculation of the site, month and year factors with greater confidence. Index values are given in Appendix 3.

It should also be borne in mind that the Alerts results given in this report cover the period up to 2000/01. Because of the longer-term view taken by the WeBS Alerts, these generally match the trends for annual indices in this report (covering an additional two years up to 2002/03), although trends for the five most recent winters may differ for the short-term Alerts.

Monthly indices

As for annual indices, the reduced numbers of both sites and birds in Northern Ireland result in a greater degree of fluctuation in numbers used in the analyses of data from the Province to produce monthly indices.

Site definition

To compare count data from year to year requires that the individual sites – in terms of the area surveyed – remain the same. The boundary of many wetlands are readily defined by the extent of habitat (*eg* for reservoirs and gravel pits), but are less obvious for other sites (*eg* some large estuaries) and here count boundaries have often been defined over time by a number of factors to a greater or lesser degree, including the distribution of birds at the time of the count, known movements of birds from roost to feeding areas, the extent of habitat, and even ease of access.

Sites are defined for a variety of purposes, and the precise boundary of sites describing ostensibly the same wetland may differ accordingly. For example, the boundaries used to define a large lake may differ for its definition as a wetland (based on habitat), as a waterbird count area (some birds may use adjacent non-wetland habitat), and as a statutorily designated site for nature conservation (which may be constrained by the need to follow boundaries easily demarcated in planning and legal terms, or may be defined for other, non-avian, features of conservation importance). It should be recognised that the boundary of a site for counting may even differ between different waterbird surveys, particularly where different methodologies are employed, *eg* the Forth Estuary comprises one large site for WeBS Core Counts, a slightly different area for Low Tide Counts, and two roost sites for Pink-footed Geese.

Data from different waterbird surveys have been used for assessment of site importance in this report if collected for ostensibly the same site, and are unlikely to cause significant discrepancies in the vast majority of cases (though see *Site importance*).

Particular caution is urged, however, in noting that, owing to possible boundary differences, totals given for WeBS or other sites in this report are not necessarily the same as totals for designated statutory sites (ASSIs/SSSIs, SPAs or Ramsar Sites) having the same or similar names.

It should also be borne in mind that whilst discrete wetlands may represent obvious sites for waterbirds, there is no strict definition of a site as an ecological unit for birds. Thus, some wetlands may provide all needs – feeding, loafing and roosting areas – for some species, but a 'site' for other species may comprise a variety of disparate areas, not all of which are counted for WeBS. Similarly, for some habitats, particularly linear areas such as rivers and rocky coasts, and marine areas, the definition of a site as used by waterbirds is not readily discerned without extensive survey or research that is usually beyond the scope of WeBS or other similar surveys. The definitions of such sites may thus evolve, and therefore change between different editions of *Wildfowl & Wader Counts*. Further, the number of birds recorded by WeBS

at particular sites should not be taken to indicate the total number of birds in that local area.

In some cases, for example where feeding geese are recorded by daytime WeBS Core Counts over large sites, and again at discrete roosts within or adjacent to that same site, data are presented for both sites in the table of key sites given the very different nature or extent of the sites and often number of birds, even though the same birds will be counted at both. A similar approach is adopted for some seaducks and divers, *eg* Common Scoter counts are provided for Liverpool Bay as a whole from aerial survey, and also from Core Counts for discrete WeBS sites that overlap part of the larger aerial site.

Site importance

Sites are selected for presentation in this report using a strict interpretation of the 1% threshold. It should be noted, however that where 1% of the national population is less than 50 birds, 50 is normally used as a minimum qualifying threshold for the designation of sites of national importance. It should also be noted that the 'qualifying levels' used for introduced species are used purely as a guide for presentation of sites in this report and do not infer any conservation importance for the species or the sites concerned since protected sites would not be identified for these non-native birds.

It is necessary to bear in mind the distinction between sites that regularly hold nationally or internationally important numbers and those which may happen to exceed the appropriate qualifying levels only in occasional winters. This follows the Ramsar Convention, which states that key sites must be identified on the basis of demonstrated regular use (calculated as the mean winter maxima from the last five seasons for most species in this report), otherwise a large number of sites might qualify as a consequence of irregular visitation by 'one-off' large numbers of waterbirds. However, the Convention also indicates that provisional assessments may be made on the basis of a minimum of three years' data. These rules of thumb are applied to SPAs (Stroud *et al* 2001) and national assessments also. Sites with just one or two years' data are also included in the tables if the mean exceeds the relevant threshold for completeness but this does not, as such, imply qualification. (This caveat applies also to sites that are counted in more than two years but, because one or more of the peak counts are incomplete, whose means surpass the 1% threshold based on counts from only one or two years.)

Nevertheless, sites which irregularly support nationally or internationally important numbers may be extremely important at certain times, *eg* when the UK population is high, during the main migratory periods, or during cold weather, when they may act as refuges for birds away from traditionally used sites. For this reason also, the ranking of sites according to the total numbers of birds they support (particularly in Principal Sites) should not be taken as a rank order of the conservation importance of these sites, since certain sites, perhaps low down in terms of their total 'average' numbers, may nevertheless be of critical importance to certain species or populations at particular times.

Peak counts derived from a number of visits to a particular site in a given season will reflect more accurately the relative importance of the site for the species than do single visits. It is important to bear this in mind since, despite considerable improvements in coverage, data for a few sites presented in this report derive from single counts in some years. Similarly, in assessing the importance of a site, peak counts from several winters should ideally be used, as the peak count made in any one year may be unreliable due to gaps in coverage and disturbance- or weather-induced effects. The short-term movement of birds between closely adjacent sites may lead to altered assessments of a site's apparent importance for a particular species.

More frequent counts than the once-monthly WeBS visits are necessary to assess more accurately the rapid turnover of waterbird populations that occurs during migration or cold weather movements.

It should also be borne in mind that because a count is considered complete for WeBS, it does not imply that it fully represents the importance of the site. A site of importance for a wintering species may have been counted only in autumn or spring, and thus while a valid complete WeBS count is available for that year, it under-represents the importance of the site for that species. This problem is overcome to some extent by the selection of counts from a limited winter window for wader species, although this will also tend to underestimate the mean if it excludes large counts at other times of year. A similar issue arises for counts derived from different survey methods. For example, many sites important as gull roosts are identified on the basis of evening roost counts. Valid and complete counts may have been made by WeBS Core Counts during daytime over the course of a particular winter but, if no roost counts were made, the mean will be depressed

by the much lower Core Count in that year. Thus, when counts appear to fluctuate greatly between years at individual sites on the basis of data from different sources – particularly for geese and gulls in the absence of roost counts, and for seaducks in the absence of dedicated survey – the five-year means and apparent trends over time should be viewed with caution.

Caution is also urged regarding the use of Low Tide Count data in site assessment. Whilst this survey serves to highlight the importance of some estuaries for feeding birds that, because they roost on other sites, is missed by Core Counts, the objectives of Low Tide Counts do not require strict synchronisation across the site and this may result in double-counting of birds on some occasions. It should also be noted that count completeness assessments are not made for Low Tide Count totals at complex sites, and any undercounts from this scheme are not flagged in the tables, leading to under-estimation of the site's importance.

This list of potential sources of error in counting wetland birds, though not exhaustive, suggests that the net effect tends towards under- rather than over-estimation of numbers and provides justification for the use of maximum counts for the assessment of site importance or the size of a population. Factors causing under-estimation are normally constant at a given site in a given month, so that while under-estimates may occur, comparisons between sites and years remain valid.

It should be noted that a change in a site's status (as internationally or nationally important) reflect the change from the last report. In many cases, particularly in this *Wildfowl & Wader Counts*, large numbers of sites have changed status because the thresholds have been revised since the last report. The arrows denoting changed status thus do not necessarily imply changes in the actual numbers of birds at a site (indeed, the peak mean may have increased yet the site no longer meet the threshold and *vice versa*). In most years, however, the changed status of a site following the publication of the new report will have resulted from a change in the mean number of birds.

It should be recognised that, in presenting sites of national importance, this report provides just one means of identifying important sites and does not provide a definitive statement on the conservation value of individual sites for waterbirds, let alone other conservation interests. The national thresholds have been used to provide a reasonable amount of information in the context of this report only. Thus, for example, many sites of regional importance or those of importance because of the assemblage of species present are not included here. European Directives and international conservation Conventions stress the need for a holistic approach to effect successful conservation, and lay great importance on maintaining the distribution and range of species, through wider countryside and other policies, in addition to the conservation of ecologically coherent national networks sites.

For the above reasons of poor coverage, geographically or temporally, outlined above, it should be recognised that lists of internationally and nationally important sites are limited by the availability of WeBS and other survey data. Whilst the counter network is likely to cover the vast majority of important sites, others may be missed and therefore will not be listed in the tables due to lack of appropriate data.

Some counts in this report differ from those presented previously. This results from the submission of late data and corrections, and in some cases, the use of different count seasons or changes to the number/combination of WeBS count sectors used to define a WeBS site. Additionally, some sites may have been omitted from tables previously due to oversight. It is likely that small changes will continue as definitions of sites are revised, in the light of new information from counters. Most changes are minor, but comment is made in the text where they are significant.

Note that sites listed under 'Sites no longer meeting table qualifying levels' represent those that were listed in the 2000/01 report as of national importance but which, following the 2002/03 counts, no longer meet the relevant threshold. It is not an exhaustive list of sites which, at any time in the past, have been of national or all-Ireland importance.

SURVEY COVERAGE

WeBS Core Counts

Co-ordinated, synchronous counts are advocated to prevent double-counting or birds being missed. Consequently, priority dates are recommended nationally. Due to differences in tidal regimes around the country, counts at a few estuaries were made on other dates to match the most suitable conditions. Weather and counter availability also result in some counts being made on alternative dates.

Table 2. WeBS Core Count priority dates in 2001/02.

8 April	7 October
27 May	4 November
24 June	16 December
22 July	13 January
19 August	10 February
16 September	3 March

Table 3. WeBS Core Count priority dates in 2002/03.

14 April	6 October
12 May	17 November
9 June	8 December
14 July	5 January
11 August	16 February
8 September	23 March

Counts were received from 1,961 sites for the period April 2001 to March 2002, comprising 3,480 count units (the sub-divisions of large sites for which separate counts are provided), and for 2,062 sites, comprising 3,537 count units, for the period April 2002 to March 2003.

WeBS and I-WeBS coverage in 2001/02 and 2002/03 is shown by 10-km squares in Figs 3 & 4. The location of each count unit is shown using only its central grid reference. Thus, for example, the 19 count sectors of the North Norfolk Coast fall in four 10-km squares, broadly indicating the extent of the whole site. As ever, areas with few wetlands or small human populations are apparent on the map as areas with little coverage. The location of many of the key sites mentioned in the report and all estuaries is shown in Fig A1 in Appendix 4. The county and grid reference of all sites mentioned by name in this report are given in Appendix 4.

The extent of survey was similar to that for recent winters. Coverage of northwest Scottish mainland was again sparse, following additional survey there in previous winters by the RAF Ornithological Society, and on the Outer Ards, Co Down, although there was extensive survey in Co Fermanagh, the first for many years.

A major Foot and Mouth Disease epidemic spread across many parts of the UK in 2001. The first case was confirmed on 20 February and by March, 32 separate outbreaks had been confirmed. As a result of subsequent restrictions on access in the countryside, the WeBS partners suspended the national survey. Counting continued at low levels throughout the summer where access was possible, although it was not until September that coverage returned to more normal levels and, even then, some areas remained out of bounds.

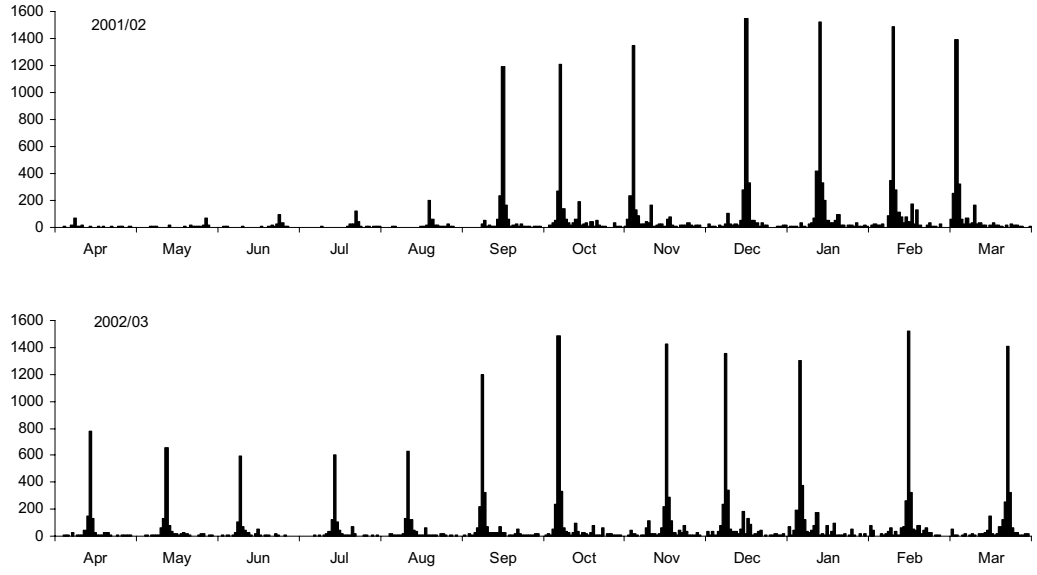


Figure 2. Number of visits to WeBS counts units by date in 2001/02 and 2002/03. Note the high degree of synchronisation nationally around the priority count dates.

Figure 3. Coverage by 10-km grid squares for WeBS Core Counts in the UK, Isle of Man and the Channel Islands and for I-WeBS in the Republic of Ireland in 2001/02. Small dots represent 1–2 count units per 10-km square, medium dots represent 3–4 units, large dots 5-10 units, and squares more than 10 units.

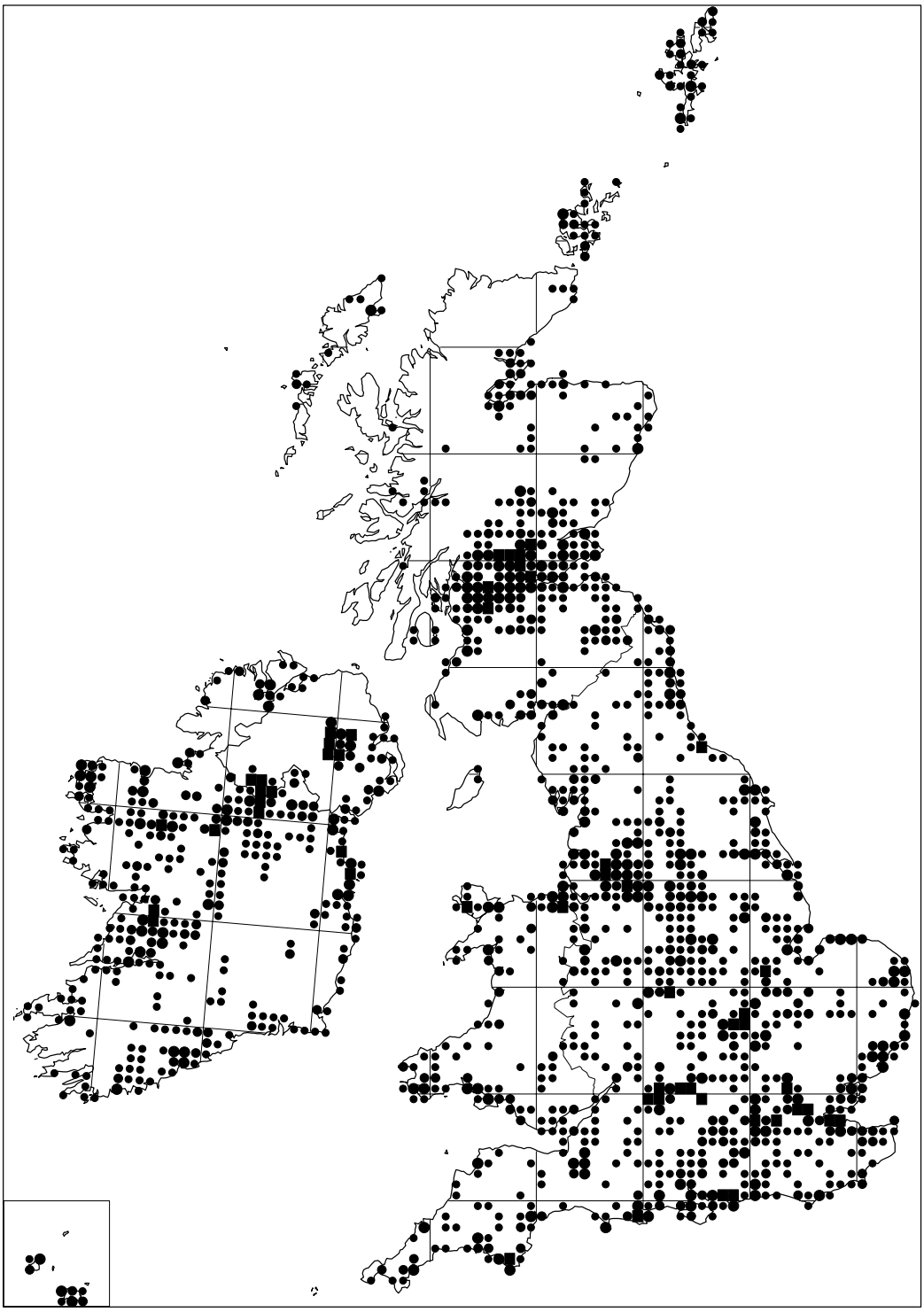
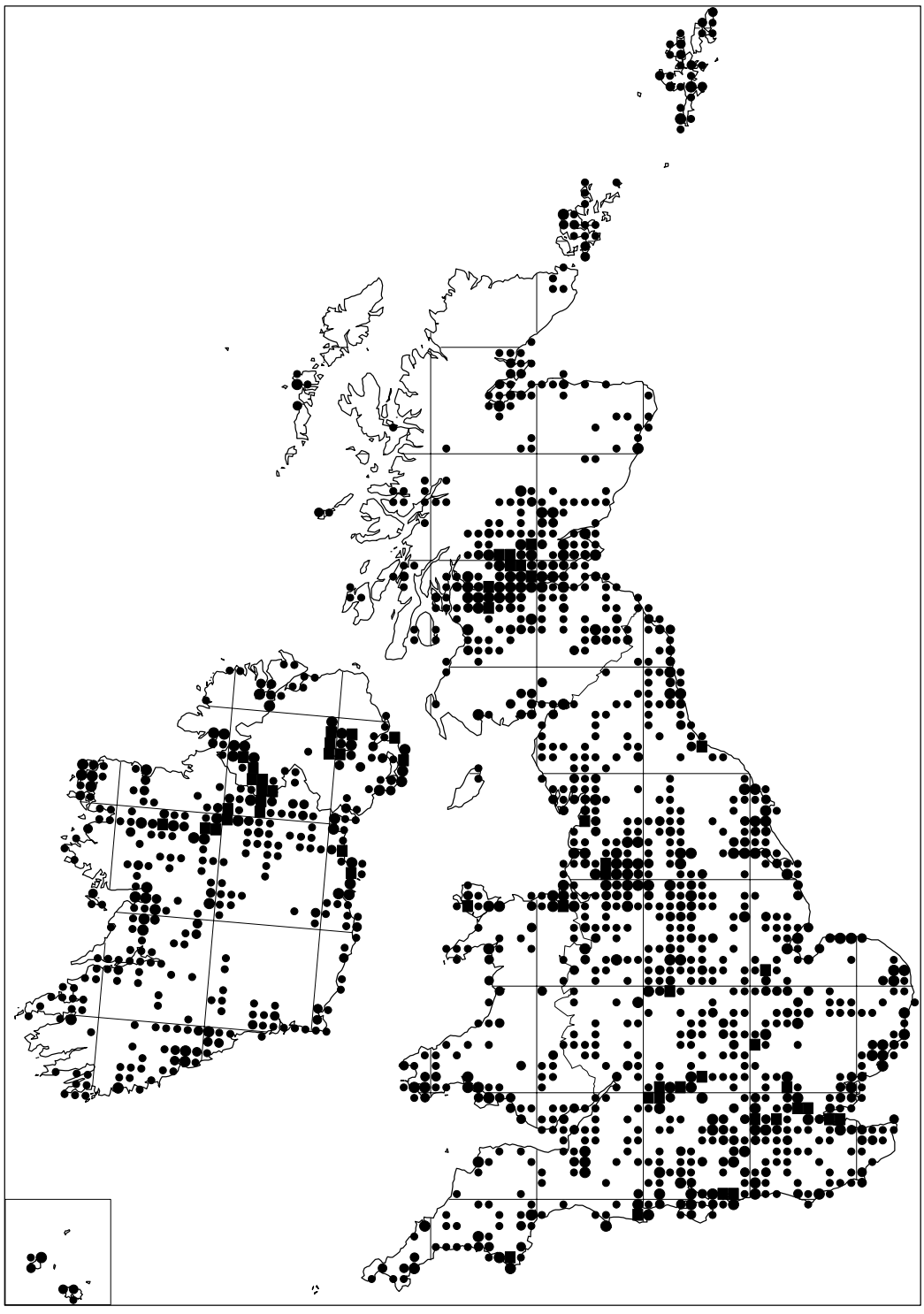


Figure 4. Coverage by 10-km grid squares for WeBS Core Counts in the UK, Isle of Man and the Channel Islands and for I-WeBS in the Republic of Ireland in 2002/03. Small dots represent 1–2 count units per 10-km square, medium dots represent 3–4 units, large dots 5-10 units and squares more than 10 units.



Goose censuses

In 2001/02 and 2002/03, as in previous years, Bean Geese were censused regularly on the Slamannan Plateau (Simpson & Maciver 2003). National surveys of Pink-footed and Icelandic Greylag Geese were undertaken in October and November (Hearn 2003, 2004), involving counts of birds arriving at or leaving roosts. Censuses of the native Scottish Greylag population on the Uists were made in August and February (Uist Greylag Goose Management Group). Censuses of Greenland White-fronted Geese, including birds in Ireland, were undertaken in autumn 2000 by the Greenland White-fronted Goose Study and Irish National Parks and Wildlife Service (Fox & Francis 2003, 2004) though the spring 2001 census failed to take place due to the outbreak of Foot and Mouth Disease. Greenland Barnacle Geese were counted regularly by SNH and others on Islay and main islands in Argyll (M McKay). The Svalbard Barnacle Goose population was counted frequently on the Solway Firth by WWT staff and volunteers (Griffin 2003). Dark-bellied Brent Geese were censused in January and February by the WeBS network, with counters at key sites making special effort to locate birds using adjacent areas, particularly fields, which would ordinarily be missed during WeBS Core Counts. East Canadian Light-belled Geese are surveyed throughout Ireland by the Irish Brent Goose Research Group.

Seaduck surveys

Data were received from the following regional or site-based surveys for counts of seaduck, divers and grebes at coastal sites, many continuing studies from previous years: counts in the Moray Firth between November and January (D Butterfield); at least once monthly aerial and/or land-based counts of Common Scoter in Carmarthen Bay between April and March (Banks *et al* 2004); and counts of key sites around the Isles of Shetland by SOTEAG (M Heubeck).

Extensive aerial surveys were undertaken in many areas, including Liverpool Bay (from Anglesey to Morecambe Bay), Cardigan Bay, Camarthen Bay, and parts of the North Sea off the Lincolnshire and Norfolk coasts, and in the 'Greater Thames' (*eg* Cranswick *et al* 2003, Dean *et al* 2003, 2004, Hall *et al* 2003, WWT Wetlands Advisory Service 2003).

Total numbers

The total numbers of waterbirds recorded in 2001/02 are given in Tables 4 & 5 for Great Britain (including the Isle of Man, but excluding the Channel Islands) and Northern Ireland, respectively. Counts of waterbirds in the Republic of Ireland are provided in Table 6.

Totals recorded in 2002/03 are given in Tables 7, 8 & 9 for Great Britain, Northern Ireland and the Republic of Ireland, respectively.

Totals are based on WeBS and I-WeBS Core Counts only, with the exception of certain geese, where totals are derived from dedicated national censuses for those species, sub-species or populations (see *Analysis* and Appendix 3).

Note, counting of gulls and terns was optional, and therefore totals are incomplete at a national level.

Table 4. Total number of waterbirds recorded by WeBS Core Counts in Great Britain, 2001/02[†].

		Apr	May	Jun	Jul	Aug
Number of sites visited		137	165	186	222	298
Number of sectors visited		172	207	231	285	436
YV	Fulvous Whistling Duck	0	0	0	0	0
YU	Lesser Whistling Duck	0	0	0	0	0
MS	Mute Swan	1,238	1,518	2,717	3,003	4,136
AS	Black Swan	0	1	4	6	8
BS	Bewick's Swan	0	0	0	0	0
WS	Whooper Swan	46	14	9	11	15
ZS	hybrid *cygnus*	0	0	0	0	0
HN	Swan Goose	6	11	3	2	4
BE	Bean Goose	0	0	0	0	0
XR	Tundra Bean Goose	0	0	0	0	0
PG	Pink-footed Goose	3,083	18	21	3	6
WG	White-fronted Goose[1]	1	0	0	0	0
EW	European White-fronted Goose	0	1	1	1	2
NW	Greenland White-fronted Goose	80	0	0	0	0
LC	Lesser White-fronted Goose	0	0	1	0	0
JI	Greylag Goose (Iceland)	1,032	0	0	0	0
JH	Greylag Goose (NW Scotland)	0	0	0	0	4,651
JE	Greylag Goose (naturalised)	977	1,130	2,213	2,948	6,378
HD	Bar-headed Goose	0	0	0	2	2
SJ	Snow Goose	2	2	2	4	11
RJ	Ross's Goose	0	0	0	0	0
EM	Emperor Goose	0	0	0	0	1
CG	Greater Canada Goose	2,029	2,500	7,043	7,016	10,675
YN	Barnacle Goose (Greenland)	20	17	0	0	0
YS	Barnacle Goose (Svalbard)	1,954	17	0	0	0
YE	Barnacle Goose (naturalised)	55	11	38	127	121
BG	Brent Goose[1]	0	0	0	0	0
DB	Dark-bellied Brent Goose	2,750	1,100	0	14	20
BB	Black Brant	0	0	0	0	0
QS	Light-bellied Brent Goose (Svalbard)	0	0	0	0	0
QN	Light-bellied Brent Goose (Canada)	1	0	0	0	0
EB	Red-breasted Goose	0	0	0	0	0
QF	Magellan Goose	0	0	0	0	0
EG	Egyptian Goose	8	28	60	107	134
ZL	hybrid goose	16	33	21	35	66
ZM	feral/domestic goose	0	0	0	0	0
UO	unidentified goose	0	0	0	0	0
UD	Ruddy Shelduck	0	0	1	2	7
SU	Shelduck	1,774	1,898	1,732	2,719	4,943
ZT	hybrid shelduck	0	0	0	0	0
MY	Muscovy Duck	11	2	7	15	18
DC	Wood Duck	0	0	0	0	2
MN	Mandarin	3	8	22	16	37
WN	Wigeon	1,625	89	54	58	600
AW	American Wigeon	4	1	1	1	0
HL	Chiloe Wigeon	0	1	0	0	1
FT	Falcated Duck	0	0	0	0	0
GA	Gadwall	443	472	1,125	1,568	2,538
IK	Baikal Teal	0	0	0	0	0
T.	Teal	2,797	146	397	801	6,145
TA	Green-winged Teal	0	0	0	0	0
MA	Mallard	4,121	4,271	7,807	12,470	26,556
BD	Black Duck	0	0	0	0	1
QB	Chestnut Teal	0	0	0	0	0
PT	Pintail	58	10	8	7	36
YL	Yellow-billed Pintail	0	0	0	0	0
PN	Bahama Pintail	0	0	0	0	0

Table 4. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	1,264	1,546	1,629	1,652	1,761	1,770	1,722
Sectors	1,988	2,454	2,587	2,646	2,871	2,910	2,643
YV	0	0	0	0	0	0	1
YU	1	0	0	0	0	0	1
MS	15,258	18,534	19,528	19,344	19,310	16,982	14,973
AS	27	42	39	33	31	29	24
BS	4	37	1,725	5,329	6,954	3,736	500
WS	45	833	5,072	6,122	6,003	5,936	5,203
ZS	4	3	3	3	2	3	4
HN	35	31	42	42	37	40	30
BE	0	1	9	201	32	8	0
XR	0	0	0	32	23	25	1
PG	2,801	265,794	234,150	60,656	123,681	86,309	52,193
WG	1	0	0	8	2	5	0
EW	3	138	210	1,788	2,694	2,901	1,171
NW	0	13	18,600	283	252	657	16,163
LC	0	2	0	0	0	0	0
JI	0	18,775	86,414	27,989	19,440	22,900	16,593
JH	844	207	423	277	188	3,332	357
JE	22,982	20,152	21,891	21,496	20,718	17,278	14,842
HD	20	12	18	13	11	24	6
SJ	28	16	17	16	12	34	26
RJ	4	0	0	0	2	2	1
EM	2	2	16	16	17	14	2
CG	44,937	49,085	50,293	51,840	51,209	47,684	33,902
YN	29	463	34,091	36,880	30,964	205	188
YS	166	22,361	19,262	22,071	21,981	22,127	23,547
YE	397	494	729	885	925	880	855
BG	0	0	0	0	0	0	0
DB	395	27,262	53,916	71,265	72,349	71,048	60,998
BB	0	0	1	1	2	6	2
QS	2,525	4,883	2,243	1,557	2,016	1,323	674
QN	14	7	52	123	83	97	31
EB	0	0	0	1	2	4	3
QF	1	1	1	1	0	1	1
EG	224	225	188	135	144	150	149
ZL	378	776	848	809	653	787	756
ZM	0	0	0	0	0	0	0
UO	0	0	0	0	0	0	0
UD	2	12	3	3	2	5	3
SU	29,247	32,707	56,614	49,984	52,504	55,326	45,340
ZT	0	0	0	0	0	0	0
MY	32	55	87	76	93	75	90
DC	4	6	4	4	2	3	8
MN	302	351	329	490	476	433	277
WN	53,768	197,755	209,486	362,537	343,199	292,048	187,052
AW	0	4	0	4	1	1	3
HL	1	3	0	1	5	5	1
FT	0	0	0	0	0	0	0
GA	7,776	10,625	13,505	16,148	15,831	12,259	8,875
IK	0	0	0	1	0	0	0
T.	45,299	95,366	105,571	158,516	151,178	147,218	86,365
TA	0	0	4	3	4	4	4
MA	96,396	122,516	123,427	136,620	131,622	97,971	70,124
BD	0	1	2	2	0	0	1
QB	0	0	0	0	0	0	0
PT	2,863	10,862	16,346	27,969	24,266	16,836	9,759
YL	0	0	0	0	0	0	0
PN	0	0	0	0	0	0	0

Table 4. Great Britain totals 2001/02 (continued).

		Apr	May	Jun	Jul	Aug
AG	Silver Teal	0	0	0	0	0
GY	Garganey	4	11	11	10	69
TB	Blue-winged Teal	0	0	0	0	0
VE	Red Shoveler	0	0	0	0	0
SV	Shoveler	492	192	212	241	1,576
IE	Ringed Teal	0	0	0	0	0
RQ	Red-crested Pochard	0	1	1	4	4
VB	Canvasback	0	0	0	1	0
PO	Pochard	266	179	521	1,790	5,343
AZ	Redhead					
NG	Ring-necked Duck	0	1	0	1	1
FD	Ferruginous Duck	0	0	0	0	0
NZ	New Zealand Scaup	0	0	0	0	0
TU	Tufted Duck	2,599	1,874	2,774	9,605	15,871
SP	Scaup	5	1	1	1	4
AY	Lesser Scaup	0	0	0	0	0
E.	Eider	1,688	1,283	560	1,120	1,247
KE	King Eider	0	0	0	0	0
LN	Long-tailed Duck	6	12	0	0	0
CX	Common Scoter	35	4	36	18	134
FS	Surf Scoter	0	0	0	0	0
VS	Velvet Scoter	0	0	0	0	0
UX	unidentified scoter sp.	0	0	0	0	0
GN	Goldeneye	542	40	7	47	63
HO	Hooded Merganser	0	0	0	0	0
SY	Smew	0	0	0	0	0
RM	Red-breasted Merganser	156	122	121	39	76
GD	Goosander	36	16	233	261	550
RY	Ruddy Duck	130	121	122	213	479
OI	Argentine Blue-bill	0	0	0	0	0
ZF	feral/hybrid Mallard type	91	104	45	228	201
ZR	hybrid *Anas*	1	1	0	0	0
ZD	hybrid *Aythya*	0	0	0	0	0
UM	unidentified duck	0	0	0	0	0
RH	Red-throated Diver	7	3	6	20	18
BV	Black-throated Diver	0	0	0	0	0
ND	Great Northern Diver	0	0	0	0	1
WV	White-billed Diver	0	0	0	0	0
UL	unidentifed diver	0	0	0	0	0
LG	Little Grebe	212	190	230	532	979
GG	Great Crested Grebe	354	717	792	1,889	3,067
RX	Red-necked Grebe	1	0	0	0	1
SZ	Slavonian Grebe	3	1	0	0	1
BN	Black-necked Grebe	4	13	13	14	20
UV	unidentified grebe	0	0	0	0	0
CA	Cormorant	1,065	1,335	1,664	2,106	3,742
SA	Shag	1	2	4	0	5
BI	Bittern	6	5	0	0	2
EC	Cattle Egret	0	0	0	0	1
ET	Little Egret	37	11	62	282	761
NY	Snowy Egret	0	0	0	0	0
HW	Great White Egret	0	0	1	1	0
H.	Grey Heron	272	324	390	562	805
OR	White Stork	0	0	0	0	0
NB	Spoonbill	0	3	8	2	6
FK	Lesser Flamingo	0	0	0	0	0

Table 4. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
AG	0	1	0	0	0	0	0
GY	18	23	3	0	0	0	1
TB	0	0	0	0	0	0	0
VE	0	1	0	0	0	0	0
SV	6,657	10,338	11,053	11,641	10,657	12,121	10,792
IE	0	2	0	1	0	0	1
RQ	88	69	58	83	134	101	71
VB	0	0	0	0	0	0	0
PO	6,377	12,334	25,513	26,015	27,583	24,831	14,331
AZ	0	0	0	1	1	0	0
NG	1	2	5	2	3	4	4
FD	0	3	2	1	3	1	2
NZ	0	0	0	0	1	1	1
TU	34,944	41,620	51,887	53,625	52,912	47,859	41,383
SP	23	2,367	1,010	1,893	1,261	2,372	1,091
AY	0	0	2	0	1	0	0
E.	18,100	15,011	13,117	18,089	16,507	17,691	13,598
KE	1	0	0	0	0	0	1
LN	12	184	377	2,184	2,022	1,995	830
CX	1,127	3,148	9,597	12,326	13,906	9,576	5,884
FS		1	1	6	5	4	5
VS	34	684	723	1,365	949	1,410	1,236
UX	0	0	80	0	65	1,160	0
GN	272	746	5,414	12,869	11,441	12,773	11,289
HO	0	0	0	0	2	2	2
SY	0	1	7	204	289	207	171
RM	1,384	1,602	3,149	3,636	3,106	3,053	3,089
GD	774	818	1,225	2,857	3,438	2,373	1,877
RY	1,891	2,601	3,363	4,035	4,302	3,385	2,850
OI	0	1	1	0	0	1	0
ZF	479	768	756	848	688	712	528
ZR	2	8	31	27	28	32	33
ZD	0	0	1	0	4	2	2
UM	0	0	6	17	0	9	3
RH	134	232	572	1,313	1,080	313	231
BV	4	6	21	29	40	19	50
ND	3	12	41	62	56	65	66
WV	0	0	1	0	0	0	0
UL	0	0	0	2	1	1	2
LG	4,148	4,594	4,323	4,050	3,226	2,705	2,644
GG	7,776	8,614	9,737	8,297	7,690	6,265	7,132
RX	29	29	29	50	19	31	26
SZ	42	79	82	287	148	138	148
BN	16	24	58	58	46	26	48
UV	0	0	0	1	0	0	0
CA	13,129	15,332	15,801	15,307	12,819	12,990	11,732
SA	588	658	1,185	829	376	326	357
BI	3	3	8	19	36	22	22
EC	0	0	0	0	0	0	0
ET	1,691	1,658	1,765	925	626	1,024	969
NY	0	0	0	0	1	0	0
HW	2	1	1	0	0	0	0
H.	3,218	3,591	3,737	3,584	3,142	3,461	3,018
OR	0	3	3	3	3	3	2
NB	8	5	8	3	8	12	5
FK	0	0	0	1	0	0	0

Table 4. Great Britain totals 2001/02 (continued).

		Apr	May	Jun	Jul	Aug
WA	Water Rail	26	10	14	3	29
AK	Spotted Crake	0	0	0	0	2
MH	Moorhen	648	722	865	1,318	2,368
CO	Coot	2,269	2,721	6,983	15,700	28,466
AN	Crane	0	0	0	0	0
	TOTAL WILDFOWL[2]	35,090	23,318	38,963	66,944	133,006
OC	Oystercatcher	3,565	3,107	2,085	11,393	40,686
IT	Black-winged Stilt	0	1	1	1	1
AV	Avocet	361	570	488	868	1,217
TN	Stone-curlew	0	0	0	0	0
LP	Little Ringed Plover	12	20	33	24	32
RP	Ringed Plover	287	1,068	199	700	8,941
KP	Kentish Plover	0	0	0	1	0
DO	Dotterel	0	0	0	0	1
ID	American Golden Plover	0	0	0	0	0
GP	Golden Plover	4,250	9	2	517	18,744
GV	Grey Plover	1,077	519	29	167	11,793
L.	Lapwing	1,051	610	1,741	5,978	15,921
KN	Knot	355	122	84	161	61,760
SS	Sanderling	118	1,016	83	386	5,755
LX	Little Stint	0	15	1	0	45
TK	Temminck's Stint	0	0	0	0	1
WU	White-rumped Sandpiper	0	0	0	0	0
BP	Baird's Sandpiper	0	0	0	0	0
PP	Pectoral Sandpiper	0	0	0	0	1
CV	Curlew Sandpiper	0	5	5	39	133
PS	Purple Sandpiper	204	4	0	200	129
DN	Dunlin	3,722	1,163	63	1,687	33,136
BQ	Buff-breasted Sandpiper	0	0	0	0	0
RU	Ruff	262	29	40	269	343
JS	Jack Snipe	1	0	0	0	0
SN	Snipe	200	49	14	47	608
LD	Long-billed Dowitcher	0	0	0	0	0
WK	Woodcock	0	0	0	0	0
BW	Black-tailed Godwit	700	138	243	2,421	9,516
BA	Bar-tailed Godwit	712	48	72	591	14,154
WM	Whimbrel	153	169	8	354	602
CU	Curlew	1,658	402	1,463	10,188	26,748
DR	Spotted Redshank	1	5	15	107	88
RK	Redshank	2,276	607	674	6,728	21,777
GK	Greenshank	4	42	6	327	1,424
LY	Lesser Yellowlegs	0	0	0	0	0
GE	Green Sandpiper	7	0	30	112	312
OD	Wood Sandpiper	0	7	0	7	30
CS	Common Sandpiper	19	37	35	194	606
PQ	Spotted Sandpiper	0	0	0	0	0
TT	Turnstone	817	500	78	876	3,397
WF	Wilson's Phalarope	0	0	0	0	0
NK	Red-necked Phalarope	0	0	0	0	0
PL	Grey Phalarope	0	0	0	0	0
U.	unidentified wader	0	0	0	0	0
	TOTAL WADERS	21,812	10,262	7,492	44,343	277,901
	TOTAL WATERBIRDS[3]	56,902	33,580	46,455	111,287	410,907

Table 4. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
WA	91	209	408	536	495	257	317
AK	3	0	0	0	0	0	0
MH	10,079	11,682	12,950	13,568	12,839	11,402	11,611
CO	88,110	100,232	103,496	112,876	106,129	77,038	57,582
AN	2	0	0	0	0	0	0
WILDFOWL	528,075	1,140,418	1,358,362	1,395,099	1,397,008	1,184,484	856,135
OC	179,056	181,109	208,049	220,580	217,520	201,961	173,326
IT	1	1	1	1		1	1
AV	1,254	1,992	5,132	4,841	4,793	6,157	3,346
TN	0	0	0	0	0	0	0
LP	36	5	0	0	0	0	3
RP	12,591	13,265	8,118	7,723	6,836	6,163	4,175
KP	1	0	0	0	0	0	0
DO	0	0	0	0	0	0	0
ID	0	0	0	1	1	1	0
GP	29,426	99,068	124,593	79,488	129,129	135,492	66,020
GV	18,306	29,162	39,674	33,996	31,605	35,838	42,316
L.	55,556	129,645	232,873	212,127	261,755	323,706	65,089
KN	75,985	138,977	226,193	237,611	193,366	284,513	119,775
SS	7,686	7,236	8,594	9,245	7,063	6,282	7,316
LX	124	355	50	51	26	13	39
TK	0	1	0	0	0	0	0
WU	0	0	0	0	0	0	0
BP	2	0	0	0	0	0	0
PP	3	0	1	1	0	0	0
CV	283	143	10	1	0	1	0
PS	92	256	811	904	1,153	1,090	744
DN	73,268	149,235	317,112	382,693	327,698	329,462	228,392
BQ	0	0	0	0	0	0	0
RU	603	781	591	596	724	678	736
JS	6	72	187	214	184	89	158
SN	1,758	5,390	7,020	8,078	6,114	5,006	4,751
LD	0	0	0	0	0	0	0
WK	2	12	12	40	42	18	33
BW	19,466	16,296	24,947	15,889	15,296	17,951	18,401
BA	22,121	21,054	30,732	35,768	39,949	65,303	60,876
WM	193	32	2	6	1	5	5
CU	53,122	66,248	60,905	60,944	58,797	81,403	70,761
DR	144	190	68	87	64	88	148
RK	65,329	85,393	82,139	72,757	64,611	73,255	67,341
GK	1,577	1,124	351	238	215	217	236
LY	1	1	1				
GE	233	224	179	132	101	115	144
OD	1	1	0	0	0	0	1
CS	214	107	63	53	27	41	52
PQ	0	0	0	1	0	0	0
TT	7,243	9,369	11,413	9,848	9,947	9,949	9,205
WF	0	0	0	0	0	0	0
NK	1	0	0	0	0	0	0
PL	0	23	0	0	0	0	0
U.	0	0	0	0	1	0	67
WADERS	625,684	956,767	1,389,821	1,393,914	1,377,018	1,584,798	943,457
WATERBIRDS	1,153,759	2,097,185	2,748,183	2,789,013	2,774,026	2,769,282	1,799,593

Table 4. Great Britain totals 2001/02 (continued).

		Apr	May	Jun	Jul	Aug
MU	Mediterranean Gull	4	2	3	19	29
LF	Laughing Gull	0	0	0	0	0
LU	Little Gull	1	6	17	7	1
AB	Sabine's Gull	0	0	0	0	3
ON	Bonaparte's Gull	0	0	0	0	0
BH	Black-headed Gull	14,361	16,380	8,944	15,550	37,515
IN	Ring-billed Gull	1	0	0	0	0
CM	Common Gull	688	521	69	1,113	3,630
LB	Lesser Black-backed Gull	1,321	1,030	777	1,395	4,096
HG	Herring Gull	2,320	3,201	3,816	4,340	9,164
YG	Yellow-legged Gull	0	0	0	30	59
YC	Caspian Gull	0	0	0	0	0
YM	Western Yellow-legged Gull	0	0	0	0	2
IG	Iceland Gull	1	0	0	0	0
GZ	Glaucous Gull	0	0	0	0	0
GB	Great Black-backed Gull	295	336	310	557	1,923
QG	Ross's Gull	0	0	0	0	0
KI	Kittiwake	0	6	10	1	1,204
UU	unidentified gull	0	0	0	0	0
ZU	hybrid gull	0	0	0	0	0
	TOTAL GULLS[4]	18,992	21,482	13,946	23,012	57,626
AF	Little Tern	0	71	54	392	289
TG	Gull-billed Tern	0	0	0	0	0
BJ	Black Tern	0	1	0	2	97
WJ	White-winged Black Tern	0	0	0	0	0
TE	Sandwich Tern	1,088	2,673	210	4,379	1,719
CN	Common Tern	7	520	526	898	1,722
RS	Roseate Tern	0	0	0	1	27
AE	Arctic Tern	0	1,047	80	193	45
UT	unidentified tern	0	0	0	0	0
UI	'Commic' Tern	0	6	0	1	2
	TOTAL TERNS[4]	1,095	4,318	870	5,866	3,901
KF	Kingfisher	14	9	20	26	69

† *See Appendix 3 for calculation of totals for goose populations*
1 *Indicates White-fronted and Brent Geese not identified to race*
2 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
3 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
4 *Counting gulls and terns was optional, thus totals are not complete at a national level*

Table 4. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MU	36	53	45	29	51	63	115
LF	0	0	0	0	1	0	0
LU	906	85	10	2	9	44	24
AB	2	1	0	0	0	0	0
ON	0	0	0	0	1	1	1
BH	113,652	123,724	175,178	175,079	195,583	201,466	208,460
IN	1	2	1	4	9	3	6
CM	15,622	54,519	53,965	43,218	54,218	73,589	56,938
LB	12,130	15,464	17,015	9,298	7,747	7,289	12,930
HG	47,399	38,181	44,747	45,735	57,060	42,518	48,616
YG	108	168	42	19	24	10	6
YC	0	0	2	1	1	0	0
YM	2	24	8	4	0	0	0
IG	0	1	0	3	7	3	7
GZ		1	2		9	5	2
GB	8,326	13,294	7,791	7,152	5,688	4,048	3,116
QG	0	0	0	0	0	1	1
KI	807	1,739	189	75	222	196	658
UU	3,080	730	1,903	1,820	279	1,521	801
ZU	0	0	0	0	2	0	0
GULLS	202,071	247,986	300,898	282,439	320,911	330,757	331,681
AF	23	0	0	0	0	0	0
TG	0	0	1	0	0	0	0
BJ	13	65	6	0	0	0	0
WJ	0	0	0	0	0	0	0
TE	2,944	283	2	2	0	4	27
CN	572	74	2	1	0	0	1
RS	10	0	0	0	0	0	0
AE	19	6	0	0	0	0	0
UT	0	0	0	0	0	0	0
UI	5	0	0	0	0	0	0
TERNS	3,586	428	10	3	0	4	28
KF	312	322	375	278	187	184	255

Table 5. Total number of waterbirds recorded by WeBS Core Counts in Northern Ireland, 2001/02[†].

		Apr	May	Jun	Jul	Aug
Number of sites visited		2	2	2	2	2
Number of sectors visited		10	7	7	7	7
MS	Mute Swan	37	71	22	21	14
BS	Bewick's Swan	0	0	0	0	0
WS	Whooper Swan	0	0	0	0	0
BE	Bean Goose	0	0	0	0	0
PG	Pink-footed Goose	0	0	0	0	0
NW	Greenland White-fronted Goose	0	0	0	0	0
GJ	Greylag Goose	0	0	0	0	0
HD	Bar-headed Goose	0	0	0	0	0
SJ	Snow Goose	0	0	0	0	0
CG	Greater Canada Goose	0	0	0	0	0
BY	Barnacle Goose	0	0	0	0	0
DB	Dark-bellied Brent Goose	0	0	0	0	0
QN	Light-bellied Brent Goose (Canada)	205	0	0	0	0
ZL	hybrid goose	0	0	0	0	0
SU	Shelduck	58	75	72	12	5
MN	Mandarin	1	0	0	0	0
WN	Wigeon	12	0	0	0	0
GA	Gadwall	0	0		0	0
T.	Teal	2	0	0	0	0
MA	Mallard	43	33	92	127	149
PT	Pintail	0	0	0	0	0
SV	Shoveler	0	0	0	0	0
PO	Pochard	0	0	0	0	0
TU	Tufted Duck	0	0	0	0	0
SP	Scaup	0	0	0	0	0
E.	Eider	10	14	6	4	8
KE	King Eider	0	0	0	0	0
LN	Long-tailed Duck	0	0	0	0	0
CX	Common Scoter	0	0	0	0	0
VS	Velvet Scoter	0	0	0	0	0
GN	Goldeneye	3	0	0	0	0
SY	Smew	0	0	0	0	0
RM	Red-breasted Merganser	5	0	0	1	1
GD	Goosander	0	0	0	0	0
RY	Ruddy Duck	0	0	0	0	0
RH	Red-throated Diver	0	0	0	0	0
BV	Black-throated Diver	0	0	0	0	0
ND	Great Northern Diver	0	0	0	0	0
LG	Little Grebe	0	1	0	0	1
GG	Great Crested Grebe	0	0	0	0	0
SZ	Slavonian Grebe	0	0	0	0	0
CA	Cormorant	18	19	16	19	53
SA	Shag	0	4	0	2	0
XU	unidentified cormorant	0	0	0	0	0
ET	Little Egret	0	0	2	0	0
H.	Grey Heron	2	2	5	6	5
WA	Water Rail	0	0	0	0	0
MH	Moorhen	0	1	2	4	1
CO	Coot	0	0	0	0	0
	TOTAL WILDFOWL[1]	396	220	217	196	237

Table 5. continued

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	16	18	19	21	22	21	20
Sectors	35	38	40	153	267	267	151
MS	357	478	393	1,831	1,815	1,746	1,386
BS	0	0	0	12	15	19	0
WS	4	134	783	1,457	2,260	2,252	1,758
BE	0	0	0	0	0	0	0
PG	0	3	1	0	0	2	0
NW	0	0	21	1	0	26	5
GJ	262	281	422	1,175	1,028	2,354	1,557
HD	1	0	0	0	0	0	0
SJ	5	0	1	0	1	3	3
CG	101	193	239	30	444	437	24
BY	135	214	202	126	107	1	1
DB	0	0	0	0	0	0	0
QN	5,309	21,570	13,573	4,417	4,203	3,252	1,891
ZL	0	0	0	0	0	0	1
SU	48	587	2,524	4,233	5,364	3,121	2,556
MN	0	0	0	0	0	0	0
WN	3,004	8,307	8,716	5,079	4,667	2,834	1,931
GA	65	42	57	157	237	150	128
T.	1,107	1,576	2,369	4,450	4,567	3,372	1,323
MA	3,737	4,347	3,591	7,449	6,253	3,104	1,828
PT	0	113	232	356	232	11	10
SV	65	133	225	151	171	51	83
PO	54	30	60	12,567	17,047	7,027	3,167
TU	239	151	194	13,073	14,636	12,691	9,589
SP	2	17	97	2,900	2,556	3,652	3,516
E.	1,167	957	1,036	785	599	999	496
KE	0	1	0	0	0	0	0
LN	0	0	15	22	12	37	15
CX	0	0	22	0	0	0	6
VS	0	0	0	0	0	1	0
GN	5	30	408	6,926	5,991	5,086	6,040
SY	0	0	0	0	0	0	0
RM	310	377	699	422	296	253	315
GD	0	1	1	1	1	1	0
RY	0	0	0	28	59	15	33
RH	2	3	19	42	17	30	16
BV	0	0	0	1	2	0	0
ND	0	1	4	3	1	4	1
LG	119	159	238	578	399	337	149
GG	1,850	2,308	2,812	1,583	1,614	2,033	1,195
SZ	0	0	7	0	0	0	0
CA	971	644	919	1,058	1,750	1,265	1,016
SA	101	28	159	189	387	113	26
XU	0	130	170	70	0	0	0
ET	0	0	0	0	0	0	0
H.	238	159	210	233	172	179	119
WA	0	0	2	1	4	2	2
MH	54	70	79	248	453	259	177
CO	562	844	751	3,084	4,994	3,717	1,957
WILDFOWL	19,874	43,888	41,251	74,738	82,354	60,436	42,320

Table 5. Northern Ireland totals 2001/02 (continued).

		Apr	May	Jun	Jul	Aug
OC	Oystercatcher	512	472	280	578	1,096
LP	Little Ringed Plover	0	0	0	1	0
RP	Ringed Plover	80	10	2	8	10
GP	Golden Plover	576	0	0	0	0
GV	Grey Plover	0	0	0	0	0
L.	Lapwing	0	0	75	96	140
KN	Knot	18	0	0	0	0
SS	Sanderling	216	1	0	0	0
LX	Little Stint	0	0	0	0	0
CV	Curlew Sandpiper	0	0	0	2	0
PS	Purple Sandpiper	0	0	0	0	0
DN	Dunlin	18	72	10	14	40
RU	Ruff	0	0	0	0	0
JS	Jack Snipe	0	0	0	0	0
SN	Snipe	17	0	0	0	0
LD	Long-billed Dowitcher	0	0	0	0	0
BW	Black-tailed Godwit	2	0	0	0	40
BA	Bar-tailed Godwit	0	7	1	0	0
WM	Whimbrel	7	2	0	0	3
CU	Curlew	110	13	62	304	368
RK	Redshank	775	4	28	84	885
GK	Greenshank	11	1	0	7	15
LY	Lesser Yellowlegs	0	0	0	0	0
CS	Common Sandpiper	0	0	0	4	0
TT	Turnstone	47	0	0	0	3
WF	Wilson's Phalarope	0	0	0	0	0
	TOTAL WADERS	2,389	582	458	1,098	2,600
	TOTAL WATERBIRDS[2]	2,785	802	675	1,294	2,837
MU	Mediterranean Gull	0	0	0	0	0
LU	Little Gull	0	0	0	0	0
BH	Black-headed Gull	82	26	212	316	307
IN	Ring-billed Gull	0	0	0	0	0
CM	Common Gull	32	19	75	26	38
LB	Lesser Black-backed Gull	4	0	51	1	2
HG	Herring Gull	51	32	83	20	27
IG	Iceland Gull	1	0	0	0	0
GZ	Glaucous Gull	0	0	0	0	0
GB	Great Black-backed Gull	14	23	40	12	11
KI	Kittiwake	0	0	2	0	0
	TOTAL GULLS[3]	184	100	463	375	385
BJ	Black Tern	0	0	0	0	0
TE	Sandwich Tern	46	86	38	314	296
CN	Common Tern	0	37	11	0	0
AE	Arctic Tern	0	0	2	0	0
	TOTAL TERNS[3]	46	123	51	314	296
KF	Kingfisher	0	0	0	0	0

† *See Appendix 3 for calculation of totals for goose populations*
1 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
2 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
3 *Counting gulls and terns was optional, thus totals are not complete at a national level*

Table 5. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
OC	13,833	16,215	15,383	14,779	13,675	10,208	10,418
LP	0	0	0	0	0	0	0
RP	437	547	542	235	286	165	34
GP	870	7,944	8,856	8,916	6,659	15,285	7,347
GV	7	43	157	296	342	153	54
L.	961	2,514	9,608	16,840	22,419	15,056	1,131
KN	24	51	571	769	4,061	1,114	95
SS	0	0	25	12	10	2	18
LX	0	1	2	1	1	0	0
CV	1	7	1	0	0	0	0
PS	3	0	4	1	2	16	9
DN	230	887	6,853	9,475	9,617	6,676	2,061
RU	1	1	0	4	2	2	2
JS	0	4	0	2	2	1	2
SN	27	59	115	171	234	220	150
LD					1	1	
BW	1,004	579	374	477	323	186	519
BA	103	478	242	424	1,095	2,008	373
WM	0	0	0	1	0	0	0
CU	3,912	3,811	3,087	3,590	3,530	4,244	3,310
RK	6,669	6,952	8,582	6,514	7,149	6,692	4,716
GK	91	146	113	86	64	71	51
LY	0	0	0	1	0	0	0
CS	1	0	1	0	0	0	0
TT	538	644	760	635	638	611	466
WF	0	1	0	0	0	0	0
WADERS	28,712	40,884	55,276	63,229	70,110	62,711	30,756
WATERBIRDS	48,586	84,772	96,527	137,967	152,464	123,147	73,076
MU	0	0	0	0	1	0	0
LU	0	0	0	0	1	0	0
BH	8,777	5,915	5,632	7,420	7,260	9,746	13,437
IN	0	0	0	0	0	2	2
CM	2,880	2,304	3,141	2,589	1,137	4,480	4,238
LB	123	72	13	201	51	180	259
HG	1,422	1,212	1,291	9,737	5,610	4,047	4,446
IG	0	0	0	1	5	2	2
GZ	0	0	0	0	2	6	3
GB	412	198	152	192	918	440	463
KI	7	0	6	0	2	9	0
GULLS	13,621	9,701	10,235	20,140	14,987	18,912	22,850
BJ	0	1	0	0	0	0	0
TE	617	100	0	0	0	0	0
CN	1	8	0	0	0	0	0
AE	0	0	0	0	0	0	0
TERNS	618	109	0	0	0	0	0
KF	0	0	3	1	0	1	0

Table 6. Total number of waterbirds recorded by I-WeBS in the Republic of Ireland, 2001/02.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Number of sites visited	120	139	176	180	253	176	157
Number of sectors visited	258	319	445	405	640	437	347
Mute Swan	1,100	2,084	2,817	2,336	3,266	2,477	1,640
Black Swan	0	1	2	1	2	1	0
Bewick's Swan	0	0	14	32	205	133	66
Whooper Swan	0	396	3,247	3,517	3,857	2,330	1,981
Pink-footed Goose	0	1	12	1	36	14	0
G'land White-fronted Goose	0	144	7,391	1,740	8,388	7,725	925
Greylag Goose	197	706	5,717	4,821	3,672	1,901	3,490
Greater Canada Goose	68	33	103	185	252	210	28
Barnacle Goose	1	1	7	16	680	916	451
Dark-Bellied Brent Goose	0	0	0	1	0	0	1
Black Brant	0	0	0	0	1	0	1
Light-bellied Brent Goose	7	936	6,460	14,240	14,713	11,327	9,526
feral/hybrid Goose	22	49	67	81	64	74	75
Shelduck	67	264	2,223	4,451	6,635	5,695	2,243
unidentified duck	1	0	0	1	0	0	0
Wigeon	1,455	8,795	28,658	32,823	31,406	28,207	9,831
American Wigeon	0	1	0	0	0	3	2
Gadwall	23	35	245	373	242	161	126
Teal	2,563	4,950	11,318	15,846	17,634	13,128	5,325
Green-winged Teal	0	0	1	1	1	0	0
Mallard	5,850	8,447	10,013	9,577	11,165	5,867	2,539
Pintail	23	89	279	313	237	273	177
Garganey	0	0	0	0	2	0	0
Shoveler	43	305	456	737	1,158	850	753
Pochard	32	100	17,678	1,415	7,272	2,539	947
Ring-necked Duck	0	0	1	1	1	0	1
Tufted Duck	641	1,285	11,480	4,220	9,244	5,432	3,018
Scaup	0	81	208	160	259	137	53
Eider	0	1	1	1	127	0	0
Long-tailed Duck	0	0	2	4	7	8	8
Common Scoter	66	560	5,457	984	4,910	831	523
Goldeneye	1	37	602	747	1,623	1,372	477
Smew	0	0	0	1	2	1	0
Red-breasted Merganser	177	315	721	636	688	482	581
Ruddy Duck	0	1	0	0	0	0	0
feral/hybrid Mallard type	3	0	5	3	1	1	0
hybrid *Aythya*	0	0	0	0	0	3	0
Red-throated Diver	11	23	165	62	111	70	65
Black-throated Diver	0	0	4	0	21	1	63
Great Northern Diver	7	14	244	99	152	160	319
Little Grebe	347	322	547	392	483	240	276
Great Crested Grebe	121	292	680	570	1,023	598	552
Slavonian Grebe	0	0	10	6	7	17	2
Black-necked Grebe	0	0	0	2	2	1	0
Cormorant	1,832	2,047	2,460	1,643	2,704	1,283	1,168
Grey Heron	490	451	842	619	551	287	330
Little Egret	160	100	107	77	53	70	44
Spoonbill	0	0	1	1	1	0	0
Coot	826	2,193	14,189	4,863	5,883	14,653	1,360
Moorhen	383	337	585	397	466	377	369
Water Rail	2	6	19	10	21	16	16
TOTAL WILDFOWL[1]	16,519	35,402	135,038	108,006	139,228	109,871	49,352

1 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
2 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
3 *Counting gulls and terns was optional, thus totals are not complete at a national level*

Table 6. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Oystercatcher	18,762	18,745	22,555	20,966	20,021	18,474	11,579
Ringed Plover	2,451	3,439	4,477	2,880	3,587	1,897	591
Golden Plover	1,281	35,140	66,073	60,134	84,493	76,656	17,611
Grey Plover	472	698	2,512	1,937	2,226	3,324	649
Lapwing	1,336	14,467	39,692	37,654	80,077	58,503	915
Knot	544	750	6,167	8,621	7,935	8,583	7,996
Sanderling	561	1,298	1,218	1,328	1,021	800	681
Semi-palmated Sandpiper	1	1	0	0	0	0	0
Little Stint	5	5	3	0	1	0	0
Pectoral Sandpiper	2	0	0	0	0	0	0
Curlew Sandpiper	25	7	0	0	0	0	0
Purple Sandpiper	9	7	48	60	95	75	51
Dunlin	3,062	10,791	29,262	33,817	40,227	39,602	11,124
Ruff	33	7	12	0	7	9	8
Jack Snipe	0	2	10	18	24	20	15
Snipe	47	217	491	561	561	413	297
Long-billed Dowitcher	0	0	1	0	0	0	0
Woodcock	0	2	0	3	1	3	1
Black-tailed Godwit	6,199	8,693	6,888	9,233	7,423	7,536	3,993
Bar-tailed Godwit	2,268	3,659	5,547	6,009	7,237	6,533	2,522
Whimbrel	25	5	2	0	0	3	2
Curlew	7,739	10,615	12,119	12,151	14,895	18,329	6,105
Spotted Redshank	3	8	8	6	4	2	8
Redshank	8,685	8,476	8,814	7,934	10,032	9,312	7,194
Greenshank	368	319	270	272	278	284	169
Green Sandpiper	2	14	5	5	8	1	0
Common Sandpiper	9	3	2	6	5	0	1
Turnstone	864	1,353	1,534	1,323	1,499	1,265	1,017
Grey Phalarope	0	4	0	0	0	0	0
TOTAL WADERS	54,753	118,725	207,710	204,918	281,657	251,624	72,529
TOTAL WATERFOWL[2]	71,272	154,127	342,748	312,924	420,885	361,495	121,881
Mediterranean Gull	11	8	1	0	4	3	1
Little Gull	0	0	1	18	0	43	9
Black-headed Gull	12,367	11,653	22,935	19,347	18,011	16,863	9,776
Ring-billed Gull	1	0	1	1	1	3	0
Common Gull	1,580	1,618	6,548	3,260	12,173	14,407	2,154
Lesser Black-backed Gull	2,284	2,010	8,350	838	3,423	1,221	1,656
Herring Gull	1,081	931	1,152	877	2,202	1,610	879
Yellow-legged Gull	0	1	0	0	0	0	0
Iceland Gull	0	0	0	0	4	4	0
Glaucous Gull	0	0	1	0	3	7	6
Great Black-backed Gull	1,077	963	1,467	521	1,323	959	976
unidentified gull	0	0	246	0	2,123	83	0
	0	0	0	0	0	0	0
TOTAL GULLS[3]	18,401	17,184	40,702	24,862	39,267	35,203	15,457
Black Tern	3	1	0	0	0	0	0
Sandwich Tern	403	18	0	0	0	0	5
Forster's Tern	1	0	0	0	0	0	0
Common Tern	46	0	0	0	0	0	0
Arctic Tern	10	0	0	0	0	0	0
TOTAL TERNS[3]	463	19	0	0	0	0	5
Kingfisher	11	17	17	18	13	5	8

Table 7. Total number of waterbirds recorded by WeBS Core Counts in Great Britain, 2002/03[†].

		Apr	May	Jun	Jul	Aug
Number of sites visited		904	827	769	808	812
Number of sectors visited		1,396	1,230	1,116	1,182	1,256
YV	Fulvous Whistling Duck	0	0	0	0	0
MS	Mute Swan	8,661	7,662	8,513	10,845	11,781
AS	Black Swan	19	23	12	17	18
BS	Bewick's Swan	0	0	0	0	0
WS	Whooper Swan	98	23	22	17	26
ZS	hybrid *cygnus*	0	0	0	0	0
QI	Blue-winged Goose	1	0	0	0	0
HN	Swan Goose	5	19	12	8	9
BE	Bean Goose	1	0	0	0	0
XR	Tundra Bean Goose	1	0	0	0	0
PG	Pink-footed Goose	23,088	28	20	9	13
WG	White-fronted Goose[1]	0	0	0	0	0
EW	European White-fronted Goose	3	1	2	1	0
NW	Greenland White-fronted Goose	44	0	0	0	0
LC	Lesser White-fronted Goose	0	0	0	0	0
JI	Greylag Goose (Iceland)	3,158	0	0	0	0
JH	Greylag Goose (NW Scotland)	60	48	22	16	4,844
JE	Greylag Goose (naturalised)	6,567	6,475	12,492	14,290	16,811
HD	Bar-headed Goose	4	8	5	7	6
SJ	Snow Goose	7	4	4	5	4
RJ	Ross's Goose	0	0	0	0	0
EM	Emperor Goose	0	1	1	1	8
NE	Hawaiian Goose	0	0	0	0	0
CG	Greater Canada Goose	14,925	12,239	23,347	33,368	34,083
YN	Barnacle Goose (Greenland)	274	19	0	0	0
YS	Barnacle Goose (Svalbard)	6,214	2,200	0	0	0
YE	Barnacle Goose (naturalised)	339	137	235	223	305
BG	Brent Goose[3]	1	0	0	0	0
DB	Dark-bellied Brent Goose	13,903	486	19	26	545
BB	Black Brant	0	0	0	0	0
QS	Light-bellied Brent Goose (Svalbard)	29	2	0	0	0
QN	Light-bellied Brent Goose (Canada)	0	1	0	0	0
EB	Red-breasted Goose	2	3	0	5	4
QF	Magellan Goose	1	0	1	1	1
EG	Egyptian Goose	107	211	478	350	405
ZL	hybrid goose	259	234	262	257	312
ZM	feral/domestic goose	0	0	0	0	0
UO	unidentified goose	0	0	0	0	0
UD	Ruddy Shelduck	1	2	5	3	5
UE	Cape Shelduck	0	0	1	0	2
UA	Australian Shelduck	0	0	0	0	0
UB	Paradise Shelduck	0	0	0	0	0
SU	Shelduck	24,045	15,059	18,898	26,064	32,301
ZT	hybrid shelduck	0	0	0	0	0
MY	Muscovy Duck	9	20	17	18	21
DC	Wood Duck	4	2	2	1	1
MN	Mandarin	128	109	78	195	163
WN	Wigeon	7,211	212	244	202	1,182
AW	American Wigeon	1	0	0	2	1
HL	Chiloe Wigeon	0	1	0	1	0
FT	Falcated Duck	0	0	1	0	0
GA	Gadwall	2,908	1,845	2,581	2,323	3,985
IK	Baikal Teal	0	0	0	0	0
T.	Teal	13,292	516	815	1,881	12,371
TA	Green-winged Teal	0	0	0	0	0
KQ	Speckled Teal	0	0	0	0	0

Table 7. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	1,532	1,699	1,742	1,725	1,754	1,784	1,739
Sectors	2,268	2,646	2,647	2,667	2,700	2,751	2,650
YV	0	0	0	0	0	1	0
MS	17,569	19,173	19,283	18,925	17,204	15,368	14,252
AS	38	31	34	25	25	21	23
BS	2	209	1,923	2,916	2,378	4,938	64
WS	33	925	5,169	3,785	1,750	6,018	2,478
ZS	0	0	0	0	0	0	0
QI	0	0	0	0	0	0	0
HN	28	19	12	15	10	10	3
BE	0	0	163	138	142	15	8
XR	0	0	0	0	7	4	0
PG	598	189,704	210,921	68,319	55,986	59,297	53,420
WG	0	0	0	2	1	11	1
EW	1	12	252	693	2,260	2,001	195
NW	2	18	19,577	421	372	530	18,272
LC	0	0	0	2	1	1	0
JI	0	7,019	61,144	22,600	22,783	25,102	19,947
JH	900	745	702	645	306	3,570	339
JE	24,378	22,708	22,730	17,499	21,240	14,611	10,580
HD	33	33	15	10	18	46	6
SJ	30	15	10	36	18	28	10
RJ	0	2	3	1	0	1	2
EM	16	21	1	14	5	11	11
NE	0	0	0	0	0	1	0
CG	54,678	49,911	47,561	44,795	45,029	33,803	23,491
YN	10	36	183	13,523	91	51	47,352
YS	5	25,174	27,121	28,512	24,606	25,606	26,523
YE	308	504	799	880	842	908	317
BG	6	17	24	18	0	3	13
DB	1,316	29,153	51,321	61,824	70,471	65,485	28,586
BB	0	1	1	1	3	5	1
QS	1,356	2,973	2,070	1,896	2,876	3,303	217
QN	0	7	48	115	67	78	77
EB	4	4	1	1	0	4	5
QF	0	1	1	1	1	1	1
EG	422	428	310	226	217	165	164
ZL	560	507	501	484	474	430	395
ZM	0	0	0	0	0	0	0
UO	0	0	0	0	0	0	0
UD	7	5	2	0	5	8	2
UE	0	0	2	1	1	1	1
UA	1	0	0	0	0	0	0
UB	1	1	0	0	0	0	0
SU	27,996	44,681	42,265	46,657	53,799	46,179	39,710
ZT	0	0	0	0	0	0	0
MY	22	34	39	49	42	42	32
DC	6	4	6	1	2	4	5
MN	340	348	418	512	267	359	172
WN	31,798	253,511	323,538	340,175	371,777	312,671	117,891
AW	1	0	1	5	0	3	2
HL	2	0	2	0	1	1	0
FT	0	0	0	0	0	0	0
GA	10,302	12,385	13,056	14,347	13,607	14,278	6,277
IK	0	0	0	0	0	0	0
T.	51,855	100,962	134,601	140,216	180,710	113,770	46,172
TA	0	0	2	8	3	2	1
KQ	1	0	2	2	0	0	0

Table 7. Great Britain totals 2002/03 (continued).

		Apr	May	Jun	Jul	Aug
MA	Mallard	27,365	24,195	30,870	40,599	62,487
BD	Black Duck	0	1	0	1	0
QB	Chestnut Teal	0	0	0	0	0
PT	Pintail	421	40	15	11	84
YL	Yellow-billed Pintail	0	0	0	0	1
PN	Bahama Pintail	1	2	0	0	0
YR	Red-billed Teal	9	0	0	1	0
AG	Silver Teal	0	0	0	0	1
GY	Garganey	33	43	23	11	36
TB	Blue-winged Teal	0	0	0	0	0
QA	Cinnamon Teal	0	0	0	0	0
SV	Shoveler	3,534	609	566	430	2,266
IE	Ringed Teal	0	0	0	0	1
MQ	Maned duck	0	0	0	0	0
RQ	Red-crested Pochard	11	4	2	5	20
QR	Rosybill	1	0	0	0	0
PO	Pochard	1,575	838	852	2,029	7,973
AZ	Redhead	0	0	0	0	0
NG	Ring-necked Duck	1	1	0	0	1
FD	Ferruginous Duck	0	0	0	0	0
NZ	New Zealand Scaup	0	0	0	0	0
TU	Tufted Duck	19,781	8,454	7,179	17,357	33,696
SP	Scaup	653	66	7	6	55
AY	Lesser Scaup	0	0	0	0	0
E.	Eider	16,001	12,625	13,017	14,112	15,145
KE	King Eider	0	1	0	0	0
LN	Long-tailed Duck	274	135	1	0	0
CX	Common Scoter	5,153	1,491	362	414	604
FS	Surf Scoter	3	0	1	0	0
VS	Velvet Scoter	1,928	160	32	18	18
UX	unidentified scoter sp.	0	0	0	0	0
VH	Bufflehead	0	0	1	0	0
GN	Goldeneye	2,598	98	56	66	77
HO	Hooded Merganser	0	2	0	0	0
SY	Smew	4	1	1	1	1
RM	Red-breasted Merganser	1,562	657	528	708	636
GD	Goosander	461	292	242	442	730
RY	Ruddy Duck	942	581	512	697	1,056
OI	Argentine Blue-bill	0	0	0	0	0
ZF	feral/hybrid Mallard type	303	238	286	352	370
ZR	hybrid *Anas*	54	21	18	31	24
ZD	hybrid *Aythya*	10	0	1	0	0
UM	unidentified duck	13	50	11	25	15
RH	Red-throated Diver	212	150	58	39	45
BV	Black-throated Diver	33	12	3	10	1
ND	Great Northern Diver	45	15	0	2	1
LG	Little Grebe	1,144	831	737	1,149	1,860
GG	Great Crested Grebe	3,894	3,086	2,732	4,115	5,830
RX	Red-necked Grebe	2	2	0	0	0
SZ	Slavonian Grebe	49	1	2	0	1
BN	Black-necked Grebe	73	27	16	25	30
UV	unidentified grebe	0	0	0	0	0
CA	Cormorant	6,780	5,419	4,446	6,575	8,383
SA	Shag	82	94	77	114	693
BI	Bittern	2	1	2	7	5
NT	Night Heron	0	0	0	0	0

Table 7. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MA	108,402	128,583	130,305	133,386	135,313	98,223	52,207
BD	0	1	0	0	0	0	0
QB	0	0	0	0	0	0	0
PT	2,268	10,207	27,470	20,128	21,290	20,968	5,545
YL	0	0	0	0	0	0	0
PN	0	1	0	0	0	0	0
YR	0	0	0	0	0	0	0
AG	0	0	2	0	0	0	0
GY	48	7	1	0	0	1	35
TB	0	0	1	0	0	0	0
QA	1	1	0	0	0	0	0
SV	5,985	8,999	10,649	11,097	11,868	9,848	9,017
IE	2	1	0	0	0	2	0
MQ	0	0	0	0	0	0	1
RQ	34	43	52	101	111	87	39
QR	0	0	0	0	0	0	0
PO	7,417	10,435	24,653	27,314	31,169	28,347	4,789
AZ	0	1	1	1	1	1	0
NG	1	0	0	1	4	2	1
FD	1	1	2	0	0	1	0
NZ	0	0	1	0	0	0	0
TU	44,197	47,758	48,185	48,429	44,805	46,353	33,687
SP	161	730	1,181	2,896	2,842	2,958	1,000
AY	0	0	1	1	1	2	1
E.	18,765	25,614	19,248	17,427	15,886	17,010	22,887
KE	0	0	0	1	0	0	0
LN	2	264	760	2,379	3,170	2,376	878
CX	1,588	4,959	6,099	12,777	19,755	10,334	5,062
FS	0	1	3	4	4	8	5
VS	155	431	815	1,392	3,460	5,429	1,283
UX	0	0	0	0	0	0	0
VH	0	0	0	0	0	0	0
GN	118	637	8,137	11,320	13,060	12,871	8,534
HO	0	2		2	0	0	0
SY	1	1	30	176	284	276	46
RM	1,405	2,213	3,121	2,864	2,506	2,391	2,770
GD	896	927	1,683	2,368	2,313	2,359	1,073
RY	1,917	2,432	2,973	3,033	3,021	3,514	1,877
OI	0	0	0	0	0	0	0
ZF	577	652	869	819	532	579	453
ZR	28	48	34	45	34	36	25
ZD	0	0	0	0	1	1	0
UM	28	30	40	24	67	11	7
RH	121	540	392	417	649	559	382
BV	1	26	31	33	32	64	63
ND	3	13	51	83	88	87	96
LG	4,194	4,941	4,188	3,642	3,561	3,098	2,559
GG	8,518	8,354	7,546	6,611	7,674	8,362	6,140
RX	1	35	22	16	40	33	49
SZ	3	80	148	130	169	157	176
BN	27	30	34	28	50	62	49
UV	0	0	0	3	1	0	0
CA	14,125	17,605	13,735	13,583	12,479	11,783	9,331
SA	1,140	1,302	2,893	867	2,939	767	566
BI	2	6	15	21	40	38	3
NT	1	0	0	0	0	0	0

Table 7. Great Britain totals 2002/03 (continued).

		Apr	May	Jun	Jul	Aug
QH	Squacco Heron	0	0	1	0	0
EC	Cattle Egret	1	1	0	0	0
ET	Little Egret	621	345	304	668	1,171
NY	Snowy Egret	0	0	0	0	0
HW	Great White Egret	0	0	0	0	0
H.	Grey Heron	1,899	1,692	1,513	2,085	2,487
UR	Purple Heron	1	1	0	0	0
OR	White Stork	2	1	0	1	0
NB	Spoonbill	12	20	19	21	23
FL	Greater Flamingo	0	0	0	0	0
WA	Water Rail	117	41	39	35	49
AK	Spotted Crake	0	0	1	0	0
MH	Moorhen	5,073	3,315	3,346	4,447	5,566
CO	Coot	19,755	16,033	18,827	36,753	52,208
AN	Crane	0	2	0	0	1
	TOTAL WILDFOWL[2]	247,617	129,230	154,795	223,498	322,817
OC	Oystercatcher	58,816	37,937	28,885	45,254	137,510
IT	Black-winged Stilt	1	1	1	1	1
AV	Avocet	1,860	998	1,186	1,990	2,079
TN	Stone-curlew	2	1	0	0	0
LP	Little Ringed Plover	206	191	193	233	104
RP	Ringed Plover	3,974	7,179	1,224	1,626	14,367
KP	Kentish Plover	0	1	1	0	0
ID	American Golden Plover	0	0	0	0	0
GP	Golden Plover	6,764	238	6	5,307	48,494
GV	Grey Plover	24,966	8,523	1,010	1,326	18,628
L.	Lapwing	8,479	4,653	5,859	26,984	62,447
KN	Knot	53,363	15,666	4,666	15,486	87,818
SS	Sanderling	7,775	14,101	996	3,075	11,569
LX	Little Stint	12	7	5	3	42
TK	Temminck's Stint	0	0	0	0	1
WU	White-rumped Sandpiper	0	0	0	1	2
BP	Baird's Sandpiper	0	0	0	0	0
PP	Pectoral Sandpiper	0	0	0	0	1
CV	Curlew Sandpiper	0	19	3	15	90
PS	Purple Sandpiper	751	167	1	288	246
DN	Dunlin	80,390	41,815	1,071	35,677	121,661
OA	Broad-billed Sandpiper	0	0	1	0	1
RU	Ruff	847	57	14	313	598
JS	Jack Snipe	35	1	0	0	12
SN	Snipe	1,055	82	94	158	958
LD	Long-billed Dowitcher	0	0	0	0	0
WK	Woodcock	4	5	1	0	1
BW	Black-tailed Godwit	10,719	1,702	697	6,796	12,808
BA	Bar-tailed Godwit	6,816	4,485	1,594	4,496	16,821
WM	Whimbrel	394	1,108	128	387	715
CU	Curlew	21,686	4,604	3,709	43,733	66,377
DR	Spotted Redshank	69	11	21	100	114
RK	Redshank	34,822	3,470	2,658	19,320	52,360
MD	Marsh Sandpiper	0	0	1	1	0
GK	Greenshank	155	110	27	729	1,600
LY	Lesser Yellowlegs	0	0	0	0	0

Table 7. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
QH	0	0	0	0	0	0	0
EC	0	0	0	0	0	0	0
ET	1,866	1,842	1,447	1,135	989	887	1,016
NY	0	0	0	0	0	0	0
HW	0	0	1	0	0	0	0
H.	3,708	4,285	3,109	2,756	2,978	2,881	2,798
UR	0	0	0	0	0	0	0
OR	0	2	2	2	2	2	2
NB	28	3	13	15	15	13	14
FL	0	0	0	0	0	0	0
WA	145	298	634	468	482	374	323
AK	2	0	0	0	0	0	0
MH	11,491	13,812	11,698	11,233	9,358	11,424	10,116
CO	89,423	101,212	98,067	95,482	81,989	63,253	38,242
AN	0	1	0	0	0	0	0
WILDFOWL	553,278	1,164,201	1,416,433	1,264,088	1,323,664	1,110,713	679,242
OC	224,797	281,118	221,283	220,066	239,750	218,409	116,280
IT	0	0	1	0	1	0	1
AV	2,613	3,249	4,156	4,423	3,938	3,134	2,936
TN	0	0	0	0	0	0	0
LP	39	0	0	0	0	0	72
RP	18,409	10,452	8,697	7,413	7,216	7,417	3,573
KP	0	0	0	0	0	0	0
ID	0	0	0	0	0	0	0
GP	32,656	50,908	119,711	131,998	104,548	70,341	20,192
GV	32,651	34,430	32,538	32,657	34,550	26,210	25,445
L.	72,954	79,605	276,246	291,643	240,555	201,158	23,886
KN	158,846	168,356	215,085	194,596	235,343	176,055	121,283
SS	11,281	6,682	6,875	7,857	9,804	8,132	6,551
LX	38	53	8	17	8	10	3
TK	1	0	0	0	0	0	0
WU	2	0	0	0	0	0	0
BP	0	0	0	0	0	0	0
PP	3	4	0	0	0	0	0
CV	237	43	2	2	0	1	2
PS	158	509	1,056	845	980	1,118	942
DN	105,994	127,674	301,835	379,742	413,770	343,164	98,028
OA	0	0	0	0	0	0	0
RU	810	721	696	529	491	612	1,020
JS	6	116	116	195	165	137	128
SN	1,859	4,549	6,879	6,646	5,684	5,386	4,148
LD	0	0	1	2	1	1	1
WK	0	4	34	30	32	27	5
BW	23,804	31,175	16,095	15,272	18,469	15,452	19,033
BA	47,352	35,157	24,251	38,766	53,910	43,728	18,948
WM	272	55	11	5	7	3	158
CU	71,457	85,619	61,407	57,442	69,715	76,036	54,014
DR	249	225	54	46	57	75	91
RK	73,111	93,209	75,240	67,061	69,486	61,505	57,573
MD	0	0	0	0	0	0	0
GK	2,124	1,194	336	239	228	212	219
LY	0	0	1	0	0	0	0

Table 7. Great Britain totals 2002/03 (continued).

		Apr	May	Jun	Jul	Aug
GE	Green Sandpiper	98	5	27	274	533
OD	Wood Sandpiper	1	7	1	4	59
CS	Common Sandpiper	59	342	148	768	1,246
TT	Turnstone	5,908	1,244	198	747	6,968
NK	Red-necked Phalarope	0	0	1	0	1
U.	unidentified wader	0	0	18	0	0
	TOTAL WADERS	330,027	148,730	54,445	215,092	666,232
	TOTAL WATERBIRDS[3]	577,644	277,960	209,240	438,590	989,049
MU	Mediterranean Gull	92	9	25	117	149
LU	Little Gull	96	79	32	15	63
AB	Sabine's Gull	0	0	0	0	1
BH	Black-headed Gull	44,139	27,124	25,587	56,404	109,773
IN	Ring-billed Gull	0	0	0	0	0
CM	Common Gull	2,047	2,238	1,527	4,341	17,647
LB	Lesser Black-backed Gull	35,035	26,263	37,634	39,894	51,682
HG	Herring Gull	29,686	28,381	20,449	26,784	40,683
YG	Yellow-legged Gull	0	6	10	37	36
YC	Caspian Gull	2	0	0	0	0
YM	Western Yellow-legged Gull	0	0	0	0	0
IG	Iceland Gull	0	0	0	0	0
GZ	Glaucous Gull	2	1	1	0	0
GB	Great Black-backed Gull	1,391	1,692	1,446	2,410	4,132
KI	Kittiwake	629	397	594	257	1,646
UU	unidentified gull	0	0	0	0	700
	TOTAL GULLS[4]	113,119	86,190	87,305	130,259	226,512
AF	Little Tern	164	375	357	836	433
TG	Gull-billed Tern	0	0	0	0	0
BJ	Black Tern	0	4	1	1	22
TE	Sandwich Tern	4,224	3,972	1,259	10,607	6,084
CN	Common Tern	229	2,218	1,935	4,083	4,414
RS	Roseate Tern	0	0	0	7	27
AE	Arctic Tern	3	231	220	967	2,235
UT	unidentified tern	0	0	0	0	44
UI	'Commic' Tern	0	0	1	2	0
	TOTAL TERNS[4]	4,620	6,800	3,773	16,503	13,259
KF	Kingfisher	76	70	74	147	188

† *See Appendix 3 for calculation of totals for goose populations*
1 *Indicates White-fronted and Brent Geese not identified to race*
2 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
3 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
4 *Counting gulls and terns was optional, thus totals are not complete at a national level*

Table 7. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
GE	359	202	121	95	100	103	107
OD	11	1	2	1	0	0	0
CS	450	77	40	29	28	26	22
TT	8,723	12,211	10,990	10,764	10,906	10,571	8,639
NK	0	0	0	0	0	0	0
U.	60	0	0	0	0	0	0
WADERS	891,326	1,027,596	1,383,897	1,468,381	1,519,765	1,269,090	583,306
WATERBIRDS	1,444,604	2,191,797	2,800,330	2,732,469	2,843,429	2,379,803	1,262,548
MU	235	134	72	48	49	57	168
LU	161	2	50	8	10	14	75
AB	0	0	0	0	0	0	0
BH	153,222	155,352	187,020	189,149	215,295	171,157	88,649
IN	1	1	2	2	5	4	2
CM	29,058	46,136	53,644	57,227	51,284	56,993	26,123
LB	17,255	16,095	10,816	11,267	10,485	9,364	38,897
HG	53,465	55,209	40,967	48,623	48,539	49,433	39,205
YG	47	96	44	32	4	7	5
YC	0	0	0	1	1	1	1
YM	5	0	7	1	9	7	0
IG	0	0	0	0	1	5	2
GZ	0	0	1	2	3	9	2
GB	8,090	8,694	7,369	10,458	6,069	4,558	2,415
KI	3,103	294	186	81	188	131	474
UU	680	940	500	1,107	0	970	150
GULLS	265,322	282,953	300,678	318,006	331,942	292,710	196,168
AF	83	8	0	0	0	0	0
TG	1	0	0	0	0	0	0
BJ	11	1	0	0	0	0	0
TE	4,814	227	11	3	3	2	99
CN	1,777	141	1	0	0	0	0
RS	0	0	0	0	0	0	0
AE	468	10	0	0	0	0	0
UT	0	0	0	0	0	0	0
UI	85	0	0	0	0	0	0
TERNS	7,239	387	12	3	3	2	99
KF	459	434	404	295	249	178	189

Table 8. Total number of waterbirds recorded by WeBS Core Counts in Northern Ireland, 2002/03[†].

		Apr	May	Jun	Jul	Aug
Number of sites visited		3	3	3	3	4
Number of sectors visited		12	12	12	12	16
MS	Mute Swan	112	99	71	25	19
AS	Black Swan					
BS	Bewick's Swan	0	0	0	0	0
WS	Whooper Swan	15	2	0	1	1
HN	Swan Goose	0	0	0	0	0
PG	Pink-footed Goose	0	0	0	0	0
NW	Greenland White-fronted Goose	0	0	0	0	0
GJ	Greylag Goose	2	2	0	0	0
CG	Greater Canada Goose	0	0	0	0	0
BY	Barnacle Goose	0	0	0	0	0
BG	Brent Goose	0	0	0	0	0
DB	Dark-bellied Brent Goose	0	0	0	0	0
QN	Light-bellied Brent Goose (Canada)	280	0	0	0	1
SU	Shelduck	232	293	162	55	28
WN	Wigeon	7	0	0	0	3
GA	Gadwall	0	0	0	0	0
T.	Teal	2	0	0	0	53
MA	Mallard	81	83	240	407	984
PT	Pintail	0	0	0	0	0
SV	Shoveler	0	0	0	0	0
PO	Pochard	0	0	0	0	0
TU	Tufted Duck	0	0	12	0	0
SP	Scaup	0	2	0	2	0
E.	Eider	6	90	26	291	558
LN	Long-tailed Duck	0	0	0	0	0
CX	Common Scoter	0	0	0	0	0
VS	Velvet Scoter	0	0	0	0	0
GN	Goldeneye	4	0	0	0	0
SY	Smew	0	0	0	0	0
RM	Red-breasted Merganser	30	13	11	6	114
GD	Goosander	0	0	0	0	0
RY	Ruddy Duck	0	0	0	0	0
RH	Red-throated Diver	1	0	0	0	0
BV	Black-throated Diver	0	0	0	0	0
ND	Great Northern Diver	1	0	0	0	0
LG	Little Grebe	2	11	11	15	17
GG	Great Crested Grebe	2	4	1	10	108
RX	Red-necked Grebe	0	0	0	0	0
SZ	Slavonian Grebe	0	0	0	0	0
BN	Black-necked Grebe	0	0	0	0	0
CA	Cormorant	37	133	77	140	364
SA	Shag	0	0	0	0	23
XU	unidentified cormorant	0	0	0	0	0
ET	Little Egret	0	0	0	0	0
H.	Grey Heron	12	12	50	36	67
WA	Water Rail	0	0	0	0	0
MH	Moorhen	3	2	0	7	11
CO	Coot	0	0	2	0	0
	TOTAL WILDFOWL[1]	829	746	663	995	2,351

Table 8. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	19	27	22	24	26	24	25
Sectors	152	198	149	331	261	227	188
MS	1,827	1,715	1,114	1,369	1,177	1,069	872
AS	0	0	0	0	0	2	2
BS	0	0	0	6	0	13	1
WS	10	3,301	1,357	1,311	782	2,019	1,177
HN	0	0	2	0	2	0	0
PG	0	7	4	0	0	3	1
NW	0	88	5	0	9	0	54
GJ	187	276	1,075	818	1,108	2,427	2,888
CG	323	316	227	409	292	126	49
BY	223	217	118	205	210	207	179
BG	0	0	0	0	2	0	1,185
DB	0	0	0	0	0	0	0
QN	7,910	19,210	15,442	3,015	1,825	2,531	2,363
SU	188	1,612	3,200	4,535	4,415	3,635	1,807
WN	3,458	6,698	5,447	5,245	4,452	3,454	3,252
GA	164	179	130	94	83	159	148
T.	2,794	5,846	3,612	4,470	3,414	4,913	2,356
MA	8,433	7,379	4,273	4,696	5,000	3,838	1,791
PT	87	190	396	355	154	280	52
SV	76	113	211	213	235	70	35
PO	497	2,067	5,930	6,751	9,339	4,251	709
TU	2,422	4,437	7,303	9,772	10,457	8,788	6,063
SP	79	25	175	671	2,537	3,298	426
E.	863	1,377	1,031	1,077	1,288	355	602
LN	0	0	23	17	20	7	7
CX	1	1	23	7	0	0	0
VS	0	5	0	5	4	10	0
GN	86	171	3,911	2,620	3,842	2,779	4,074
SY	0	0	0	1	0	0	0
RM	388	366	421	476	513	297	286
GD	0	2	1	1	1	0	1
RY	23	67	3	10	1	0	5
				1			
RH	4	17	29	13	38	34	31
BV	1	0	0	0	0	0	0
ND	0	27	16	1	4	5	7
LG	350	631	421	440	478	237	154
GG	1,844	3,009	948	1,316	1,156	1,653	746
RX	0	0	0	0	0	0	0
SZ	0	10	0	0	0	1	13
BN	0	0	0	0	0	0	0
CA	2,193	3,124	948	1,498	1,225	1,080	942
SA	132	320	237	288	465	140	120
XU	00	131	67	78	160	0	0
ET	0	0	0	0	0	0	0
H.	413	442	209	198	175	187	160
WA	0	2	0	3	2	2	0
MH	207	291	190	229	210	177	186
CO	4,399	5,032	2,860	3,819	2,729	1,914	1,180
WILDFOWL	39,582	68,701	61,359	56,042	57,804	49,961	33,924

Table 8. Northern Ireland totals 2002/03 (continued).

		Apr	May	Jun	Jul	Aug
OC	Oystercatcher	1,775	1,139	1,420	1,520	4,105
RP	Ringed Plover	402	32	0	24	158
GP	Golden Plover	4,981	0	0	2	30
GV	Grey Plover	0	0	0	0	5
L.	Lapwing	38	46	35	330	232
KN	Knot	1	1	0	0	13
SS	Sanderling	2	33	0	0	8
LX	Little Stint	0	0	0	0	0
CV	Curlew Sandpiper	0	0	0	0	0
PS	Purple Sandpiper	0	0	0	0	0
DN	Dunlin	126	387	0	23	868
RU	Ruff	0	0	0	0	0
JS	Jack Snipe	0	0	0	0	0
SN	Snipe	7	0	0	0	10
BW	Black-tailed Godwit	27	2	0	0	16
BA	Bar-tailed Godwit	107	154	119	3	166
WM	Whimbrel	0	12	3	10	30
CU	Curlew	395	57	311	2,116	2,318
DR	Spotted Redshank	0	0	0	0	0
RK	Redshank	827	6	0	524	1,141
GK	Greenshank	3	0	0	35	33
LY	Lesser Yellowlegs	0	0	0	0	0
CS	Common Sandpiper	1	0	0	3	8
TT	Turnstone	12	0	0	4	112
WF	Wilson's Phalarope	0	0	0	0	0
	TOTAL WADERS	8,704	1,869	1,888	4,594	9,253
	TOTAL WATERBIRDS[2]	9,533	2,615	2,551	5,589	11,604
LU	Little Gull	0	0	0	0	0
BH	Black-headed Gull	65	25	108	1,300	1,896
IN	Ring-billed Gull	0	0	0	0	0
CM	Common Gull	97	7	69	1,289	1,516
LB	Lesser Black-backed Gull	3	37	78	69	92
HG	Herring Gull	29	453	153	49	402
IG	Iceland Gull	0	0	0	0	0
GZ	Glaucous Gull	0	0	0	0	0
GB	Great Black-backed Gull	55	50	31	15	48
KI	Kittiwake	0	0	0	0	0
	TOTAL GULLS[3]	249	572	439	2,722	3,954
TE	Sandwich Tern	48	165	107	565	994
CN	Common Tern	0	2	2	13	21
RS	Roseate Tern	0	1	0	0	0
AE	Arctic Tern	0	0	0	3	0
UI	'Commic' Tern	0	0	0	58	140
	TOTAL TERNS[3]	48	168	109	639	1,155
KF	Kingfisher	0	0	0	1	1

† *See Appendix 3 for calculation of totals for goose populations*
1 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
2 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
3 *Counting gulls and terns was optional, thus totals are not complete at a national level*

Table 8. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
OC	16,973	20,270	12,471	13,722	14,933	13,221	7,884
RP	267	1,212	590	351	741	248	169
GP	392	8,340	10,280	11,203	11,976	9,367	12,446
GV	0	60	284	76	338	174	216
L.	1,707	5,233	11,498	12,611	11,733	10,834	562
KN	179	309	2,190	3,642	3,341	2,641	1,601
SS	0	2	0	0	0	30	30
LX	0	5	1	1	1	1	0
CV	9	4	0	0	0	0	0
PS	0	23	5	1	129	15	85
DN	685	1,104	9,737	7,061	7,913	11,305	3,104
RU	2	4	3	4	3	2	0
JS	0	1	1	1	0	3	0
SN	31	122	329	249	351	368	119
BW	805	612	533	283	315	605	217
BA	310	620	1,308	560	1,223	3,719	4,556
WM	4	0	0	0	0	0	2
CU	4,740	5,489	3,877	2,938	3,496	5,120	3,354
DR	0	0	1	0	0	1	1
RK	6,609	10,527	6,151	6,020	7,216	5,715	7,031
GK	85	140	87	80	92	71	86
LY	1	0	0	0	0	0	0
CS	5	1	0	0	1	1	0
TT	650	1,869	698	559	1,836	666	1,297
WF	0	1	0	0	0	0	0
WADERS	33,454	55,948	60,044	59,362	65,638	64,107	42,760
WATERBIRDS	73,036	124,649	121,403	115,404	123,442	114,068	76,684
LU	1	0	0	0	0	0	0
BH	6,248	8,153	10,590	5,952	13,774	9,408	9,016
IN	0	1	0	1	1	1	0
CM	5,935	5,962	4,126	1,576	3,217	7,937	2,770
LB	1,429	934	47	17	93	405	240
HG	1,115	1,671	4,672	4,351	9,200	5,268	1,749
IG	0	0	0	0	0	1	0
GZ	0	0	1	0	0	0	0
GB	231	445	232	451	689	361	253
KI	52	29	2	1	0	1	1
GULLS	15,011	17,195	19,670	12,349	26,974	23,382	14,029
TE	554	198	0	0	0	0	2
CN	13	3	0	0	3	0	0
RS	0	0	0	0	0	0	0
AE	0	0	0	0	0	0	0
UI	136	0	0	0	0	0	0
TERNS	703	201	0	0	3	0	2
KF	2	1	0	1	0	3	0

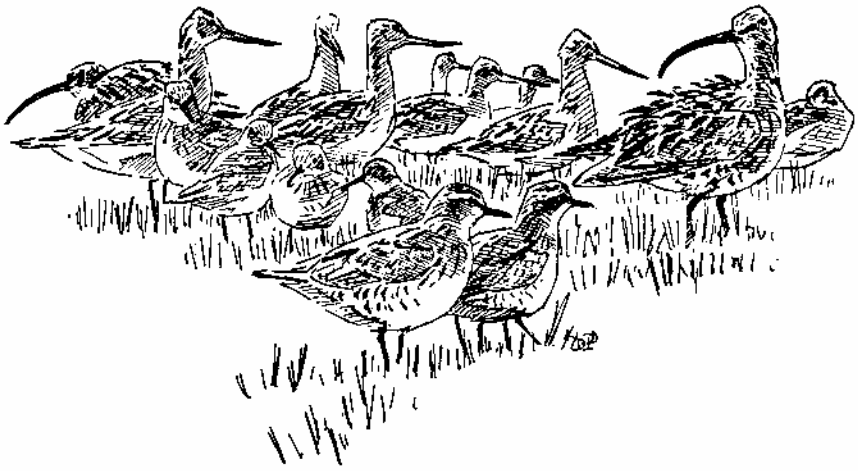
Table 9. Total number of waterbirds recorded by I-WeBS in the Republic of Ireland, 2002/03.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Number of sites visited	105	125	161	156	229	162	134
Number of sectors visited	256	338	422	378	655	414	328
Mute Swan	1,161	2,769	2,219	1,927	2,837	2,426	1,160
Black Swan	1	0	0	1	1	1	1
Bewick's Swan	0	63	62	111	172	12	0
Whooper Swan	2	1,218	3,570	2,658	4,390	2,272	980
Bean Goose	0	0	0	1	0	0	0
Pink-footed Goose	0	6	4	7	7	7	10
European White-fronted Goose	0	0	0	1	1	1	0
Greenland White-fronted Goose	2	3,630	7,114	6,552	9,290	8,801	8,749
Greylag Goose	28	542	1,622	1,872	4,669	1,455	3,373
Snow Goose	0	1	2	2	2	2	2
Greater Canada Goose	32	5	43	261	178	11	43
Barnacle Goose	0	110	510	1,410	2,753	2,213	635
Dark-Bellied Brent Goose	0	0	0	0	2	1	1
Black Brant	0	0	0	0	1	0	0
Light-bellied Brent Goose	17	1,126	5,684	12,753	10,528	8,293	7,703
feral/hybrid Goose	0	19	43	22	23	7	27
Shelduck	169	649	3,675	6,723	6,882	6,511	2,989
Wigeon	3,474	10,311	32,553	29,201	37,197	28,106	3,111
American Wigeon	1	1	1	1	2	1	2
Gadwall	116	55	222	293	411	250	133
Teal	2,937	8,205	12,343	14,453	20,998	12,893	3,956
Green-winged Teal	0	0	2	0	0	1	0
Mallard	7,717	6,769	9,087	7,995	10,739	5,804	2,386
Black Duck	0	0	0	1	1	1	0
Pintail	37	114	554	245	634	428	62
Garganey	0	0	0	0	0	1	0
Blue-winged Teal	1	0	0	0	0	0	0
Shoveler	73	228	852	1,324	1,380	691	268
Red Crested Pochard	1	1	0	0	1	0	0
Pochard	38	3,865	3,262	1,403	4,975	2,696	155
Ring-necked Duck	0	0	2	1	0	3	2
Tufted Duck	1,143	1,283	10,686	3,382	8,956	5,652	2,601
Scaup	1	48	243	91	593	88	15
Eider	0	0	12	7	3	0	6
Long-tailed Duck	0	0	10	13	23	9	10
Common Scoter	2,827	2,638	3,408	1,592	3,103	602	1,899
Velvet Scoter	0	0	0	0	0	0	3
Goldeneye	2	76	737	720	1,250	1,032	246
Smew	0	0	0	1	4	1	0
Red-breasted Merganser	300	388	681	762	985	452	558
Goosander	0	0	4	0	6	0	0
Ruddy Duck	0	0	1	0	1	0	0
feral/hybrid Mallard type	0	0	0	0	0	92	25
hybrid *Aythya*	0	0	1	3	1	0	0
Red-throated Diver	13	35	76	28	138	52	93
Black-throated Diver	1	0	7	16	10	0	0
Great Northern Diver	16	35	141	208	371	134	200
Little Grebe	438	351	464	511	767	396	784
Great Crested Grebe	484	391	676	654	1,081	637	390
Slavonian Grebe	0	10	0	0	5	7	3
Black-necked Grebe	0	0	0	0	0	2	0
Cormorant	2,309	2,183	2,181	1,696	2,959	1,623	1,820
Grey Heron	550	567	581	577	602	275	306
Little Egret	146	161	111	85	136	318	81
Coot	1,673	6,967	5,541	7,889	4,553	1,849	600
Moorhen	437	459	399	382	432	351	369
Water Rail	20	11	30	19	12	37	15
TOTAL WILDFOWL[1]	26,167	55,290	109,416	107,854	144,065	96,497	45,772

Table 9. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Oystercatcher	19,732	22,839	23,666	12,591	27,072	24,231	14,404
Avocet	0	0	0	1	0	0	0
Ringed Plover	2,270	2,534	2,826	2,609	3,545	2,150	624
Golden Plover	472	19,704	65,947	56,987	58,875	72,285	21,582
Grey Plover	271	503	986	2,468	2,334	2,018	307
Lapwing	1,171	7,509	45,112	49,329	66,183	40,263	1,117
Knot	2,998	1,844	14,302	6,014	12,108	10,590	3,842
Sanderling	1,042	1,180	1,414	1,603	1,863	1,452	973
Curlew Sandpiper	36	5	0	0	1	1	0
Purple Sandpiper	10	2	13	66	54	32	34
Dunlin	1,729	5,053	24,133	28,696	44,667	36,037	4,335
Ruff	11	19	26	10	19	3	1
Jack Snipe	0	0	13	24	22	22	16
Snipe	42	299	462	594	1,075	548	291
Long-billed Dowitcher	0	0	0	0	0	0	1
Woodcock	0	0	2	1	0	2	1
Black-tailed Godwit	5,710	6,892	10,975	6,415	7,728	10,791	7,095
Bar-tailed Godwit	3,317	3,925	7,308	7,816	12,501	12,020	2,337
Whimbrel	76	5	3	1	0	0	7
Curlew	10,236	11,631	12,510	9,374	14,771	17,104	3,729
Spotted Redshank	4	5	8	4	12	1	1
Redshank	9,044	13,369	10,900	7,393	9,095	8,656	8,356
Greenshank	291	363	313	312	390	301	222
Green Sandpiper	5	8	4	4	12	2	1
Common Sandpiper	16	1	2	0	6	48	1
Turnstone	597	1,223	1,794	1,491	1,784	1,574	935
TOTAL WADERS	59,080	98,913	222,719	193,803	264,117	240,131	70,212
TOTAL WATERFOWL[2]	85,247	154,203	332,135	301,657	408,182	336,628	115,984
Mediterranean Gull	14	9	7	7	5	6	5
Little Gull	0	0	0	0	2	0	2
Black-headed Gull	12,432	14,790	14,985	12,820	26,147	16,719	5,124
Ring-billed Gull	0	0	1	3	2	4	3
Common Gull	1,135	3,696	3,705	4,738	16,922	10,692	3,446
Lesser Black-backed Gull	1,267	4,131	1,300	1,233	2,449	2,874	664
Herring Gull	649	1,361	1,604	839	2,244	1,971	2,203
Yellow-legged Gull	0	0	0	1	0	2	0
Iceland Gull	0	0	0	0	0	0	2
Glaucous Gull	0	0	0	0	0	2	0
Great Black-backed Gull	451	662	1,199	873	981	778	772
unidentified gull	110	0	52	10	0	0	0
TOTAL GULLS[3]	16,058	24,649	22,853	20,524	48,752	33,048	12,221
Sandwich Tern	304	23	0	0	0	0	38
Forster's Tern	0	0	0	1	2	0	0
Common Tern	28	46	1	0	0	2	0
Roseate Tern	0	62	0	0	0	0	0
Arctic Tern	20	0	0	0	0	0	0
TOTAL TERNS[3]	352	131	1	1	2	2	38
Kingfisher	16	16	16	10	9	5	4

1 *Total wildfowl represents numbers of all swans, geese, divers, grebes, cormorants and rails*
2 *Total waterbirds represents numbers of all species except gulls, terns and Kingfisher*
3 *Counting gulls and terns was optional, thus totals are not complete at a national level*



Species accounts

PRESENTATION AND NOTATION

Detail is provided here on the format of presentation and the notation used in *Species accounts*. Symbols and notation used are also given at the end of this section. The locations of all sites named in this report are given in Appendix 6.

Species are listed in order recently adopted by the BOURC (Knox *et al* 2002). Vagrants and escapes are listed in a separate section at the end of the systematic list.

Terminology

The 'most recent year' or 'winter' refers to 2002/03 for 'winter' species and to 2002 for 'calendar-year' species (see *Annual maxima* under *Analysis*). For this edition of *Wildfowl & Wader Counts*, detailed data are often provided for the 'two most recent years' or 'winters', referring also to data from 2001/02 or 2001.

'National threshold' is used as a generic term to imply the 1% British threshold for sites in Great Britain, and the all-Ireland threshold for sites in Northern Ireland. Similarly, the term 'national importance' implies sites in Great Britain and in Northern Ireland that meet the respective thresholds.

Populations and thresholds

A key purpose of the *Species accounts* is to list important sites for each species, sub-species or population, as relevant. This is done using certain numerical criteria adopted widely for use in conservation legislation and guidelines for site designation (see *Analysis* and Appendix 2), although exceptions have been made in some cases. Where available, the international and national 1% thresholds are listed at the start of each account. Less numerous species, for which national thresholds are not produced, are classified as 'scarce' whilst species are classified as a 'vagrant' where the UK does not fall within its normal range of distribution. For some species, *eg* Lapwing and Golden Plover, no national thresholds are available and arbitrary levels have been used to compile the table of sites, the chosen level being given in the sub-heading of the table. Where several populations of the same species occur in the UK, several international thresholds may be listed, with the population name derived from *Waterbird Population Estimates – Third Edition* (Wetlands International 2002). Passage thresholds, applied to counts of some wader species in Great Britain, are also listed.

In line with the recommendations of Vinicombe *et al* (1993), records of all species recorded by WeBS, including escapes, have been published to contribute to the proper assessment of naturalised populations and escaped birds. Following Holmes & Stroud (1995), non-native species which have become established are termed 'naturalised'. These species are categorised according to the process by which they became established: naturalised feral (domesticated species gone wild); naturalised introduction (introduced by man); naturalised re-establishment (species re-established in an area of former occurrence); or naturalised establishment (a species which occurs, but does not breed naturally, *eg* potentially Barnacle Goose in southern England). With the exception of vagrants, all other non-native species have been classed as 'escapes'. The native range is given in the species account for naturalised species, escapes and vagrants.

National totals

The maximum count in any month of the most recent year, and the month of occurrence, is given for Great Britain and Northern Ireland in each account except for species occurring in very small numbers. For this edition of *Wildfowl & Wader Counts*, maxima are given for both of the two most recent years.

WeBS Alerts

The national (Great Britain) Alerts results are given for 5-, 10- and 25-year periods in the species header, covering the period up to 2000/01 (from Austin *et al* 2004). The symbols used to indicate the various categories derived from the Alerts analysis:

- ▼ high alert (>50% decrease)
- ▽ medium alert (25-50% decrease)
- O stable trend
- △ medium increase (33-100% increase)
- ▲ large increase (>100% increase)
- – data not available for Alerts

High and medium alerts are highlighted in the text.

Annual and monthly indices

Index values, where calculated, are graphed within each account. Where separate British and Northern Ireland values have been calculated (for certain wildfowl species), these are presented on the same graph to allow direct comparison but with different vertical axes for clarity. Individual index values for Britain are denoted using circles and the left-hand axis, and Northern Ireland values using squares and the right hand axis. Where only one index series is presented, circles and the left-hand axis have been used regardless of country. The underlying trend, where calculated, is shown using a solid line.

Monthly indices, where calculated, are graphed within each account. Mean values for the previous five years (1998/99 to 2001/02) are shown using black columns and values for the most recent year (2002/03) using white columns.

Productivity

Where productivity data have been collected, these are graphed using the left-hand axis and bars to denote the proportion of young, and using the right-hand axis and circles to denote brood size. The values for the most recent years are also listed in the header for ease of reference.

Important sites tables

Tables provide data for all internationally important sites and all nationally important sites (either in a Great Britain context or, for sites in Northern Ireland, in an all-Ireland context) monitored by WeBS or other appropriate surveys.

For each site, the maximum count in each of the five most recent years, the month of occurrence of the peak in the most recent year, and the five-year peak mean are given. Incomplete counts are bracketed. Years with no counts are denoted using a dash '-'. The source of all counts, if not derived from WeBS Core Counts, is indicated using a superscripted number before the count. The list of sources is given at the end of this section.

Sites are selected for presentation using a strict interpretation of the 1% threshold (for convenience, sites in the Channel Islands and Isle of Man are identified using 1% thresholds for Great Britain and included under the Great Britain section of the tables). For some species with very small national populations, and consequently very low 1% thresholds, an arbitrary, higher level has been chosen for the inclusion of sites. Where no thresholds are given, *eg* for introduced species, and where no or very few sites in the UK reach the relevant national qualifying levels, an arbitrary threshold has been chosen to select a list of sites for this report. These adopted thresholds are given in the sub-headings of the table. A blank line has been inserted in the table to separate sites that qualify as nationally important from those with five-year peak mean counts of less than 50 birds.

All sites which held numbers exceeding the relevant national threshold (or adopted qualifying level) in either of the two most recent years, but with five-year peak means below this value, are listed separately, with the relevant count and month. This serves to highlight important sites worthy of continued close attention.

For a number of wader species, where different thresholds exist for passage periods, the peak count during this period and month of occurrence are also listed. This list includes all those sites with counts above the relevant threshold, even if already listed in the main part of the table by virtue of the five-year winter peak mean surpassing the national threshold.

Site status

Where the importance of a site has changed since the previous *Wildfowl & Wader Counts* as a result of the data collected since then – *ie* it has become, or ceased to be, nationally or internationally important – this is indicated in the table, under the column headed 'S' (for status) to the right of the five-year peak mean. Sites with elevated status have a black triangle pointing up (▲) to the right of the average, whilst those with lowered status are indicated using a triangle pointing down (▼). Sites for which the average fell below the threshold for national importance following 2002/03 are listed at the end of the table.

A few sites that have not been counted in recent years, in most cases due to their isolated location, but were of national or international importance for one or more species when last counted (and thus retain that status in the absence of data to the contrary), are listed in the accounts under the section 'Internationally or nationally important sites not counted in last five years'. This also serves to highlight the need for counting to be resumed.

A number of tables use a lower qualifying level – or an arbitrary level where none exists – for the purposes of presenting a reasonable

amount of data. Some sites have therefore been added to or dropped from these lists without attaining or losing national importance since the previous report. Such changes are flagged using an open – rather than filled – triangle (△), to indicate that the numbers have changed only relative to the arbitrary levels, not agreed criteria for importance. This approach has been adopted, not least, because some of the arbitrary table qualifying levels have been changed solely to produce a more reasonable number of listed sites. Similarly, sites which have newly qualified for inclusion in the tables of naturalised species are flagged using open triangles, as sites are not recognised as nationally important for these species (see also *Interpretation of waterbird counts*). Lists of sites that no longer feature in the table are given appropriate sub-headings, to separate sites that no longer meet national importance levels from those that no longer meet arbitrary levels. Where this list is large as a result of changed qualifying levels, a note to this effect is given alongside the list. Note, also, that the introduction of 1% threshold levels for the first time automatically qualifies any sites meeting that level as having raised site status, since no sites were previously listed as important in the absence of a threshold.

It should be noted that some sites will be flagged as having elevated status even though the most recent count was below the relevant threshold. Although this may initially appear to be an error, this situation arises where the count from the first year used to calculate the five-year mean in the previous report was lower than the maximum in the most recent winter. The converse may be true for sites with lowered status and thus, in exceptional circumstances, a site may be listed in the relevant sections of the table as both no longer being of national importance yet with a peak count in the most recent year exceeding the national threshold.

Text

Text in each account highlights significant points, *eg* coverage, marked changes in indices, or numbers at individual sites, and provides an overview of any recently published relevant surveys or research.

Frequently cited references

The following references are cited frequently and are referred to by an abbreviated title throughout the text of the *Species accounts*.

1981-84 Winter Atlas
Lack, P. 1986. *The Atlas of Wintering Birds in Britain and Ireland.* T & AD Poyser, Calton.

Migration Atlas
Wernham, CV, MP Toms, JH Marchant, JA Clark, GM Siriwardena & SR Baillie (eds). 2002. *The Migration Atlas: movements of the birds of Britain and Ireland.* T & AD Poyser, London.

Seabird 2000
Mitchell, PI, SF Newton, N Ratcliffe & TE Dunn. *Seabird populations of Britain and Ireland: results of the Seabird 2000 Census (1998-2002).* T & AD Poyser, London.

WPE3
Wetlands International. 2002. *Waterbird Population Estimates – Third Edition. Wetlands International Global Series No. 12*, Wageningen, the Netherlands.

QUICK REFERENCE FOR SPECIES ACCOUNTS

Table 10. Key to symbols commonly used in the *Species accounts*.

As footnotes to **thresholds** (see Appendix 2):

? population size not accurately known

\+ population too small for meaningful threshold

* where 1% of the national population is fewer than 50 birds, 50 is normally used as a minimum threshold for national importance

** a site regularly holding more than 20,000 waterbirds (excluding non-native species) qualifies as internationally important by virtue of absolute numbers

† denotes that a qualifying level different to the national threshold has been used for the purposes of presenting sites in this report

To denote **WeBS Alerts** categories in the header:

▼ high alert (>50% decrease)

▽ medium alert (25-50% decrease)

O stable trend

△ medium increase (33-100% increase)

▲ large increase (>100% increase)

\- data not available for Alerts

In **tables** of important sites:

\- no data available

( ) incomplete count

† same meaning as used for thresholds

▲ site was of a lower importance status in the previous report

▼ site was of a higher importance status in the previous report

△ the site did not meet arbitrary table qualifying levels in the previous report

[1,2] count obtained using different survey methodology from WeBS Core Counts (see table below for sources and references)

A blank line within a section of the important sites table is used to separate sites holding 50 or more birds where the relevant threshold is below this figure (see *eg* Little Grebe)

Sources of additional survey information used in compiling tables of important sites. Non-WeBS counts in the tables are identified by the relevant number or letter below given in superscript preceding the count, *eg* [15]231 represents a count from Greenland White-fronted Goose Study surveys.

1 All Wales Common Scoter Survey, *eg* Cranswick *et al* (2004)
2 Argyll Bird Report records
3 Banks *et al* (2004)
4 Bean Goose Working Group, *eg* Simpson & Maciver (2003)
5 C Hartley
6 Chown (1999), Avalon Marshes Wintering Bird Survey 1998/99
7 Cranswick *et al* (2000)
8 Cranswick *et al* (2003)
9 CSL Ruddy Duck data
10 D Carrington
11 Dean *et al* (2003)
12 Dorset Bird Report records
13 Firth of Clyde Eider counts, *eg* Waltho (2003)
14 Geary & Lock (2001)
15 Greenland White-fronted Goose Study, *eg* Fox & Francis (2004)
16 Hall *et al* (2003)
17 J Smith
18 K Colhoun
19 Musgrove (2002)
20 M Howe
21 M Tickner
22 Orkney Bird Report records
23 P Reay
24 Paul Daw
25 R Godfrey
26 R MacDonald
27 Roost counts
28 RSPB data
29 RSPB pers comm
30 RSPB/Talisman Energy studies
31 Scottish Bird Report records
32 SNH Islay 'adopted' counts
33 SNH wader survey data
34 SNH goose survey data
35 SNH Greenland Goose Census
36 SOTEAG reports, *eg* Heubeck (2003)
37 Supplementary daytime counts
38 WeBS Low Tide Counts
39 Williams (1999)
40 Woolmer *et al* (2001)
41 Worden *et al* (2004a)
42 Worden *et al* (2004b)
43 WWT swan/goose survey data
44 WWT studies, *eg* Rees *et al* (2000)
45 WWT aerial survey data
46 WWT/JNCC National Grey Goose Census
47 Webb *et al* in (prep a)
48 Webb *et al* in (prep b)

Productivity data (where available)

WeBS Alerts (see pg 20)
- ▼ high alert
- ▽ medium alert
- ○ stable trend
- △ medium increase
- ▲ large increase
- – no data

1% thresholds for site importance (see pg 19)

Peak WeBS counts or national census totals (see pg 17)

SPECIES COMMON NAME
Species scientific name

	01/02	02/03
GB Max:	**6,954 Jan**	**4,938 Feb**
NI Max:	**19 Feb**	**13 Feb**
% young	**12.7**	**8.3**
Brood size	**1.8**	**2.1**

International threshold: **10,000**
Great Britain threshold: **2,000**
All-Ireland threshold: **+*†**
**50 is usually used as a minimum threshold*

GB Alert: **5 ▲ 10 △ 25 ○**

Annual index values (dots) and trend (line). Note different axes for GB and NI (see pg 17)

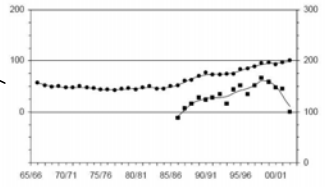


Figure 1. Annual indices for species in GB (circles, left axis) and NI (squares, right axis)

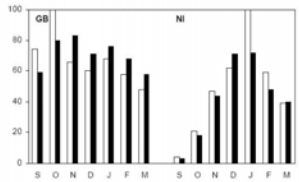


Figure 3. Monthly indices for species in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Monthly indices (see pg 18)

Productivity data (where available) (see page 15)

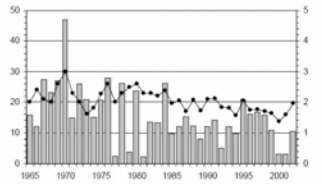


Figure 2. Productivity in species, 1965–2002; proportion of young (white bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

The number of internationally important sites in Britain has increased from nine to 12 since the previous report. This seemingly positive trend reflects the decrease in the international population – and the accompanying reduction in the 1% threshold (*WPE3*) – rather than an increase in abundance at these sites. Indeed, at all nine sites previously of international status, there was in fact a decrease in the mean number of birds. These site-level declines are consistent with the trend of overall abundance for this population, having fallen from a high of 260,000 in 1994/95 to 215,000 in 2001/02 (*WPE3*). In Britain, the peak national counts dropped sharply (by 20,000) in 2001/02 and remained low the following winter, numbers which represent only 51% of those at its zenith in 1991/92.

All UK sites of international importance, all nationally important sites in Great Britain, and all sites in Northern Ireland of All-Ireland importance (see pg 19)

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	17,736	28,811	19,518	17,924	20,314	Jan	20,861	
Solway Estuary	8,134	(2,413)	7,121	18,371	19,556	Feb	13,296	▲
North Norfolk Coast	[38] 10,100	[38] 12,969	10,201	8,033	9,180	Feb	10,097	
Sites of national importance in Great Britain								
Portsmouth Harbour	13,169	(2,661)	11,827	6,682	7,185	Dec	9,716	
North West Solent	2,659	(2,114)	1,616	2,350	1,500	Jan	2,048	▼
Other sites surpassing table qualifying levels in 2001/02 or 2002/03								

	01/02			02/03	
Alde Complex	277	Feb	St James Park Lake	311	Dec

Sites no longer of national importance
(Note, the 1% threshold has been revised from 80 to 171 for Great Britain) Allington Gravel Pit, Coate Water

Sites no longer meeting table qualifying levels
Chesham Pond, Deeping St James Gravel Pits

Important sites not covered in last five years
Clea Lakes, Gunton Park Lake

Filled triangles indicate sites of changed importance. Open triangles indicate sites that newly meet arbitrary site-selection levels (see pg 60-61)

Sites that featured in the table in the previous report

Peak counts in each 12-month period (see *Annual maxima* pg 16). Brackets indicate undercounts (pg 60). Superscripted numbers indicate other data sources (pg 62).

Sites that featured in the table previously but for which no recent data are available (see pg 60)

Five-year peak mean, used to assess site importance against Ramsar Criterion 6 (see pg 19 for calculation using incomplete counts)

MUTE SWAN

Cygnus olor

International threshold (British population): 380

International threshold (Irish population): 100

	01/02	02/03
GB Max:	**19,528 Nov**	**19,283 Nov**
NI Max:	**1,831 Dec**	**1,827 Sep**

	5	10	25
GB Alert:	○	○	△

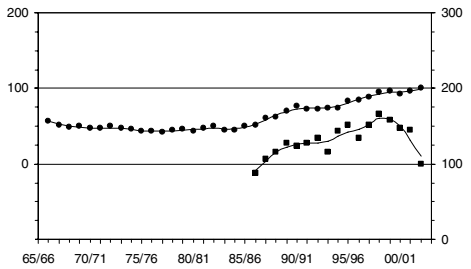


Figure 5. Annual indices for Mute Swan in GB (circles, left axis) and NI (squares, right axis)

In both 2001/02 and 2002/03, peak counts of Mute Swans in Northern Ireland were around 20% lower than numbers recorded in 2000/01. The declining trend since 1998/99 accelerated dramatically, and the annual index value for 2002/03 was the lowest since 1986/87. Conversely, British maxima held steady at just over 19,000 birds, and indices indicate that the increase in population size since the mid 1980s is continuing. A comprehensive census of breeding Mute Swans in Britain in 2000 similarly found a 23% increase in numbers since the previous census in 1990, with a total of 31,700 individuals (comprising 6,150 pairs and 19,400 non breeders) (Ward *et al* 2004). It seems that there has been further population growth since the census; the annual index for Britain in 2002/03 was the highest to date.

A recent but pre-census estimate of the number of Mute Swans in Britain derived from WeBS data put the population at 37,500 birds (Kershaw & Cranswick 2003), a considerable increase from the 26,000 estimated previously. Owing to their largely sedentary nature, Wetlands International has recognised the Mute Swans occurring Britain and in Ireland as two discrete populations, separate from one another and from birds on the Continent (Scott & Rose 1996) – delineations that have recently been adopted by UK statutory bodies. Consequently, all sites of national importance in Great Britain and those of All-Ireland importance in Northern Ireland are now recognised as being of international importance. Although nine sites previously listed as nationally important in Britain in the 2000/01 WeBS report are no longer included in the table, counts of over 400 birds at Hornsea Mere and at Tring Reservoirs in 2002/03 suggest that these may soon meet the new criteria. There was a notable increase on the Fleet/Wey in the last two winters and numbers on the Ouse Washes surpassed 1,000 in 2001/02. Numbers at Abberton Reservoir in 2002/03 recovered from the marked drop the previous winter but the recent decline on the Tweed Estuary continued and is contrary to the national trend.

WPE3 uses an estimate of 10,000 birds for the Irish population (derived from Shepherd 1993), and the increase in the threshold (previously 55) similarly results in just six core sites now featuring in the table for Northern Ireland, albeit that these are now of international importance. Of these, Loughs Neagh & Beg remains the stronghold in the island of Ireland – supporting almost one fifth of the entire population – despite numbers being 43% lower than in 1998/99. As the threshold is based on data nearly 20 years old, there is an urgent need for a more contemporary assessment.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance (British population) in Great Britain								
Fleet/Wey	1,141	1,177	1,150	1,228	1,368	Jan	1,213	▲
Somerset Levels	(733)	(1,011)	(1,110)	(1,121)	(1,039)	Dec	(1,121)	▲
Ouse Washes	663	662	[309] 726	[38] 1,110	[37] 782	Nov	789	▲
Loch of Harray	441	(495)	597	597	672	Jan	577	▲
Rutland Water	469	617	547	590	594	Aug	563	▲
Tweed Estuary	615	580	575	[38] 464	414	Aug	530	▲
Loch Leven	423	406	496	506	550	Sep	476	▲
R. Avon: Salisbury to F'bridge	(239)	(263)	395	(229)	(162)	Jan	395	▲
Abberton Reservoir	512	520	328	187	387	Aug	387	▲

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance (Irish population) in Northern Ireland								
Loughs Neagh & Beg	2,422	1,887	1,931	1,346	1,391	Sep	1,795	▲
Upper Lough Erne	351	328	445	306	323	Dec	351	▲
Lower Lough Erne	-	-	-	-	199	Feb	199	▲
Strangford Lough	111	225	174	183	180	Oct	175	▲
Broad Water Canal	71	-	113	77	172	Oct	108	▲
Lough Foyle	115	115	98	101	77	Mar	101	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Upper Quoile River	117	Nov	Hornsea Mere	486	Jul
			Tring Reservoirs	447	Nov
			Stodmarsh & Collards Lagoon	436	Jul
			Christchurch Harbour	[12] 430	Aug

Sites no longer of international or national importance

(Note, the 1% threshold has been revised from 260 to 380 for Great Britain and from 55 to 100 for Northern Ireland)
Belfast Lough, Dundrum Bay, Fen Drayton Gravel Pits, Hornsea Mere, Humber Estuary, Loch Bee (South Uist), Lough Aghery, Montrose Basin, Morecambe Bay, Severn Estuary, Stour Estuary, Tring Reservoirs, Upper Quoile River

Internationally or nationally important sites not covered in last five years

Ballyroney Lake

BEWICK'S SWAN

Cygnus columbianus

	01/02	02/03
GB Max:	**6,954 Jan**	**4,938 Feb**
NI Max:	**19 Feb**	**13 Feb**
% young	**12.7-21.0**	**8.3-11.3**
Brood size	**n/a**	**n/a**

International threshold:			**290**
Great Britain threshold:			**81**
All-Ireland threshold:			**25***
** 50 is usually used as a minimum threshold*			
	5	**10**	**25**
GB Alert:	○	▽	△

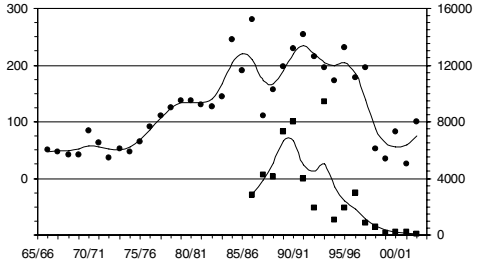


Figure 6. Annual indices for Bewick's Swan in GB (circles, left axis) and NI (squares, right axis)

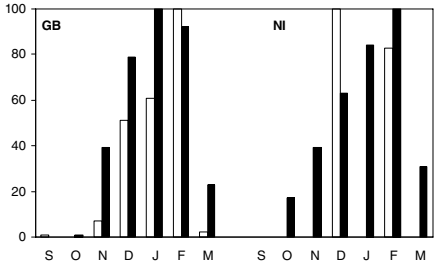


Figure 7. Monthly indices for Bewick's Swan in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Although the international threshold for this swan has increased by 71% since the previous report, in line with a total population size of 29,277 recorded in 1995 (Beekman 1997), more recent information suggests that the population has since declined (Wetlands International data). Numbers in Great Britain in 2001/02 were 33% higher than in 2000/01. The lower total for 2002/03 may be partly due to poor count conditions on Ouse Washes during WeBS in mid winter, particularly given that the 5,177 at the site in early February matches recent peaks. Nevertheless, the annual indices show a sharp fall since the mid 1990s, triggering a 10-year medium alert for Great Britain, and are now at levels not seen since the early 1970s. There has also been a major decrease in Northern Ireland, with only a handful of birds now reaching the Province each year. It is possible that the trends reflect milder winters, and that the swans are stopping further east in continental Europe. Declining numbers at key wintering sites in the Netherlands over the same period, however, give cause for concern (van Roomen *et al* 2004). The results of the international census in January 2005 should help to determine whether there has indeed been a substantial drop in total Bewick's Swan numbers since 1995, or

whether the national trend indices simply reflect a redistribution away from sites covered by WeBS and by the count scheme in the Netherlands.

The proportion of young in flocks was 12.7% on the Ouse Washes, 17.3% at Martin Mere/Ribble Estuary and 21.0% at Slimbridge (Severn Estuary) in 2001/02, indicating that 2001 was an average breeding year. In 2002/03 the figures were below average at 8.3%, 10.8% and 11.3%, respectively, but still well above those of the exceptionally poor 1997 breeding season.

A recent review of the trends and wintering distribution of this population (Robinson *et al* 2004a) shows that the Ouse and Nene Washes have seen an increase in numbers, particularly during the past 30 years, which are coincident with decreases at sites elsewhere in Britain and Ireland. Despite the overall national decline, peak counts on the Ouse Washes have remained high, with numbers recorded during additional counts close to the British maxima in 2002/03. The change in the threshold means that only the Ouse Washes, Nene Washes and Medway Estuary are of international importance. Counts at the Nene continued to show considerable variation between years; interestingly, these are often the converse of the changes at the nearby Ouse Washes and the sum of peaks for the two sites in any one winter is more consistent. Although meeting the criteria for international importance, the Medway is rarely used by large numbers of Bewick's Swans.

With the recent decline in numbers in the population as a whole, and the likelihood that increased winter temperatures enable a greater proportion to remain on the near Continent throughout the winter (a phenomenon suggested to account for recent declines in European White-fronted Geese and Mallard in Britain), it might be expected that decreases in Bewick's Swans would be most marked in the west and north of their range. Whilst this appears to be happening at Loughs Neagh & Beg, and perhaps to a lesser extent at Martin Mere/Ribble Estuary where counts are substantially lower than in the early 1990s, numbers on the Severn Estuary are more stable and may soon exceed the revised international threshold.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Ouse Washes	[43] 5,129	[43] 5,649	[27] 4,693	[43] 5,735	[43] 5,177	Feb	5,277	
Nene Washes	723	327	1,100	[27] 347	1,068	Jan	713	
Medway Estuary	(302)	(42)	(0)	(0)	(0)	Jan	(302)	▲
Sites of national importance in Great Britain								
Severn Estuary	[43] 287	[43] 216	[43] 272	[43] 310	[43] 345	Jan	286	▼
Martin Mere/Ribble Estuary	[27] 144	[43] 163	[43] 322	[43] 296	315	Feb	248	▼
St Benet's Levels	126	209	206	147	287	Feb	195	▼
Breydon Wtr & Berney Marshes	210	132	186	85	240	Feb	171	▼
Unspecified SE England site	256	64	10	180	220	Feb	146	▼
Somerset Levels	(120)	(117)	(146)	(108)	(69)	Jan	(146)	
Sites of all-Ireland importance in Northern Ireland								
Loughs Neagh & Beg	53	16	102	19	6	Dec	39	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

01/02		02/03	
none	Dungeness Gravel Pits	[37] 221	Feb
	Walmore Common	99	Jan

Sites no longer of national importance

Arun Valley, Dee Estuary (Eng/Wal), Lough Foyle, Lower Derwent Valley, Upper Lough Erne

Internationally or nationally important sites not covered in last five years

Boghill Fields (Coleraine), Canary Road, R. Lagan: Flatfield

WHOOPER SWAN

Cygnus cygnus

	01/02	02/03
GB Max:	**6,122 Dec**	**6,018 Feb**
NI Max:	**2,260 Jan**	**3,301 Oct**
% young	**18.6-20.6**	**12.7-14.9**
Brood size	**n/a**	**n/a**

International threshold:	**210**
Great Britain threshold:	**57**
All-Ireland threshold:	**100**

	5	10	25
GB Alert:	△	○	▲

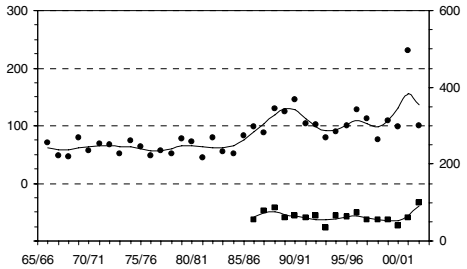


Figure 8. Annual indices for Whooper Swan in GB (circles, left axis) and NI (squares, right axis)

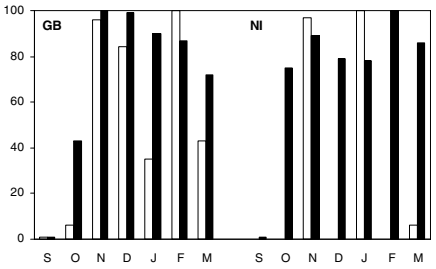


Figure 9. Monthly indices for Whooper Swan in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Numbers of Whooper Swans recorded in Great Britain rose by 13% between 2000/01 and 2001/02, then stayed at this higher level in 2002/03. Annual indices similarly show that, having been relatively stable during the early to mid 1990s, the population increased sharply between 1998/99 and 2001/02, though falling again in 2002/03. The international Icelandic Whooper Swan census in January 2000 recorded 20,856 swans, an increase in numbers of 32% since the previous census in 1995 (Cranswick *et al* 2002). The increase in 2001/02 may be partly due to the good breeding season in 2001: the proportion of young in that year was 20.6% on the Ouse Washes, 20.5% at Caerlaverock (Solway Firth) and 18.6% at Martin Mere/Ribble Estuary; breeding success was lower in 2002/03, with 12.7%, 14.9% and 13.6% respectively at these sites.

Following a record low count in Northern Ireland in 2000/01, the peak count nearly doubled the following winter and then rose a further 46% in 2002/03. The apparently declining trend since the late 1980s therefore was reversed, and the annual index for the Province in 2002/03 was the highest recorded.

The monthly indices suggest a change in the timing of the swans' use of sites in Northern Ireland in 2002/03. Usually peak numbers occur in November and February, perhaps reflecting a mid winter movement to the Republic of Ireland, but in this year they peaked in January. This coincides with an exceptionally low January index for Britain; analysis of ringing data would be needed to determine whether there was a movement from Britain to Ireland at this time.

Despite the increase in the 1% threshold for international importance (from 160 to 210 following the 2000 international census), all internationally important sites in Britain retained this status. Larger than normal numbers were recorded at each of the three main sites in both 2001/02 and 2002/03, particularly at Loughs Neagh & Beg, while a six-fold increase at Lough Foyle in 2002/03 was particularly notable. Other large counts were noted in 2001/02 or 2002/03 at Loch of Wester, Loch Eye/Cromarty Firth and the nearby Inner Moray Firth, at Loch of Lintrathen, Warkworth Lane Ponds, River Tweed, Morecambe Bay and in particular on the Nene Washes. Counts at Upper Lough Erne, Loch of Strathbeg and Loch Leven were markedly lower than expected, particularly so at the last site.

Treatment of parts of the River Clyde as different sites – the stretch at Ravenstruther now separated from that between Carstairs Junction and Thankerton – means that the latter part is of only national importance (note, both are flagged in the table as being of changed status as a consequence of this split). The definition of sites for linear habitats – particularly on rivers and non-estuarine coast – is, however, problematic compared with more obvious lakes and estuaries where sites are normally discrete, clearly separated by changes in habitat from the surrounding area. This may be further complicated on rivers, where there is interchange with nearby still waters (*eg* as

roosts) and, in the case of swans, with agricultural areas for feeding. Treatment of river sections in the tables for this and other species, particularly those for which counts are received only irregularly, should be treated with some caution.

A comprehensive review of available count data has recently documented trends and site use at the key wintering resorts for this population (Robinson *et al* 2004b). Whilst many of these sites continue to support reasonable numbers, although sporadically so at some, the most significant changes have been the growth in numbers at Caerlaverock and, in particular, at Martin Mere and the Ouse Washes, all coinciding with their acquisition and subsequent management as reserves. Notably declines have been at Lindisfarne, where counts regularly exceeded 200, occasionally considerably more, in the 1960s and 1970s to fewer than 20 in the 1990s. At Loch of Skene, numbers barely reached double figures until the late 1980s, when 100-200 Whooper Swans were recorded for five consecutive winters; the site now, again, receives virtually none.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Ouse Washes	[27] 1,623	[27] 2,120	[43] 1,797	[43] 2,894	[43] 2,743	Feb	2,235	
Martin Mere/Ribble Estuary	[43] 1,130	[43] 1,335	1,650	[43] 1,762	[43] 1,770	Jan	1,528	
Loughs Neagh & Beg	(830)	(641)	(735)	(1,532)	1,514	Feb	1,523	
Lough Foyle	642	657	434	548	3,284	Oct	1,113	
Upper Lough Erne	989	985	1,010	[37] 1,228	658	Dec	974	
Ravenstruther	-	-	347	-	-		347	▲
Solway Estuary	[43] 188	[43] 223	[43] 466	(309)	[43] 340	Dec	305	
Loch of Strathbeg	476	262	424	223	67	Jan	290	
Black Cart Water	[44] 244	[44] 187	299	[44] 238	[44] 176	Mar	229	
Sites of national importance in Great Britain								
R. Clyde: Carstairs to Thankerton	125	393	142	242	101	Nov	201	▼
Nene Washes	44	9	111	[27] 110	[27] 663	Dec	187	▲
Lower Teviot Valley	(75)	(12)	(179)	(50)	(29)	Dec	(179)	
Loch of Wester	(123)	45	86	341	-		157	
Wigtown Bay	102	134	110	156	135	Dec	127	
R. Nith: K'bank-Nunholm	100	(146)	131	125	108	Feb	122	
Loch Eye & Cromarty Firth	28	[43] 180	39	230	141	Jan	124	
Killimster Loch	102	-	-	135	-		119	▲
Loch a'Phuill	101	142	36	-	168	Nov	112	
Dornoch Firth	89	84	307	[38] 53	23	Jan	111	
Loch Insh & Spey Marshes	131	[37] 125	96	92	91	Feb	107	
Forth Estuary	(79)	(20)	(95)	(20)	(24)	Feb	(95)	▲
Loch Leven	134	144	144	0	13	Feb	87	
Loch of Lintrathen	(36)	68	96	10	166	Nov	85	
Warkworth Lane Ponds	-	[43] 113	62	25	128	Nov	82	
R.Tweed: Kelso to Coldstream	105	50	47	60	116	Mar	76	
Kinnordy Loch	(12)	17	-	116	82	Feb	72	▲
Threave Estate	-	(117)	74	21	-		71	
Milldam & Balfour Mains Pools	[37] 49	[37] 53	112	98	41	Feb	71	
Caistron Quarry	-	-	71	71	67	Feb	70	
Inner Moray Firth	74	17	1	173	60	Feb	65	▲
Lower Derwent Valley	45	81	-	-	-		63	
Morecambe Bay	55	(33)	7	(125)	(6)	Dec	62	▲
Loch of Spiggie	-	24	73	47	86	Oct	58	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	79	177	[38] 220	212	191	Jan	176	
Lower Lough Erne	-	-	-	-	135	Jan	135	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
R. Earn: Millands Marsh & Floods	84	Feb	Lindisfarne	90	Feb
Cameron Reservoir	62	Feb	Cameron Reservoir	89	Mar
Clatto Reservoir	62	Nov	Tweed Estuary	78	Nov
Tarbat Ness to Rockfield	60	Dec	Loch of Sabiston	67	Feb
Broadford Bay	(59)	Oct	Baron's Haugh	62	Mar
			St Benet's Levels	58	Feb

Sites no longer of national importance

Barons Folly, Loch Heilen, River Foyle: Grange, Tyninghame Estuary

Internationally or nationally important sites not covered in last five years

Boghill Fields (Coleraine), Bush River: Deepstown, Easterloch/Uyeasound, Islesteps, R. Lagan: Flatfield, R. Teviot: Kalemouth to Roxburgh, R. Tweed: Magdalenehall

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BEAN GOOSE

Anser fabalis

International threshold (*fabalis*): 1,000
Great Britain threshold: 4*
All-Ireland threshold: +

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**201 Dec**	**163 Nov**
NI Max:	**0**	**0**

Increasing numbers of Bean Geese at Slamannan Plateau, Stirling, saw the total in 2002/03 exceed 200 for the first time, and made this the largest flock in the UK that year. This site, and the Middle Yare Marshes, Norfolk, remain the only two to support this species regularly, both flocks comprising the *fabalis* subspecies or 'Taiga' Bean Goose (Hearn 2004a). At the Yare Marshes, numbers continued to fluctuate around 275, although the peak in 2002/03 was much lower.

Detailed monitoring of the Slamannan flock noted that the first birds arrived between late September and early October, reaching peak numbers by late October to early November (Simpson & Maciver 2003). The main spring departure was in the second half of February. Fannyside Lochs were again the preferred roost site in both years, although other sites are occasionally used, *eg* 312 at Loch Ellrig in 1998/99. In 2002/03, a minimum of approximately 10% of the flock were identified as first-winter birds. Although no standardised productivity data exist to enable comparison between years, this suggests that this flock experienced a good breeding season during 2002, which is supported by the relatively large increase in numbers noted the following winter.

The only other site to hold Bean Geese in each of the last five years was the Ouse Washes, where a small flock of *rossicus* or 'Tundra' Bean Geese occurs. All other sites are used only irregularly, and the majority of birds there are also likely to be of the Tundra race, which, away from the two main sites, is by far the most commonly encountered subspecies (Hearn 2004a).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Middle Yare Marshes	[29] 296	[29] 227	276	[29] 272	[29] 183	Jan	251	
Slamannan Plateau	[4] 168	[4] 188	187	[4] 192	[4] 231	Oct	193	
Lower Derwent Valley	42	7	-	-	-		25	
Alde Complex	15	-	-	-	-		15	▲
North Warren & Thorpness Mere	-	[37] 10	-	-	-		10	
Medway Estuary	(0)	(7)	-	-	-		(7)	▲
Fleet/Wey	0	0	0	26	6	Feb	6	▲
Ouse Washes	[37] 7	[37] 9	[27] 4	[37] 4	[37] 8	Jan	6	
Cuckmere Estuary	-	-	-	-	4	Feb	4	▲
Abberton Reservoir	0	0	0	22	0	Nov	4	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Severn Estuary	6	Feb	Dungeness Gravel Pits	7	Jan
			Thames Estuary	(6)	Mar

Sites no longer of national importance
Holland Marshes, Humber Estuary

PINK-FOOTED GOOSE

Anser brachyrhynchus

International threshold:	**2,400**
Great Britain threshold:	**2,400**
All-Ireland threshold:	**+**

	01/02	02/03
GB Max:	**265,817 Oct**	**210,923 Nov**
NI Max:	**3 Oct**	**7 Oct**
% young	**17.1**	**21.0**
Brood size	**2.4**	**2.3**

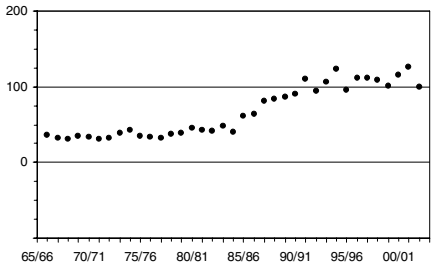


Figure 10. Annual indices for Pink-footed Goose in GB

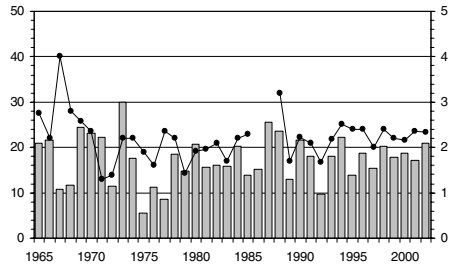


Figure 11. Productivity in Pink-footed Geese, 1965-2002; proportion of young (grey bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

Surveys of Pink-footed Geese are best made shortly after their arrival in Britain, when their concentration at relatively few roosts enables more or less complete of the whole population. The 42nd and 43rd annual censuses of Icelandic-breeding geese took place in October and November 2001 and 2002 (Hearn 2003, 2004). There was a marked fall between these censuses, but it is likely that the latter underestimated total population size. Reports were received of at least 3,500-4,000 Pink-footed Geese in Iceland at the time of the co-ordinated count – likely to be a minimum estimate, since comprehensive counts were not carried out (A Sigfússon pers comm) – indicating a late arrival from the Icelandic and Greenlandic breeding grounds and after the census. Using estimates for sites missed during the census, adjusted totals of 270,921 and 229,824 were derived for the population in 2001 and 2002 respectively (Hearn 2003, 2004c)

The suggestion of an undercount in 2002/03 is also supported both by good reproductive success in 2002, and by below average hunting mortality in Iceland (11,406 were shot, compared with a mean of 13,117 since 1995; Icelandic Wildlife Management Institute). It should be noted, however, that the number of harvested birds reported from Iceland in 2002 may be less reliable than in previous years due to problems of compliance by hunters as a result of their unhappiness with a temporary ban on Ptarmigan hunting. Nevertheless, these factors still strongly suggest that a large decrease in abundance during 2002/03 was unlikely.

Despite the census problems in 2002, recent analyses have confirmed that monitoring methodologies for this population of Pink-footed Geese are effective (Frederiksen *et al* 2004). Modelling showed no significant discrepancies between autumn counts and estimates of productivity, survival rates and the size of the hunting bag in Iceland, indicating that there is no particular bias in the data collected for the autumn census. Nevertheless, given the increased likelihood of later migration in recent years, greater co-ordination between the UK and Iceland will become increasingly important to ensure the accuracy of the population estimates (Frederiksen 2001).

A population model was developed using the counts and demographic data to predict the likely trend of the population over the next 25 years (Trinder *et al* 2005a). Under current conditions, it is expected that the population will reach equilibrium at around 220,000, with only a very small chance that the numbers will fall below 50,000 in the next 25 years. The current level of harvest – estimated at around 25,000 per year in Scotland (Frederiksen 2002, Hart & Harradine 2003) and 13,000 in Iceland – is thought to be sustainable.

A major review of winter count data between 1960 and 2000 (Mitchell & Hearn 2004) demonstrated the increasing importance of Norfolk for Pink-footed Geese, particularly the north coast, with rapid increases in numbers using this area since the late 1980s and early 1990s. The three major roosts along the North Norfolk Coast now feature in the top five sites of international importance, with the most notable of these at Scolt Head. The count there of 62,500 in November 2002 is the largest of Pink-footed Geese at a single site in the UK, and over 90,000 were present in Norfolk at that time. Notably large counts were also made in 2002/03 at West Water – the highest for some time at a site that regularly held 40,000 in the early 1990s, and particularly notable given the low census total in 2002 – at Loch Eye/Cromarty Firth; in 2001/02 at Loch of Strathbeg, Holkham Bay, Tay Estuary, Cameron Reservoir, the River Clyde and Findhorn Bay; and at Morecambe Bay in both winters. Roost counts at Hule Moss continued to fall.

Trends at sites within central and southern Scotland vary considerably. Key roosts such as Dupplin Lochs and Carsebreck & Rhynd Lochs have shown a decrease in numbers in recent years, whilst other sites, such as Aberlady Bay, are being used by increasing numbers. Further north, rapid changes have continued at several key roosts, where the predominant species has switched from Greylag Goose to Pink-footed Goose in just a few years. This has been particularly prevalent at Loch Spynie and Loch of Skene. Whether these changes are related and, if so, whether this is due to Greylags moving north and leaving an opportunity for Pink-footed Geese to fill, or Pink-footed Geese taking over these roosts and causing Greylags to move elsewhere, is unknown.

The threat from a proposed dam development on the edge of Þjórsárver, the most important location in Iceland for breeding Pink-footed Geese, has dissipated for the time being, but another at Kárahnjúkar, in the southeast of Iceland, is already under construction. This development threatens some 2,200 breeding pairs, around 5% of the population (as well as other conservation features of the site), and is going ahead despite considerable local and international opposition. Analysis suggests that the loss of breeding habitat will reduce the equilibrium level of the population but is not predicted to lead to a significant risk of the total population falling below 50,000 birds, but the combined effects of further developments would require this prediction to be re-assessed (Trinder *et al* 2005a).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Scolt Head	[46] 28,510	[27] 35,180	[46] 41,000	[46] 33,900	[46] 62,500	Nov	40,218	
Loch of Strathbeg	(37,078)	31,031	[46] 42,615	[46] 46,898	39,900	Oct	40,111	
Holkham Bay	[46] 34,100	[46] 31,190	[46] 33,750	[46] 45,000	[46] 33,800	Jan	35,568	
SW Lancashire	[46] 36,260	[46] 29,955	[46] 16,885	[46] 33,180	[46] 31,645	Nov	29,585	
Snettisham	[46] 35,555	[46] 19,450	[46] 18,250	[46] 35,000	[46] 37,050	Dec	29,061	
West Water Reservoir	[46] 21,670	[46] 28,000	[46] 26,500	[46] 23,270	[46] (40,000)	Oct	27,888	
Montrose Basin	[46] 33,012	[46] 18,480	[27] 29,922	[46] 38,669	[46] 11,500	Oct	26,317	
Dupplin Lochs	[46] 42,500	[46] 22,800	[46] 15,530	[46] 17,500	[46] 9,500	Oct	21,566	
Ythan Estuary/Slains Lochs	[46] 16,400	[27] 15,500	[46] 23,500	[46] 13,900	[46] 19,600	Oct	17,780	
Carsebreck & Rhynd Lochs	[46] 18,500	[46] 15,400	[46] 16,500	[46] 14,500	[46] 10,320	Apr	15,044	
Aberlady Bay	[46] 13,260	[46] 4,840	[46] 16,750	[46] 13,740	[46] 22,200	Oct	14,158	
Loch Leven	[46] 14,100	[46] 11,540	[46] 14,700	[46] 16,200	[46] (12,874)	Oct	14,135	
Hule Moss	11,253	[37] (19,100)	[46] 14,700	[46] 8,600	[37] 5,850	Oct	11,901	
Morecambe Bay	(189)	2,347	7,143	[46] 14,100	[46] 14,600	Jan	9,548	
Loch of Skene	[46] 1,500	[46] (60)	[27] 13,550	[46] 13,175	[46] (8,420)	Nov	9,408	
Loch Spynie	[46] (2,000)	[46] 1,000	[46] 8,000	[46] 9,100	[46] 11,700	Nov	7,450	
Tay Estuary	[46] 5,355	[46] 4,630	[46] 8,930	[46] 11,385	[46] 2,700	Oct	6,600	
Cameron Reservoir	[46] 4,104	[46] 3,168	5,000	15,823	3,000	Nov	6,219	
Breydon Wtr & Berney Marshes	5,500	6,600	[46] 5,500	4,380	7,100	Feb	5,816	
Loch of Lintrathen	[46] 3,350	[46] 10,400	[46] 2,220	[46] 5,920	[46] (6,440)	Nov	5,666	
Loch Eye & Cromarty Firth	[46] 295	[37] 12,000	[46] 126	[46] 367	[46] 14,050	Nov	5,368	
Thornham	-	[46] 5,180	-	-	-		5,180	▲
R. Clyde: Carstairs to Thankerton	948	5,650	4,850	11,000	3,350	Feb	5,160	
Fala Flow	[46] 2,100	[46] 7,550	[46] 4,910	[46] 7,500	[46] 2,790	Oct	4,970	
Solway Estuary	[46] 3,710	[46] 6,434	[46] 2,541	(5,550)	(4,075)	Mar	4,559	
Lindisfarne	[46] 4,100	[27] 1,500	5,881	[46] 6,450	3,679	Oct	4,322	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK (continued)								
Wigtown Bay	[46] 5,029	6,459	50	[46] 5,316	(4,747)	Mar	4,320	
Findhorn Bay	[46] 203	[46] 750	[46] 5,500	[46] 14,000	200	Dec	4,131	▲
Strathearn (west sites)	-	-	-	-	[46] 4,100	Nov	4,100	
Fort George to Nairn	3,600	-	-	-	-		3,600	▲
Horsey Mere	(100)	1,027	[46] 3,620	[46] (5,000)	[46] 4,000	Feb	3,412	
Holbeach St Matthew	[46] 1,620	[46] (1,700)	[46] (5,000)	-	-		3,310	▲
Humber Estuary	[46] 1,530	[27] 2,410	[46] (2,700)	[46] 4,300	[46] 4,620	Nov	3,215	▲
Loch Long	[46] 7,200	[46] 5,417	[46] (2,450)	0	[46] 0	Oct	3,154	
Tarbat Ness	-	[37] (3,000)	-	-	-		(3,000)	▲
Tay-Isla Valley	[46] 4,000	[46] 2,700	[46] (2,000)	[46] 2,133	[46] 2,497	Oct	2,833	
Holburn Moss	[46] 4,350	[46] 2,000	[46] (1,500)	20	[37] 4,250	Oct	2,655	
Skinflats	[46] 2,245	[46] 2,030	[46] 2,750	[46] 3,800	[46] 1,900	Oct	2,545	▲
Gladhouse Reservoir	[46] 1,300	[46] 6,000	[46] 1,520	3,200	700	Apr	2,544	
Loch Mullion	[46] 2,000	[46] 5,500	[46] (660)	[46] 900	[46] 1,600	Oct	2,500	
Loch Tullybelton	[46] 8,100	[46] 0	[46] 4,050	[46] 0	[46] 0	Oct	2,430	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Wells-Next-The-Sea	[46] 45,000	Dec	Lake of Menteith	[46] 4,515	Oct
Heigham Holmes	[46] 2,500	Feb	Holme	4,050	Dec
Lentran	2,500	Dec	Terrington (Norfolk)	4,023	Nov
			Ouse	3,200	Nov

Sites no longer of international importance
Drummond Pond, Heigham Holmes, Loch Mahaick, Upper Cowgill Reservoir

Internationally or nationally important sites not covered in last five years
Carse of Stirling, Forth & Teith Valleys

EUROPEAN WHITE-FRONTED GOOSE

Anser albifrons albifrons

International threshold: 10,000
Great Britain threshold: 58
All-Ireland threshold: +

	01/02	02/03
GB Max:	**2,901 Feb**	**2,260 Jan**
NI Max:	**0**	**0**
% young	**31.4**	**19.3**
Brood size	**2.6**	**2.4**

	5	10	25
GB Alert:	▽	▼	▼

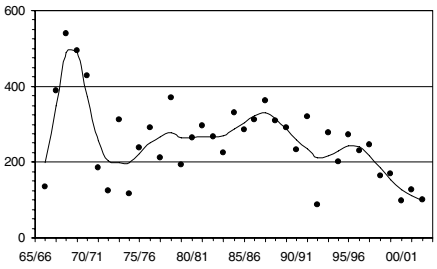


Figure 12. Annual indices for European White-fronted Goose in GB

Although index values for 2001/02 and 2002/03 were not the lowest on record, the number of 'European' White-fronts – the Baltic-North Sea population of Greater White-fronted Geese – wintering in Britain continued to decline. The underlying trend reached its lowest point since monitoring began, and triggered a medium alert over the last five years and high alerts for Britain over both 10- and 25-year periods. At a flyway scale, however, the population continues to increase, with some estimates suggesting that the Baltic-North Sea flyway now comprises as many as 1,000,000 birds (Gilissen *et al* 2002) and declines in this country are considered to be a consequence of birds 'short-stopping' in the Netherlands and Germany.

The proportion of first-winter birds in the wintering population, as assessed at the Severn Estuary, was extremely high during 2001/02, half as high again as the mean of 19.9% during 1998-2002, whilst brood size was more typical (mean of 2.6 during 1998-2002). This high breeding success is in contrast to other wintering goose and swan populations that breed in northern Russia: Bewick's Swans experienced a typical level of breeding success, whereas Dark-bellied Brent Geese had another below average year. It also contrasts with reports from Arctic recording stations within the

breeding range, which generally recorded low or moderate rodent abundance and correspondingly poor to moderate levels of productivity in waterbirds (Soloviev & Tomkovich 2005). That data from the Severn Estuary are unrepresentative of productivity for the population as a whole suggests that the site may have supported a disproportionate number of successful breeders. In 2002, Arctic recording stations reported an overall picture of higher productivity than in 2001 (Soloviev & Tomkovich 2005). This was not borne out by data collected at the Severn Estuary, where the proportion of first-winter birds was around average and considerably lower than in the previous year.

A comprehensive review of the status of the Baltic/North Sea population of White-fronted Geese in Britain since 1960 (Hearn 2004b) showed that differing trends between well-established and more recently occupied wintering sites have been generally observed across most sites in Britain, particularly those in western England and Wales where greater declines have occurred than in eastern England, to the extent that the Severn Estuary is now the sole remaining site in the west. Of sites in eastern England with increasing numbers, this trend began at most in the late 1980s and early 1990s, although at Holkham, on the north Norfolk coast, there has been a long-term increase since the mid 1960s. Thus, despite the withdrawal from almost all of the sites that were important for European White-fronted Geese during their zenith in the late 1960s and early 1970s, it appears that the establishment of regular wintering at other sites may go a long way to ensuring that they maintain a presence in Britain.

These patterns are reflected in the table below. Although the Severn Estuary remains by far the most important site, numbers there continued to decline, dropping below 1,000 for the second time in three winters. After several years with low numbers in the other long-established key area for this population, north Kent, there were notably higher numbers in 2002/03 at both the Swale Estuary and Thames Estuary. Although numbers have remained high or increased slightly at Dungeness to the south, it is not known if these two sites are linked – very few European White-fronted Geese have been ringed in Britain and the handful of sightings in England of individuals ringed in The Netherlands in recent years are too few to advance our understanding of exchange between wintering sites in Britain.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of national importance in Great Britain							
Severn Estuary	1,840	1,931	996	[37] 1,250	[38] 990	Jan	1,401
Heigham Holmes	740	415	-	-	-		578
Swale Estuary	(973)	455	432	360	655	Feb	575
North Warren & Thorpness Mere	[37] 500	[37] 350	-	250	[37] 310	Jan	353
Dungeness Gravel Pits	320	[37] 340	[37] 234	355	460	Jan	342
North Norfolk Coast	383	343	240	380	347	Feb	339
Unspecified SE England site	198	230	26	450	300	Feb	241
Alde Complex	230	323	0	[38] 5	385	Feb	189
Middle Yare Marshes	(84)	155	298	74	89	Dec	154
Minsmere	196	-	[37] 200	120	1	Jan	129
Breydon Wtr & Berney Marshes	91	51	112	110	181	Feb	109
Thames Estuary	(76)	(7)	(18)	(41)	(89)	Mar	(89)

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
Holkham & Burnham Overy	380	Feb	none
Lower Windrush Valley GPs	71	Jan	
Chichester Harbour	58	Dec	

Sites no longer of national importance

Lower Derwent Valley

Internationally or nationally important sites not covered in last five years

Kessingland Levels

GREENLAND WHITE-FRONTED GOOSE

Anser albifrons flavirostris

	01/02		02/03	
GB Max:	**18,600**	**Nov**	**19,577**	**Nov**
NI Max:	**26**	**Feb**	**88**	**Oct**
% young	**7.9**		**9.9**	
Brood size	**3.1**		**3.2**	

International threshold:	**300**
Great Britain threshold:	**209**
All-Ireland threshold:	**140**

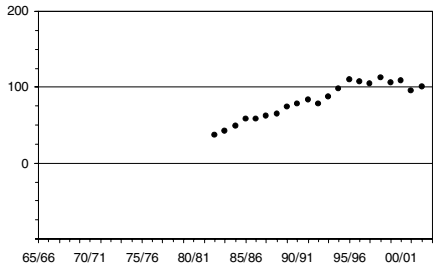


Figure 13. Annual indices for Greenland White-fronted Goose in GB

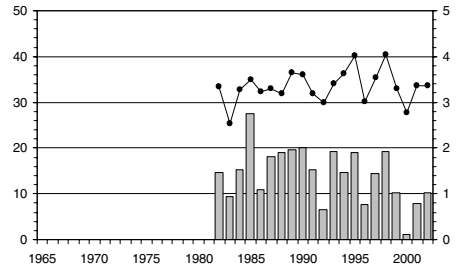


Figure 14. Productivity in Greenland White-fronted Geese, 1965–2002; proportion of young (grey bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

Greenland White-fronted Geese are found on the Celtic fringes of Britain and Ireland and, consequently, are poorly covered by WeBS. Specific surveys are organised by the Greenland White-fronted Goose Study, and the 20th and 21st consecutive biannual censuses took place in autumn and spring 2001/02 and 2002/03 (Fox & Francis 2003, 2004). Counts from the entire British and Irish wintering range are not yet available for spring 2003 meaning that, with the incomplete census in 2001 due to the outbreak of Foot and Mouth Disease, an estimate of total population size has only been possible in one of the past three years.

The census in spring 2002 suggested a substantial decrease in abundance, from the high of 35,573 in 1999 to just 26,412. This follows a run of poor breeding success since 1999 (Fox 2003), during which period hunting mortality in Iceland has remained roughly constant (at around 3,200, with the highest bag on record – 3,700 – in 2001) and is thus responsible for an increasingly greater proportion of the population being harvested. A complete census is urgently required so that a better assessment of this population's conservation status can be made.

This apparent population decline is not reflected in the index for Britain, however, since the greatest decrease has been observed at Wexford Slobs, the second most important wintering site after Islay. Numbers on Islay and most other key resorts in Britain have generally been stable over the past five years, although decreases have been recorded on both Coll and Tiree, as well as at Stranraer Lochs. A large increase has occurred in Caithness in the past two years, and numbers were also high at Loch Lomond during 2002/03. Numbers at the most southerly wintering site in Britain, the Dyfi Estuary, also reached the threshold for national importance for the first time since 1998/99.

To investigate likely future trends in this population, census data were used to derive a model to predict the likelihood of 'quasi-extinction' (*ie* that the population might fall below a certain number) (Trinder *et al* 2005b). The population is predicted to reach equilibrium at around 20,000 birds, with a small risk of decline below 10,000 in 25 years. The recent decline in numbers resulted from fewer birds breeding, rather than less successful breeding or a reduction in adult survival (Fox 2003). Population size is particularly sensitive to changes in adult survival, and the model suggested that the loss of just 800 more adults per year (around 3,000 Greenland White-fronted Geese have been shot annually in Iceland since 1995) would cause a 50% likelihood of decline to below 10,000 in the next 25 years (Trinder *et al* 2005b). Expansion in numbers and range of Canada Geese breeding in west Greenland may severely limit Greenland White-fronted Goose breeding and lead to a high risk of substantial decline (Kristiansen 2001). Consequently, assessment of the status and growth of Canada Geese in Greenland is recommended as a priority.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Islay	[32] 13,560	[15] 14,474	[15] 13,281	[35] 12,261	[15] 12,253	Dec	13,166	
Rhunahaorine	[15] 1,532	[15] 1,585	[15] 1,551	[15] 1,594	[15] 1,450	Nov	1,542	
Machrihanish	[15] 1,579	[15] 1,322	[15] 1,386	[15] 1,448	[15] 1,501	Mar	1,447	
Tiree	[15] 1,444	[15] 1,347	[15] 1,221	[15] 1,076	[15] 1,093	Dec	1,236	
Coll	[15] 1,122	[15] 1,014	[15] 721	[15] 705	[15] 611	Mar	835	
Stranraer Lochs	[15] 1,000	[15] 440	[15] 550	[15] 500	[15] 365	Feb	571	
Caithness Lochs	[15] 230	[15] 280	[15] 232	[15] 950	[15] 758	Nov	490	▲
Keills Peninsula & Isle of Danna	[15] 425	[15] 290	[15] 443	[15] 403	[15] 411	Mar	394	
Eriska/Benderloch/Lismore	[15] 270	[15] 227	[15] 377	[15] 452	[15] 443	Mar	354	
Loch Ken	[15] 357	[15] 330	[15] 325	[15] 326	[15] 275	Mar	323	
Loch Lomond	[15] 306	(200)	[15] 200	[15] 294	[15] 450	Dec	313	▲
Sites of national importance in Great Britain								
Loch Heilen/Loch of Mey	[15] 215	[15] 280	[15] 232	[15] 260	[15] 208	Feb	239	
Clachan/Whitehouse	[15] 196	[15] 232	[15] 366	[15] 100	[15] 250	Mar	229	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03		
none		Dyfi Estuary	[38] 212	Feb	

Sites no longer of national importance

Bute, Colonsay/Oronsay, Orkney, Westfield Marshes

GREYLAG GOOSE

Anser anser

ICELANDIC POPULATION

International threshold:	**1,000**
Great Britain threshold:	**819**
All-Ireland threshold:	**40***

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**88,009 Nov**	**62,145 Nov**
NI Max:	**0**	**0**
% young	**20.0**	**15.9**
Brood size	**2.8**	**2.8**

Icelandic Greylag Geese are traditionally surveyed by comprehensive coverage of key roost sites shortly after their arrival in Britain. The 42nd and 43rd annual censuses of Icelandic-breeding Geese in October and November 2001 and 2002 recorded a maximum of 88,009 Greylag Geese in 2001, the highest number since the early 1990s, but numbers fell to just 62,145 the following year (Hearn 2003, 2004c). As with Pink-footed Geese, however, the count in 2002 underestimated the total population size owing to a late arrival from the breeding grounds. Productivity in 2002 was slightly below average, and whilst hunting mortality of 30,471 birds in Iceland remained high in absolute terms, it was again lower than the annual mean of 35,720 since 1995 (Icelandic Wildlife Management Institute), supporting the assertion that a large decrease in abundance was unlikely to have taken place. Allowing for sites missed during the census, and for birds from other Greylag populations, totals of 89,628 and 73,115 were estimated for the Icelandic population in the autumns of 2001 and 2002 respectively (Hearn 2003, 2004c).

Later autumn migration by Icelandic Greylag Geese is becoming increasingly prevalent. October counts in Britain in recent years have recorded a decreasing proportion of the November total, and anecdotal information from Iceland suggests that large numbers now regularly remain there until well into November, with some present into December and possibly over-wintering (A. Sigfússon & G. Guðmundsson pers comm). The effects of these problems on current monitoring protocols were clarified by Frederiksen *et al* (2004) who showed that autumn count data and estimates of the size of the hunting bag in Iceland were incompatible. Furthermore, there were also discrepancies between the estimates of productivity, survival rates and population trend – with the implication that the autumn census misses a proportion of the population.

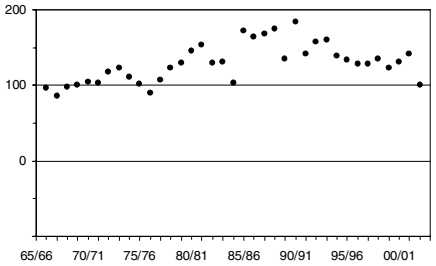


Figure 15. Annual indices for Icelandic Greylag Goose in GB

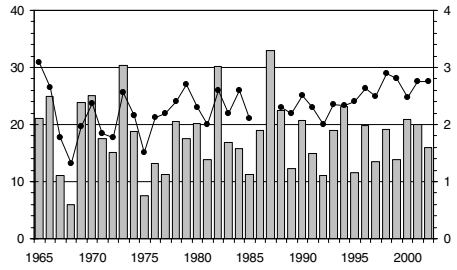


Figure 16. Productivity in Icelandic Greylag Geese, 1965–2002; proportion of young (grey bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

Another significant factor causing problems for the accurate monitoring of the size of this population is the overlap in the wintering areas with Greylag Geese from other populations (*ie* NW Scotland and Re-established birds). This is a significant issue on Orkney, where locally-breeding birds make up 10% or more of the total count.

A comprehensive review of site use by this population (Hearn & Mitchell 2004) shows an overall shift northwards in range over the past 30 years, first with a movement away from east central Scotland into northeast Scotland, and more recently away from northeast to north Scotland. This shift is continuing and evident in the table below, particularly the increasing importance of the Orkney Islands for Icelandic Greylag Geese which now support around one third of the population during autumn. Within Orkney, the majority is found in west Mainland, although large numbers also occur in east Mainland, and on Shapinsay, Egilsay and Stronsay. As a consequence of the redistribution northwards, numbers continue to decline at important haunts in northeast Scotland, notably Dinnet Lochs and Loch of Skene. Further south, around Perth, similar trends have been observed at Loch of Lintrathen and Drummond Loch. In contrast, however, numbers at Kilconquhar Loch, Fife, have risen steadily over the past five years, suggesting that the redistribution northwards is not completely uniform across the range. A low count was recorded in Caithness during 2002/03, an area where numbers might have been expected to increase, although it remains to be seen whether this trend continues or numbers recover.

Given continuing concerns over this population, a viability analysis was undertaken to assess the likelihood of population decline under different conditions (Trinder *et al* 2005c). The difficulties of obtaining accurate demographic and census data – for example, the number shot in Scotland annually has been variously estimated at 15,000 (Hart & Harradine 2003) and 20,000-25,000 (Frederiksen 2002) – meant that several population models were investigated. The more pessimistic of these suggests that under current conditions, the population will decline by 3.5% per annum with 50% chance that it will fall below 25,000 in the next 25 years. Levels of shooting in the UK and Iceland are considered to be unsustainable, and Trinder *et al* (2005c) recommend that the number shot is reduced by a minimum of 2,100 and ideally 6,100 a year to maintain the current population size. They also strongly recommend that the proposals from a recent workshop in Iceland for improved monitoring of numbers, demography and bag size in this population (Frederiksen 2001) are implemented. As with Pink-footed Geese (*qv*), there are also worries over the effects of hydro development in the breeding grounds.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in the UK							
Orkney	[46] 18,110	[46] 20,475	[46] 15,914	[46] 23,065	[46] 26,505	Nov	20,814
Caithness Lochs	[46] (12,731)	[46] 10,017	[46] 8,326	7,854	[46] 2,792	Nov	8,467
Loch of Skene	[46] 9,890	[46] 6,110	[46] 9,660	[46] 2,100	[46] (1,021)	Nov	6,940
Loch Eye & Cromarty Firth	[46] 9,181	[46] 5,674	6,192	[46] 5,680	[46] 7,028	Nov	6,751
Dinnet Lochs	[46] 4,400	[27] (10,000)	[46] 4,560	[46] 5,277	[46] 2,700	Nov	5,387
Loch Spynie	[46] (6,500)	[37] 3,000	[46] 5,500	[46] 5,300	[46] 3,200	Nov	4,700
Dornoch Firth	2,352	[46] 3,351	3,339	[46] 2,386	2,916	Dec	2,869
Munlochy Bay	3,702	[46] 1,050	1,810	[46] 3,500	[46] 3,130	Nov	2,639

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK (continued)								
Tay/Isla Valley	[46] 4,640	[46] 2,075	[46] 2,490	[46] 2,092	1,700	Mar	2,599	
Lower Teviot Valley	(2,800)	509	[37] 3,500	(598)	(1,800)	Nov	2,270	
Loch Fleet Complex	[46] 2,970	[46] 980	[46] 1,700	[46] 4,210	[46] 817	Sep	2,135	
Loch Garten	-	[46] 1,650	[46] 2,700	[46] 2,800	[46] 1,000	Nov	2,038	
Tay Estuary	(4,350)	[46] 2,221	[46] 1,116	[46] 1,950	[37] 81	Feb	1,944	
R. Eden: Warcop to Little Salkeld	-	-	1,900	-	-		1,900	
Beauly Firth	1,500	740	[46] 2,980	2,200	[46] 2,010	Nov	1,886	▲
Loch of Lintrathen	[46] 2,750	[46] 1,440	[46] (905)	[46] 1,330	[46] (400)	Nov	1,840	
R. Earn: Lawhill Oxbows	-	-	2,316	1,138	-		1,727	
Bute	[46] 1,055	[37] 1,780	[46] 1,530	[46] 2,300	[46] 1,380	Nov	1,609	
Findhorn Bay	[46] 1,760	[46] 2,600	[46] 620	[46] 1,950	700	Dec	1,526	
Threipmuir & Harlaw Reservoirs	219	5,000	1,390	[46] 530	[46] 350	Sep	1,498	
R. Eamont & Eden: H'pot to E'hall	1,344	1,300	(920)	-	(1,400)	Jan	1,348	
Haddo House Lakes	[46] 3,000	[46] 670	[46] 1,100	980	975	Jan	1,345	
Stranraer Lochs	[46] 2,717	[46] 176	[46] 750	-	-		1,214	
Loch Ken	[46] 871	(1,742)	971	1,368	1,106	Dec	1,212	
Kilconquhar Loch	797	[46] 844	1,096	[46] 1,380	1,552	Jan	1,134	
Drummond Pond	[46] 2,350	[46] 1,900	[46] 1,075	[46] 212	[46] 98	Nov	1,127	
Gadloch	[46] 1,162	[46] 902	[46] 1,550	685	994	Feb	1,059	▲
Strathearn (west sites)	-	-	-	-	[46] 1,050	Nov	1,050	▲
Sites of national importance in Great Britain								
Upper Tay	[46] 1,227	[46] 376	[46] 1,189	[46] 1,022	[46] 943	Nov	951	▼
East Chevington Pools	-	-	598	700	1,500	Feb	933	▲
Cochrage Loch	-	-	-	[46] 850	-		850	▲
Carsebreck & Rhynd Lochs	[46] 460	[46] 1,060	[46] 1,160	[46] 953	[46] 610	Nov	849	▲
Lindisfarne	[46] 600	[46] 500	[46] 1,050	1,060	1,000	Feb	842	▲
Loch of Strathbeg	637	[46] 325	993	[46] 1,744	[46] 415	Nov	823	▲
Ythan Estuary/ Slains Lochs	(146)	(2,880)	[46] 94	[46] 155	[46] 156	Nov	821	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Tarbat Ness to Rockfield	2,000	Dec	Loch Lomond	1,513	Dec
North Beauly Firth	1,500	Dec	Whitrig Standing Water	[46] 1,000	Nov
Rossie Bog	1,250	Dec	Caistron Quarry	1,000	Feb
R. Earn: Millands Marsh & Floods	1,114	Feb	Tyninghame Estuary	830	Mar
Caistron Quarry	1,100	Mar			
Shetland Isles	1,083	Nov			
Barons Folly	[46] 1,050	Nov			
Loch Leven	1,000	Oct			
South Mainland	943	Nov			

Sites no longer of national importance

Kilimster Loch

Internationally or nationally important sites not covered in last five years

Birgham Haugh, Fincastle Loch, Loch of the Clans, R. Earmont: Watersmeet to Pooley Bridge, R. Spey: Boat of Balliefirth, R. Tay: Dunkeld

NORTHWEST SCOTTISH POPULATION

International threshold: 90
Great Britain threshold: 96

	01/02	02/03
GB Max:	**4,651 Aug**	**4,844 Aug**
% young	**43.4**	**17.7**
Brood size	**3.0**	**2.7**

The peak counts for this population by WeBS in 2001/02 and 2002/03 were markedly lower than in recent years. Following reasonable breeding success, however, these differences will reflect variation in numbers and distribution of WeBS counters and counting effort, rather than in

numbers of geese, given the distribution of this population; numbers were more or less stable at most of the five key sites where annual counts are conducted. There was a notable decrease on Tiree, but stable numbers on nearby Coll did not show any indication that birds from Tiree had shifted between these islands. On North and South Uist, however, some degree of movement is suggested by the most recent counts, where combined numbers remained similar to those in 2000/01 although the proportion on North Uist fell. Elsewhere, counts are patchy and it is hard to draw conclusions on the trends at individual sites.

The estimates of productivity were obtained from Tiree and Coll and suggest that the number of goslings produced was very high in 2001/02, and much lower in 2002/03. These data were, however, collected in different months – August and September, respectively – and the much lower figure in 2002/03 will, in very large part, be explained by the much higher mortality of young birds during the early hunting season. Caution is also urged since these data were collected only on Tiree and Coll, and may not therefore be representative of the population overall.

The only assessment of breeding status of this population is from a comprehensive survey in 1997, which recorded a minimum of 9618 birds (Mitchell *et al* 2000). The next survey is scheduled for 2007.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Tiree	[2] 3,137	[35] 3,109	[29] 3,535	[35] 2,040	[35] 2,154	Mar	2,795	
North Uist	[26] 1,318	[26] 1,808	[26] 2,877	[26] 2,076	[26] 2,261	Aug	2,068	
South Uist	[26] 1,336	[26] 1,362	[26] 1,862	[26] 2,303	[26] 2,095	Aug	1,792	
Coll	[35] 912	[35] 587	[35] 679	-	[35] 675	Mar	713	
Benbecula	[26] 567	[26] 374	[26] 431	[26] 376	[26] 488	Aug	447	
Melbost Sands & Tong Saltings	(40)	64	(394)	197	-		218	
Loch Broom	-	-	(197)	-	-		(197)	
Branahuie Saltings	(35)	-	-	101	-		101	▲
Clachan/Whitehouse	-	-	-	[35] 0	[35] 184	Mar	92	
Loch Urrahag	130	40	167	27	-		91	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03	
none	Tayinloan		[35]175	Dec

Sites no longer of international importance

Colonsay/Oronsay, Islay, Loch Kishorn, Loch Ordais & Port Mhor Bragar, Loch Sheil: West, Rhunahaorine.
Note, Machrihanish and Moine Mhor were listed erroneously in this table in the previous report. Birds at these sites are considered to be from the Iceland population. Numbers at these sites are below the threshold for the Icelandic population, and therefore these sites no longer feature in any table for Greylag Goose.

RE-ESTABLISHED POPULATION

Naturalised re-establishment[†]

	01/02	02/03
GB Max:	**22,982 Sep**	**24,378 Sep**
NI Max:	**2,354 Feb**	**2,888 Mar**

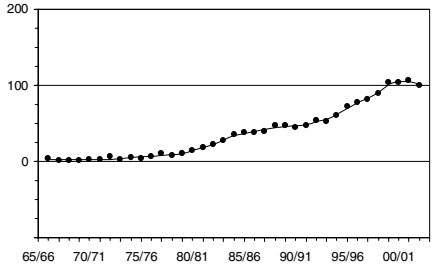


Figure 17. Annual indices for Naturalised Greylag Geese in GB

After sustained for over 30 years, index values suggest that numbers of the Re-established Greylag Goose population have now stabilised. Recent estimates, based on an analysis of WeBS data, put the total wintering in Britain at some 28,500 (Kershaw & Cranswick 2003). A survey of 246 tetrads, stratified according to different habitat types, suggested that the population in Britain during summer 1999 numbered at least 30,000 birds (Rehfisch *et al* 2002), while a site-based survey in late summer 2000 counted 25,640 Greylags (Rowell *et al* 2004), although this will have included a small number of Northwest Scotland birds also.

Numbers at many key sites show large variation between years, though few show a clear trend over the past five years. It seems likely that, with the plethora of suitable sites available, birds frequent a number of sites within a wider area, accounting for the variation. This is illustrated by sites in Norfolk and Suffolk: at the North Norfolk Coast, numbers returned to a more typical level after the peak in 2000/01; a much lower than normal count was made at Holkam Lake; while large counts in at least one of the last two winters were made on the Wash, at Breydon Water & Berney Marshes, Benacre Broad and Livermere. Numbers at Abberton showed extreme variation in 2001/02 and 2002/03, and high counts were also made at Nosterfield, Kirby-on-Bain, Langtoft West End, Little Paxton and Marsham Gravel Pits, on the South Lancashire Mosses, Humber Estuary and Morecambe Bay in one or other of those winters. Especially large numbers have occurred at Traeth Lafan in recent winters, a site which did not previously feature in the table.

Little is known, however, about the movements of Re-established Greylag Geese, and therefore the true influence of local movements on individual site trends is difficult to determine. A notable result from recent ringing, however, was of breeding birds ringed in the Forest of Dean, Gloucestershire, sighted in a moult flock at Hogganfield Loch, Glasgow, and of birds then ringed at Hogganfield subsequently sighted at WWT Slimbridge, Gloucestershire (WWT data), reminiscent of the moult migration of Canada Geese from many parts of Britain, especially Yorkshire and the West Midlands, to the Beauly Firth, Moray in late summer (*Migration Atlas*).

Large numbers at Loughs Neagh & Beg point to a continuing increase at that site, and high counts were also made at Lough Foyle. The March peaks at both of these sites are the only spring peaks in the list of sites; birds from the Icelandic population are known to be present at these sites, and the peaks perhaps indicate pre-migration staging here before the return to Iceland.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 300 or more birds in Great Britain†								
North Norfolk Coast	1,892	1,837	3,431	1,850	1,657	Nov	2,133	
Nosterfield Gravel Pits	682	993	678	1,084	1,746	Nov	1,037	
Sutton & Lound Gravel Pit	-	800	-	1,057	1,176	Aug	1,011	
Tophill Low Reservoirs	990	850	1,126	1,183	828	Jan	995	
Lower Derwent Valley	1,200	763	-	-	-		982	
Humber Estuary	(419)	(553)	(590)	648	1,058	Oct	851	
Bolton-on-Swale Gravel Pits	508	880	1,110	699	1,060	Sep	851	
Traeth Lafan	(2)	(146)	903	609	1,037	Sep	850	△
Abberton Reservoir	537	589	469	2,500	80	Nov	835	
Swale Estuary	574	653	907	830	760	Jan	745	
Eccup Reservoir	550	600	742	760	1,000	Oct	730	
The Wash	683	476	563	967	895	Nov	717	
Ouse Washes	276	[37] 596	964	958	[37] 691	Oct	697	
Orwell Estuary	(563)	[38] 989	449	[38] 604	[38] 587	Jan	657	
Llyn Traffwll	464	746	450	700	769	Jul	626	
Hornsea Mere	441	834	625	745	465	Sep	622	
Kirby-on-Bain Gravel Pits	376	541	562	635	900	Jan	603	
Baston Langtoft Gravel Pits	(450)	(380)	(152)	(330)	(600)	Dec	(600)	
Langtoft West End Gravel Pits	635	(165)	401	901	441	Feb	595	
Heigham Holmes	577	865	-	[46] 300	-		581	
Tattershall Pits	[37] 770	570	403	400	730	Jul	575	
Morecambe Bay	351	(411)	327	(867)	(741)	Jan	572	
Alton Water	542	550	624	490	577	Oct	557	
Medway Estuary	(520)	(226)	(146)	(311)	(135)	Jan	(520)	△
Livermere	334	655	249	490	806	Oct	507	
Dungeness Gravel Pits	440	517	(472)	554	(502)	Oct	504	
Hay-a-Park Gravel Pits	-	501	696	529	183	Jan	477	
Little Paxton Gravel Pits	300	399	457	467	746	Dec	474	
Martin Mere	435	460	440	438	580	Nov	471	
Thames Estuary	(319)	(310)	(465)	(329)	(320)	Jan	(465)	
Dee Flood Meadows	(521)	(310)	295	480	540	Nov	459	
Watermill Broad	274	328	722	-	-		441	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 300 or more birds in Great Britain (continued)†								
Derwent Reservoir	360	[46] 285	530	482	544	Feb	440	
Stodmarsh NNR & Collards Lagoon	273	276	521	454	599	Oct	425	
Middle Yare Marshes	(83)	340	442	340	569	Oct	423	
Hardley Flood	-	-	307	-	515	Dec	411	
Ardleigh Reservoir	226	271	610	286	560	Nov	391	
Bough Beech Reservoir	-	95	543	428	488	Aug	389	
Llyn Alaw	376	384	328	275	538	Oct	380	
Southill Lake	195	309	520	366	505	Nov	379	△
Breydon Wtr & Berney Marshes	[38] 263	219	335	340	723	Oct	376	△
Thrapston Gravel Pits	370	298	324	372	459	Sep	365	
Blatherwyke Lake	(346)	215	401	382	433	Sep	358	△
Earls Barton Gravel Pits	363	398	379	402	248	Sep	358	
Bardney Pits	450	350	490	230	230	Dec	350	
Castle Howard Lake	-	-	-	350	-		350	△
Grimsthorpe Lake	248	365	297	425	350	Sep	337	△
Beaulieu Estuary	270	381	392	351	260	Jan	331	
Willen Lake	392	367	313	210	365	Sep	329	
Buckden/Stirtloe Pits	649	330	304	24	-		327	
Benacre Broad	295	344	258	235	470	Sep	320	△
North Warren & Thorpness Mere	283	240	-	[37] 360	[37] 392	Nov	319	△
Masham Gravel Pits	440	160	86	585	270	Nov	308	△
Ranworth & Cockshoot Broads	565	230	[37] 504	138	96	Sep	307	
Middle Tame Valley Gravel Pits	305	(263)	(163)	(210)	(135)	Oct	305	△
Huntingdon Racecourse Gravel Pits	-	-	(300)	-	-		(300)	
Sites with mean peak counts of 50 or more birds in Northern Ireland†								
Loughs Neagh & Beg	296	(71)	785	915	1,179	Mar	794	
Lough Foyle	[37] 190	1,282	0	786	1,207	Mar	693	
Strangford Lough	489	367	166	405	577	Jan	401	
Belfast Lough	[38] 138	[38] 116	242	188	144	Nov	166	
Lower Lough Erne	-	-	-	-	71	Feb	71	△
Ballysaggart Lough	-	-	-	-	70	Dec	70	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Snettisham	965	Aug	Brandesburton Ponds West	504	Nov
Holkham & Burnham Overy	689	Nov	Leighton & Roundhill Reservoirs	504	Jan
Minsmere	503	Sep	Somersham Gravel Pits	470	Nov
Tees Estuary	(422)	Oct	Rutland Water	440	Jul
Alde Complex	[38] 416	Dec	Pulfin Bog	409	Nov
Hamford Water	392	Mar	Severn Estuary	393	Sep
Fen Drayton Gravel Pits	390	Jun	Radwell Gravel Pits	381	Jan
North Cave Gravel Pits	369	Sep	Hamford Water	376	Sep
Lackford Gravel Pits	362	Oct	Arun Valley	358	Sep
Titchwell	344	Sep	Harewood Lake	350	Sep
Brandesburton Ponds West	340	Feb	Harrold-Odell Country Park	348	Oct
Windermere	336	May	Wynyard Lake	335	Jan
R Cam: Upware-Dimmocks Cote	332	Nov	R Avon: Ringwood to C'church	318	Oct
Norton Marsh	319	Sep	Newport Pagnell Gravel Pits	317	Oct
R Cam: Kingfishers Bridge	300	Jan	Scaling Dam Reservoir	315	Jul
Trinity Broads	300	Dec	Barton Broad	313	Jan
Weirwood Reservoir	300	Sep	Tees Estuary	301	Oct
Leighton & Roundhill Reservoirs	(300)	Dec	Horsey Mere	[46] (300)	Dec
Llyn Coron	(300)	Oct	East Park	300	Jan
Larne Lough	57	Feb			

Sites no longer meeting table qualifying levels

Bann Estuary, Emberton Gravel Pits, Revesby Reservoir, Windermere, Wynyard Lake

† *as site designation does not occur and the 1% criterion is not applied, qualifying levels of 300 and 50 have been chosen to select sites in Great Britain and Northern Ireland for presentation in this report.*

GREATER CANADA GOOSE

Branta canadensis

Naturalised introduction†
Native range: N America

	01/02	02/03
GB Max:	**51,840 Dec**	**54,678 Sep**
NI Max:	**444 Jan**	**409 Dec**

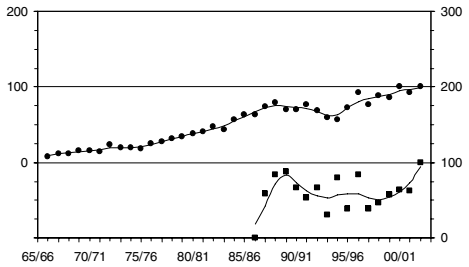


Figure 18. Annual indices for Canada Goose in GB (circles, left axis) and NI (squares, right axis)

The peak national totals of Canada Geese in Great Britain recorded by WeBS in 2002/03 and 2001/02 were the highest and third highest yet recorded, and index values accordingly continued to show a long-term increase. In Northern Ireland, the peak count in both winters returned to a more typical level after the low in 2000/01, but the annual index value rose sharply to its highest level to date in 2002/03.

A recent analysis of WeBS data estimated that Canada Geese in Great Britain numbered some 96,100 in Great Britain during 1994-99, an increase of 12% since 1987-92 (Kershaw & Cranswick 2003). It has been suggested – particularly given the decline in index values in the early 1990s – that WeBS trends may not track changes in this population adequately as it expands to use smaller and/or newly created wetlands (for which the run of WeBS counts is either not long enough or not frequent enough to be included in calculations of trends or population estimates). Additional surveys have therefore been conducted in recent years using different methods to overcome this potential problem. Rehfisch *et al* (2002) surveyed breeding birds in 1999, using a sample of 246 tetrads also surveyed during the *1988-91 Atlas*. The tetrads were stratified according to the occurrence of Canada Geese and by habitat, and results suggested an overall increase of 156% during the ten-year period. Although increases varied considerably between different habitat types, they were greatest in lowland habitats with some (rather than much) water cover. Assuming numbers had remained constant in unsurveyed habitats, they estimated total numbers to be 82,000. A site-based survey of naturalised geese in late summer 2000 recorded some 54,587 Canada Geese, slightly higher than the WeBS peak of 49,990 that year (Rowell *et al* 2004).

Although the same sites occupy the top four places as in 1999/2000, Rutland Water has fallen from first to fourth place, while increasing numbers on the Dyfi Estuary – where the count in July 2002 was the largest of Canada Geese at any British site yet recorded by WeBS – have elevated this to the principal site. Steady increases were also seen at the Dee Estuary (England/Wales), Tring Reservoirs, the Taw-Torridge Estuary and Pitsford Reservoir, while large counts in 2002/03 were recorded at Colliford Reservoir and the Somerset Levels. An exceptional count at Abberton Reservoir in 2001/02 was followed by especially low numbers – the same pattern as observed for numbers of naturalised Greylag Goose at this site. The only key site showing a steady decrease over the past five years was Blithfield Reservoir.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with mean peak counts of 600 or more birds in Great Britain†							
Dyfi Estuary	1,543	1,884	2,180	[38] 2,156	3,029	Jul	2,158
Dee Estuary (Eng/Wal)	1,150	(1,347)	(1,664)	(2,268)	(2,568)	Sep	1,995
Arun Valley	1,298	967	1,139	1,550	(1,754)	Nov	1,342
Rutland Water	1,374	1,365	1,539	1,120	1,276	Jul	1,335
Abberton Reservoir	989	928	1,217	2,000	270	Nov	1,081
Colliford Reservoir	759	858	946	894	1,884	Jun	1,068
Mersey Estuary	680	308	1,738	737	1,437	Jul	980
Middle Tame Valley Gravel Pits	798	1,173	889	(456)	(402)	Oct	953
Cleddau Estuary	469	(1,108)	1,080	1,000	765	Jan	884
Fairburn Ings	707	1,177	950	709	823	Jul	873

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 600 or more birds in Great Britain (continued)†								
Bewl Water	592	1,200	1,078	500	885	Jul	851	
Lower Derwent Valley	980	627	-	-	-		804	
Ellesmere Lakes	692	737	912	906	751	Oct	800	
Southampton Water	(745)	675	735	(1,084)	609	Jan	776	
Walthamstow Reservoirs	694	(500)	781	662	945	Jul	771	
King's Bromley Gravel Pits	804	814	850	669	712	Jun	770	
Tring Reservoirs	(500)	593	626	893	962	Nov	769	△
Harewood Lake	670	943	750	700	700	Dec	753	
Stour Estuary	795	785	485	713	983	Oct	752	
Taw-Torridge Estuary	426	587	591	888	1,179	Sep	734	△
Chew Valley Lake	631	660	720	810	830	Jul	730	
Blithfield Reservoir	1,120	1,140	570	321	386	Dec	707	
Somerset Levels	(463)	275	(704)	417	1,378	Dec	694	△
Lee Valley Gravel Pits	(628)	498	591	955	678	Sep	681	△
Pitsford Reservoir	(439)	451	516	722	967	Aug	664	△
Sites with mean peak counts of 50 or more birds in Northern Ireland†								
Upper Lough Erne	(96)	222	289	347	293	Dec	288	
Strangford Lough	161	[38] 307	310	238	323	Sep	268	
Drumgay Lough	260	110	70	-	-		147	
Lower Lough Erne	-	-	-	-	(110)	Feb	(110)	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
R. Nith: K'bank to Nunholm	950	Apr	The Wash	896	Feb
Arlington Reservoir	823	Sep	Eyebrook Reservoir	850	Sep
Old Moor Wetlands	768	Mar	Carsington Water	848	Jul
Upper Tamar Reservoir	743	Oct	Orwell Estuary	[38].765	Nov
Hope Carr Reserve	700	Oct	Maer Lake	740	Dec
Colt Crag Reservoir	643	Oct	Colt Crag Reservoir	720	Oct
Doxey Marshes	638	Jan	Thames Estuary	700	Sep
Fleet/Wey	631	Nov	Llangorse Lake	700	Dec
Beaulieu Estuary	603	Feb	Hallington Reservoir	683	Sep
Hanningfield Reservoir	602	Jan	Port Meadow	680	Nov
Grindon Lough	600	Feb	Middle Yare Marshes	680	Oct
Siblyback Reservoir	600	Oct	Doxey Marshes	(637)	Nov
Llangorse Lake	600	Dec	Watermead Gravel Pits	610	Jul
			Sutton & Lound Gravel Pits	609	Aug
			Poole Harbour	602	Dec

Sites no longer meeting table qualifying levels

Croxall Pits, Kedleston Park Lake, Port Meadow, Tundry Pond

† *as site designation does not occur and the 1% criterion is not applied, qualifying levels of 600 and 50 have been chosen to select sites in Great Britain and Northern Ireland for presentation in this report.*

BARNACLE GOOSE

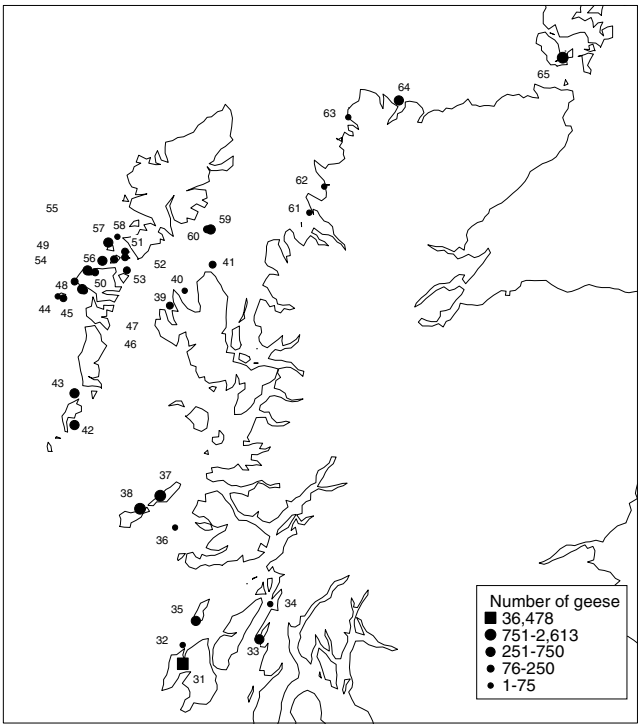
Branta leucopsis

GREENLAND POPULATION

International threshold:	**540**
Great Britain threshold:	**450**
All-Ireland threshold:	**75**

	01/02	02/03
GB Max:	**36,880 Dec**	**47,352 Mar**
NI Max:	**0**	**0**
% young	**7.1**	**12.5**
Brood size	**2.1**	**2.2**

This population of Barnacle Goose winters principally on the western seaboards of Scotland and Ireland. Many of the sites used are remote islands and a full census of the population requires a combination of aerial and land-based counts to cover all key haunts; eleven such surveys have been conducted since 1959. The latest census, in March 2003, estimated a total wintering population of 56,386 geese, a 4.2% increase on the previous total in 1999 (Worden *et al* 2004b). Growth on Islay, the principal site, has slowed in recent years, and whilst the increase in the remainder of Scotland (7.9%) was higher than the increase in the population as a whole, it too showed a considerable slowing in rate compared with the almost 30% rise between the 1997 and 1999 censuses. Previous censuses have shown declining numbers on some of the smaller sites, suggesting a contraction in range. The number of occupied sites in 2003 was higher than in any previous census, with geese recorded at 30 sites in Ireland, 35 in Scotland, and one in Wales (Fig 19), although the population continues to be increasingly concentrated on Islay (the proportion there having risen from around one third to almost two thirds over the last 40 years).



No	Site name
31	Islay mainland
32	Nave Island
33	Island of Danna
34	Eilean na Cille
35	Oronsay
36	Bac Mor
37	Coll
38	Tiree
39	Isay
40	Eilean Creagach
41	Eilean Trodday
42	Muldoanich, south of Barra
43	Fiaray, Sound of Barra
44	Ceann Iar, Monach Isles
45	Ceann Ear, Monach Isles
46	Kirkibost, North Uist
47	Balemore, North Uist
48	Goula
49	Vallay
50	Grenitote
51	Ensay
52	Killegary, Sound of Harris
53	Opsay, Sound of Harris
54	Aird Mhic Caoilt
55	Berneray, Sound of Harris
56	Boreray, Sound of Harris
57	Shillay, Sound of Harris
58	Coppay, Sound of Harris
59	Eilean Mhuire, Shiants
60	Garbh Eilean, Shiants
61	Summer Isles
62	Soyea Island
63	Eilean an Roin Mor
64	Eilean Hoan
65	South Walls

Figure 19. Sites holding Barnacle Geese in Scotland in March 2003 (from Worden *et al* 2004b)

The Islay figures for 1998/99, 1999/00 and 2000/01, obtained during annual all-island counts, have been revised since publication of *Wildfowl and Wader Counts 2000/01*, following the recent provision of new data. Consequently, counts at this site in 2001/02 and 2002/03 were below the five-year mean. The percentage young recorded on Islay was 7.1% in 2001/02 and slightly higher in 2002/03 at 12.5%, largely accounting for the slight increase in numbers between these periods. Although such figures are average to high for recent years, recent analyses show that reproductive output has declined as the population size has increased, although there is little evidence to suggest that numbers on Islay population have reached the island's carrying capacity (Trinder *et al* 2005d). A population model suggests that greater growth in numbers here compared with other parts of the range was the result of higher reproductive success of these birds, rather than movement between sites. If reproductive output is regulated on the breeding grounds, numbers on Islay are predicted to stabilise at the current level of around 35,000. The analysis recommended that more effort is needed to collect demographic and census data throughout the wintering range for this population (Trinder *et al* 2005d).

North Uist, Tiree and Coll held higher numbers than average, continuing the trend of increase at these sites. Many of the sites used by this population are remote and little visited, and for many, the aerial survey as part of the international censuses once every five years provides the only data. The census is conducted in early spring (when the weather is generally more conducive to flying), and it is possible that higher counts may be obtained in autumn or mid winter, or even that sites occupied only during those months are missed altogether.

The Barnacle Geese on the Dyfi Estuary have been reported previously as naturalised birds. In recent years, however, it has been noted that the majority of this flock arrives and leaves with the Greenland White-fronted Geese also using this site (R Jones, CR Mitchell pers comm); summering numbers have not exceeded 12 birds since 1993. Furthermore, numbers at the site have increased in recent years and, although no sightings of ringed birds have been made to confirm their origins, current opinion is that these should be treated as part of the Greenland population. Although not of national importance, this represents the most southerly flock of this population in Britain and the only regular flock in Wales, and thus numbers at the site over the last five years are given in the table below for interest.

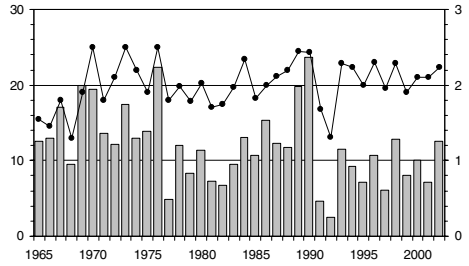


Figure 20. Productivity in Greenland Barnacle Geese, 1965–2002; proportion of young (grey bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Islay	[34] 37,715	[34] 40,054	[34] 38,022	[35] 35,213	[34] 36,478	Mar	37,496	
North Uist	[26] 1,648	[26] 1,491	[26] 1,957	[26] 3,326	[26] 2,732	Feb	2,231	
Tiree	[2] 1,572	[28] 1,607	[29] 1,442	[28] 2,132	[28] 2,786	Jan	1,908	
South Walls	[22] 1,140	-	-	[34] 2,600	[34] 1,800	Dec	1,847	
Sound of Harris	[7] 1,450	-	-	-	[74] 706	Mar	1,078	
Coll	[35] 931	[28] 788	[31] 718	[28] 933	[28] 1,010	Mar	876	
Islands South of Barra	-	[31] 1,491	[31] 500	-	[74] 271		754	▲
South Uist	-	[26] 126	[31] 1,326	-	-		726	▲
North Sutherland	[7] 540	-	-	-	[74] 669	Mar	605	
Sites of national importance in Great Britain								
Keills Peninsula & Isle of Danna	[35] 720	[35] 610	[35] 280	[35] 420	[35] 400	Mar	486	▼
Sound of Jura	[28] 472	-	-	-	-		472	▲
Colonsay/Oronsay	[35] 463	[35] 600	[35] 244	-	[35] 510	Mar	454	▼
Dyfi Estuary	35	46	63	[38] 158	[38] 98	Feb	80	
Internationally or nationally important sites not counted in last five years								
Monach Isles								

SVALBARD POPULATION

International threshold:	**230**
Great Britain threshold:	**220**

	01/02	02/03
GB Max:	**23,547 Mar**	**28,512 Dec**
NI Max:	**0**	**0**
% young	**3.1**	**10.4**
Brood size	**1.58**	**1.96**

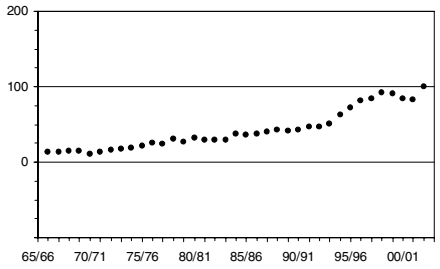


Figure 21. Annual indices for Svalbard Barnacle Goose in GB

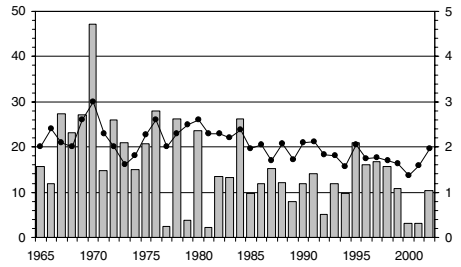


Figure 22. Productivity in Svalbard Barnacle Geese, 1965–2002; proportion of young (grey bars, left axis) and mean brood size of successful pairs (black circles, right axis) from age assessments in Great Britain

As with the previous season, productivity (measured as the proportion of first-year birds in flocks on the Solway Firth) was again very low in 2001/02 and although improved success was recorded in 2002/03, it remained well below the 17.2% long-term mean for 1958-2002. The average brood size of a successful pair generally exhibits a positive relationship to the proportion of young and was also below the long-term mean of 2.1 young. After having fluctuated around 25,000 birds since the mid 1990s, reasonable breeding success in 2002 saw the population increase to its highest level to date.

The findings of a detailed population viability analysis suggest that there is currently no evidence of the population having reached the carrying capacity for either the summer or winter range – previous predictions had suggested that numbers would not exceed 8,000-12,000 – despite a decline in reproductive output with increasing population size (Trinder *et al* 2005e). It is thought that numbers are restricted by limits on the breeding grounds, but if sites for new colonies are exploited, further increases can be expected.

The first birds of the 2001/02 winter at Loch of Strathbeg arrived on 24 September, followed by a massive influx of 10,390 on 1 October – a record count for Aberdeenshire. Numbers dropped rapidly over the next two days coinciding with a rise on the Solway Estuary, where the first birds had been recorded on 23 September. Several large flocks were observed along the coasts of southeast Scotland and northeast England at this time, though there presence there is normally short-lived. In 2002, the dates of first arrival were 18 September and 19 September at Strathbeg and the Solway, respectively. Despite the very different initial numbers at Strathbeg in the two winters, numbers declined to fewer than 100 by early December in both years.

The outbreak of Foot and Mouth Disease in 2001 resulted in changes to local farming practice, with the possibility that changes in stocking regimes and the resulting grazing pressure will have affected the sward height and composition – practices that are normally closely managed for the benefit of the wintering geese. Close study showed, however, that there were few significant effects of these changes on the condition of the geese or their distribution around the Solway, although birds showed some tendency towards foraging in more dispersed flocks (Griffin *et al* 2003).

Detailed studies of the birds' distribution in the Solway has shown an increase in the use of more western areas of the Solway, including the Cumbrian Marshes of Newton, Calvo and Skinburness, with a slight shift in use away from Rockcliffe Marsh in the east, where spring staging has become less protracted (Griffin 2003). Extensions to the historical wintering range have also been identified on the Scottish side of the Solway since 2000, with use of the coastal strip and inland fields between Eastriggs and Gretna, and greater use of western coastal fringes beyond Mersehead including Auchencairn, Dundrennan, Kirkcudbright,

Borgue and Wigtown, usually in mid winter when food resources for an increased population have become depleted.

Single birds from the Baltic and from the Greenland flyways were recorded on the Solway in both of the two most recent winters.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in the UK							
Solway Estuary	[43] 26,040	[43] 25,750	[43] 23,783	[43] 23,524	[43] 28,447	Dec	25,509
Loch of Strathbeg	[29] 6,200	[27] (513)	[37] 3,700	[28] 10,390	[28] 314	Oct	5,151

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
Forth Estuary	461	Oct	none
Lindisfarne	(400)	Oct	
Tyninghame Estuary	239	Oct	

NATURALISED POPULATION

Naturalised establishment†

	01/02	02/03
GB Max:	**925 Jan**	**908 Feb**
NI Max:	**214 Oct**	**223 Sep**

Total numbers recorded by WeBS in both of the two most recent winters were on a par with previous figures. Counts at Strangford Lough have continued to increase, particularly in the last two years, these birds breeding on the many small islands within the lough (RM Ward pers comm). Numbers at many of the regularly used sites in Britain have also continued to increase – and seven new sites are now included in the list since the last report – with only counts at the key site, Hornsea Mere, showing a decline.

Autumn counts of Barnacle Geese at coastal sites in northeast England may constitute displaced birds from the Svalbard population on route from Norway to the Solway, while small numbers in mid or late winter – particularly in East Anglia and associated with groups of White-fronted or Bean Geese – may be Baltic birds displaced from the near Continent during hard weather. Despite increasing numbers of naturalised birds in southern England, an open mind should perhaps be kept for birds at some sites at certain times of year, although sightings of darvic rings are required to confirm the birds' origins.

Birds on the Dyfi Estuary are considered to constitute birds from the Greenland flyway, because of their arrival and departure dates, and counts are now included under that account.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with peak mean counts of 50 or more birds in Great Britain†								
Hornsea Mere	314	(326)	241	202	132	Jan	243	
Eversley Cross & Yateley GP	220	187	183	236	219	Feb	209	
Thwaite Flat & Roanhead Ponds	-	-	[37] 152	-	-		152	
Duddon Estuary	150	155	150	150	1	Jul	121	
Middle Yare Marshes	70	80	20	141	104	Dec	83	
Willington	-	-	47	115	84	Apr	82	△
Humber Estuary	(1)	(11)	(42)	(53)	74	Nov	74	△
Severn Estuary	83	0	53	73	96	Jan	61	△
Roxton Gravel Pits	-	6	18	105	107	Aug	59	△
Hardley Flood	-	-	58	-	-		58	
Barcombe Mills Reservoir	35	47	60	76	64	Oct	56	△
Benacre Broad	32	56	26	42	120	Sep	55	△
Frampton Pools	32	46	37	75	79	Mar	54	△
Sites with peak mean counts of 50 or more birds in Northern Ireland†								
Strangford Lough	122	136	158	214	223	Sep	171	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

01/02		02/03	
none	Morecambe Bay	94	Oct
	Minsmere	62	Dec
	Glynde Levels	61	Nov
	Martin Mere	53	Dec
	Hamford Water	51	Mar

Sites no longer meeting table qualifying levels
Stratfield Saye

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of 50 has been chosen to select sites for presentation in this report.*

DARK-BELLIED BRENT GOOSE

Branta bernicla bernicla

	01/02	02/03
GB Max:	**72,349 Jan**	**70,471 Jan**
NI Max:	**0**	**0**
% young	**6.2**	**6.8**
Brood size	**1.8**	**2.1**

International threshold:	**2,200**
Great Britain threshold:	**981**
All-Ireland threshold:	**+**

	5	10	25
GB Alert:	○	○	△

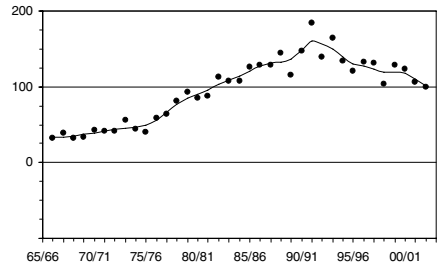


Figure 23. Annual indices for Dark-bellied Brent Geese in GB

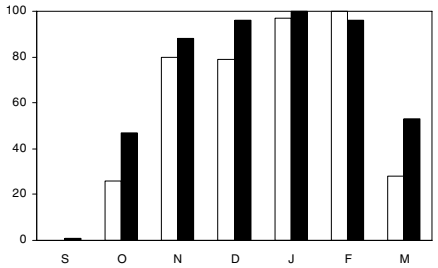


Figure 24. Monthly indices for Dark-bellied Brent Geese in GB (white bars 2002/03; black bars 1998/99 to 2002/03)

The number of internationally important sites for Dark-bellied Brent Geese in Britain has increased from nine to 11 since the previous report. This seemingly positive trend reflects the decrease in the international population – and the accompanying reduction in the 1% threshold (*WPE3*) – rather than an increase in abundance at these sites. Indeed, at all nine sites previously of international status, there was in fact a decrease in the mean number of birds. (It is also worth noting that, following the application of 'count completeness' assessments to numbers of wildfowl on WeBS sites (see *Methods*), all peak counts for the Medway Estuary are classed as incomplete, and the highest count of the last five years has, for the purposes of this report, been used as the five-year mean.)

These site-level declines are consistent with the trend of overall abundance for this population, having fallen from a high of 260,000 in 1994/95 to 215,000 in 2001/02 (*WPE3*). In Britain, the peak national counts dropped sharply (by 20,000) in 2001/02 and remained low the following winter, numbers which represent only 51% of those at its zenith in 1991/92. Steady decline in index values over the last ten years suggest that abundance is at its lowest since the early 1980s. The proportion of the population visiting Britain (about one third) has, however, not changed greatly.

A comprehensive review of the status of this population in Britain (Ward 2004) showed that trends at almost every nationally or internationally important site in Britain were strongly correlated with that of the population as a whole. This suggests that sub-populations within the flyway, with different trends in population parameters and fidelity to certain parts of the range, are unlikely to exist as they do, for example, in Greenland White-fronted Geese.

The main reason for the decrease has been a sustained period of poor reproductive

success, although it is possible that numbers in Britain are also being affected by milder winter weather and improved foraging conditions further east, causing birds to 'short-stop' and remain in the Netherlands over winter. Productivity, as assessed in Britain, has exceeded the average mortality rate (15%, Summers & Underhill 1991) in only two of last eleven years (Worden & Hearn 2003). Furthermore, according to the three-year cycle of good, poor and variable breeding success (Dhondt 1987), 2002 was expected to be a 'good' year, but in actual fact it was the second of the past four predicted good years in which productivity remained below 15%. The reasons behind falling productivity have not been fully explored. Reports from the breeding grounds indicate that rodent abundance was generally low in 2001, as expected, but also only moderate at the majority of monitoring stations in the Russian tundra, with relatively few young Brent Geese fledging (Soloviev & Tomkovich 2005). It might be speculated, therefore, that although the link between Brent productivity and the lemming cycle remains, lemming abundance levels and cycles may no longer operate in the same way.

Over recent decades a shift in preferred feeding habitats has been apparent (Summers & Critchley 1990, Mckay et al 1994, Ward 2004). Grassland and arable land has been increasingly favoured over traditional intertidal feeding areas. A study to identify inland feeding areas around 19 Special Protection Areas (SPAs) for which this population is a qualifying species, has highlighted the importance of many feeding grounds outside the current boundary of these SPAs (Rowell & Robinson 2004). Winter cereals were the most frequently used habitat followed by permanent and improved grassland, with amenity and recreational land also being used. Continued assessment of winter feeding distribution and site use is necessary to inform future management and protection of Dark-bellied Brent Goose feeding habitat.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	17,736	28,811	19,518	17,924	20,314	Jan	20,861	
Thames Estuary	14,100	7,346	7,371	12,157	(8,589)	Oct	10,244	
North Norfolk Coast	[27] 10,100	[27] 12,969	10,201	8,033	9,180	Feb	10,097	
Chichester Harbour	8,142	(9,267)	7,412	7,470	7,358	Jan	7,930	
Blackwater Estuary	5,160	9,838	(9,860)	7,195	6,100	Feb	7,631	
Langstone Harbour	[38] 6,230	6,928	5,080	4,813	4,686	Feb	5,547	
Crouch-Roach Estuary	2,452	(5,488)	4,446	3,471	3,083	Dec	3,788	
Hamford Water	2,320	3,879	4,047	4,331	3,567	Feb	3,629	
Colne Estuary	(2,685)	(3,614)	3,310	2,572	(409)	Mar	3,165	
Pagham Harbour	(1,260)	[38] 2,438	2,520	3,178	2,252	Feb	2,597	▲
Medway Estuary	(2,580)	(1,845)	(1,041)	(1,725)	(1,179)	Mar	(2,580)	▲
Sites of national importance in Great Britain								
Humber Estuary	(2,540)	2,404	(1,649)	1,432	(2,351)	Dec	2,182	
Portsmouth Harbour	2,169	(2,661)	1,827	1,682	2,185	Dec	2,105	
North West Solent	2,659	(2,114)	1,616	2,350	1,500	Jan	2,048	
Dengie Flats	2,600	(1,550)	2,455	1,798	1,160	Oct	2,003	
Southampton Water	[38] 1,533	[38] 2,480	[38] 1,742	(1,455)	(1,326)	Jan	1,918	
Deben Estuary	1,268	2,139	2,890	2,218	1,251	Jan	1,953	
Swale Estuary	(2,215)	(1,800)	2,149	[38] 1,690	1,278	Dec	1,833	
Stour Estuary	2,367	1,769	[38] 1,716	1,412	1,753	Apr	1,803	
Newtown Estuary	1,180	(1,727)	1,800	1,660	1,779	Feb	1,629	
Fleet/Wey	2,290	1,404	1,813	2,188	398	Nov	1,619	
Beaulieu Estuary	1,682	1,458	1,334	2,015	1,512	Jan	1,600	
Exe Estuary	1,647	1,806	1,345	1,183	1,714	Jan	1,539	
Poole Harbour	1,297	1,354	1,708	(599)	(740)	Mar	1,453	
Orwell Estuary	[38] 1,129	[38] 1,799	[38] 1,228	[38] 1,215	[38] 1,525	Jan	1,379	
Burry Inlet	1,043	(1,195)	1,158	1,174	917	Feb	1,097	

LIGHT-BELLIED BRENT GOOSE

Branta bernicla hrota

EAST CANADIAN HIGH ARCTIC POPULATION

International threshold:	**200**
Great Britain threshold:	**+†**
All-Ireland threshold:	**200**

	01/02	02/03
GB Max:	**123 Dec**	**115 Dec**
NI Max:	**21,570 Oct**	**19,210 Oct**
% young	**1.96**	**1.8**
Brood size	**2.2**	**2.2**

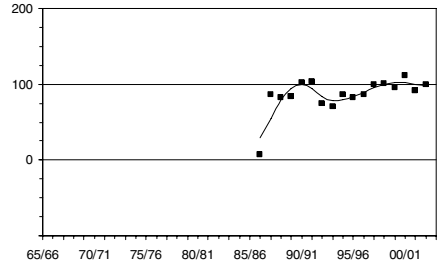


Figure 25. Annual indices for Light-bellied Brent Geese in NI

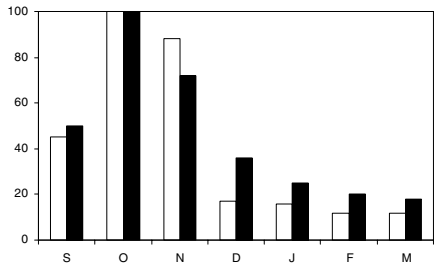


Figure 26. Monthly indices for Light-bellied Brent Geese in NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Despite poor breeding success in 2001 and 2002, the All-Ireland census recorded the highest numbers to date in October 2001 (K Colhoun pers comm). Although numbers were lower in 2002, the total was greater than the average of previous winters, following high productivity in 2000 (30% young). The population appears to have stabilised in recent years at levels similar to those of the late 1980s, following a marked dip early in the 1990s.

Strangford Lough is the major site used on arrival in autumn and held 91% of total numbers of birds in both October 2001 and 2002. Birds are attracted by rich feeding grounds, particularly *Zostera* spp in early winter, with green algae and saltmarsh utilised as winter progresses (Robinson *et al* 2004c). Feeding on improved pastures also occurs in mid winter and spring, with foraging on cereal fields being observed in recent years. During late winter, re-distribution of birds occurs around the coast of Ireland, Channel Islands, and Northern France. This is reflected in the monthly indices and the midwinter census, when numbers remaining at Strangford Lough in January equated to only 9% (2002) and 18% (2001) of the previous October totals. This decrease is mirrored by increases at other sites, such as Larne Lough, Outer Ards and Dundrum Bay.

Numbers at Strangford have remained consistently high with larger than average counts in 2001/02 and 2002/03. The current peak mean is 23% higher than that in 2000/01. Conversely, counts at Lough Foyle, another important autumn arrival site, have been lower with a 31% decrease in the five-year mean. Counts at Strangford on consecutive days show large fluctuations in numbers, suggesting that there may be a high turnover of birds and further investigation is needed to clarify the total proportion of the flyway population that pass through this site (Robinson *et al* 2004c).

Large concentrations occur at relatively few sites in the UK, particularly during early winter. Dundrum Bay and the Outer Ards have attained international importance, both consistently holding numbers exceeding the threshold in mid winter and spring, with an especially large count at the latter site in March 2003. Only small numbers are encountered at other sites, particularly in Britain, although the table shows that these are consistently used by this population, with small groups in northwest England, and even increasing numbers on the Channel Islands, the most southerly and rather distant outpost for this population. There are also increasing records of small flocks using the west coast of Britain, particularly the Camel and Exe Estuaries (Robinson *et al* 2004c).

	98-99	99-00	00-01	01-02	02-03	Mon	Mean	
Sites of international importance in the UK								
Strangford Lough	13,196	[38] 14,074	16,162	[18] 19,583	[18] 17,520	Oct	16,107	
Lough Foyle	2,766	1,934	3,469	1,841	[18] 1,563	Oct	2,315	
Killough Harbour	[21] 557	-	-	[38] 489	472	Mar	506	
Carlingford Lough	642	(437)	(498)	259	319	Mar	431	
Outer Ards	221	(215)	(120)	[18] 210	700	Mar	377	▲
Dundrum Bay	(259)	(148)	(205)	(320)	(242)	Mar	(320)	▲
Larne Lough	218	253	266	235	139	Feb	222	
Sites with mean peak counts of more than 25 birds in the UK								
Jersey Shore	14	-	86	127	-		76	
Loch Gruinart	107	46	60	-	-		71	
Inland Sea	23	51	95	80	76	Mar	65	
Belfast Lough	32	[30,7]21	[30,7]40	(62)	48	Jan	41	△
Dee Estuary (Eng/Wal)	21	14	75	[38] 32	25	Jan	33	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Foryd Bay	43	Dec	Morecambe Bay	[38] 62	Dec
Loch Ryan	[37] 28	Dec	Loch Ryan	[37] 25	Dec

SVALBARD POPULATION

International threshold: 50
Great Britain threshold: 30*

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**4,883 Oct**	**3,303 Feb**
NI Max:	**0**	**0**
% young	**5.2**	**4.7**

Lindisfarne remained the only site in Britain to hold anything more than a handful of birds from this population. Numbers there fluctuate considerably between years, usually in relation to the severity of winter weather in northern Denmark, the other key wintering area for this population. The 2001/02 peak count was, therefore, remarkable, being the largest by some margin at this site to date, and occurring in October when there was no appreciable period of cold weather or other obvious factor causing such a mass departure from Denmark.

Numbers in Britain rarely exceed around half the population, and although this now exceeds 6,000 (Denny *et al* 2004), the Lindisfarne count in 2001 – the largest in the UK since the early 20th century, when some 10,000 wintered on the Moray Firth (Denny *et al* 2004) – is out of all proportion to the modest increase in the population.

Reproductive success in some high arctic-nesting geese shows a cycle of very low and high values, normally over a three-year cycle. The extremely low values in both 2001/02 and 2002/03 for this population in Britain (S Percival pers comm) are thus unusual, although paired years of low success also occurred in 1994-1995 and 1998-1999, on both occasions slowing the growth in the population.

A major review of wintering distribution of this population (Denny *et al* 2004) has shown changing site use as the population has grown from the low in the 1930s. Peak counts at Lindisfarne jumped sharply in the early 1980s and, more often than not, have been lower since, but this measure of abundance may simply reflect cold weather movements, and large numbers of birds may only be present for short periods. Examination of site use using bird-days (allowing for the length of stay) shows a more consistent pattern of site use over the same period (Figures 27 & 28).

The occurrence of larger numbers at Lindisfarne in the late 1980s was also matched by a change in the timing of occurrence. Prior to this, there was a gradual rise to a January peak with a sharp decline thereafter; since the mid 1980s, there has been an earlier arrival (usually in September), a faster rise to an November peak, followed by a more gradual departure (Denny *et al* 2004). At the same time there has been decreasing use of Danish autumn sites, such as the Wadden Sea, and this may be linked to declining *Zostera* stocks.

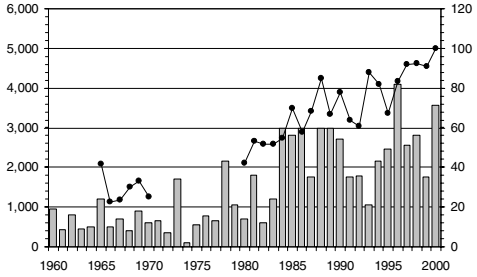


Figure 27. Light-bellied Brent Geese at Lindisfarne, 1960/61-1999/2000: peak counts (bars) and population index (line) (reproduced from Denny *et al* 2004)

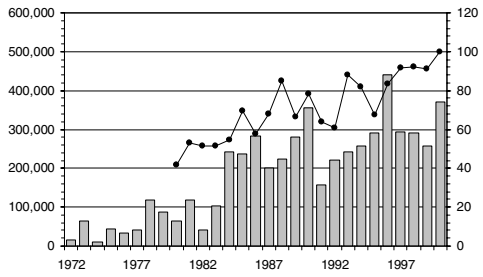


Figure 28. Light-bellied Brent Geese at Lindisfarne, 1972/73-1999/2000: bird days (bars) and population index (line) (reproduced from Denny *et al* 2004)

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in the UK							
Lindisfarne	(2,812)	(1,767)	3,184	(4,845)	3,150	Feb	3,726

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Seahouses to Budle Point	70	Jan	Inner Moray Firth	100	Feb
Beadnell to Seahouses	44	Feb			
Inner Moray Firth	41	Jan			

Sites no longer of national importance

Seahouses to Budle Point

EGYPTIAN GOOSE

Alopochen aegyptiacus

Naturalised introduction†
Native range: Africa

	01/02	02/03
GB Max:	**225 Oct**	**478 Jun**
NI Max:	**0**	**0**

The peak in 2002/03 rose to an all-time high of 478, an increase of 13.5% over the previous high in 1999/2000. The number of sites with ten or more birds also increased, by five, over 2000/01. In contrast to the national picture, numbers at the key site, the North Norfolk Coast, reached record levels in 2001/02 but then dropped. Elsewhere, numbers and peak means generally increased, including some sites away from East Anglian, most notably Spade Oak Gravel Pit, Buckinghamshire, where there has been a dramatic increase in the past five years.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of ten or more birds in Great Britain†								
North Norfolk Coast	180	197	218	318	233	Aug	229	
Sennowe Park Lakes	-	-	-	-	98	Jun	98	△
St Benet's Levels	66	-	51	52	88	Oct	64	
Rutland Water	40	52	54	60	58	Jul	53	
Middle Yare Marshes	16	44	45	45	72	Oct	44	
Watermill Broad	26	92	23	-	8	Mar	37	
Breydon Wtr & Berney Marshes	15	12	25	48	63	Sep	33	△
Lynford Gravel Pit	52	33	11	-	-		32	
Weybread Pits	-	-	-	18	31	Sep	25	△
Trinity Broads	15	58	11	18	20	Jul	24	
Nunnery Lakes	26	22	20	19	21	Jun	22	
Snetterton Gravel Pits	2	29	24	-	-		18	
Stanford Training Area	16	[37] 30	7	13	-		17	
Spade Oak Gravel Pit	0	1	18	23	33	Sep	15	△
Barton Broad	-	8	13	15	18	Jun	14	△
Ranworth & Cockshoot Broads	8	4	[37] 12	12	14	Nov	10	△
Colney Gravel Pits	-	-	-	10	-		10	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Whitlingham Country Park	10	Feb	The Wash	12	Oct
Lackford GPs	10	Sep			

Sites no longer meeting table qualifying levels

Didlington Lakes, Livermere

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of ten has been chosen to select sites for presentation in this report.*

SHELDUCK

Tadorna tadorna

	01/02	02/03
GB Max:	**56,614 Nov**	**53,799 Jan**
NI Max:	**5,364 Jan**	**4,535 Dec**

International threshold:	**3,000**
Great Britain threshold:	**782**
All-Ireland threshold:	**70**

	5	10	25
GB Alert:	O	O	O

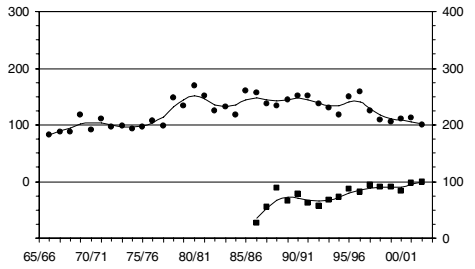


Figure 29. Annual indices for Shelduck in GB (circles, left axis) and NI (squares, right axis)

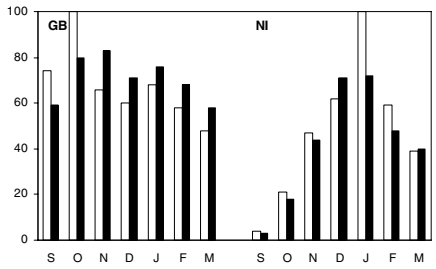


Figure 30. Monthly indices for Shelduck in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

The peak total count for Great Britain in 2002/03 was the lowest in the current five-year period, 5% lower than in 2001/02 and 11% lower than 2000/01. Recent declines are confirmed by the annual indices which, overall, show a gradual downward trend since the early 1990s and the annual index value in 2002/03 was the lowest seen since 1977/78. In contrast, the annual index for Northern Ireland is the highest to date with a 13% increase in total numbers from 2000/01 to 2001/02, and a 3% increase between 2001/02-2002/03.

Although a large proportion of British and Irish breeding birds are known to migrate to the Helgoland Bight of the Wadden Sea to moult between July and September (joined there by Scandinavian and Baltic birds), small numbers moult at some UK estuaries. Counts at the Humber and Mersey Estuaries show that them to be major moult sites. The importance of the latter has developed only recently, but the count there in August 2002 was by far the highest at any UK site in 2002/03, and is exceeded only by three counts of between 20,000 and 21,300 on the Wash between 1979/80 and 1991/92.

The return migration from the Wadden Sea in autumn is gradual and winter numbers are boosted by birds from continental Europe (*Migration Atlas*). This is reflected in the monthly indices, which rise to a peak in midwinter, declining thereafter as migrant winterers return to the continent and as local breeders disperse and take up territory.

Counts have remained high on the Dee Estuary (England/Wales) following a recent rise. A much larger than average count was made at Martin Mere in 2002/03. Low counts were made on the Burry Inlet in the same winter, but numbers at the Alde Estuary appeared to recover slightly after a period of steady decline. In Northern Ireland, numbers at Carlingford Lough continued their recent increase, and a comparatively high count in 2001/02 saw the Bann Estuary attain All-Ireland Importance.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Mersey Estuary	(10,600)	15,070	10,084	5,740	19,810	Aug	12,676	
The Wash	11,430	7,608	10,074	11,783	7,834	Jan	9,746	
Dee Estuary (Eng/Wal)	5,634	8,814	11,563	10,200	10,533	Oct	9,349	
Humber Estuary	(5,262)	(4,020)	(6,918)	(3,655)	(4,819)	Aug	(6,918)	
Morecambe Bay	8,030	6,225	(6,707)	6,137	7,164	Oct	6,889	
Solway Estuary	4,049	[38] 3,270	4,626	(2,213)	4,324	Oct	4,067	
Strangford Lough	3,574	[38] 4,251	[38] 3,067	4,162	[38] 4,199	Nov	3,851	
Severn Estuary	[38] 3,730	(1,996)	(2,912)	3,776	[38] 3,495	Feb	3,667	
Forth Estuary	4,684	3,775	3,009	2,920	3,531	Sep	3,584	
Thames Estuary	(2,363)	(2,711)	(3,385)	2,940	3,040	Jan	3,122	▲
Sites of national importance in Great Britain								
Ribble Estuary	2,644	2,908	2,536	3,190	(3,063)	Nov	2,868	▼
Blackwater Estuary	(1,777)	(3,093)	(2,873)	(1,808)	2,572	Jan	2,846	▼
Medway Estuary	(1,945)	(2,627)	(1,912)	(2,045)	(1,257)	Jan	(2,627)	▼
Swale Estuary	3,015	2,929	2,047	2,342	2,290	Jan	2,525	
Poole Harbour	2,318	2,192	1,748	(2,221)	2,385	Jan	2,173	
Stour Estuary	1,956	[38] 2,351	[38] 2,164	[38] 1,441	1,916	Jan	1,966	
Hamford Water	1,791	1,369	2,003	[38] 1,737	1,903	Dec	1,761	
Lindisfarne	973	1,224	1,751	[38] 1,546	1,826	Nov	1,464	
Alde Complex	2,129	1,707	1,328	881	945	Mar	1,398	
North Norfolk Coast	1,310	955	938	[38] 2,012	1,182	Dec	1,279	
Burry Inlet	1,327	(1,557)	1,233	963	570	Mar	1,130	
Montrose Basin	973	1,071	907	776	1,191	Dec	984	
Chichester Harbour	[38] 836	(1,040)	990	[38] 1,014	1,019	Feb	980	
Martin Mere	640	913	743	950	1,435	Feb	936	▲
Colne Estuary	(799)	(963)	773	920	(263)	Nov	885	
Crouch-Roach Estuary	(376)	836	(483)	(478)	(385)	Jan	836	▲
Deben Estuary	895	952	772	676	864	Mar	832	
Sites of all-Ireland importance in Northern Ireland								
Larne Lough	711	414	710	776	637	Feb	650	
Lough Foyle	446	419	278	536	232	Mar	382	
Carlingford Lough	213	321	326	365	493	Feb	344	
Belfast Lough	[38] 184	250	[38] 319	437	[38] 199	Feb	278	
Loughs Neagh & Beg	211	157	74	102	146	Mar	138	
Dundrum Bay	98	104	79	93	99	Jan	95	
Bann Estuary	48	48	50	138	87	May	74	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

01/02		02/03	
none	Tees Estuary	809	Jan

Sites no longer of national importance

Cleddau Estuary, Duddon Estuary, Eden Estuary, Orwell Estuary, Tees Estuary

MANDARIN

Aix galericulata

Naturalised introduction[†]
Native range: E Asia

	01/02	02/03
GB Max:	**490 Dec**	**512 Dec**
NI Max:	**1 Apr**	**0**

Total numbers of Mandarins recorded by WeBS have remained high following a sharp jump to record levels in 2000/01: the peak in 2001/02 was just one lower and the total increased slightly the following winter. Reasons for this rise are not immediately obvious: although some sites held higher numbers in two or more of these winters – *eg* Wraysbury Ponds, Cuttmil Ponds, Headley Mill Pond, Lost & Golding Hill & Baldwins Ponds and Darwell Reservoir – the increase may simply reflect increased coverage of small wooded lakes or ponds favoured by this species. The large fluctuations in numbers at many sites, *eg* Harewood Lake, highlight the

difficulties of assessing numbers this unobtrusive species. Nevertheless, British totals show a consistent pattern, with a steady rise to a mid winter – normally December – peak followed by a similarly steady fall. Larger numbers at some sites may also reflect increased skill of finding this species by observers as they become more familiar with these sites; the fact that counts at the most important site – Forest of Dean Ponds (previously reported separately as Dean Heritage Museum Lake, Soudley Ponds and Cannop Ponds) – were obtained during supplementary counts perhaps also highlights the difficulty of obtaining accurate counts during normal WeBS survey. Now presented as a single site, these figures also demonstrate a steady decline in numbers there.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of ten or more birds in Great Britain†								
Forest of Dean Ponds	[25] 221	[25] 195	[25] 171	[25] 159	[25] 120	Nov	173	
Wraysbury Pond	-	-	83	78	[27] 63	Mar	75	
Cuttmil Ponds	41	65	104	98	51	Jan	72	
Stockgrove Country Park	34	66	80	54	70	Dec	61	
Severn Estuary	102	32	72	65	28	Sep	60	
Passfield Lake	66	(10)	61	14	67	Sep	52	
Bradley Pools	-	26	43	85	55	Jan	52	
Dee Flood Meadows	38	36	31	79	49	Dec	47	
Busbridge Lakes	0	-	57	54	47	Mar	40	
Headley Mill Pond	12	18	16	70	76	Feb	38	
Connaught Water	51	27	54	26	31	Aug	38	
Arun Valley	46	36	31	28	41	Dec	36	
Lost/G'ding Hill/B'dwins Hill Ponds	-	6	45	10	78	Dec	35	
Bough Beech Reservoir	-	2	[37] 40	63	27	Feb	33	
Darwell Reservoir	4	6	46	43	25	Sep	25	
Osterley Park Lakes	41	23	8	13	20	Jul	21	
Woburn Park Lakes	13	18	25	12	24	Jul	18	
Harewood Lake	8	6	10	11	53	Oct	18	△
Fonthill Lake	5	23	23	17	18	Dec	17	
Panshanger Flash	22	6	8	16	24	Feb	15	
Gatton Park	8	7	15	20	18	Oct	14	△
Wraysbury Gravel Pits	(6)	(7)	(6)	(2)	(13)	Nov	(13)	△
Strawberry Hill Ponds	-	1	8	7	30	Nov	12	△
Bramshill Park Lake	5	19	14	4	[37] 15	Dec	11	
Elfordleigh Golf & Country Club	0	11	6	22	-		10	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Chillington Hall Pool	14	Sep	Groby Pool	15	Nov
Groby Pool	10	Feb	Linacre Reservoirs	14	Jan
			Swanbourne Lake	13	Oct
			R. Avon: Ford'bridge-R'wood	12	Oct

Sites no longer meeting table qualifying levels

Norbury Pond

Note, Forest of Dean Ponds comprises Dean Heritage Museum Lake, Soudley Ponds and Cannop Ponds, sites that were presented separately in the table in previous reports.

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of ten has been chosen to select sites for presentation in this report*

WIGEON

Anas penelope

	01/02		02/03	
GB Max:	**362,537**	**Dec**	**371,777**	**Jan**
NI Max:	**8,716**	**Nov**	**6,698**	**Oct**

International threshold:	**15,000**
Great Britain threshold:	**4,060**
All-Ireland threshold:	**1,250**

	5	10	25
GB Alert:	○	○	△

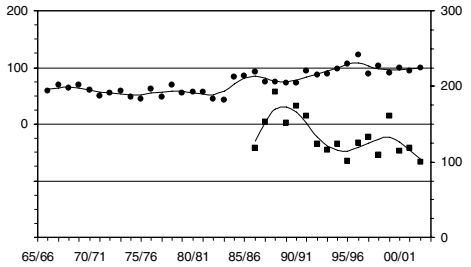


Figure 31. Annual indices for Wigeon in GB (circles, left axis) and NI (squares, right axis)

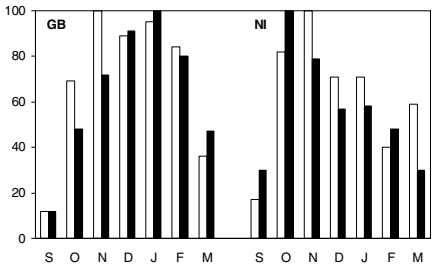


Figure 32. Monthly indices for Wigeon in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Whilst not as high as in 2000/01, peak numbers in Great Britain in the following winter were above the average of previous years. The annual index similarly remained at a high level resulting in a relatively stable trend over the last 10 years, although numbers have more than doubled over the whole 37-year indexing period. Monthly indices indicated that an above average proportion of birds was present in Great Britain in October and November, with over 250,000 were counted in the first month. In Northern Ireland, peak numbers fell for the third consecutive winter and in 2002/03 were the lowest ever recorded. This decline was also reflected in the annual index which was also the lowest ever value giving a 28% fall over the 16-year period.

At a site level, increases in 1% thresholds for both national and international importance saw a notable decrease in the number of sites meeting these criteria. Numbers on the Ribble were up in 2002/03 after several (relatively) low counts and sharply so on the Somerset Levels – 40% higher than the five-year mean – despite being an incomplete count. A peak count in excess of 20,000 at Lindisfarne was reminiscent of levels regularly recorded in the 1980s and was part of a continuing rise in recent years. Other high counts were made on southeast England estuaries the Thames, Swale and Blackwater, on the Arun Valley and River Avon between Ringwood and Christchurch, and the Severn Estuary. Marked declines continued, however, on the Mersey, Loch of Harray and Lough Foyle.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Ribble Estuary	96,855	50,678	(63,921)	68,661	75,617	Nov	72,953	
Somerset Levels	14,523	[37] (21,965)	28,366	28,779	(39,492)	Jan	27,790	
Ouse Washes	[37] 16,999	24,540	[37] 14,874	26,623	[37] 26,753	Jan	21,958	
North Norfolk Coast	16,398	18,950	20,083	19,078	16,056	Nov	18,113	
Breydon Wtr & Berney Marshes	11,200	14,130	15,700	21,700	[38] 15,999	Jan	15,746	▲
Swale Estuary	13,837	11,725	17,637	15,303	20,827	Jan	15,866	
Sites of national importance in Great Britain								
Dornoch Firth	13,282	9,305	17,445	17,967	16,979	Oct	14,996	▼
Lindisfarne	(4,612)	5,006	14,141	(12,435)	20,016	Oct	13,054	
Cromarty Firth	9,338	[38] 14,956	14,027	11,987	(6,041)	Oct	12,577	
Nene Washes	13,533	6,994	10,808	5,053	11,866	Jan	9,651	
Mersey Estuary	12,013	[38] 8,731	8,279	9,150	4,280	Dec	8,491	
Lower Derwent Valley	8,100	8,600	-	-	-		8,350	
Inner Moray Firth	8,208	9,746	7,260	7,070	7,820	Dec	8,021	
Thames Estuary	3,407	(2,975)	(5,392)	5,808	9,784	Jan	7,796	
Alde complex	7,247	6,676	7,145	[38] 6,647	7,387	Feb	7,020	
Blackwater Estuary	3,401	4,296	6,507	5,789	10,976	Feb	6,194	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Morecambe Bay	(4,783)	5,289	7,746	5,861	5,634	Jan	6,133	
Solway Estuary	(2,598)	(2,146)	(2,778)	(3,085)	(5,497)	Nov	(5,497)	▲
Loch of Harray	5,263	(5,092)	9,476	4,255	2,682	Dec	5,419	
Middle Yare Marshes	5,460	5,387	4,794	5,668	5,508	Jan	5,363	
Severn Estuary	4,011	3,459	(5,789)	(5,579)	7,019	Jan	5,171	
Arun Valley	4,421	4,173	5,343	4,010	6,237	Jan	4,837	
Medway Estuary	(4,592)	(1,751)	(1,424)	(2,056)	(1,720)	Dec	(4,592)	
R. Avon: R'wood to Christchurch	2,138	(3,051)	[37] 4,945	(1,450)	6,394	Feb	4,492	
Montrose Basin	3,503	4,402	3,446	4,381	4,752	Nov	4,097	
Sites of all-Ireland importance in Northern Ireland								
Lough Foyle	8,829	11,496	8,051	5,696	2,609	Sep	7,336	
Loughs Neagh & Beg	2,333	5,743	2,375	2,707	1,908	Mar	3,013	
Strangford Lough	2,153	2,469	2,509	2,414	3,400	Oct	2,589	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Fleet/Wey	5,337	Dec	Tophill Low Reservoirs	[37] 5,780	Mar
Dee Estuary (Eng/Wal)	[38] 4,941	Nov	The Wash	5,630	Nov
			Humber Estuary	5,513	Nov
			Fleet/Wey	5,360	Oct
			Hamford Water	(4,631)	Dec
			Stour Estuary	[38] 4,068	Jan

Sites no longer of national importance

Burry Inlet, Cleddau Estuary, Dee Estuary (Eng/Wal), Dyfi Estuary, Exe Estuary, Foryd Bay, Fleet/Wey, Hamford Water, Humber Estuary, Martin Mere, Rutland water, Southampton Water, Stour Estuary

GADWALL

Anas strepera

International threshold: **600**
Great Britain threshold: **171**
All-Ireland threshold: **+[†]**

	01/02	02/03
GB Max:	**16,148 Dec**	**14,347 Dec**
NI Max:	**237 Jan**	**179 Oct**

	5	10	25
GB Alert:	○	△	▲

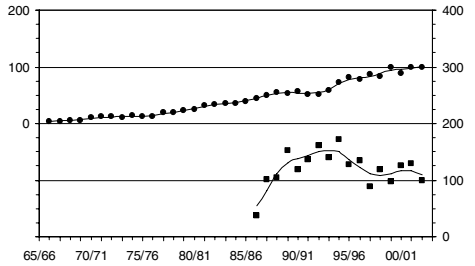


Figure 33. Annual indices for Gadwall in GB (circles, left axis) and NI (squares, right axis)

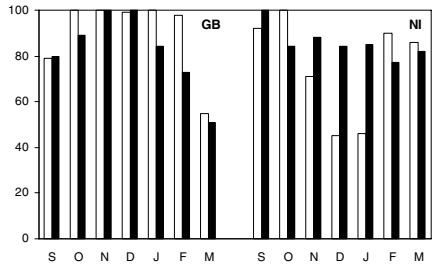


Figure 34. Monthly indices for Gadwall in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Following a period of sustained growth since the mid 1960s, and more rapid increase during the 1990s, there has been comparatively little change in the numbers of Gadwall in Britain over the past four winters. The 2001/02 Great Britain maximum was the highest on record, representing over one quarter of the estimated northwest Europe population (*WPE3*), but numbers have tended to fluctuate around 15,000 since the late 1990s. Between year variation in Northern Ireland is greater than in Britain, and the trend in the Province has been one of general decline for the past ten years; the 2002/03 Northern Ireland index value was the fourth lowest since recording started. This contrasts with a positive trend - albeit representing only a small increase in numbers – reported for the Republic of Ireland (Crowe & Boland 2004).

Rutland Water remains the most important UK site, although numbers are substantially lower than in the 1990s and were rivalled by counts on the Thames Estuary, Lee Valley Gravel Pits and, particularly, the Somerset Levels; this last became the third British site to support a four-figure total of Gadwall, even though it was an undercount. Despite a smaller national total in 2002/03 than in 2001/02, larger counts at were made many sites in the second winter, notably on the Ouse Washes, Minsmere, Lackford Gravel Pits, the Orwell Estuary and Meadow Lane Gravel Pits. Pitsford and Ravensthorpe Reservoirs were the two sites to hold notably high numbers in 2001/02. In previous years, more sites qualified as nationally or internationally important for Gadwall in Britain than for any other waterbird species. The now greatly reduced number of these sites reflects a doubling of both of the respective 1% thresholds.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Rutland Water	961	1,529	967	747	867	Sep	1,014	
R. Avon: Fordingbridge to R'wood	(611)	(612)	[37] 897	(525)	824	Feb	861	
Wraysbury Gravel Pits	1,397	612	713	552	745	Oct	804	
Somerset Levels	[6] 819	(527)	453	754	(1,077)	Jan	776	
Lee Valley Gravel Pits	448	(764)	526	717	808	Oct	653	
Thames Estuary	(387)	(439)	535	512	815	Jan	621	
Sites of national importance in Great Britain								
Ouse Washes	[37] 337	[37] 808	393	[37] 433	782	Mar	551	▼
Abberton Reservoir	(460)	549	746	173	730	Sep	550	▼
Loch Leven	526	544	270	320	840	Sep	500	▼
Thrapston Gravel Pits	195	668	531	98	218	Nov	342	▼
Fen Drayton Gravel Pits	393	186	345	362	336	Nov	324	▼
Chichester Gravel Pits	69	289	307	569	349	Jan	317	
Horsey Mere	(20)	316	-	-	-		316	
Pitsford Reservoir	(169)	204	259	581	164	Aug	302	
Hornsea Mere	(315)	(380)	265	240	285	Sep	297	▼
Lower Derwent Valley	317	255	-	-	-		286	
Cotswold Water Park (West)	272	282	194	267	403	Feb	284	
Colne Valley Gravel Pits	(270)	(155)	412	(211)	149	Jul	281	
Hoveton Great Broad	-	230	283	310	-		274	
Stodmarsh & Collards Lagoon	240	276	222	259	360	Oct	271	
Chew Valley Lake	305	145	310	230	360	Aug	270	
Eversley Cross & Yateley GP	183	248	323	292	305	Oct	270	
Minsmere	92	-	[37] 366	212	394	Feb	266	
Severn Estuary	208	294	298	250	253	Feb	261	
Lackford Gravel Pits	-	-	-	68	432	Sep	250	▲
Little Paxton Gravel Pits	193	132	360	287	275	Feb	249	
Thorpe Water Park	(178)	(249)	(157)	(55)	(74)	Dec	(249)	
North Norfolk Coast	258	(294)	250	221	215	Feb	248	
Fairburn Ings	358	342	220	150	154	Jun	245	
Burghfield Gravel Pits	236	175	-	-	312	Dec	241	
Orwell Estuary	(120)	[38] 165	150	[38] 160	[38] 465	Dec	235	
Buckden/Stirtloe Pits	277	257	284	118	208	Oct	229	
Sutton & Lound Gravel Pits	-	274	-	370	58	Jul	234	
Earls Barton Gravel Pits	266	279	159	[37] 140	207	Oct	210	
Dinton Pastures	193	204	-	291	144	Dec	208	
Brent Reservoir	115	180	306	295	109	Sep	201	
Meadow Lane Gravel Pits	178	59	195	211	321	Feb	193	
Ravensthorpe Reservoir	104	144	42	372	288	Sep	190	▲
Alton Water	108	168	92	268	270	Jan	181	
Eyebrook Reservoir	211	-	101	162	250	Sep	181	
Hampton & Kempton Reservoirs	250	273	113	100	122	Nov	172	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with mean peak counts of ten or more birds in Northern Ireland†							
Loughs Neagh & Beg	182	138	155	178	149	Oct	160
Strangford Lough	83	62	72	58	57	Sep	66
Hillsborough Forest Lake	0	53	3	27	12	Dec	19

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Alde Complex	277	Feb	Lonsdale Road Reservoir	311	Dec
Blagdon Lake	257	Oct	Wellington Country Park	302	Feb
London Wetland Centre	221	Dec	Stoke Newington Reservoirs	265	Jan
Hanningfield Reservoir	217	Dec	Swithland Reservoir	243	Oct
Wicken Fen	214	Nov	N Warren & Thorpness Mere	[37] 229	Feb
Sonning Gravel Pit	179	Jan	Nene Washes	225	Feb
Lonsdale Road Reservoir	179	Feb	Whitlingham Country Park	222	Jan
Whitlingham Country Park	177	Jan	Blunham Gravel Pit	214	Nov
Grafham Water	174	Mar	Tees Estuary	201	Oct
			Twyford Gravel Pits	189	Dec
			Blatherwyke Lake	188	Oct
			Bewl Water	186	Feb
			Woolston Eyes	182	Sep
			Wicken Fen	181	Feb
			Lakenheath Fen	179	Feb
			Humber Estuary	176	Dec
			The Wash	172	Jan

Sites no longer of national importance

(Note, the 1% threshold has been revised from 80 to 171 for Great Britain) Allington Gravel Pit, Bainton Pits, Belvide Reservoir, Bewl Water, Blagdon Lake, Blatherwyke Lake, Blunham Gravel Pits, Breydon Wtr & Berney Marshes, Clifford Hill Gravel Pits, Cotswold Water Park (East), Crichel Lake, Crome's Broad, Ditchford Gravel Pits, Dungeness Gravel Pit, Fort Henry Ponds & Exton Park Lake, Grafham Water, Hanningfield Reservoir, Hickling Broad, Hollowell Reservoir, Holme Pierrepont Gravel Pits, Kirby-on-Bain Gravel Pits, Langtoft West End Gravel Pits, Leybourne/New Hythe Gravel Pits, Longside Lake, Lower Windrush Valley GP, Marsh Lane Gravel Pits, Middle Tame Valley Gravel Pits, Middle Yare Marshes, Nene Washes, North Warren & Thorpness Mere, North West Solent, Otmoor, Reedham Water, Rye Harbour & Pett Level, Seaton Gravel Pits, Sonning Gravel Pit, Stanford Reservoir, Swale Estuary, Swanholme Lakes, Swillington Ings, Swithland Reservoir, The Wash, Thompson Water, Tophill Low Resevoirs, Tring Reservoirs, Twyford Gravel Pits, Wellington Country Park, Whitlingham Country Park, Woolston Eyes

Sites no longer meeting table qualifying levels

Upper Quoile River

Important sites not covered in last five years

Clea Lakes, Deeping St James Gravel Pits, Gunton Park Lake, Shrigley Lake, South Iver Gravel Pits,

† *as no all-Ireland threshold has been set, a qualifying level of ten has been chosen to select sites for presentation in this report.*

EURASIAN TEAL

Anas crecca

International threshold: 4,000
Great Britain threshold: 1,920
All-Ireland threshold: 650

	01/02	02/03
GB Max:	**158,516 Dec**	**180,710 Jan**
NI Max:	**4,567 Jan**	**5,846 Oct**

	5	10	25
GB Alert:	○	○	△

Although the British index was the lowest recorded for fifteen years, it is in keeping with the general trend since the 1980s of overall stability but with high inter-annual variation, largely a result of the species' responsiveness to cold weather (*Migration Atlas*). Despite the low index value, British maxima were the highest ever recorded, greatly exceeding the 149,276 of 2000/01, and that in 2002/03 represented 47% of the estimated northwest European population (*WPE3*). The Northern Ireland index, as in Britain, was lower in 2002/03 than in 2001/02, despite an increase in counted numbers, as a consequence of smaller than normal numbers in most midwinter months, and suggests a slight decline over the last five winters.

Site counts in both 2001/02 and 2002/03 at the Somerset Levels were especially large – the

largest at any site in the UK since 35,000 on the Mersey Estuary in 1980/81 – and that in 2001/02 on the Mersey Estuary was also noteworthy. Despite fluctuating numbers, these sites continue to be the premier UK sites for Teal, having occupied the top two places since ousting the Ribble in 1994/95. Recent increases continued on the North Norfolk Coast, the Swale and in particular on the Thames Estuary, where there has been a four-fold increase in the last ten years, while high counts in 2001/02 and/or 2002/03 were made at the Ouse and nearby Nene Washes, Breydon & Berney Marshes, and (as for Wigeon) on the River Avon between Christchurch and Ringwood. The ability of this species to exploit changing conditions is illustrated by fluctuating numbers at some sites, notably Abberton Reservoir, Lough Foyle and Upper Lough Erne.

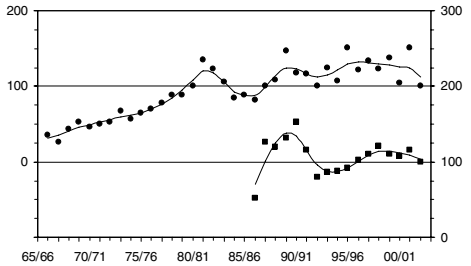


Figure 35. Annual indices for Teal in GB (circles, left axis) and NI (squares, right axis)

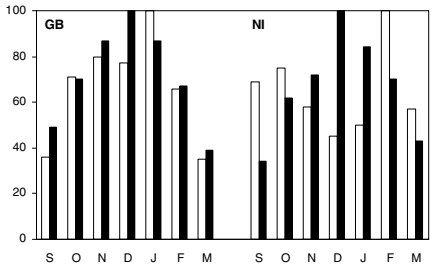


Figure 36. Monthly indices for Teal in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Somerset Levels	16,037	13,641	[37] (19,040)	29,586	(33,350)	Jan	23,154	
Mersey Estuary	9,393	11,700	8,777	17,660	7,855	Oct	11,077	
Thames Estuary	(3,346)	(4,007)	(4,610)	6,994	9,780	Jan	8,387	▲
Ribble Estuary	5,114	5,748	7,874	5,316	4,671	Nov	5,745	
Dee Estuary (Eng/Wal)	4,544	5,185	5,622	[38] 6,887	4,361	Jan	5,320	
North Norfolk Coast	3,721	(3,133)	4,186	5,718	5,281	Nov	4,727	▲
Loch Leven	5,055	4,320	2,940	4,100	6,562	Oct	4,595	▲
Severn Estuary	3,772	4,719	5,151	4,449	3,748	Nov	4,368	▲
Lower Derwent Valley	4,300	4,100	-	-	-		4,200	
Martin Mere	3,170	3,710	6,700	4,460	2,750	Nov	4,158	
Sites of national importance in Great Britain								
Hamford Water	3,266	1,514	2,510	[38] 9,055	3,628	Jan	3,995	
Swale Estuary	2,672	2,388	4,385	4,297	5,752	Jan	3,899	
Ouse Washes	[37] 2,970	3,212	2,429	5,757	[37] 4,433	Nov	3,760	
Blackwater Estuary	(2,131)	(2,598)	(4,867)	2,517	3,721	Jan	3,702	
Breydon Wtr & Berney Marshes	1,284	3,150	4,237	6,487	3,124	Oct	3,656	
R. Avon: R'wood to Christchurch	(162)	(104)	[37] 2,178	(654)	4,841	Feb	3,510	▲
Mersehead RSPB Reserve	-	970	4,180	4,390	3,100	Dec	3,160	
Arun Valley	2,695	2,438	4,276	2,194	3,934	Jan	3,107	
Solway Estuary	(1,218)	(1,387)	(2,101)	(750)	(2,813)	Nov	(2,813)	▲
Inner Moray Firth	[38] 3,028	2,921	2,794	2,289	[38] 2,948	Nov	2,796	
Humber Estuary	(1,438)	2,765	3,370	1,300	2,681	Oct	2,529	
Alde Complex	1,863	1,837	2,234	3,690	2,609	Jan	2,447	
Abberton Reservoir	(3,593)	5,450	488	1,871	736	Sep	2,428	▼
Dornoch Firth	2,272	2,039	2,261	2,797	2,502	Jan	2,374	
Woolston Eyes	(2,000)	(1,800)	2,100	3,675	1,320	Feb	2,365	
Horsey Mere	(2,500)	2,143	-	-	-		2,322	
Cleddau Estuary	2,138	(2,438)	2,427	(1,621)	2,095	Jan	2,275	
Otmoor	-	-	(1,313)	856	3,633	Nov	2,245	▲
Morecambe Bay	1,528	1,719	(2,956)	2,519	(2,261)	Jan	2,197	
Nene Washes	2,129	1,548	1,592	940	4,046	Dec	2,051	

Sites of all-Ireland importance in Northern Ireland

Strangford Lough	2,519	1,627	1,189	2,121	2,177	Sep	1,927
Loughs Neagh & Beg	2,388	1,487	2,002	1,633	1,887	Feb	1,879
Lough Foyle	[37] 1,500	577	2,888	684	2,275	Oct	1,585
Upper Lough Erne	631	1,379	308	333	1,635	Dec	857

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Chichester Harbour	2,426	Jan	Milldam & Balfour Mains Pools	2,650	Oct
Minsmere	2,227	Oct	Minsmere	2,189	Oct
The Wash	2,217	Feb	Holburn Moss	2,000	Sep
Middle Yare Marshes	2,097	Feb			

Sites no longer of national importance

(Note the 1% threshold has been revised from 1,400 to 1,920 for Great Britain) Burry Inlet, Chichester Harbour, Forth Estuary, Medway Estuary, Mere sands Wood NR, Minsmere, Pagham Harbour, Poole Harbour, Rutland Water, Southampton Water

MALLARD

Anas platyrhynchos

International threshold: 20,000**
Great Britain threshold: 3,520†
All-Ireland threshold: 500

	01/02	02/03
GB Max:	**136,620 Dec**	**135,313 Jan**
NI Max:	**7,449 Dec**	**8,433 Sep**

	5	10	25
GB Alert:	○	▽	▽

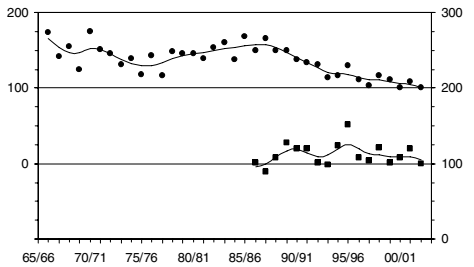


Figure 37. Annual indices for Mallard in GB (circles, left axis) and NI (squares, right axis)

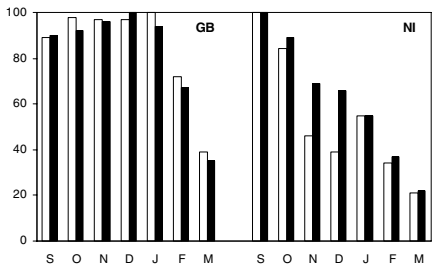


Figure 38. Monthly indices for Mallard in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

The decline in British Mallard numbers, first detected in the late 1980s, continues. The peak Great Britain count for 2002/03 was the lowest since 1977, and the annual index fell to its lowest value ever recorded, representing an average decline of 3% per annum and an overall fall of 36% since 1987/88. This shallow decline has triggered medium alerts over both 10- and 25-year periods in Britain. Reasons for the decline in the wintering population are still unclear. Delany *et al* (1999) reported a significant decline in northwest European wintering numbers over the period 1987-1996 and an overall reduction of 10% has been estimated for the region over the period 1996-2002 (*WPE3*). Ring-recovery data suggest that up to 75% of the birds in Britain and Ireland during the winter months are continental immigrants (*Migration Atlas*). These data also suggest that the observed decline in Great Britain is at least partly due to a fall in the number of immigrants: of birds ringed in Britain and Ireland during the months November to February and recovered during the breeding season, the proportion of recoveries in continental Europe has declined from more than 50% in the 1950s and 1960s to less than 25% in the 1980s, with a further decline evident in the 1990s. Another possibility is that fewer captive-reared birds are being released for hunting, although there are no data to confirm this. It is also not clear how many of these captive-reared birds would be recorded by WeBS as many are shot in early September or stay on small waterbodies which may not be counted by WeBS.

In contrast, trends from breeding surveys, although covering fewer sites than WeBS, indicate that the breeding population is increasing (by more than 30% over the ten year period 1992-2002) (Baillie *et al* 2005), although some of this increase in numbers represents

non wild-type birds, *ie* originating from domesticated birds.

The overall trend in Northern Ireland is more stable but with fluctuating numbers: peak counts vary widely – between 6,500 and 10,000 in recent winters – and the index fell to one of its lowest levels in 2002/03. The proportion of birds present in November and December in 2002/03 was lower than in recent winters.

The dispersed nature of Mallard compared with other wildfowl species means that few sites hold significant concentrations of birds. However, with the Great Britain threshold revised down following the recent decline, from 5,000 to 3,520, the Lower Derwent Ings and the Ouse Washes now qualify as nationally important. Numbers at the key sites did not generally reflect the national decline, with counts at most in 2002/03 similar to or exceeding the five-year means, notably at Martin Mere and Tring Reservoirs. After five years of declining numbers, counts at Martin Mere were also higher in 2001/02 and 2002/03, the peak in the first year surpassing the new national 1% level. In Northern Ireland, peak numbers at Lough Foyle continued to decline.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Lower Derwent Valley	3,450	4,250	-	-	-		3,850	▲
Ouse Washes	2,402	[37] 4,168	3,657	4,457	[37] 3,580	Oct	3,653	▲
Sites with peak mean counts of 2,000 or more birds in Great Britain†								
Morecambe Bay	3,045	3,334	(3,126)	(1,683)	2,455	Oct	2,990	
Severn Estuary	2,465	(2,767)	3,265	2,761	2,936	Oct	2,857	
Martin Mere	2,440	2,230	2,400	3,800	3,280	Dec	2,830	
Ampton Water	3,400	1,746	-	-	2,535	Nov	2,560	△
Humber Estuary	(2,089)	2,001	3,460	1,626	2,957	Jan	2,511	
Somerset Levels	(1,528)	(1,615)	2,681	1,932	2,587	Dec	2,400	△
The Wash	1,956	2,350	3,264	1,781	2,384	Jan	2,347	
Tring Reservoirs	(2,040)	(1,500)	(1,700)	1,834	2,800	Nov	2,317	
Solway Estuary	(2,170)	[38] 2,176	(1,856)	(1,033)	(1,954)	Jan	2,176	△
Inner Moray Firth	3,325	1,819	1,825	1,627	1,711	Jan	2,061	
Sites of all-Ireland importance in Northern Ireland								
Loughs Neagh & Beg	6,176	3,828	6,431	4,242	4,753	Sep	5,086	
Strangford Lough	1,198	1,514	1,807	2,227	1,851	Sep	1,719	
Lough Foyle	1,696	1,336	1,298	1,181	705	Oct	1,243	
Lower Lough Erne	-	-	-	-	533	Feb	533	▲
Upper Lough Erne	444	603	323	514	730	Dec	523	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03
Thames Estuary	(2,031)	Oct	none	

† *as few sites exceed the British threshold, a qualifying level of 2,000 has been chosen to select sites in Great Britain for presentation in this report.*

PINTAIL

Anas acuta

International threshold: 600
Great Britain threshold: 279
All-Ireland threshold: 60

	01/02	02/03
GB Max:	**27,969 Dec**	**27,470 Nov**
NI Max:	**356 Dec**	**396 Nov**

	5	10	25
GB Alert:	○	▽	○

After two seasons with very low peak counts, numbers in Great Britain in 2001/02 and 2002/03 were among the highest ever recorded. The annual index rose sharply in 2002/03, though remained well below the levels of the late 1970s and 1980s, hence the medium alert for the trend over the last ten years. The annual index for Pintail is characterised by relatively large inter-year fluctuations compared with other wildfowl species, reflecting the aggregated nature of this species occurrence on relatively few sites coupled with its high mobility and tendency to exploit temporarily flooded environments. It is, therefore, not yet possible to determine if these figures herald an end to the overall decline of around 50% since the early 1980s.

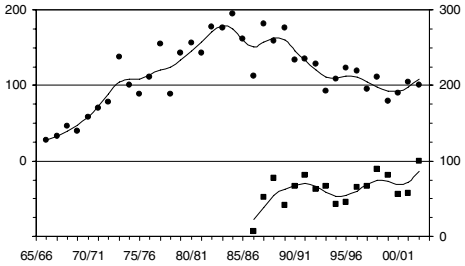


Figure 39. Annual indices for Pintail in GB (circles, left axis) and NI (squares, right axis)

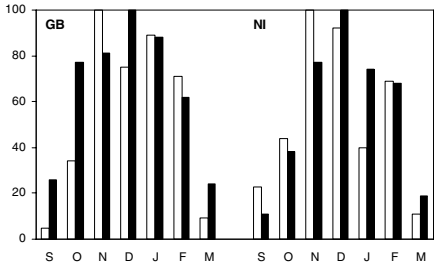


Figure 40. Monthly indices for Pintail in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Peak counts in Northern Ireland for both 2001/02 and 2002/03 were consistent with previous years, but the annual index was the highest ever recorded: a sharp rise after two low years represents a 52% increase over the last ten years. This may, in part, be due to large numbers in early winter, with monthly indices suggesting a large influx in November – when the peak winter count was made – in both Northern Ireland and Britain.

Large fluctuations are also evident at a site level. The most important sites based on WeBS counts tend to be estuarine, although some inland sites hold large numbers when flooded. The opportunistic exploitation of these temporarily flooded sites will not always be picked up by WeBS counts. For example, in early March 2002, 2,000 Pintail were counted on Ashleworth Ham following flooding (Brown & Smart 2002, Mike Smart pers comm), but none were present by the time of the March 2002 WeBS count, and fewer than 800 were counted on the whole of the nearby Severn Estuary. Counts in 2002/03 at a number of sites were well in excess – in some cases, by more than 50% – of their five-year means, *eg* the Burry Inlet, the Nene Washes, the Somerset Levels and the River Avon: Ringwood to Christchurch (where high numbers of other dabbling ducks were also recorded), The Wash and Mersehead RSPB Reserve, while the Dee Estuary (England/Wales) sustained high numbers in both of the two most recent winters. The exceptional count on the Solway Estuary in 2001/02 was the highest of Pintail at any UK site since 10,001 on the Dee Estuary (England/Wales) in 1991/92. Altogether, thirteen sites showed elevated status (becoming nationally important, or increasing from nationally to internationally important) since the 2000/01 winter, despite the thresholds remaining unchanged.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Dee Estuary (Eng/Wal)	(5,018)	(2,356)	4,216	6,023	[37] 6,000	Nov	5,413	
Solway Estuary	(4,436)	3,067	[38] 2,818	(8,070)	(3,357)	Nov	4,652	
Morecambe Bay	4,795	4,161	2,387	3,471	3,628	Oct	3,688	
Burry Inlet	2,782	(3,609)	1,328	1,305	4,410	Nov	2,687	
Ouse Washes	2,082	3,804	[37] 1,509	[37] 2,606	[37] 2,844	Mar	2,569	
Nene Washes	1,487	353	2,671	1,250	3,478	Feb	1,848	
Ribble Estuary	3,894	747	819	619	1,405	Nov	1,497	
Medway Estuary	(807)	(463)	(475)	(1,118)	(333)	Jan	(1,118)	
Dee Flood Meadows	(94)	(472)	(990)	1,050	(628)	Nov	1,050	▲
North Norfolk Coast	1,075	1,235	987	1,296	475	Dec	1,014	
Somerset Levels	171	570	1,546	1,084	(1,315)	Jan	937	▲
R. Avon: R'wood to Christchurch	[37] 90	30	[37] 1,385	(280)	2,013	Feb	880	▲
Severn Estuary	510	778	981	(780)	(891)	Dec	790	
Swale Estuary	556	395	952	998	946	Jan	769	
Duddon Estuary	918	810	628	391	(415)	Nov	687	
Arun Valley	447	199	1,171	(413)	(775)	Nov	648	▲
Stour Estuary	569	[38] 629	691	629	[38] 613	Dec	626	
Sites of national importance in Great Britain								
Mersey Estuary	882	1,100	491	134	220	Dec	565	▼
Alde complex	673	495	506	705	403	Nov	556	
Mersehead RSPB Reserve	-	46	480	410	1,140	Nov	519	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Ashleworth Ham	125	52	291	[37] 2,000	40	Feb	502	▲
Pagham Harbour	683	[38] 434	340	587	304	Oct	470	▼
The Wash	290	200	70	516	1,253	Jan	466	▲
Martin Mere	294	313	344	635	487	Feb	415	
Blackwater Estuary	333	(295)	(325)	352	498	Feb	394	▲
Breydon Wtr Berney Marshes	255	204	446	329	571	Feb	361	▲
Otmoor	-	-	[37] 396	[37] 160	[37] 481	Jan	346	
Thames Estuary	(86)	(128)	(244)	(223)	[38] 335	Jan	335	▲
Lower Derwent Valley	242	347	-	-	-		295	▲
Coombe Hill Canal	0	(36)	(90)	[37] 800	70	Nov	290	▲
Inner Moray Firth	286	227	307	313	310	Dec	289	▲
Blyth Estuary (Suffolk)	-	-	202	368	-		285	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	313	303	249	348	378	Nov	318	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Orwell Estuary	[38] 473	Nov	Crouch-Roach Estuary	385	Dec
Poole Harbour	424	Dec	Orwell Estuary	[38] 372	Dec
R. Severn/R. Vyrnwy Confluence	341	Feb	Hamford Water	364	Dec
Dyfi Estuary	[38] 304	Jan	Lindisfarne	330	Nov
Fleet/Wey	281	Dec	Wigtown Bay	(320)	Nov
Larne Lough	110	Oct			

Sites no longer of national importance

Hamford Water, Fleet/Wey, Poole Harbour, Tottenhill Gravel Pits

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GARGANEY

Anas querquedula

International threshold: **20,000****
Great Britain threshold: **?†**
All-Ireland threshold: **?†**

	2001	2002
GB Max:	**69 Aug**	**48 Sep**
NI Max:	**0**	**0**

The 2001/02 peak was around average for recent years, but was by far the highest count during 2001; although the 2002/03 peak was comparatively low, large numbers were recorded in other summer months, and particularly in spring, with over 40 also recorded in May 2002. Three birds were still present in November 2001, and a single bird remained in November 2002. As usual, most records were from sites in the south and east of England but the total of 64 sites which held Garganeys in 2002 was some 73% more than in 2000. The 30 at Stodmarsh NNR & Collards Lagoon in August 2001 was especially noteworthy.

	1998	1999	2000	2001	2002	Mon	Mean	
Sites with mean peak counts of four or more birds in Great Britain†								
Stodmarsh NNR & Collards Lagoon	1	7	12	30	5	May	11	
Millbrook Clay Pit	-	-	10	-	-		10	△
Thames Estuary	(3)	6	9	(2)	(5)	Jun	8	
Wraysbury Gravel Pits	(3)	(10)	2	0	(15)	Sep	7	
Ouse Washes	[37] 7	(7)	9	[37] 3	7	Apr	7	
Earls Barton Gravel Pits	-	5	6	-	-		6	△
Breydon Wtr & Berney Marshes	6	8	6	4	4	Jun	6	
Severn Estuary	(3)	(2)	4	4	(7)	May	5	△
Chew Valley Lake	9	3	5	2	1	Aug	4	
Rye Harbour & Pett Level	3	2	1	7	9	Aug	4	△
Dungeness Gravel Pits	5	3	2	12	0	Feb	4	△
Nene Washes	5	7	2	2	-		4	△
Alde Complex	-	4	-	-	-		4	△

	1998	1999	2000	2001	2002	Mon	Mean	
Sites with mean peak counts of four or more birds in Great Britain (continued)†								
North Norfolk Coast	2	7	3	4	4	Apr	4	△
Tees Estuary	5	8	3	(0)	1	Jul	4	△
Fairburn Ings	3	10	4	0	2	Apr	4	
Unspecified SE England site	7	5	7	0	0	Mar	4	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

2001			2002		
Minsmere	7	Aug	Blackwater Estuary	5	May
			Cotswold Water Park (West)	4	Sep
			Kirby-on-Bain Gravel Pits	4	Sep
			Forth Estuary	4	Apr

Sites no longer meeting table qualifying levels
Rutland Water

† *as no British or all-Ireland thresholds have been set, a qualifying level of four has been used to select sites for presentation in this report*

SHOVELER

Anas clypeata

International threshold: 400
Great Britain threshold: 148
All-Ireland threshold: 65

	01/02	02/03
GB Max:	**12,121 Feb**	**11,868 Jan**
NI Max:	**225 Nov**	**235 Jan**

	5	10	25
GB Alert:	○	○	△

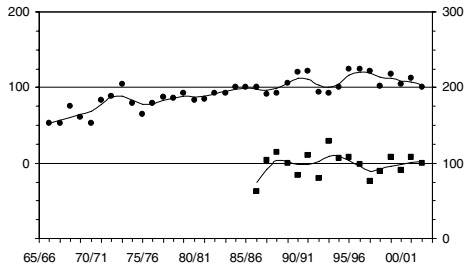

Figure 41. Annual indices for Shoveler in GB (circles, left axis) and NI (squares, right axis)

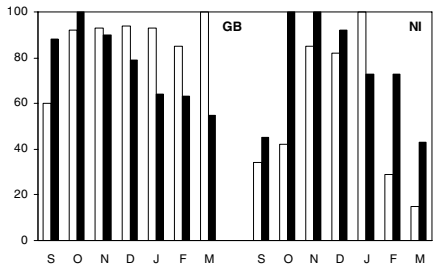

Figure 42. Monthly indices for Shoveler in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Following a gradual increase since the mid 1960s, the Great Britain index has remained at a similar (though variable) level since the late 1980s, though with indications of a decline over the last ten winters. The high Great Britain maximum in 2001/02 was only fractionally below the all-time peak in 1995/96 and represented over 80% of the British winter estimate, despite the latter having been revised upward by almost 50% (Kershaw & Cranswick 2003). This concentration of Shovelers on sites counted by WeBS is also reflected by the fact that the number of nationally and internationally important sites is now greater than for any other wildfowl species.

The Somerset Levels maintained their relatively recent elevation to the UK's most important site, sustaining numbers in excess of 1,000, while the peak in 2002/03 was by far the highest of Shoveler at any UK site to date. Few other counts at the key sites in 2002/03 were notably higher than their respective five-year means, although numbers on the River Avon between Fordingbridge and Ringwood continued their recent rise. Large counts were much in evidence in 2001/02, however, with those at Breydon Water & Berney Marshes, Chew Valley and nearby Blagdon Lakes, Dungeness Gravel Pits, the Alde Complex and Morecambe Bay all much higher than normal.

In the past, passage birds (and local breeders) have moved through Britain to winter in France and Spain. This has resulted in numbers peaking in October followed by a steady decline during the winter. The lack of a concomitant peak during spring was assumed to be because birds were taking a different route when returning to the breeding grounds or were less aggregated at this time (*Migration Atlas*). As noted in the previous two WeBS

reports, however, this within-winter pattern has been changing in recent years, and in 2002/03 the monthly index was almost constant between October and January and suggested a peak in March. In Northern Ireland, the monthly index showed a midwinter peak, contrasting with the steady within-winter decline seen in the Province in previous years.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Somerset Levels	(485)	635	1,343	1,170	(2,190)	Jan	1,335	
Ouse Washes	[37] 574	[37] 980	[37] 396	[37] 968	1,125	Mar	809	
Thames Estuary	(374)	(187)	564	(605)	697	Jan	631	▲
Rutland Water	430	1,154	401	608	504	Aug	619	
Swale Estuary	468	498	511	587	440	Mar	501	
Breydon Wtr & Berney Marshes	319	356	620	679	415	Mar	478	
Burry Inlet	826	(573)	368	215	397	Dec	476	
Chew Valley Lake	235	425	270	805	535	Oct	454	
Loch Leven	318	420	480	400	550	Oct	434	
Abberton Reservoir	(488)	375	352	440	422	Nov	415	
Sites of national importance in Great Britain								
R. Avon: Fordingbirdge to R'wood	(67)	(81)	(182)	(117)	(361)	Feb	(361)	
Lee Valley Gravel Pits	(228)	(241)	374	321	(308)	Oct	348	
Nene Washes	482	406	190	374	262	Mar	343	
Dungeness Gravel Pits	197	269	398	504	320	Jan	338	
Severn Estuary	259	(206)	306	366	[38] 368	Nov	325	
Unspecified SE England site	360	320	164	520	125	Feb	298	
Staines Reservoirs	251	312	130	356	377	Oct	285	
Medway Estuary	(156)	(122)	(71)	(280)	(20)	Mar	(280)	
Stodmarsh NNR & Collards Lagoon	230	(280)	(409)	206	244	Jan	274	
Blithfield Reservoir	266	443	341	58	148	Aug	251	
Arun Valley	203	163	392	227	259	Jan	249	
Llynnau Y Fali	178	92	464	176	337	Feb	249	
Lower Derwent Valley	341	122	-	-	-		232	
Alde Complex	141	161	181	407	229	Mar	224	
Wraysbury Gravel Pits	84	399	154	[37] 260	221	Sep	224	
Ribble Estuary	73	173	393	179	197	Nov	203	
Poole Harbour	(159)	(51)	(158)	(71)	(198)	Dec	(198)	
Minsmere	98	-	[37] 241	207	233	Jan	195	
Brent Reservoir	185	241	183	230	125	Sep	193	
North Norfolk Coast	138	153	203	289	182	Jan	193	
Fairburn Ings	200	144	289	153	159	Sep	189	
Fen Drayton Gravel Pits	155	92	378	157	128	Nov	182	
Rye Harbour & Pett Level	126	130	160	282	(167)	Jan	175	
Solway Estuary	(44)	(77)	(174)	(59)	(144)	Nov	(174)	
Chichester Gravel Pits	26	112	160	317	238	Dec	171	▲
Tees Estuary	107	131	260	114	245	Sep	171	
Leighton Moss	185	146	-	-	-		166	
King George VI Reservoir	119	114	141	241	163	Mar	156	
Fleet/Wey	217	(118)	73	183	142	Feb	154	
Malltraeth Marsh RSPB	125	145	(157)	(145)	186	Dec	153	
Blagdon Lake	52	95	145	400	75	Mar	153	
Grafham Water	171	265	128	143	51	Feb	152	
Morecambe Bay	(28)	86	57	(380)	82	Apr	151	▲
Humber Estuary	(92)	195	146	(78)	109	Dec	150	
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	126	168	159	182	199	Jan	167	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Stanford Reservoir	548	Oct	The Wash	397	Mar
Wicken Fen	226	Nov	R. Avon: Ringwood to C'church	247	Feb
Hampton & Kempton Rsrs	208	Mar	Cotswold Water Park (West)	218	Mar
Eyebrook Reservoir	184	Oct	Loch Gelly	195	Nov
Walthamstow Reservoirs	179	Oct	Middle Yare Marshes	169	Oct
Ravensthorpe Reservoir	163	Nov	Chetwynd Pool	166	Nov
London Wetland Centre	154	Dec	N Warren & Thorpness Mere	[37] 156	Mar
Pitsford Reservoir	153	Sep			
Middle Yare Marshes	151	Sep			

Sites no longer of national importance

(Note, the 1% threshold has been revised from 100 to 148 for Great Britain) Aqualate Mere, Beddington Sewage Farm, Belvide Reservoir, Coombe Country Park, Dee Estuary (Eng/Wal), Grafham Water, Hampton & Kempton Reservoirs, Hanningfield Reservoir, Knight & Bessborough Reservoirs, Loughs Neagh & Beg, Loch of Strathbeg, Middle Tame Valley Gravel Pits, Middle Yare Marshes, North West Solent, Otmoor, Pitsford Reservoir, Reedham Water, Rostherne Mere, Stanford Reservoir, Swithland Reservoir, Walthamstow Reservoirs, Willen Lake, Woolston Eyes, Wraysbury Reservoir

Internationally or nationally important sites not covered in last five years

Ashford Common Waterworks

RED-CRESTED POCHARD

Netta rufina

Vagrant and escape†

Native range: Europe, Asia

	01/02	02/03
GB Max:	**134 Jan**	**111 Jan**
NI Max:	**0**	**9 Dec**

Despite their large size and prominent appearance, Red-crested Pochards are often surprisingly elusive and numbers are easily underestimated during surveys (du Rau *et al* 2003). The vast majority of British records arise from naturalised populations, the largest of which is found at the Cotswold Water Park where numbers continue to increase slowly; the large count there in 2001/02 fuelled the largest national total yet recorded by WeBS. More vagrants may be expected to occur in future, however, as a result of recent changes in the wintering distribution of the European population (Keller 2000): a large number of birds now winter in areas north of the Alps and have been using a greater number of sites.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of ten or more birds in Great Britain†								
Cotswold Water Park (West)	(60)	63	56	(58)	(74)	Dec	64	
Cotswold Water Park (East)	25	22	33	72	40	Jan	38	
Baston Langtoft Gravel Pits	11	(4)	17	16	8	Feb	13	△

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of ten has been chosen to select sites for presentation in this report*

POCHARD

Aythya ferina

	01/02	02/03
GB Max:	**27,583 Jan**	**31,169 Jan**
NI Max:	**17,047 Jan**	**9,339 Jan**

International threshold:	**3,500**
Great Britain threshold:	**595**
All-Ireland threshold:	**400**

	5	10	25
GB Alert:	○	○	▽

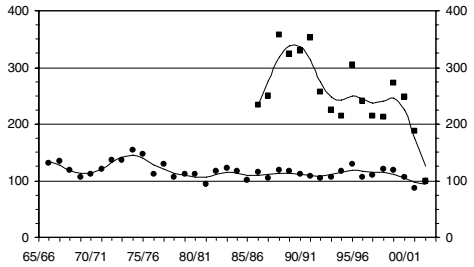

Figure 43. Annual indices for Pochard in GB (circles, left axis) and NI (squares, right axis)

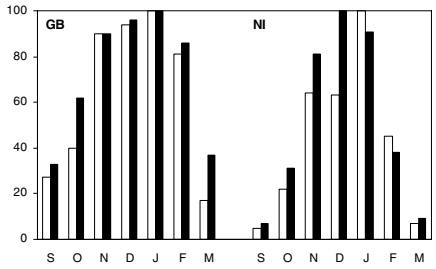

Figure 44. Monthly indices for Pochard in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

National totals in Great Britain dropped sharply in 2001/02, some 29% below the mean of the previous five years, and though they rose appreciably in 2002/03, peak counts in both winters were the lowest since 1970. Index values showed a similar pattern, with that in 2001/02 the lowest to date. Alerts calculated up to the 2000/01 winter suggested stable numbers in recent years, but a medium alert over the previous 25 years, primarily a consequence of the higher numbers in the mid 1970s. The results from the last two winters suggest, however, a 24% decline for the last five years but relative stability since the 1980s, with only a 3.3% decline over the most recent 25-year period.

Peak counts in Northern Ireland fell even more dramatically than in Great Britain, almost entirely reflecting the situation on Loughs Neagh & Beg. In 2002/03, the index had fallen to less than half its value five years ago, and less than one third of values in the early 1990s. Declines in the Republic of Ireland during the late 1990s may be part of the same phenomenon although numbers there have fluctuated considerably between years, with counts at the most important site, Lough Corrib, above average in 2001/02 and 2003/04 but very low in 2002/03 (I-WeBS data).

Reasons for the decline in Northern Ireland are not clear but a recent study of wintering diving duck numbers on Loughs Neagh & Beg has suggested that the most likely explanation is a Europe-wide redistribution of wintering birds in response to milder winters, along with increased availability of flooded grasslands in eastern England (Allen & Mellon 2004, Allen *et al* 2004). There is some evidence to support this idea: although northwest European wintering numbers have overall remained stable, numbers have increased in some countries (Delany *et al* 1999, Gilissen *et al* 2002, *WPE3*). There have, however, been declines in the breeding populations of some European countries, in particular in the key breeding area of Russia where many of the breeding season recoveries of British and Irish wintering birds have originated (*Migration Atlas*, BirdLife International 2004).

On Loughs Neagh & Beg, the key wintering site, peak numbers in 2002/03 were 55% lower than average for recent years. Numbers of diving duck on this site have, however, shown considerable short-term variation: numbers were very low during the late 1960s with the peak in 1966/67 only 11,300 birds (JA Robinson & K Colhoun pers comm, Winfield *et al* 1989). Numbers were also low in the last two winters on the Middle Tame Valley Gravel Pits, the Severn Estuary and at the Cotswold Water Park. Greatly fluctuating numbers on the Nene Washes are typically in response to the degree of flooding. Numbers at Loch Leven and Hornsea Mere were high in both of the last two winters, as they were at Upper Lough Erne, despite the declines in Northern Ireland as a whole.

Monthly indices for Great Britain show a slightly lower proportion of birds present early and late in the season which might be indicative of late arrival and early departure of birds due to milder winter conditions.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Loughs Neagh & Beg	29,683	22,681	24,388	16,138	9,080	Jan	20,394	
Ouse Washes	5,383	[37] 6,345	[37] 4,602	4,206	4,583	Feb	5,024	
Abberton Reservoir	(2,569)	4,744	5,296	3,125	4,325	Aug	4,373	
Sites of national importance in Great Britain								
Loch Leven	1,544	1,320	1,330	4,074	2,934	Oct	2,240	
Nene Washes	1,943	27	4,102	48	2,853	Feb	1,795	
Middle Tame Valley Gravel Pits	1,447	1,167	1,733	1,423	442	Jan	1,242	
Severn Estuary	1,154	1,473	1,008	1,064	772	Feb	1,094	
Fleet/Wey	1,320	850	928	1,072	926	Jan	1,019	
Hornsea Mere	806	1,065	580	1,115	1,415	Nov	996	
Cotswold Water Park (West)	876	(670)	988	(512)	(377)	Jan	932	
Cotswold Water Park (East)	1,382	1,225	723	826	371	Jan	905	
Martin Mere	767	905	861	860	750	Jan	829	
Lower Windrush Valley GPs	655	1,150	681	600	(384)	Jan	772	
Dungeness Gravel Pits	659	889	669	595	765	Jan	715	
Loch of Boardhouse	123	1,156	711	822	605	Jan	683	
Woolston Eyes	(710)	(630)	537	570	637	Feb	617	
Sites of all-Ireland importance in Northern Ireland								
Upper Lough Erne	186	188	185	780	916	Dec	451	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
King George VI Reservoir	[37] 1,066	Dec	Brogborough Pit	1,207	Nov
Chew Valley Lake	735	Jan	Loch of Harray	715	Jan
Rutland Water	630	Sep			

Sites no longer of national importance

(Note, the 1% threshold has been revised from 440 to 595 for Great Britain) Chew Valley Lake, Hanningfield Reservoir, Hickling Broad, Humber Estuary, Loch Gelly, Loch Ore, Loch of Harray, Lower Derwent Valley, Pitsford Reservoir, Poole Harbour, R. Avon: Fordingbridge to R'wood, Rostherne Mere, Rutland Water, Shustoke Reservoirs, St. Johns Loch, Thames Estuary, Wraysbury Gravel Pits

Internationally or nationally important sites not covered in last five years

Walton Lock

TUFTED DUCK

Aythya fuligula

International threshold: 12,000
Great Britain threshold: 901
All-Ireland threshold: 400

	01/02	02/03
GB Max:	**53,625 Dec**	**48,429 Dec**
NI Max:	**14,636 Jan**	**10,457 Jan**

	5	10	25
GB Alert:	O	O	O

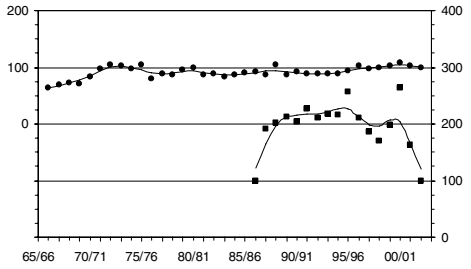

Figure 45. Annual indices for Tufted Duck in GB (circles, left axis) and NI (squares, right axis)

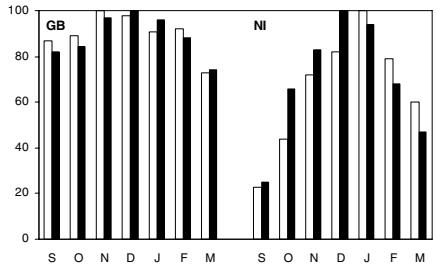

Figure 46. Monthly indices for Tufted Duck in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Peak numbers counted in Great Britain fell for two successive years, with the 2002/03 peak 12% lower than the previous five-year peak mean. National index values were, however, little changed and the overall trend for the last ten years has been one of slight increase.

In Northern Ireland peak counts also fell, although the magnitude was far greater, with the 2002/03 total barely one third of that just two winters previously. As with Pochard, this decline was largely driven by a fall in peak numbers at Loughs Neagh & Beg, with the count in 2002/03 below the international 1% threshold. A study of diving duck numbers on Loughs Neagh & Beg suggested that the declines in Tufted Duck and Pochard numbers might be the result of birds wintering further east in response to milder winters, although the authors predict that this effect will be less pronounced for Tufted Duck since the Irish wintering birds originate from Iceland as well as northwest Europe (Allen & Mellon 2004, Allen *et al* 2004). Nevertheless, the annual index in Northern Ireland fell dramatically to its lowest level since 1986/87, when WeBS counts began in the Province.

Despite low numbers nationally, counts at several key sites in Great Britain were high with Rutland Water and Staines Reservoirs in particular holding above average numbers in 2002/03, and large numbers in that and the previous winter at Walthamstow Reservoirs. In Northern Ireland peak numbers on Upper Lough Erne have increased in each of the last five years, coinciding with higher Pochard numbers at that site and with declines at Loughs Neagh & Beg.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Loughs Neagh & Beg	20,324	20,039	26,360	13,303	9,769	Jan	17,959	
Sites of national importance in Great Britain								
Rutland Water	4,692	3,325	3,313	5,115	7,496	Oct	4,788	
Loch Leven	3,434	3,550	3,900	3,650	4,872	Oct	3,881	
Abberton Reservoir	(2,602)	4,654	4,414	1,418	2,487	Aug	3,243	
Middle Tame Valley Gravel Pits	1,645	2,370	2,547	2,164	(915)	Jan	2,182	
Pitsford Reservoir	(2,585)	1,312	1,202	1,263	2,441	Oct	1,761	
Ouse Washes	1,662	1,361	2,214	[37] 1,395	1,192	Feb	1,565	
Walthamstow Reservoirs	1,217	1,194	1,691	1,838	1,867	Aug	1,561	
Hanningfield Reservoir	851	1,534	2,183	1,160	1,641	Sep	1,474	
Staines Reservoirs	1,251	1,250	1,243	1,026	1,971	Aug	1,348	
Besthorpe & Girton Gravel Pits	1,499	983	(462)	(418)	(10)	Apr	1,241	
Wraysbury Gravel Pits	(1,667)	1,812	785	2,091	2,422	Feb	1,178	
Lee Valley Gravel Pits	(1,053)	1,065	1,085	1,027	1,248	Sep	1,106	
Alton Water	922	736	1,389	961	815	Sep	965	
Chew Valley Lake	735	965	785	1,020	1,080	Sep	917	
Draycote Water	1,010	1,007	744	[37] 740	1,030	Dec	906	
Sites of all-Ireland importance in Northern Ireland								
Upper Lough Erne	255	546	745	998	1,065	Dec	722	
Lower Lough Erne	-	-	-	-	635	Feb	635	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Grafham Water	913	Nov	Hornsea Mere	1,225	Dec

Sites no longer of national importance

(Note, the 1% threshold has been revised from 600 to 901 for Great Britain) Chasewater, Cotswold Water Park (East), Cotswold Water Park (West), Dungeness Gravel Pits, Fen Drayton Gravel Pits, King George V Reservoirs, Loch of Harray, Lower Windrush Valley Gravel Pits, Severn Estuary, Thames Estuary, Tophill Low Reservoir, William Girling Reservoir, Windermere

SCAUP

Aythya marila

	01/02	02/03
GB Max:	**2,372 Feb**	**2,958 Feb**
NI Max:	**3,652 Feb**	**3,298 Feb**

International threshold:	**3,100**
Great Britain threshold:	**76**
All-Ireland threshold:	**30***

** 50 is usually used as a minimum threshold*

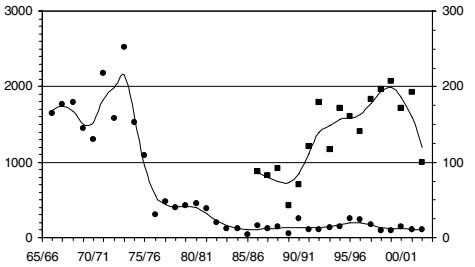

Figure 47. Annual indices for Scaup in GB (circles, left axis) and NI (squares, right axis)

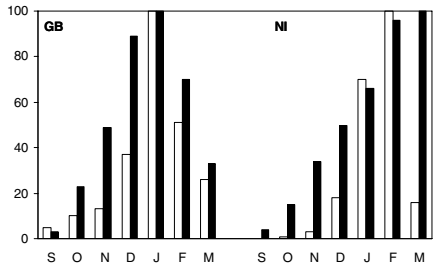

Figure 48. Monthly indices for Scaup in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

British peak counts of Scaup were markedly lower in 2001/02 than the normal range of between 3,500 and 7,500 for recent winters, and remained low in 2002/03 also, the lowest national peak totals since 2,010 in 1983/84. This is not immediately obvious from the indices (presented here for the first time) partly as a consequence of the considerably lower index values in recent decades following the crash in numbers using the Firth of Forth in the 1970s.

Totals in Northern Ireland were also lower than in recent years. The lowest counts at Loughs Neagh & Beg since 1990/91 – matching low numbers of several other species of diving duck at the site – will have been a key factor in 2002/03, as will low numbers at Carlingford Lough in the same winter, although numbers at Belfast Lough were much higher than normal.

Counts of Scaup may suffer from the difficulties affecting those of many seaducks, and fluctuating numbers at some sites may be a result of poor counting conditions rather than genuine changes. National totals, similarly, will reflect these problems, and large totals require favourable conditions at many of the key sites in the same month. There is, however, some evidence that some of the key sites are linked, and only relatively short movements are needed for birds to switch between the Solway and Loughs Neagh & Beg, and between sea lochs in between, including notably Loch Ryan, Loch Indaal and Belfast Lough. The different timing of peak occurrence in Northern Ireland and Great Britain – in late winter and mid winter respectively – also lends some support to the idea of regional movement of the same birds during the course of the winter. Direct evidence from ringing is limited, owing to the difficulty of ringing seaducks, and there are few data for Britain and Ireland after the 1980s, since when the numbers and distribution of Scaup wintering here have changed markedly. Nevertheless, birds from both the Icelandic breeding population and from Fenno-Scandia and northern Russia have been shown to occur in Britain and Ireland, and both at Loughs Neagh & Beg (*Migration Atlas*). Although numbers in Britain as a whole have declined, probably due to an eastwards shift in the wintering of Fenno-Scandian birds, Ireland and western Britain appear increasingly important for the Icelandic-breeding birds since the recovery of the population there in recent decades.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in UK							
Loughs Neagh & Beg	4,426	3,874	2,633	3,389	2,565	Feb	3,377
Sites of national importance in Great Britain							
Solway Estuary	(2,006)	(3,001)	[38] 1,815	[38] 2,367	(1,077)	Feb	2,394
Loch Indaal	1,120	900	1,200	241	755	Feb	843
Loch Ryan	200	(637)	631	[37] 766	[37] 907	Dec	628
Inner Moray Firth	[30] 392	480	313	323	[30] 996	Jan	486
Loch of Stenness	268	(250)	211	513	309	Feb	325

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Cromarty Firth	132	[30] 117	424	[37] 353	[30] 160	Nov	237	
Forth Estuary	342	157	240	189	130	Jan	212	
Loch of Harray	198	(201)	311	97	185	Dec	198	
Rough Firth	(170)	204	204	88	-		167	
Auchenharvie Golf course	-	107	98	-	-		103	▲
Ayr to North Troon	32	60	100	200	120	Jan	102	▲
Sites of all-Ireland importance in Northern Ireland								
Carlingford Lough	700	700	800	618	168	Jan	597	
Belfast Lough	[38] 78	244	493	270	642	Jan	345	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Dornoch Firth	107	Jan	Dornoch Firth	163	Feb
The Wash	92	Apr	Alt Estuary	84	Jan

Sites no longer of national importance

Humber Estuary

EIDER

Somateria mollissima

International threshold (Baltic/Wadden Sea): 10,300
International threshold (Britain/Ireland): 750
Great Britain threshold: 730
All-Ireland threshold: 20*

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**18,100 Sep**	**25,614 Oct**
NI Max:	**1,167 Sep**	**1,377 Oct**

Movements by Eiders breeding in Britain are fairly limited. Most show only regional movements, such as the wintering congregation around the Forth that draws breeding birds from the Ythan to the north and the Farne Islands to the south. Although there appears to be no large interchange with birds on the Continent, the degree of mixing is unclear. Wetlands International regards breeding birds in Britain and Ireland as a separate biogeographical population (*WPE3*) (the current estimate of 73,000 for Britain is derived from winter counts, and, with only small numbers found in Ireland, the national estimate is thus used to derive the new threshold for international importance also). The UK's SPA and Ramsar Scientific Working group has, however, found limited evidence to support this conclusion, and recommends that for site-selection purposes, British Eider continue to be considered as a component of the four groups of the Northwest European groups of the race *mollissima* with an international 1% threshold of 15,500. This threshold has been used for the identification of sites in the table below. It is hoped that future genetic studies will help clarify this situation.

The British peak by WeBS in 2001/02 was significantly lower than recent counts and fell well outside of the normally narrow range of variation for this species (23,900 to 25,420 in recent years). Given that peak numbers are often recorded in late summer, inflated by post-breeding aggregations close to major breeding areas, the maximum in 2001/02 may have been affected by the access restrictions imposed following the Foot and Mouth Disease outbreak in spring 2001, and numbers returned to normal levels the following winter. Although numbers in Northern Ireland were lower than the high in 2000/01, they remained slightly above average for recent winters in both 2001/02 and 2002/03.

Though always coastal, Eiders may be found in a variety of habitats, including sandy bays, estuaries and rocky shores, and may be found in small numbers over a considerable length of coastline. Site definition is, therefore, problematic for this species and sites used for the majority of other waterbirds may not be appropriate for Eider. Large numbers are found throughout much of the Firth of Clyde, and birds found at many locations within this area may be best treated as part of one major site (*eg* Waltho 2003). Numbers obtained during regular early autumn counts in recent years are presented in the table below both for the whole of this site and the individual locations more closely matching WeBS sites for other species. With apparently much smaller numbers on the Tay since the early 1990s – although birds there are difficult to count without dedicated survey – the Firth of Clyde is by far the most important for Eider in Britain, supporting some 21% of the population.

Ringing evidence shows, however, that some British-bred birds – nearly all males – are found in Baltic colonies (*Migration Atlas*). Eiders form pair bonds during winter, and females show a high degree of fidelity to their natal areas; thus, when birds from different breeding areas mix during winter, pairs formed between birds from these different areas will result in males switching from one breeding population to another, a process known as abmigration. Small numbers of continental birds are thought to winter in Britain, and it may be that the majority of those in southeast England, *eg* on the Wash, some distance from British breeding areas, are from the much larger Baltic-Wadden Sea population. Numbers on the Wash have increased markedly in recent winters, and although contrary to the picture seen for many other wildfowl that breed further east whose numbers in Britain have declined with milder winters, such increases may be a consequence of problems on the Wadden Sea, *eg* increased harvest of shellfish (Camphuysen *et al* 2002), which may have forced some Eider to seek alternative feeding grounds. Aerial survey in recent winters of the extensive shallow seas off southeast England (*eg* Hall *et* al 2003) have not located any further significant concentrations of Eider.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Clyde Estuary	[13] 14,529	[13] 17,596	[13] 14,679	[13] 15,692	[13] 14,297	Sep	15,359	
Forth Estuary	7,171	6,283	8,893	5,684	7,492	Mar	7,105	
Tay Estuary	6,030	(32)	[11] (3,861)	[37] 7,500	(6,000)	Oct	6,765	
Morecambe Bay	8,131	6,713	5,306	3,903	(4,541)	Jul	6,013	
Gare Loch	[13] 2,156	[13] 2,261	[13] 3,877	[13] 3,252	[13] 2,619	Sep	2,833	
Montrose Basin	3,365	2,214	2,500	3,013	3,051	Oct	2,829	
Ythan Estuary	3,944	3,800	583	3,531	2,082	Apr	2,788	
Scapa Flow	[39] 2,308	-	-	-	-		2,308	
Lindisfarne	(2,106)	1,407	[38] 1,841	2,024	2,043	Dec	1,884	
Loch Long/Loch Goil	[13] 2,960	[13] 2,164	[13] 1,539	[13] 1,299	[13] 1,459	Sep	1,884	
Loch Fyne	[13] 1,558	[13] 1,510	[13] 1,297	[13] 1,874	[13] 1,505	Sep	1,549	
Farne Islands	2,500	200	2,434	671	(293)	Nov	1,451	
Ayr to North Troon	4,355	[37] 775	[37] 504	[46] 1,203	387	Mar	1,445	
Loch Ryan	1,202	1,400	2,037	1,031	[13] 1,188	Sep	1,372	
The Wash	266	258	1,370	1,344	2,546	Jan	1,157	
Gourock to Largs	[13] 1,059	[13] 627	[13] 908	[13] 1,097	[13] 1,773	Sep	1,093	▲
Holy Loch to Toward Point	[13] 794	[13] 1,504	[13] 1,319	[13] 615	[13] 1,146	Sep	1,076	▲
Inner Moray Firth	-	-	[30] 1,243	[30] 1,137	[30] 804	Dec	1,061	▲
Bute	[13] 949	[13] 1,367	[13] 771	[13] 1,143	[13] 944	Sep	1,035	
Girvan to Turnberry	1,589	1,083	957	151	1,198	Feb	996	
Alnmouth	820	(12)	(6)	(9)	(3)	Sep	820	▲
Wemyss Bay to Fairlie	622	744	561	1,246	733	Sep	781	▲
Isle of Cumbrae	909	577	-	-	-		743	
Sites of all-Ireland importance in Northern Ireland								
Belfast Lough	[38] 913	1,076	[38] 2,219	906	[38] 1,016	Feb	1,226	
Outer Ards	716	382	241	-	428	Mar	442	
Lough Foyle	[37] 130	11	28	344	551	Aug	213	
Strangford Lough	95	122	279	283	165	Jan	189	
Larne Lough	100	157	128	107	120	Sep	122	
Bann Estuary	26	6	16	32	21	Oct	20	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03
Stevenston Point	[13] 800	Sep	none	
Seahouses to Budle Point	735	Nov		

Sites no longer of national importance

Ardrossan to Farland Head, Don Mouth to Ythan Mouth, Stevenston Point

LONG-TAILED DUCK

Clangula hyemalis

International threshold:	**20,000**
Great Britain threshold:	**160**
All-Ireland threshold:	**+**[†]

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**2,184 Dec**	**3,170 Jan**
NI Max:	**37 Feb**	**23 Nov**

Although the current estimate of 16,000 Long-tailed Ducks wintering in Britain is a compilation from various sources and includes some relatively historical data (Kershaw & Cranswick 2003), WeBS peak totals represent, at most, 20% of this figure. This species usually remains some distance from the coast, making ground-based counts difficult and accurate monitoring problematic. Dedicated boat-based surveys of seaducks provide data for more remote parts of Scotland particularly in Shetland, while aerial and shore-based counts provide data for several other important areas including the Outer Hebrides, Orkney and northeast Scottish coasts. This is reflected in the table below, with such additional data comprising a large proportion of the counts used.

The WeBS peak total for Great Britain in 2002/03 was above the mean for the previous five years while numbers in Northern Ireland were about average. Total numbers over the most recent two years increased from September through to December/January, with the arrival of birds thought to originate mainly from breeding grounds in northern Fenno-Scandia and northwest Russia (*Migration Atlas*). Numbers were sustained until February, falling rapidly in March with small numbers present in April and May and no birds recorded during the summer.

The different sources of data make interpretation of trends difficult, even at individual sites (see *Methods*), and particularly for a species such as Long-tailed Duck. Aerial survey data given in the table are usually actual counts but, since these were obtained using distance-sampling protocols, will be undercounts of the actual number present. Thus, while the count in Scapa Flow in 2002/03 is a known undercount, the true figure is still likely to be well below the 1,582 recorded by boat surveys in 1998/99. However, whether a single count in December accurately monitors the importance of the site in 2002/03 is clearly a moot point – ideally, further surveys are needed during winter to identify the seasonal use of this site – while it would be similarly unwise to determine trends or even identify a change in status on the basis of a single count four years after the previous survey. Given the lack of appropriate survey of nearshore waters in the UK, a targeted programme of survey using appropriate techniques at relevant times of the year and with sufficient frequency is required first to assess and then to monitor the status and distribution of seaducks and divers in the UK (Cranswick 2003).

Given the above limitations, numbers counted at individual sites fluctuate between years, and differences between winters and apparent patterns must be interpreted with caution. The Moray Firth remains the most important site numerically, consistently holding high numbers. Fewer birds have been recorded on the Firth of Forth in recent years, suggesting a genuine decline.

Although in recent years, many major areas for wintering seaducks have been surveyed by boat or aerial surveys, there are still substantial gaps in overall coverage and not all areas are surveyed at regular intervals throughout winter months. The fluctuating and sporadic nature of much of the count data available highlights the need for comprehensive surveys of wintering seaducks, divers and grebes to determine national population estimates and identify spatial and temporal distribution around British and Irish coasts.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Moray Firth	[30] 2,482	[30] 1,389	(3,991)	(1,501)	[30] 3,585	Dec	2,862	
Scapa Flow	[39] 1,582	-	-	-	[11] (43)	Dec	1,582	
Forth Estuary	772	783	(319)	413	435	Nov	601	
South Yell Sound	[36] 191	[36] 317	[36] 222	[36] 136	[36] 108	Feb	195	
Hacosay, B'mull & C'grave Sounds	[36] 305	-	[36] 169	[36] 201	[36] 59	Mar	184	▲

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 30 or more birds in Great Britain†								
Bressay Sound	-	-	-	[36] 130	[36] 176	Mar	153	△
West Whalsay and Sounds	-	-	-	[36] 152	-		152	△
Loch of Stenness	88	(173)	75	226	182	Dec	149	
Tay Estuary	2	9	[11] (546)	[11] (116)	[37] 1	Sep	140	△
Virkie/Quendale	-	[36] 110	[36] 203	[36] 117	[36] 122	Dec	138	△
Water Sound	135	120	179	68	155	Jan	131	
St Andrews Bay	(72)	(16)	(7)	(10)	(97)	Nov	(97)	
Island of Papa Westray	-	-	-	4	182	Mar	93	△
Traigh Luskentyre	(75)	49	49	126	-		75	
Whiteness to Skelda Ness	[36] 66	[36] 87	[36] 60	[36] 40	[36] 45	Jan	60	△
West Voe of Sumburgh	-	-	-	[36] 58	-		58	△
Aberdeen Beach	12	88	-	-	-		50	
Loch Indaal	4	8	231	0	6	Dec	50	
Thurso Bay	-	(60)	-	-	30	Jan	45	
Loch of Tankerness	-	79	7	-	-		43	△
Loch of Harray	85	(20)	31	15	17	Nov	37	
Quendale Bay	-	-	-	[36] 34	-		34	△
Lindisfarne	(32)	1	15	[38] 66	[38] 50	Feb	33	△
East Unst	-	-	-	[36] 31	-		31	△
Sites with mean peak counts of 30 or more birds in Northern Ireland†								
Lough Foyle	0	4	161	0	1	Mar	33	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
Belfast Lough	37	Feb	none
North Norfolk Coast	34	Dec	

Sites no longer meeting table qualifying levels

Seahouses to Budle Point

† *as few sites in Great Britain exceed the British threshold, and as no all-Ireland threshold has been set, a qualifying level of 30 has been chosen to select sites for presentation in this report.*

COMMON SCOTER

Melanitta nigra

International threshold: 16,000
Great Britain threshold: 500
All-Ireland threshold: 40*

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**13,906 Jan**	**19,755 Jan**
NI Max:	**22 Nov**	**23 Nov**

The peak British counts by WeBS in 2001/02 and 2002/03 were markedly higher than in the previous five winters, returning to levels recorded in the early 1990s, although numbers remained very low in Northern Ireland. Counted numbers undoubtedly suffer, however, from the many difficulties of assessing birds on the sea from land, particularly during WeBS counts which are timed to coincide with favourable tidal rather than weather conditions, and when the need to record large numbers of waterbirds using high tide roosts precludes the time needed to make the lengthy scans often required for divers and seaducks.

An extensive programme of aerial surveys in recent winters, particularly in the northern Irish Sea, has greatly changed our understanding of numbers and distribution of Common Scoter in UK waters (Oliver *et* al 2001, WWT Wetlands Advisory Service 2003, Cranswick *et al* 2004). Large numbers were located offshore, particularly in Liverpool and Cardigan Bays. Counted totals exceeded 12,000 in Liverpool Bay in three of the four winter survey months during 2002/03, and surpassed 24,000 in February that winter. Numbers over Shell Flat alone – a sand bank stretching some 20 km west from Blackpool – were 14,000 in the same month, the highest recorded aerial survey total of Common Scoter at a single UK site. Counted numbers in Cardigan Bay varied between 2,000 and 4,000, and distribution similarly extended a considerable distance offshore where there was shallow water. Such numbers, however, represent only a portion of

the total present, since birds further from the plane are likely to go undetected. Aerial survey employs a 'distance sampling' methodology, a technique that allows the numbers of birds missed to be calculated, and analysis suggested that at least 25,000 birds were present in Liverpool Bay during winter months in 2002/03, and a remarkable 79,000 in February 2003 (Webb *et al* in prep a). Numbers in Liverpool Bay as a whole, and perhaps within some of its constituent 'sites' – Shell Flat, Formby Point, Colwyn Bay and Conwy Bay (Fig. 49) – therefore exceeded the 1% international threshold and, following similar numbers in the previous two winters, the site qualifies for classification as a marine Special Protection Area (SPA) (Webb *et al* in prep a). Whilst survey showed that the sites favoured by Common Scoter in Liverpool and Cardigan Bays in 2002/03 closely matched those identified in 2001/02, there was an apparent shift of birds to deeper waters as winter progressed, presumed to be in response to food depletion. A survey in August 2002 recorded over 6,000 birds, a proportion of which were thought to be moulting, demonstrating the considerable importance of this area for Common Scoter throughout much of the year.

Numbers have been presented in the table below both for Liverpool Bay as a whole – considered to represent one 'super-site' for Common Scoter – and for its constituent areas, which more closely match WeBS sites. As for other species using marine sites, care is needed in interpreting these figures: low numbers at many sites are likely to reflect the absence of counts, or at least dedicated counts during suitable conditions, and may be best treated as undercounts. At many, particularly where large concentrations are known to occur 5 km or further offshore, ground counts will always underestimate the total present (see also Red-throated Diver *qv*). The data provided from aerial surveys are the counted numbers, not allowing for missed birds, and are thus also known undercounts.

Nevertheless, land counts continue to record large numbers for some sites, and this approach may provide the most accurate counts where birds occur close to shore in large and discrete aggregations. Especially high numbers have been present off the North Norfolk Coast in the two most recent winters, although even here, the dense rafts that form – most commonly off Titchwell and near Holkham – pose their own particular counting problems. Aerial surveys in the North Sea suggest that Common Scoter are confined to three or four discrete flocks off Norfolk and Lincolnshire (the 'Wash offshore area' in the table below) and do not, as in Liverpool Bay, occur more widely spread over the extensive shallow seas there (Cranswick *et al* 2003). Counts in the Moray Firth were the highest of recent decades by a considerable margin; although counts in excess of 10,000 were made regularly during the 1970s, the last large count was 8,000 in 1977/78, after which numbers dropped abruptly. An unusually high count off the Swale in January 2003 is reminiscent of the large flocks that were occasionally recorded off the Kent and Essex coasts in the 1960s and 1970s. The count obtained during aerial survey in 2001/02 at Dundrum Bay, where large numbers have been recorded infrequently in the past, was the largest in Northern Ireland for many years.

Given the aforementioned problems, it is currently difficult to determine real changes in numbers at any of the key sites, but the continuation of aerial surveys, now demonstrated to be the only means of obtaining accurate survey data, should alleviate this problem to a large extent.

Numbers in Carmarthen Bay have consistently exceeded the international threshold following recovery after the *Sea Empress* oil spill killed many thousands in the mid 1990s, and the site was recently classified as the UK's first wholly marine SPA on this basis. A program of aerial and ground monitoring continues at this site. A peak count of 15,417 Common Scoters was made during aerial counts in January 2003, analysis suggesting the actual number present could be as high as 30,000 (Banks *et al* 2004).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in UK								
Liverpool Bay	-	-	-	[47] 27,772	[47] 79,136	Feb	53,454	▲
Carmarthen Bay	[40] 18,243	[40] 21,592	[40] 19,506	[1] 20,078	[3] 23,288	Jan	20,541	▲
Sites of national importance in Great Britain								
Colwyn Bay	(363)	(735)	(500)	[1] (5,194)	[1] (7,436)	Dec	(7,436)	
Moray Firth	[30] 3,543	[30] 2,281	(3,848)	(3,072)	(8,351)	Jan	4,725	
Cardigan Bay	(477)	(126)	[11] (3,767)	[1] (4,045)	[1] (4,219)	Nov	(4,132)	

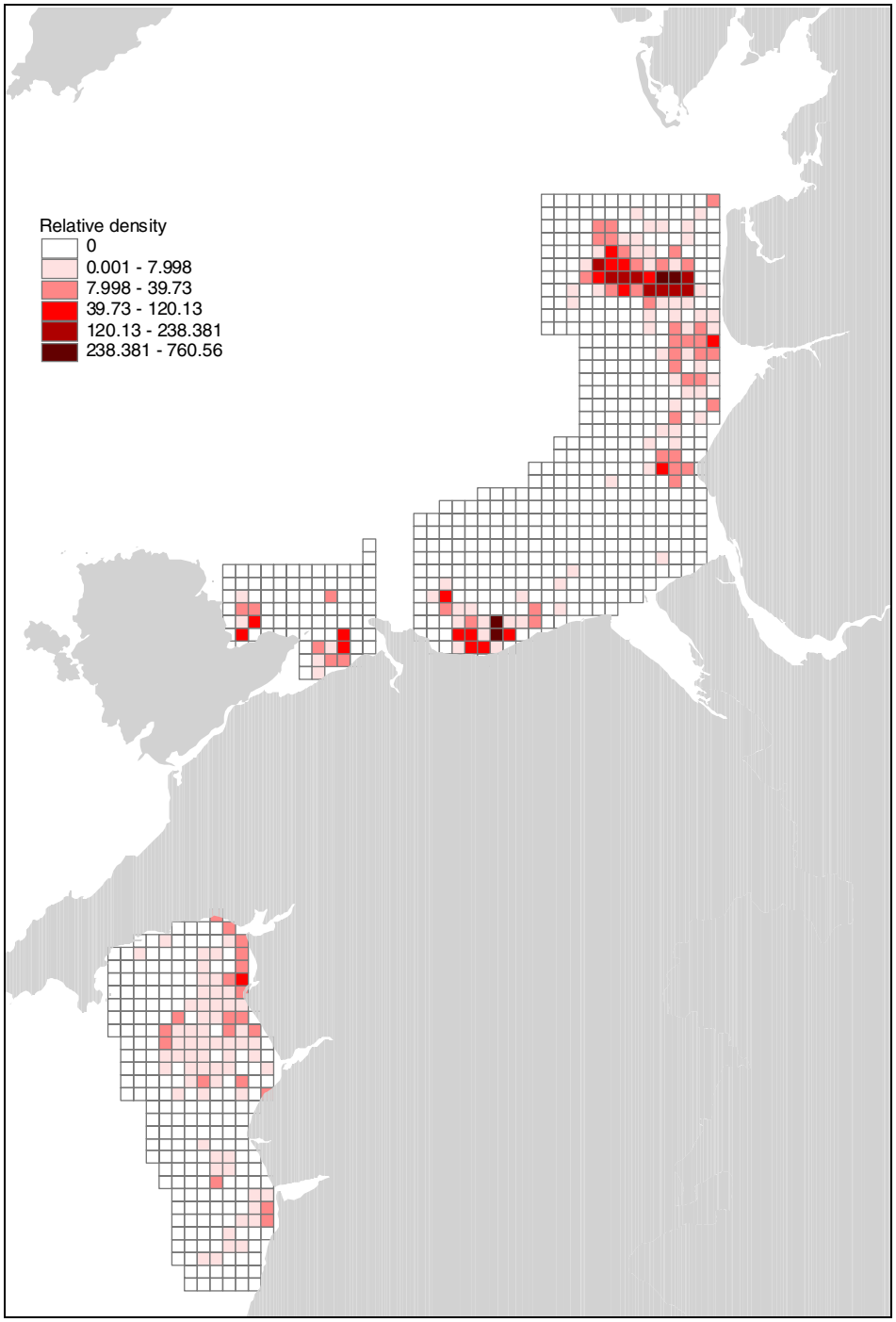

Figure 49. Relative encounter rate for all observations of Common Scoter *Melanitta nigra* by 2x2 km blocks in Liverpool and Cardigan Bays, February 2003 (from Cranswick *et al* 2004).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
North Norfolk Coast	1,552	3,014	606	8,008	5,051	Jan	3,646	
Conwy Bay	-	-	-	[I] (3,336)	[I] (1,424)	Dec	(3,336)	▲
Forth Estuary	1,663	3,764	[II] (841)	[II] (2,557)	3,255	Mar	2,894	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
The Wash offshore area	-	-	-	-	[8] (2,042)	Feb	(2,042)	▲
St Andrews Bay	(1,105)	880	2,300	1,705	(584)	Sep	1,628	
Alt Estuary	454	572	399	[37] 1,900	1,818	Dec	1,029	
The Wash	468	(166)	2,650	150	452	Jan	930	
Dee Estuary (Eng/Wal)	48	11	25	[38] 4,000	5	Sep	818	▲
Solway Firth	[5] (1,450)	(3)	0	(41)	(2)	Jan	725	
Swale Estuary	(3)	2	18	(20)	2,000	Jan	673	▲
Lindisfarne	(1,512)	220	0	[38] 844	[38] 450	Feb	605	
Traeth Coch	-	-	-	-	[1] (571)	Feb	(571)	▲
Tay Estuary	0	0	[11] (1,687)	[11] (865)	0	Jan	510	▲
Sites of all-Ireland importance in Northern Ireland								
Dundrum Bay	755	(0)	(0)	[45] 828	(0)	Jan	792	

Internationally or nationally important sites not covered in last five years
Craigalea to Newcastle, Earlsferry Links to Anstruther, Tyrella Shore

VELVET SCOTER

Melanitta fusca

International threshold: **10,000**
Great Britain threshold: **30***
All-Ireland threshold: **+***

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**1,410 Feb**	**5,429 Feb**
NI Max:	**1 Feb**	**10 Feb**

The peak count of Velvet Scoter in 2001/02 was about average for recent years at just over 1,000, but that in 2002/03 was the highest national total ever recorded by WeBS. This was mainly due to large numbers in the Moray Firth, where much larger than normal numbers of Common Scoter were also recorded that winter. Counts on the North Norfolk Coast were the highest there since 1995/96, and again matched high numbers of Common Scoter at that site.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of national importance in Great Britain							
Moray Firth	[30] 1,090	[30] 401	[30] 744	(610)	(4,398)	Feb	1,658
Forth Estuary	433	751	542	1,923	1,487	Jan	1,027
St Andrews Bay	840	845	1,870	800	(2)	Apr	871

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
North Norfolk Coast	41	Jan	North Norfolk Coast	55	Mar

GOLDENEYE

Bucephala clangula

International threshold: **4,000**
Great Britain threshold: **249**
All-Ireland threshold: **110**

	01/02	02/03
GB Max:	**12,869 Dec**	**13,060 Jan**
NI Max:	**6,926 Dec**	**4,074 Mar**

	5	10	25
GB Alert:	○	○	○

Annual indices for Northern Ireland show a sharp drop in recent years, and particularly in 2002/03 to the lowest value on record, a consequence of the decline at Loughs Neagh & Beg, the main wintering site for Goldeneye in the UK. Whilst numbers at other key sites in Northern Ireland remained relatively stable, the 2002/03 peak count at Loughs Neagh & Beg was the lowest since the early 1980s and was less than half the peak – of 13,748 in January 1993 – since WeBS began in earnest in the Province. Of the several diving duck species that winter at the site, Goldeneye has shown the most obvious decline in recent years (Allen *et al* 2004).

British maxima in 2001/02 and 2002/03 were also notably lower than in previous years and this decrease is highlighted in the downward trend of the annual indices. Numbers in Britain usually reach a maximum in

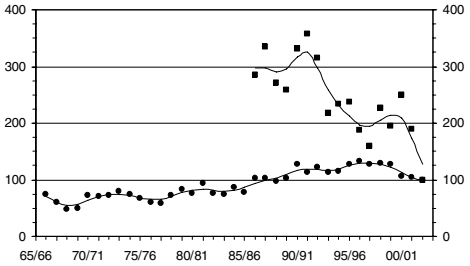

Figure 50. Annual indices for Goldeneye in GB (circles, left axis) and NI (squares, right axis)

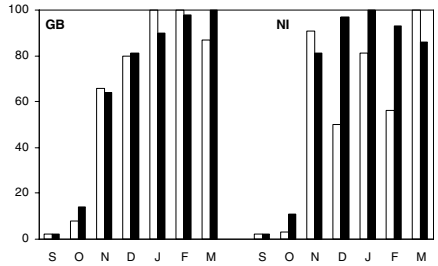

Figure 51. Monthly indices for Goldeneye in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

late winter, but the peak in 2001/02 occurred in December. The drop thereafter was reflected in counts at key sites, *eg* numbers on the Inner Moray Firth peaked at 993 in December but then fell markedly the following month to just 170. Elsewhere, numbers at the Inner Firth of Clyde have declined over the most recent four years, and notably lower than average counts were recorded at the Firth of Forth in both of the most recent two winters. The Humber and Stour Estuaries and Hornsea Mere all held markedly higher numbers in 2002/03 than in previous years.

The most recent data from international counts show that whilst the wintering population in Northwest Europe has remained fairly stable, numbers in the Baltic/Nordic (including Russia, Scandinavia and Denmark) region have increased (Gilissen *et al* 2002)). It is suggested that Goldeneyes may stage in the Baltic on route to the UK, but with climate change resulting in milder winters, fewer birds then continue the journey further west (Allen *et al* 2004). Goldeneyes migrate to their wintering grounds from late August, with the main passage of birds taking place from November (*Migration Atlas*). This is reflected in the monthly indices for Great Britain, which, typically, show an increase in numbers as the winter progresses. Ringing data, though limited, suggest birds breeding in Scotland remain in Britain and Ireland for the winter, and that the majority of birds overwintering in the UK are from the Fenno-Scandian breeding population (*Migration Atlas*).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in the UK							
Loughs Neagh & Beg	7,611	7,026	8,482	6,454	3,661	Mar	6,647
Sites of national importance in Great Britain							
Forth Estuary	2,445	1,653	(2,414)	1,113	(1,241)	Jan	1,906
Inner Moray Firth	[38] 964	894	1,141	993	[38] 1,352	Jan	1,069
Abberton Reservoir	631	651	448	619	469	Feb	564
Clyde Estuary	496	858	468	321	264	Mar	481
Humber Estuary	(581)	410	498	208	618	Feb	463
Rutland Water	366	354	353	450	428	Nov	390
Tweed Estuary	585	302	151	312	240	Jan	318
Hornsea Mere	185	(505)	85	294	[37] (480)	Mar	310
Morecambe Bay	314	288	346	221	280	Feb	290
Scapa Flow	[39] 282	-	-	-	-		282
Stour Estuary	154	146	291	205	573	Jan	274
Blackwater Estuary	279	265	(341)	197	181	Jan	253
Loch Leven	382	256	215	249	153	Feb	251
Loch of Stenness	215	(310)	261	227	237	Dec	250
Sites of all-Ireland importance in Northern Ireland							
Strangford Lough	298	238	108	256	295	Jan	239
Belfast Lough	[38] 337	161	276	[38] 140	249	Jan	233
Lower Lough Erne	-	-	-	-	218	Dec	218 ▲
Larne Lough	173	247	136	189	130	Feb	175
Carlingford Lough	(154)	(139)	163	68	103	Feb	125

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Loch of Skene	270	Mar	Solway Estuary	254	Mar
			Upper Lough Erne	117	Dec

Sites no longer of national importance

(Note, the 1% threshold has been revised from 170 to 249 for Great Britain) Doon Estuary, Fleet/Wey, Girvan to Turnberry, Kilconquhar Loch, Loch of Skene, Loch Ryan, Lough Money, North Norfolk Coast, Poole Harbour, R, Tweed: Kelso to Coldstream, Upper Lough Erne, Windermere

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SMEW

Mergellus albellus

International threshold:	**400**
Great Britain threshold:	**4***
All-Ireland threshold:	**+***

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**289 Jan**	**284 Jan**
NI Max:	**0**	**1 Dec**

Both the 2001/02 and 2002/03 British peak totals showed an increase of over 60 birds since the 2000/01 maximum, although they remained significantly lower than the WeBS peak of 453 in 1996/97 (as might be expected given the trend towards milder winters). Typically, peaks at most sites occurred between early January and mid February. Smew remains a scarce visitor to Northern Ireland with three birds observed at Strangford Lough during Low Tide Counts in 2001/02, and a single at Quivvy Lough (part of the Upper Lough Erne complex), in December only, during 2002/03. Interestingly, most of the important sites for this species in the UK are man-made wetlands created by mineral extraction.

Small increases were noted at several of the key sites in both 2001/02 and 2002/03 – notably at Wraysbury Gravel Pits, Cotswold Water Park (West) and Rye Harbour & Pett Level – contributing to the increased national figures, and there was a much larger than normal count at Meadow Lane Gravel Pits, St Ives. Birds usually begin to leave by late February or early March, but occasional individuals remain well into the summer, and one bird was present on the Burry Inlet throughout the summer of 2002.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Wraysbury Gravel Pits	53	56	53	66	63	Jan	58	
Dungeness Gravel Pits	38	29	27	32	18	Dec	29	
Lee Valley Gravel Pits	30	(22)	20	23	29	Feb	26	
Cotswold Water Park (West)	19	28	17	31	(32)	Jan	25	
Rye Harbour & Pett Level	11	7	2	20	28	Feb	14	
Fen Drayton Gravel Pits	17	14	7	15	11	Feb	13	
Thorpe Water Park	26	9	6	6	11	Feb	12	
Twyford Gravel Pits	9	17	-	7	12	Jan	11	
Rutland Water	19	8	8	12	8	Dec	11	
Middle Tame Valley Gravel Pits	21	5	8	(8)	(5)	Jan	11	
Seaton Gravel Pits	16	[37] 9	7	11	7	Dec	10	
Chew Valley Lake	15	5	11	3	7	Jan	8	
Earls Barton Gravel Pits	15	3	2	-	7	Feb	7	
Horsey Mere	(1)	7	-	-	-		7	▲
Eyebrook Reservoir	12	-	7	7	1	Jan	7	
Hornsea Mere	19	1	3	7	4	Dec	7	
Bedfont & Ashford Gravel Pits	(1)	(1)	5	6	(6)	Jan	6	
Leybourne/ New Hythe Gravel Pits	-	-	7	7	3	Feb	6	
Little Paxton Gravel Pits	4	5	10	4	8	Feb	6	
Marsh Lane Gravel Pits	-	-	-	-	6	Jan	6	▲
Meadow Lane Gravel Pits	1	-	3	1	17	Feb	6	▲
Hoveringham Gravel Pits	-	6	(0)	(0)	-		6	▲
Fairburn Ings	5	6	8	6	6	Feb	6	
Pitsford Reservoir	(8)	2	2	9	2	Feb	5	▲
Hickling Broad	4	2	10	-	-		5	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)*								
Tees Estuary	10	3	2	3	5	Feb	5	▲
Tottenhill Gravel Pits	5	3	-	-	-		4	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Abberton Reservoir	9	Jan	Sonning Gravel Pits	9	Feb
Stodmarsh & Collards Lagoon	4	Jan	Colne Valley Gravel Pits	6	Feb
Sutton & Lound Gravel Pits	4	Jan	Toft Newton Reservoir	5	Jan
Lower Windrush Valley GPs	4	Feb	Tophill Low Reservoirs	5	Jan
Minsmere	4	Feb	Croxall Pits	5	Feb
Barton Pits	4	Mar			
Martin Mere	[37] 4	Dec			
Strangford Lough	[38] 3	Nov			

Sites no longer of national importance
Chichester Gravel Pits, Loch of Strathbeg

Internationally or nationally important sites not covered in last five years
Staines Moor Gravel Pits

RED-BREASTED MERGANSER

Mergus serrator

International threshold: 1,700
Great Britain threshold: 98
All-Ireland threshold: 20*

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**3,636 Dec**	**3,121 Nov**
NI Max:	**699 Nov**	**513 Jan**

	5	10	25
GB Alert:	○	○	△

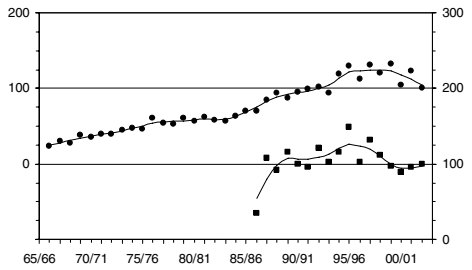

Figure 52. Annual indices for Red-Breasted Merganser in GB (circles, left axis) and NI (squares, right axis)

After a long-term increase, the number of Red-breasted Mergansers counted by WeBS in Great Britain is now falling, and the 2002/03 index value was the lowest for ten years. Counted totals in 2001/02 and 2002/03 were markedly below the 4,300 recorded consistently in the previous four winters. Since the turn of the century, the WeBS index for Northern Ireland has also been considerably lower than during the 1990s, this despite November 2001 seeing the highest peak count of Red-breasted Mergansers since 1995/96 (counts varied between 450 and 600 since). The reasons for these recent declines are unknown, although DEFRA figures show that an increase in licensed control is not to blame. Perhaps coincidentally, the index for Goosander has shown a similar dip in recent years.

Since the massive decline in numbers on the Moray Firth, no UK sites hold internationally important numbers of Red-breasted Mergansers. The top seven nationally important sites are also showing declines in five-year means and although some held fewer than average numbers in 2001/02 and/or 2002/03, *eg* Lavan Sands and the Duddon Estuary, obviously depressed numbers were not found at other sites. Indeed, higher than average numbers were noted at several sites, particularly in Northern Ireland, at Strangford, Belfast and Carlingford Loughs, and at the Firth of Forth.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of national importance in Great Britain							
Scapa Flow	[39] 628	-	-	-	-		628
Forth Estuary	(622)	(601)	459	599	769	Oct	612
Poole Harbour	385	466	336	417	469	Jan	415
Fleet/Wey	269	530	283	366	358	Mar	361
Morecambe Bay	(309)	475	338	229	(265)	Nov	347

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Traeth Lafan	[20] 453	[20] 255	317	164	170	Sep	272	
Duddon Estuary	378	240	(148)	136	220	Sep	244	
Inner Moray Firth	[30] 431	224	144	[37] 140	266	Oct	241	
Chichester Harbour	[38] 141	(212)	180	159	184	Mar	175	
Clyde Estuary	230	159	125	196	141	Sep	170	
Langstone Harbour	185	116	122	192	158	Nov	155	
Cromarty Firth	[30] 135	[38] 168	[37] 221	[37] 75	[37] 162	Sep	152	
Loch Indaal	191	185	163	40	172	Aug	150	
Tay Estuary	(13)	(27)	(127)	(30)	(39)	Oct	(127)	▲
Solway Estuary	(66)	(122)	(109)	(57)	(55)	Nov	(122)	
Cardigan Bay	-	-	-	[1] 118	-		118	▲
Exe Estuary	93	130	139	94	112	Dec	114	
North Norfolk Coast	100	128	103	102	109	Mar	108	
Loch Ryan	83	80	94	113	[37] 133	Dec	101	▲
Portsmouth Harbour	(89)	(104)	63	125	100	Dec	98	▲
Arran	(41)	64	108	94	126	Jul	98	▲
Rova Head to Kirkabister	-	-	-	-	[36] 98	Mar	98	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	285	211	148	342	187	Jan	235	
Larne Lough	195	243	188	176	123	Feb	185	
Belfast Lough	[38] 123	166	169	162	228	Jan	170	
Outer Ards	41	(52)	(35)	-	62	Mar	52	
Carlingford Lough	46	41	44	24	106	Aug	52	
Lough Foyle	[37] 99	27	15	73	37	Mar	50	
Dundrum Bay	42	(10)	(13)	(11)	(3)	Oct	42	▲
Loughs Neagh & Beg	42	9	21	19	29	Sep	24	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Goring	186	Dec	Loch nan Gabhar	100	Aug
Sullom Voe	[36] 114	Feb			
Stour Estuary	[38] 100	Feb			

Sites no longer of national importance

Bann Estuary, Montrose Basin, Stevenston Point, the Wash

Internationally or nationally important sites not covered in last five years

Craigalea to Newcastle, Stevenston Point, Tyrella Shore

GOOSANDER

Mergus merganser

International threshold (Scandinavia/Baltic/W Russia): 2,500
International threshold (Scotland/England/Wales): 160
Great Britain threshold: 160
All-Ireland threshold: +

	01/02	02/03
GB Max:	**3,438 Jan**	**2,368 Dec**
NI Max:	**1 various**	**2 Oct**

GB Alert: 5 ▽ 10 ○ 25 △

Numbers of Goosanders counted by WeBS appear to be declining following a long-term increase. As the UK breeding population continues to increase (Rehfisch *et al* 1999, Waterways Bird Survey data), and as the WeBS index for England has dipped sharply in recent years (Austin *et al* 2004), it is tempting to suggest that reduced numbers of late winter continental immigrants might be the cause. The peak in the mid 1990s coincided with a cold winter and the occurrence of larger numbers at sites in southern England, and it might be speculated that the same individuals returned to use these sites in following winters, maintaining the relatively high numbers. The current decline since the mid 1990s – triggering a medium alert over the 5-year period – might therefore be a waning of this 'tradition', matching the trend observed for some other waterbirds that breed east of the UK not travelling so far west in recent winters and therefore declining in number in Britain. This theory is also supported by the monthly index values, with fewer birds counted in late winter than in previous years, a time

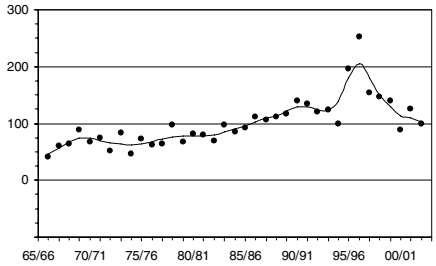

Figure 53. Annual indices for Goosander in GB

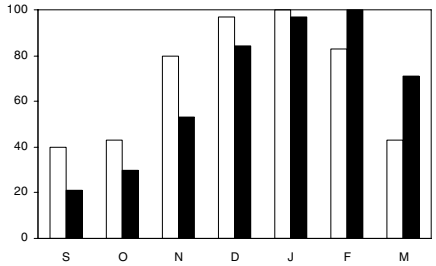

Figure 54. Monthly indices for Goosander in GB (white bars 2002/03; black bars 1998/99 to 2002/03)

when continental immigrants were likely to be present. Nevertheless, the WeBS index has decreased by 20% over the past ten years (*ie* before the mid 1990s influx) and the peak count in 2002/03 was the lowest since 1987/88, suggesting that numbers may also now be falling below the levels of the early 1990s. The large count on the River Tweed in 2001/02 is therefore all the more remarkable. Wetlands International treats Goosanders breeding in Scotland, northern England and Wales as a discrete population, distinct from those birds in continental Europe, and thus the national threshold for birds in Great Britain has also been adopted as the international estimate (*WPE3*). A recent review of available data by the UK's SPA and Ramsar Scientific Working Group, however, found limited evidence to support this conclusion for the time being. The group recommends that for site-selection purposes, British Goosanders continue to be considered as a component of the Northwest and Central European population, with an international 1% threshold of 2,700. This threshold has been adopted in the table below.

The revision of the British winter estimate to 16,100 (Kershaw & Cranswick 2003) means that only three sites surpass the 1% threshold. Regular roost counts at many of the former and current key sites would, however, probably see an increase in their five-year peak means. Small numbers of birds continue to be recorded in winter in Northern Ireland, although there are still no confirmed breeding records. Large numbers of Goosander continue to be shot under licence in Scotland: since 1990, an average of 450 birds has been shot each year with a peak of 813 birds (more than 5% of the population) in 1997.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Hirsel Lake	[37] 490	[37] 87	145	-	-		241	
Tay Estuary	160	268	230	245	248	Sep	230	
R. Tweed: Kelso to Coldstream	129	158	111	371	179	Jan	190	
Sites with peak mean counts of 100 or more birds in Great Britain								
Loch Lomond	129	176	(12)	(37)	(84)	Oct	153	▼
Tyninghame Estuary	62	130	(300)	161	97	Aug	150	▼
Eccup Reservoir	131	154	95	103	95	Nov	116	▼

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Inner Moray Firth	[37] 191	Jul	Bann Estuary	1	Oct
Talkin Tarn	141	Jan			
Castle Loch (Lochmaben)	113	Jan			
Hamilton Low & S'clyde Parks	110	Jan			
Belfast Lough	1	Oct			

Sites no longer of national importance

(Note, the 1% threshold has been revised from 90 to 160 for Great Britain) Castle Loch (Lochmaben), Blithfield Reservoir, Hamilton Low Parks & Strathclyde Park, Hay-a-Park Gravel Pits, Lower Derwent Valley, Montrose Basin

Internationally or nationally important sites not covered in last five years

Spey Mouth

RUDDY DUCK

Oxyura jamaicensis

Naturalised Introduction†
Native range: N & S America

	01/02	02/03
GB Max:	**4,302 Jan**	**3,514 Feb**
NI Max:	**59 Jan**	**67 Oct**

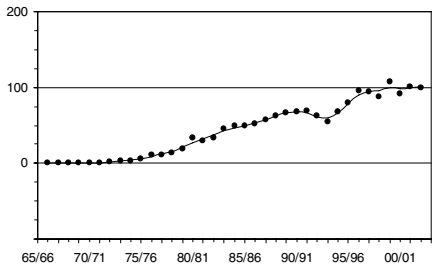

Figure 55. Annual indices for Ruddy Ducks in GB

The rate of growth in the annual index for Ruddy Duck has slowed in recent years, and peak counts since the mid 1990s have, in most years, consistently numbered around 3,600. The peak in 2001/02 was, however, second only to the all-time high of 4,565 in 1999/2000, and that in 2002/03 was the lowest since 1995/96, albeit only marginally below the normal 3,600 figure. Despite both counts and the index appearing to level since 1996/97, comparison of counts at key sites suggest continuing growth: 26 sites had five-year means of at least 50 Ruddy Ducks in the first winter, five of these with 200 or more, numbers which had increased to 36 sites and nine sites, respectively, in 2002/03. Peak counts at the key sites do, however, show changes in varying directions over those six winters, *eg* the five-year mean for Rutland Water has risen from 495 to 1,019, and at Blagdon Lake from 213 to 359, whereas that at Chew Valley Lake has fallen from 638 to 442 and at Blithfield Reservoir from 504 to 393.

Perhaps the most marked change since the mid 1990s is the importance of sites in southeast England, with large numbers now found at Abberton Reservoir, Staines Reservoirs, Dungeness Gravel Pits and King George V Reservoirs. The first of these sites, currently second in the table, held a mean of just 86 and was eighteenth in the table in 1996/97, while Staines Reservoirs held 68 and was twenty-first.

Such changes, both nationally and locally, perhaps reflect the increased numbers of birds being shot as part of the UK government's control programme. As well as this apparent natural shift in range (which began before the onset of the ongoing cull), many sites are showing marked changes in numbers, perhaps as a result of redistribution in response to culling. Numbers of Ruddy Ducks using Rutland Water continued to decline, with the peak in 2002/03 barely one third of previous totals, and counts at Blithfield and Llyn Alaw show a similar picture. Large numbers were recorded in 2001/02 and/or 2002/03 at Staines Resersvoirs, Hanningfield, Pitsford, Dungeness, King George V and King George VI Reservoirs, Brent Reservoir, Thames Estuary and Knight & Bessborough Reservoirs, nearly all in the southeast.

Numbers in Northern Ireland have remained reasonably consistent since the mid 1990s, with the 60-70 birds all found at Loughs Neagh & Beg.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with mean peak counts of 30 or more birds in Great Britain†							
Rutland Water	1,170	1,345	1,187	911	482	Nov	1,019
Abberton Reservoir	(217)	443	389	456	493	Nov	445
Chew Valley Lake	255	[37] 390	[9] 647	[37] 491	[37] 427	Dec	442
Blithfield Reservoir	462	449	[9] 600	265	187	Dec	393
Staines Reservoirs	(22)	127	244	444	(696)	Feb	378
Blagdon Lake	426	360	152	463	394	Feb	359
Hanningfield Reservoir	44	22	287	553	664	Feb	314
Pitsford Reservoir	(70)	167	135	293	358	Jan	238
Hilfield Park Reservoir	216	298	206	159	125	Oct	201
Stanford Reservoir	147	212	67	274	97	Sep	159
Dungeness Gravel Pits	39	110	134	224	264	Dec	154
Middle Tame Valley Gravel Pits	260	120	125	141	120	Jan	153
Tophill Low Reservoirs	85	113	117	173	89	Feb	115

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 30 or more birds in Great Britain (continued)†								
Colwick Country Park	41	[37] 181	-	-	-		111	
Eyebrook Reservoir	14	-	[9] 116	236	56	Feb	106	
Clumber Park Lake	116	66	123	122	72	Feb	100	
Llyn Alaw	[37] 221	159	[9] 18	54	44	Mar	99	
Carsington Water	10	96	-	[9] 141	132	Jan	95	
Holme Pierrepont Gravel Pits	64	102	106	-	-		91	
Belvide Reservoir	59	100	170	30	-		90	
Blackwater Estuary	38	80	106	152	53	Aug	86	
Fairburn Ings	116	45	100	69	94	Sep	85	
Llyn Traffwll	[37] 153	92	61	[9] 36	80	Oct	84	
Bolton-on-Swale Gravel Pits	57	66	79	97	108	Jan	81	
Cotswold Water Park (West)	33	34	(115)	128	(60)	Dec	78	
King George V Reservoirs	0	20	46	156	135	Feb	71	△
Brent Reservoir	46	44	61	73	104	Sep	66	
Great Pool Westwood Park	77	47	90	59	57	Jan	66	
Sutton & Lound Gravel Pits	-	38	-	132	26	Jul	65	
Angler's Country Park Lake	54	69	[37] 70	58	76	Jan	65	
King George VI Reservoir	2	0	0	[37] 283	0	Aug	57	△
Hollowell Reservoir	19	60	91	76	39	Nov	57	
Tees Estuary	39	56	71	40	77	Sep	57	
Humber Estuary	23	54	99	45	55	Mar	55	
Thames Estuary	31	29	63	34	106	Sep	53	
Kilconquhar Loch	58	56	[9] 80	30	42	Oct	53	
Llynnau Y Fali	71	29	20	32	86	Feb	48	
Hule Moss	[37] 73	39	-	-	[37] 28	Oct	47	
Knight & Bessborough Reservoirs	32	10	31	122	29	Oct	45	
Wigan Flashes	41	16	39	78	49	Dec	45	△
Ravensthorpe Reservoir	41	58	44	40	26	Oct	42	
Sites with mean peak counts of 30 or more birds in Northern Ireland†								
Loughs Neagh & Beg	84	(14)	53	59	67	Oct	66	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Grafham Water	121	Jan	Walthamstow Reservoirs	67	Dec
Draycote Water	[37] 110	Jan	Old Moor Wetlands	47	May
Barrow Gurney Reservoir	59	Jan	Wraysbury Gravel Pits	41	Feb
Loch Gelly	58	Oct	London Wetland Centre	36	Jan
Pugneys Country Park Lakes	57	Dec	Welbeck Estate	34	Jan
Hampton & Kempton Rsrs	47	Feb	Hurworth Burn Reservoir	34	Sep
Orwell Estuary	[38] 47	Feb	Severn Estuary	31	Jul
Old Moor Wetlands	40	Mar	Orwell Estuary	30	Aug
Attenborough Gravel Pits	39	Jan			
London Wetland Centre	39	Feb			
Kirby-on-Bain Gravel Pits	38	Sep			

Sites no longer meeting table qualifying levels

(Note, the table qualifying level has been revised from 90 to 160 for Great Britain) Attenborough Gravel Pits, Church Wilne Reservoir, Cropston Reservoir, Farmwood Pool, Hampton & Kempton Reservoirs, Hogganfield Loch, Houghton Green Pool, Old Moor Wetlands, Pugneys Country Park Lakes, Rostherne Mere, Rufford Lake, Thoresby Lake, Walthamstow Reservoirs, Woolston Eyes

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of 41 has been chosen to select sites for presentation in this report*

RED-THROATED DIVER

Gavia stellata

	01/02	02/03
GB Max:	**1,313 Dec**	**649 Jan**
NI Max:	**42 Dec**	**38 Jan**

International threshold:	**10,000**
Great Britain threshold:	**49***
All-Ireland threshold:	**10***

** 50 is usually used as a minimum threshold*

Total numbers of Red-throated Divers recorded by WeBS in Great Britain in 2001/02 were notably high, and very close to the highest yet recorded by Core Counts (1,361 in December 1995), primarily as a consequence of a large count in Cardigan Bay in December 2001. Counts in 2002/03 were unexceptional. British totals during these winters showed a similar pattern, with a marked increase in numbers from September reflecting the southward migration of British and Scandinavian breeding birds. Numbers peaked in December/January though the decline to small numbers in summer varies in its timing, and moderate numbers may be recorded as late as May, particularly on the Scottish east coast. Given that British-breeding birds are already on territory by early spring (*Migration Atlas*), these are likely to be birds from Fenno-Scandia or Greenland. The pattern of counts was similar in Northern Ireland but, as usual, involving much smaller numbers, reflecting the generally lower numbers of Red-throats off the coast of the Province (*1988-91 Winter Atlas*).

An increase in the number and extent of aerial surveys – specifically to assess abundance and distribution of waterbirds in UK nearshore waters – has provided much new and remarkable information on divers and seaducks wintering in Britain. In particular, surveys of the 'Greater Thames', covering the area between the Essex and Kent coasts, since 2002/03 have revealed a far greater number of divers, and over a far greater area, than previously suspected (Hall *et al* 2003). A peak of 1,831 birds were counted in January 2003, the majority located many kilometres offshore (Fig. 56). Many birds recorded during aerial surveys are not identified to species (because of the speed of the plane), particularly in the case of divers, but of the 20% identified in January 2003, all were Red-throated Divers; the total of 1,831 has thus been assumed to comprise only this species. Further, aerial surveys adopt a 'distance sampling' method, only counting a proportion of the birds actually present; consequently, it has been estimated that the actual number of Red-throated Divers in the Greater Thames in January 2003 was 11,089 (with upper and lower confidence intervals of 8,115 and 15,154 respectively) (Webb *et al* in prep b). Subsequent surveys (WWT data) have suggested that this mid winter peak may be a regular occurrence, but that the divers at this site may be very mobile, distributions changing markedly over short periods. Aerial surveys of Liverpool Bay (covering a strip extending 20-25 km from shore between Anglesey and Morecambe Bay) in 2001/02 and 2002/03 recorded counted maxima of 226 divers (presumed all to be Red-throats) in January 2003, when 130 were recorded in Colwyn Bay; application of distance analysis suggests that peak numbers were 1,599 in the first winter (with 95% confidence intervals of 1,063 to 2,405 birds) and 1,210 (901-1,626) in the second (Cranswick *et al* 2004, Webb *et al* in prep a). Aerial surveys off the Norfolk/Lincolnshire coasts, the eastern Scottish Firths, Orkney and the Outer Hebrides have also revealed that notable numbers of divers occur there and, though counts in these areas were generally of fewer than 100, significantly, a high proportion of divers were located 10-20 km from shore (Cranswick *et al* 2003, Dean *et al* 2003, Dean *et al* 2004).

Such findings have greatly changed our understanding of Red-throated Divers wintering in British waters: the British estimate (of just 4,850 birds) is clearly a considerable underestimate and is need of revision; the idea that birds are largely coastal or do not occur in large concentrations vulnerable to events such as oil spills (*eg Migration Atlas*) also needs refining; and, notably, there are clear implications for both appropriate monitoring and site protection. Procedures for identifying marine Special Protection Areas (SPAs), likely to encompass large areas in the case of divers, are currently in preparation (McSorley *et al* 2004, Webb *et al* in prep a, Webb *et al* in prep c). Occurring on Annex 1 of the EC Birds Directive, all nationally important sites for Red-throated Divers qualify for consideration for SPA classification (Stroud *et al* 2001), but it may be that the Greater Thames is internationally important for this species, despite the large increase in the international threshold (based on a breeding estimate of up to 140,000 pairs; *WPE3*). Only a few sites in Northwest Europe hold comparable numbers, *eg* 23,500 divers (a

mixture of Red-throated and Black-throated) are found in the East German Bight (Skov *et al* 1995), although these occurred over a much larger area (13,000 km^2) compared with those in the Thames (2,500 km^2).

These findings also have implications for the interpretation of the table of key sites. A major consideration is that because of the regular occurrence of significant numbers of birds further from shore than can be detected by land-based observers, all counts are likely to be undercounts to a greater or lesser degree (note, in addition to those flagged because certain sectors of large sites were not counted during WeBS, brackets in this table are applied subjectively to counts that simply appear markedly low compared with previous peaks, given the difficulties of obtaining accurate counts). Nevertheless, large numbers are recorded periodically at many of these sites, probably in relation to mobile food sources and sea or weather conditions that may only infrequently bring birds within sight of land, and in many cases may be indicative of larger concentrations further offshore. (Such land-based counts are also useful since the kilometre closest to shore cannot be covered by aerial survey at some sites). Birds seen off the Dengie and Pegwell Bay relate to local movements of the larger numbers in the Greater Thames, but the high counts regularly noted from the Suffolk coast, *eg* 2,680 off Minsmere in January 2000 (Rafe 2000), almost certainly involve the same birds also. Of particular interest is the count off Lade Sands – especially since large numbers have occurred at this site and nearby Dungeness previously – which points to a possible concentration in the English Channel.

As around the Thames, moderate numbers of Red-throats have been noted by WeBS at several sites around Liverpool Bay in recent years, all part of a broad distribution of birds in an area stretching from Conway/Lafan Sands to the Ribble (Cranswick *et al* 2003). Clearly, the definition of sites used for WeBS Core Counts may not be appropriate for marine species such as divers – although enclosed bays and estuaries, such as the Clyde and Loch Ryan, are obvious exceptions – and it should be noted that the areas designated within the current network of SPAs and Ramsar sites for UK estuaries and coastal sites rarely cover the area used by divers and seaducks. It is clear that, although much further work is needed to provide a fuller understanding of waterbird numbers and distribution in nearshore waters, aerial surveys have in just a few winters greatly increased our knowledge of divers wintering in the UK.

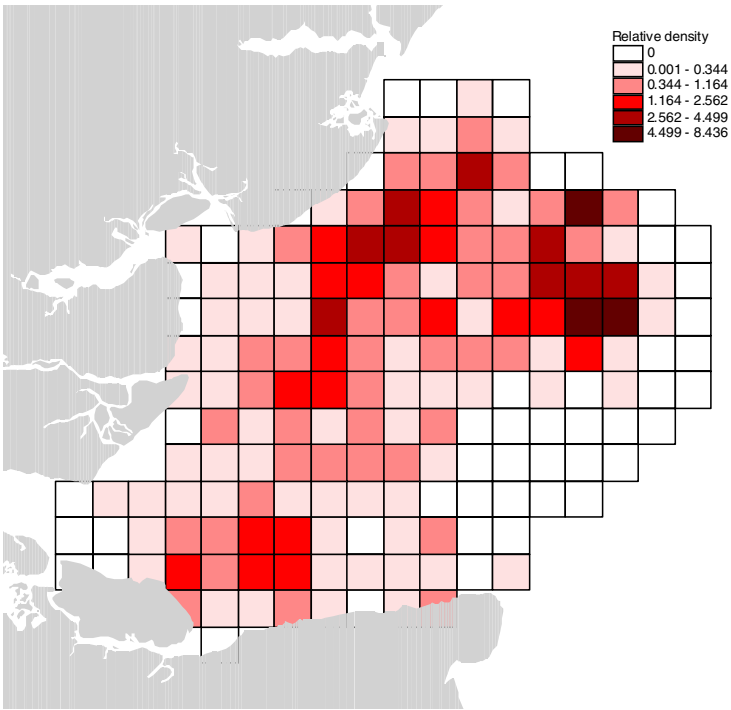

Figure 56. Relative abundance of divers (*Gavia* spp) using a 4 x 4 km grid from aerial survey in the 'Greater Thames' area, January 2003 (from Hall *et al* 2003)

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in Great Britain								
Greater Thames	-	-	-	[11] (211)	[48] 11,089	Jan	11,089	▲
Sites of national importance in Great Britain								
Liverpool Bay	-	-	-	[47] 1,599	[47] 1,210	Jan	1,405	▲
Minsmere	[37] 500	[37] 717	[37] 700	(4)	(3)	Nov	639	▼
Cardigan Bay	(270)	(229)	460	732	(32)	Oct	596	
Lade Sands	(5)	[37] 100	(0)	800	100	Jan	333	▲
Traeth Lafan	(2)	(90)	[37] (72)	(13)	[37] 202	Apr	202	▲
Moray Firth	[30] 179	[30] 103	[11] (150)	[11] (74)	[30] 126	Nov	140	
Pegwell Bay	(1)	(1)	(4)	54	215	Feb	135	▲
Clyde Estuary	138	123	145	112	151	Mar	134	
Dengie Flats	(45)	92	145	51	114	Jan	101	
Forth Estuary	121	75	104	93	106	Nov	100	
Don Mouth to Ythan Mouth	(81)	(101)	33	(14)	(35)	Sep	72	
Scapa Flow	[39] 59	-	-	-	-		59	
The Wash	224	24	14	3	11	Nov	55	
Alt Estuary	57	21	33	101	59	Jan	54	▲
Sites of all-Ireland importance in Northern Ireland								
Belfast Lough	57	39	14	41	31	Jan	36	
Dundrum Bay	31	(0)	(1)	(0)	(0)	Feb	31	▲
Lough Foyle	[37] 50	15	5	7	29	Mar	21	
Strangford Lough	0	[38] 6	0	[38] 57	0		13	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Rye Harbour & Pett Level	68	Jan	Colwyn Bay	[1] (58)	Jan
Llanrhystud - Morfa Mawr	64	Feb	Loch Ryan	[37] 111	Dec
North Norfolk Coast	58	Dec			

Internationally or nationally important sites not covered in last five years
Craigalea to Newcastle

BLACK-THROATED DIVER

Gavia arctica

International threshold:	**10,000**
Great Britain threshold:	**7***
All-Ireland threshold:	**1***

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**50 Mar**	**64 Feb**
NI Max:	**2 Jan**	**1 Sep**

The fewer than 200 pairs of Black-throated Divers breeding in the UK are boosted in winter by arrivals from Fenno-Scandia (*Migration Atlas*). Peak totals recorded in Great Britain by WeBS Core Counts during 2001/02 and 2002/03 were relatively low, having fluctuated between 39 and 145 over the most recent five winters. The difficulty in counting this rarest of our diver species, not least due to the remote nature of many of the prime wintering areas, means that only a small proportion of the true number is counted by WeBS, with a tendency for sporadic counts with considerable variation. A number of key sites were not visited in the two most recent years, and many sites feature in the table below by virtue of data received from supplementary counts and dedicated surveys.

A January peak in 2001/02 was exceeded by a second in March, presumably as birds gathered at pre-breeding or pre-migration sites. Small numbers were recorded throughout the summer, and nine present on the Firth of Forth in July 2002 were noteworthy. In 2002/03, fairly constant numbers were recorded between October and January, and the February peak was sustained into March.

The majority of key sites are in northern or western Scotland. The count in Scapa Flow, Orkney in winter 1998/99 remains the highest of the most recent five years, although this was made during a dedicated survey; the count in Gerrans Bay in February 2003 was the first by WeBS to exceed 50. Numbers at the latter site have consistently exceeded the qualifying level, but it forms just part of the South Cornwall Coast Important Bird Area which held 160 Black-throated Divers in 1999/2000, with other key concentrations in St Austell Bay, Veryan Bay

and Gerrans Bay (Geary & Lock 2001). Numbers, as usual, were very small in Northern Ireland, although Belfast Lough remains a site at which this species can be regularly found.

Relatively few Black-throated Divers have been recorded by aerial survey to date, though partly this reflects the absence of survey in key areas.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Scapa Flow	[39] 57	-	-	-	-		57	
Gerrans Bay	-	-	35	33	53	Feb	40	
Applecross Bay - Sand	[37] 40	-	-	-	-		40	
Gruinard Bay	[37] 34	(14)	(11)	-	-		34	
Loch Ewe	(26)	(29)	(15)	-	-		(29)	
Moray Firth	19	[30] 14	[30] 17	[38] 11	[30] 18	Nov	16	
Loch Gairloch	4	(5)	23	-	-		14	
Bay of Sandoyne to Holme Sound	-	[37] 14	-	-	-		14	▲
Loch Caolisport	12	-	-	-	-		12	
Forth Estuary	10	6	2	24	9	Jul	10	▲
Girvan to Turnberry	3	7	7	8	20	Nov	9	
Little Loch Broom	(4)	1	17	-	-		9	
Red Point to Port Henderson	3	9	11	-	-		8	
Sites of all-Ireland importance in Northern Ireland								
Outer Ards	(0)	2	(3)	-	0	Jan	2	
Belfast Lough	0	3	2	2	1	Sep	2	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

01/02		02/03	
none	Arran	14	Oct

Sites no longer of national importance
Strangford Lough

GREAT NORTHERN DIVER

Gavia immer

International threshold: 50
Great Britain threshold: 30*†
All-Ireland threshold: ?†
** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**66 Mar**	**96 Mar**
NI Max:	**4 Nov/Feb**	**27 Oct**

Britain is of key importance for the population of Great Northern Divers breeding in Greenland and Iceland. Most leave the breeding grounds in September or October, and may remain on their wintering grounds – primarily around Shetland and Orkney, the west coast of Scotland and much of Ireland bar the east coast – until April or May (*1988-91 Winter Atlas*, *Migration Atlas*). This pattern is partly reflected in the monthly totals recorded by WeBS, but the species' distribution and its habits – they often occur well offshore – means that only small numbers are present at regularly visited sites. Counts in both Britain and Northern Ireland in 2001/02 and 2002/03 were within the usual range for recent years. As with Black-throated Divers, highest numbers are often recorded in later winter, perhaps as birds congregate at pre-migration sites or perhaps even because the birds' habits change at this time and they are found closer to land.

The majority of key sites listed is located in the north and northwest of Scotland with the exception of Fleet/Wey in Dorset and Gerrans Bay in Cornwall. Although WeBS counts from these two sites do not exceed national importance, the latter is contained within the South Cornwall Coast Important Bird Area which has, during previous dedicated surveys, held internationally important numbers (Geary & Lock 2001). Almost all the larger counts derive from supplementary data or dedicated boat surveys, particularly in Shetland and the northeast Scottish coast. In addition, aerial survey off the west coast of the Outer Hebrides counted 102 Great Northern Divers between Harris and Barra in March 2002 (Dean *et al* 2003); given the distance-sampling methodology employed, the actual number present is likely to have been three to five times this figure. These often relatively inaccessible and remote sites are

little visited, and sites may qualify as internationally or nationally important based on only one or two counts. Even so, it is clear that the west coast of Scotland, Shetland and Orkney in particular frequently hold remarkable numbers of birds, particularly during passage months (March to May); the count of 781 birds in Scapa Flow represents over 15 per cent of the international population. Such concentrations highlight the need both for adequate monitoring and for site protection in these areas.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Scapa Flow	[39] 781	-	-	-	-		781	
Entrance to Deer/Shapinsay Sounds	-	[37] 375	[37] 225	-	-		300	
Sound of Gigha	-	[24] 104	-	-	-		104	▲
Gigha, Kintyre	[24] 100	-	-	-	-		100	▲
Bay of Sandoyne to Holme Sound	-	[37] 82	-	-	-		82	▲
Rova Head to Kirkabister	-	[36] 63	[36] 69	[36] 87	[36] 41	Mar	65	▲
Sites of national importance in Great Britain								
Loch Indaal	27	31	19	74	68	Apr	44	▲
Whiteness to Scarvister	[36] 44	[36] 47	[36] 30	[36] 34	[36] 34	Jan	38	
East Unst	-	-	-	[36] 37	-		37	▲
Moray Firth	18	[30] 12	[30] 38	[11] (54)	[30] 60	Nov	36	
Broadford Bay	-	-	-	(25)	35	Feb	35	▲
Sites with mean peak counts of ten or more birds in Great Britain†								
Virkie/Quendale	-	[36] 15	[36] 19	[36] 30	[36] 22	Jan	22	△
Loch Eriboll	-	(15)	(1)	-	-		(15)	
Uyea Sound	-	26	13	6	10	Mar	14	
Island of Papa Westray	-	-	-	6	20	Mar	13	△
Gerrans Bay	-	-	13	6	17	Feb	12	
Kirkabister/Dury Voe	-	-	-	[36] 11	-		11	△
Traigh Luskentyre	16	8	6	8	-		10	
Sites with mean peak counts of five or more birds in Northern Ireland								
Dundrum Bay	23	(0)	(1)	(0)	(0)	Feb	23	△
Carlingford Lough	(6)	(7)	(16)	3	15	Nov	11	
Lough Foyle	[37] 22	2	0	4	26	Oct	11	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
North Norfolk Coast	5	Jan	Kingsbridge Estuary	7	Jan
			Cleddau Estuary	7	Dec
			Traeth Lafan	5	Feb
			Girvan to Turnberry	5	Nov

Sites no longer meeting table qualifying levels

(Note, the qualifying level has been revised from 5 to 10 for Great Britain. The British sites in the following list are those that previously held but no longer hold a mean peak of 10 birds) Camas Dubh-aird, Egilsay, Gruinard Bay, Loch Ewe, Strangford Lough

† *as few sites in Great Britain exceed the British threshold, and as no all-Ireland threshold has been set, qualifying levels of 10 in Great Britain and of five in Northern Ireland have been chosen to select sites for presentation in this report.*

LITTLE GREBE

Tachybaptus ruficollis

	01/02	02/03
GB Max:	**4,594 Oct**	**4,941 Oct**
NI Max:	**578 Dec**	**631 Oct**

International threshold:	**3,400**
Great Britain threshold:	**78**
All-Ireland threshold:	**?†**

** 50 is usually used as a minimum threshold*

	5	10	25
GB Alert:	O	△	-

Numbers wintering in Great Britain have increased steadily since records began, and although the peak count in Britain in 2001/02 was slightly lower than in the previous year, that in 2002/03 was the highest yet recorded, and over 6% higher than the 4,618 in 2000/01. In Northern Ireland, 2001/02 and 2002/03 peaks both showed increases on the previous year, although numbers remained below the levels of the late 1980s to mid 1990s. These patterns are

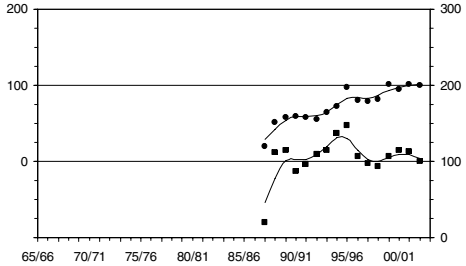

Figure 57. Annual indices for Little Grebe in GB (circles, left axis) and NI (squares, right axis)

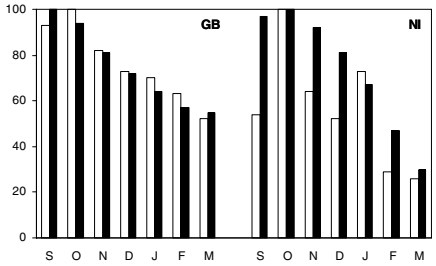

Figure 58. Monthly indices for Little Grebe in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

reflected in the annual indices. WeBS totals account for only one quarter of the estimated British breeding population, and a small number of long-distance ring-recoveries proves that Britain and Ireland receive migrants from Northern Europe (*Migration Atlas*). Many birds must, therefore, winter on small lakes and rivers not regularly covered by WeBS.

Monthly indices show a peak in late autumn and early winter. The general decline as winter progresses – by over one-third by January – is for the greater part likely to reflect departure from the larger waters, which are where counts tend to be most frequently made, though genuine decline through mortality will also occur. The overall pattern is more marked in Northern Ireland and more variable between months within any one winter, which may reflect local movements, or simply the ability to count all birds, at the key site, Loughs Neagh & Beg; peak counts at this site are, however, extremely consistent between winters.

Numbers at the Thames continued their recent rise, albeit more modestly, for it to become the principal site in Britain, although counts remain below previous levels, *eg* 477 in 1995/96. Conversely, those on the nearby Swale dropped sharply in 2001/02 and 2002/03. Other notably high counts occurred at Chichester Harbour and Bewl Water in both winters, and on Upper Lough Erne in 2001/02. Partial coverage of the Somerset Levels in recent years means that counts remain well below those obtained during a dedicated survey in 1998/99 (Chown *et al* 1999) but, with its myriad ditches and difficult viewing, even that figure will surely have under-represented the true numbers at the site.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Thames Estuary	(132)	217	348	351	378	Nov	324	
Somerset Levels	[6] 176	(56)	(74)	(52)	(47)	Oct	176	
Swale Estuary	201	238	195	[38] 64	43	Dec	148	
Holme Pierrepont Gravel Pits	109	158	107	-	-		125	
Chichester Harbour	50	58	78	[38] 150	111	Nov	89	
Rutland Water	78	120	87	77	58	Oct	84	
Chew Valley Lake	80	65	95	100	70	Oct	82	
Bewl Water	43	38	54	132	136	Oct	81	
North Norfolk Coast	105	74	77	[38] 100	42	Sep	80	
Sutton & Lound Gravel Pits	-	45	-	109	86	Aug	80	
Sites with mean peak counts of 30 or more birds in Northern Ireland†								
Loughs Neagh & Beg	380	413	400	412	430	Oct	407	
Strangford Lough	99	87	72	103	113	Jan	95	
Upper Lough Erne	86	67	94	122	75	Dec	89	
Lough Money	46	55	48	53	41	Oct	49	
Lower Lough Erne	-	-	-	-	39	Feb	39	△
Larne Lough	48	35	36	27	32	Nov	36	
Belfast Lough	[38] 23	31	41	29	37	Nov	32	△
Hillsborough Forest Lake	4	25	40	45	37	Sep	30	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Blagdon Lake	127	Aug	Tees Estuary	104	Sep
Hamford Water	105	Jan			

Sites no longer of national importance

(Note, the 1% threshold has been revised from 30 to 50 for Great Britain) Abberton Reservoir, Alde Complex, Barton Pits, Blackwater Estuary, Blagdon Lake, Cameron Reservoir, Cardigan Bay, Cleddau Estuary, Crouch-Roach Estuary, Deben Estuary, Dungeness Gravel Pits, East Wretham Meres, Eyebrook Reservoir, Fleet/Wey, Hamford Water, Hogganfield Loch, Humber Estuary, Kilconquhar Loch, King's Dyke Pits, Kirby-on-Bain Gravel Pits, Langstone Harbour, Lee Valley Gravel Pits, Medway Estuary, Middle Tame Valley Gravel Pits, Old Moor Wetlands, Orwell Estuary, Otmoor, Pitsford Reservoir, Portsmouth Harbour, Purfleet Chalk Pit, R. Avon: Fordingbridge to Ringwood, R. Avon: R'wood to Christchurch, R. Avon: Salisbury to Fordinbridge, R.Test: Fullerton to Stockbridge, Rye Harbour & Pett Level, Southampton Water, Tees Estuary, The Wash, Woolston Eyes, Wraysbury Gravel Pits

Internationally or nationally important sites not covered in last five years

R. Soar: Leicester

† *as no all-Ireland threshold has been set, a qualifying level of 30 has been chosen to select sites for presentation in this report*

GREAT CRESTED GREBE

Podiceps cristatus

	01/02	02/03
GB Max:	**9,737 Nov**	**8,518 Sep**
NI Max:	**2,812 Nov**	**3,009 Oct**

International threshold:	**4,800**
Great Britain threshold:	**159**
All-Ireland threshold:	**30***

** 50 is usually used as a minimum threshold*

	5	10	25
GB Alert:	O	O	-

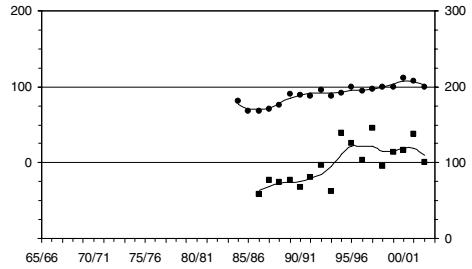

Figure 59. Annual indices for Great Crested Grebe in GB (circles, left axis) and NI (squares, right axis)

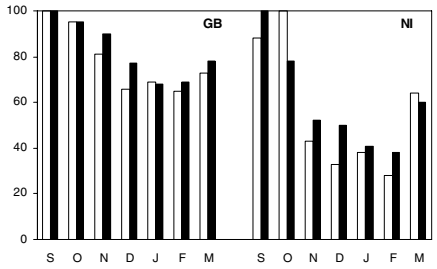

Figure 60. Monthly indices for Great Crested Grebe in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

Following the record highs for the peak British count and index value in 2000/01, both dropped slightly the following winter and then more markedly the next – in 2002/03, the peak count fell by some 12.5 per cent and was below the average for the last five years. Counted numbers in Northern Ireland were, overall, similar to those of previous winters although the peak counts in both of the two most recent winters were slightly above average. Although total counts are more variable during the course of a winter in Northern Ireland, monthly indices for both the Province and Great Britain show a similar pattern of decreasing numbers following an autumn peak and then an increase in March – when birds are presumably more conspicuous on their breeding sites – although the rise in Northern Ireland is much more marked, and was particularly so in 2002/03.

The increase in the international 1% threshold level (from 1,500 to 4,800; *WPE3*) has meant that there are no longer any sites in the UK of international importance for Great Crested Grebe. Great variations in numbers occur between years at several of the key sites and marked shifts are known to occur in Britain and Ireland with, at times, large numbers over-wintering on inland waters or moving from smaller lakes to gather on the larger English lakes and reservoirs, such as Rutland Water, Chew Valley Lake and Grafham Water; large numbers also move to coastal sites, although the patterns of such movements are not readily understood (*Migration Atlas*). Birds at open – rather than enclosed – coastal sites may, like divers and seaducks, be difficult to record during land-based counts. Counts at Lade Sands in recent years are, thus, significant: the peak in 2002/03 coincided with a large count of Red-throated Divers at the same site, suggesting that weather conditions and/or food brought these birds close inshore, and it may be that large numbers remain yet undetected further offshore. Even so, counts at this site are easily the most important in Great Britain; 1,038 at Rutland in 1990/91 is the only other four-figure count of Great Crested Grebes. In Northern Ireland, movement to the coast of the 4,100

adults breeding on and around Loughs Neagh & Beg is well known (Perry 2000), and while winter counts on Loughs Neagh & Beg themselves in 2001/02 were notably low, those on Belfast Lough, Lough Foyle and Strangford Lough were higher than normal in one or both of 2001/02 and 2002/03. Notably higher than average counts were also recorded at Queen Mary Reservoir and Grafham Water in 2001/02, and at Pegwell Bay in 2002/03, the last presumably also linked to a favourable combination of food and viewing conditions at this site. Low counts at Minsmere in the most recent two winters reflect solely the absence of dedicated counts of marine waters and should ideally be treated as undercounts.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Lade Sands	730	[37] 1,100	[37] 1,012	755	1,600	Jan	1,039	
Rutland Water	843	726	997	600	607	Oct	755	
Chew Valley Lake	585	550	690	480	320	Sep	525	
Queen Mary Reservoir	185	312	246	671	267	Sep	336	
Forth Estuary	319	297	(290)	224	(389)	Aug	307	
Cotswold Water Park (West)	(245)	(225)	306	(258)	(188)	Sep	306	
Grafham Water	272	150	98	619	311	Jan	290	
Traeth Lafan	[20] 389	[20] 165	[37] 388	113	308	Mar	273	
Bewl Water	136	104	261	292	356	Sep	230	
Pitsford Reservoir	(218)	195	241	268	203	Oct	227	
Morecambe Bay	(191)	239	245	222	187	Dec	223	
Solway Firth	191	[38] 251	[38] 336	[38] 164	161	Nov	221	
Pegwell Bay	28	68	370	7	604	Feb	215	
Draycote Water	133	200	219	221	255	Jan	206	
Minsmere	[37] 150	[37] 500	[37] 350	5	19	Feb	205	
Stour Estuary	196	[38] 290	[38] 222	[38] 139	136	Sep	197	
Wraysbury Gravel Pits	289	202	167	130	150	Dec	188	
Lee Valley Gravel Pits	(148)	201	191	181	169	Oct	186	
Loch Ryan	58	258	147	121	300	Oct	177	
Blithfield Reservoir	198	240	231	110	98	Apr	175	
Abberton Reservoir	185	207	77	198	144	Nov	162	
Sites of all-Ireland importance in Northern Ireland								
Belfast Lough	1,935	1,508	1,338	1,995	1,214	Feb	1,598	▼
Loughs Neagh & Beg	1,596	847	1,547	336	930	Oct	1,051	
Lough Foyle	[37] 189	24	38	278	782	Oct	262	
Carlingford Lough	(270)	249	326	284	174	Jan	261	
Strangford Lough	69	111	141	231	[38] 267	Nov	164	
Upper Lough Erne	144	243	113	190	110	Dec	160	
Larne Lough	124	140	204	80	105	Oct	131	
Lower Lough Erne	-	-	-	-	71	Feb	71	▲
Dundrum Bay	68	(0)	(4)	(1)	(1)	Feb	68	▲
Outer Ards	3	1	199	-	9	Mar	53	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
Swale Estuary	[38] 311	Feb	none
Stewartby Lake	197	Jan	
Dee Estuary (Eng/Wal)	[38] 190	Nov	
Langstone Harbour	182	Nov	
Poole Harbour	171	Nov	
Queen Elizabeth II Reservoir	163	Jan	
Rye Harbour & Pett Level	160	Jan	

Sites no longer of national importance

(Note, the 1% threshold has been revised from 100 to 159 for Great Britain) Alton Water, Ardleigh Reservoir, Attenborough Gravel Pits, Blackwater Estuary, Blagdon Lake, Bough Beech Reservoir, Cardigan Bay, Clyde Estuary, Cotswold Water Park (East), Hanningfield Reservoir, Loch Leven, Queen Elizabeth II Reservoir, Rye Harbour & Pett Level, Southampton Water, Swansea Bay, Thanet Coast, Thrapston Gravel Pits

Internationally or nationally important sites not covered in last five years

Craigalea to Newcastle

RED-NECKED GREBE

Podiceps grisegena

International threshold: **1,000**
Great Britain threshold: **2*†**
All-Ireland threshold: **30***
** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**50 Dec**	**49 Mar**
NI Max:	**0**	**0**

Although the Red-necked Grebe is essentially a winter visitor to the UK from breeding grounds east from Denmark and the Baltic area (*EBCC Atlas*), an increasing number have over-summered during recent years. British maximum counts by WeBS in both 2001/02 and 2002/03 were about average, having varied between 37 and 70 in the last five winters though, in contrast to the late 1990s, none was recorded during summer and large numbers were not apparent until September or October. Once again, no birds were recorded in Northern Ireland in either winter.

Usually occurring in small numbers along sheltered coasts or within large estuaries, Red-necked Grebes may be easily over-looked, while others occur at more remote sites little visited by WeBS. The vast majority of the WeBS total occurs on the Forth Estuary, the figure there representing 90% of the British peak in March 2003. Most birds are found on the east coast and it seems likely that their rarity on the west coast and in Northern Ireland – where they occur sporadically and in response to cold weather (Chandler 1981) – will only increase with the trend towards milder winters.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of national importance in Great Britain†							
Forth Estuary	41	55	29	39	44	Mar	42
Scapa Flow	[39] 23	-	-	-	-		23
Bay of Sandoyne to Holme Sound	-	[37] 8	-	-	-		8
North Norfolk Coast	8	6	3	9	2	Jan	6

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Lindisfarne	5	Dec	Beaulieu Estuary	5	Jan

† *as the British threshold for national importance is so small, a qualifying level of five has been chosen to select sites for presentation in this report*

SLAVONIAN GREBE

Podiceps auritus

International threshold: **35**
Great Britain threshold: **7***
All-Ireland threshold: **?†**
** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**287 Dec**	**176 Mar**
NI Max:	**7 Nov**	**13 Mar**

Counted totals in both Great Britain and Northern Ireland in the two most recent winters were around average in most months, and although the peak in 2001/02 was around 100 higher than other months, WeBS totals have surpassed 300 on several occasions in the 1990s. In Northern Ireland, most counts revealed no birds, and although the count in March 2003 was the highest for several winters, numbers remain well below those of the early and mid 1990s, which often reached 50-100 as a consequence of counts on Lough Foyle.

Most of the key sites for this species in the UK identified by a recent review (Evans 2000) are included in the table below, but counts for many, particularly in the north, are derived from supplementary or additional sources. WeBS counts on both the Moray and Forth in recent winters are thus notable for their size. Other large counts during this period were made on the Clyde, at Lindisfarne and the Blackwater, while the third highest site count in 2001/02, on Jersey Shore, was also the most southerly. By contrast, counts at Pagham Harbour in the last three winters were especially low for a site that consistently reported high numbers during the 1990s.

The 60 or so pairs of Slavonian Grebes breeding in Scotland often remain on their breeding lochs or on other inland waters into late October, but by November most have moved to the coast; Scottish breeding sites are typically reoccupied in March (*Migration Atlas*). WeBS totals in Scotland often remain high into March, and might therefore suggest gatherings of passage birds on route to breeding grounds

in Iceland or even Greenland as well as local breeders; birds wintering in southern England are believed to be primarily of the race *auritus*, breeding in southern Fenno-Scandia (*Migration Atlas*), and it might be speculated that the decline in counted numbers in England from mid winter onwards represents the earlier passage of these birds to the continent.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Scapa Flow	[39] 124	-	-	-	-		124	
Moray Firth	[30] 98	29	86	75	[30] 69	Nov	71	
Forth Estuary	(57)	67	44	61	80	Mar	63	
Loch Ashie	-	-	[37] 41	-	-		41	▲
Whiteness to Scarvister	[36] 33	[36] 30	[36] 43	[36] 29	[36] 55	Jan	38	▲
Sites of national importance in Great Britain								
Traigh Luskentyre	19	38	48	19	-		31	
Rova Head to Kirkabister	-	-	[36] 28	[36] 20	[36] 24	Mar	24	▲
Loch Indaal	21	27	23	11	31	Dec	23	
Sound of Gigha	[24] 11	[24] 44	[24] 9	-	-		21	▲
Loch Ryan	9	10	19	31	[37] 31	Dec	20	
Clyde Estuary	5	22	20	10	45	Mar	20	
Loch of Harray	14	(24)	8	25	25	Nov	19	
Jersey Shore	(0)	-	5	31	-		18	▲
Pagham Harbour	22	34	1	6	6	Nov	14	
Bay of Sandoyne to Holme Sound	-	[37] 14	-	-	-		14	
Lindisfarne	(19)	1	9	14	[38] 23	Dec	13	
Blackwater Estuary	10	8	9	22	[38] 9	Nov	12	
North West Solent	14	(8)	8	10	4	Feb	9	
Upper Loch Torridon	9	(0)	9	-	-		9	
Broadford Bay	-	-	-	8	10	Feb	9	▲
Vaila Sound/Gruting Voe	-	-	-	[36] 9	-		9	▲
Sites with mean peak counts of seven or more birds in Northern Ireland†								
Lough Foyle	[37] 48	2	9	6	13	Mar	16	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Inland Sea	9	Feb	Traeth Lafan	[39]15	Apr
			Loch of Swannay	10	Feb
			Thames Estuary	7	Jan
			Eden Estuary	7	Dec

Sites no longer of national importance

(Note, the 1% threshold has been revised from four to seven for Great Britain) Chichester Harbour, Exe Estuary, Loch Eriboll, Loch Linnhe: Corran Ferry – Onich, Loch of Swannay, North Norfolk Coast, Poole Harbour, St Andrews Bay, Tamar Complex

Internationally or nationally important sites not covered in last five years

Sound of Taransay, Studland Bay

† *as no all-Ireland threshold has been set, a qualifying level of seven has been chosen to select sites for presentation in this report*

BLACK-NECKED GREBE

Podiceps nigricollis

	01/02	02/03
GB Max:	**58 Nov/Dec**	**73 Apr**
NI Max:	**0**	**0**

International threshold: **2,800**
Great Britain threshold: **1*†**
All-Ireland threshold: **?†**

** 50 is usually used as a minimum threshold*

The small numbers of breeding birds in the UK are supplemented by passage (particularly during March-May) and over-wintering individuals, many of which are thought to originate from the continent (*Migration Atlas*). This is reflected in WeBS totals, which show moderate numbers throughout the summer and autumn months, and generally increased numbers from September or October through to spring. Counts in winters 2001/02 and 2002/03

were around average for recent years; the large peak in 2002/03 occurred during spring passage.

The wintering distribution of the species within the UK is more southerly and westerly than that of other grebes. Counts at many of the key sites are remarkably consistent between years. Notable, then, is the disparity in counts at Woolston Eyes in recent winters, but the peak in 2001/02 relates to the spring 2002 aggregation of birds there, and the low count of birds throughout the following winter. Birds were recorded at 32 sites during 2002/03, the vast majority located along the English south coast or in southeast England. The resumption of counts on the Fal has reaffirmed the importance of this site (where largest numbers are found at Carrick Roads) although recent numbers are only around half those recorded during the mid 1990s.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain†								
Woolston Eyes	(25)	15	1	41	6	Apr	18	
Fal Complex	-	-	(1)	16	15	Feb	16	
Langstone Harbour	17	12	15	[38] 22	15	Jan	16	
William Girling Reservoir	11	11	14	16	16	Oct	14	
Holme Pierrepont Gravel Pits	5	14	10	-	-		10	
Fleet/Wey	2	11	9	13	3	Dec	8	
Hilfield Park Reservoir	6	7	5	8	7	Apr	7	▲
Tamar Complex	6	(6)	9	3	[38] 6	Feb	6	
Kilconquhar Loch	5	5	8	8	6	Jun	6	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Hornsea Mere	[27] 5	Sep	Stour Estuary	[37] 6	Dec
			Gerrans Bay	5	Dec
			Staines Reservoirs	5	Mar

Sites no longer meeting table qualifying levels
Poole Harbour

Internationally or nationally important sites not covered in last five years
Studland Bay

† *as the British threshold for national importance is so small, and as no all-Ireland threshold has been set, a qualifying level of five has been chosen to select sites for presentation in this report*

CORMORANT

Phalacrocorax carbo

International threshold: 1,200
Great Britain threshold: 230
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**15,801 Nov**	**17,605 Oct**
NI Max:	**1,750 Jan**	**3,124 Oct**

	5	10	25
GB Alert:	O	O	-

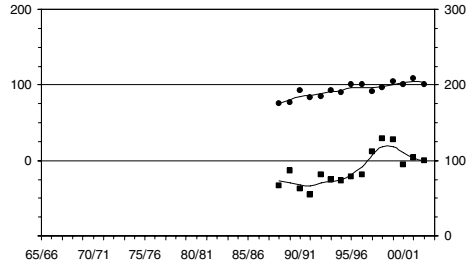

Figure 61. Annual indices for Cormorant in GB (circles, left axis) and NI (squares, right axis)

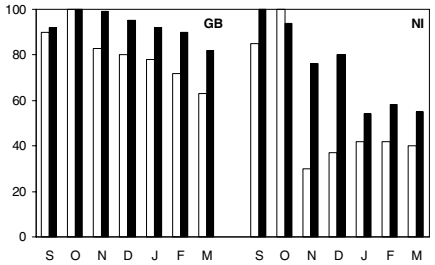

Figure 62. Monthly indices for Cormorant in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

The increase in the number of Cormorants counted by WeBS continues, no doubt in part due to increases in the number of breeding birds at coastal colonies (up 7% since 1985-87)

and inland sites (up 15%) (*Seabird 2000*). Although totals in 2001/02 were around average, the 2002/03 winter saw record counts in both Great Britain (surpassing the 16,243 in 1999/00) and Northern Ireland (2,607, also in 1999/00), although these rises are not reflected in the annual indices. Following these large October peaks, numbers declined to more normal levels, hence the larger than normal fall in monthly indices for the remainder of the winter.

The first European survey of Cormorants at night-time roosts took place in January 2003 to assess winter numbers and distribution. Coverage of only 185 of the 355 roosts identified in Britain was possible, giving totals of 9,866 birds in England, 1,193 in Scotland and 490 in Wales (Figure 63), but the survey identified 74 new roosts compared with an inventory compiled in 1996-98, the majority located inland and suggesting an in-filling, rather than an expansion, of the wintering range (Worden *et al* 2004a).

Individual site counts of Cormorants are typified by a large annual variation with peaks differing by many hundreds of birds, *eg* there were notably high then low counts in 2001/02 and 2002/03, respectively, both at Dungeness Gravel Pits and on the Blackwater Estuary. Large counts were noted in both winters on the Ribble Estuary, and in the latter on the nearby Alt, on the North Norfolk Coast and the Outer Ards. Numbers at the last site were the largest on record by WeBS in Northern Ireland away from Loughs Neagh & Beg, which remains the most important site in the UK despite an unusually low count in 2001/02. Estuaries remain the most important sites for Cormorants, although inland sites with breeding colonies, such as Abberton Reservoir, Besthorpe and Little Paxton Gravel Pits, and Rutland Water, also hold significant numbers, the latter increasingly so.

In September 2004, DEFRA announced a change in policy for control of this species, increasing the annual limit for killing Cormorants from 500 birds to 3,000 (around 20% of the English population) for two years. WeBS counts will be crucial in assessing the impact this change in policy will have on the UK Cormorant population.

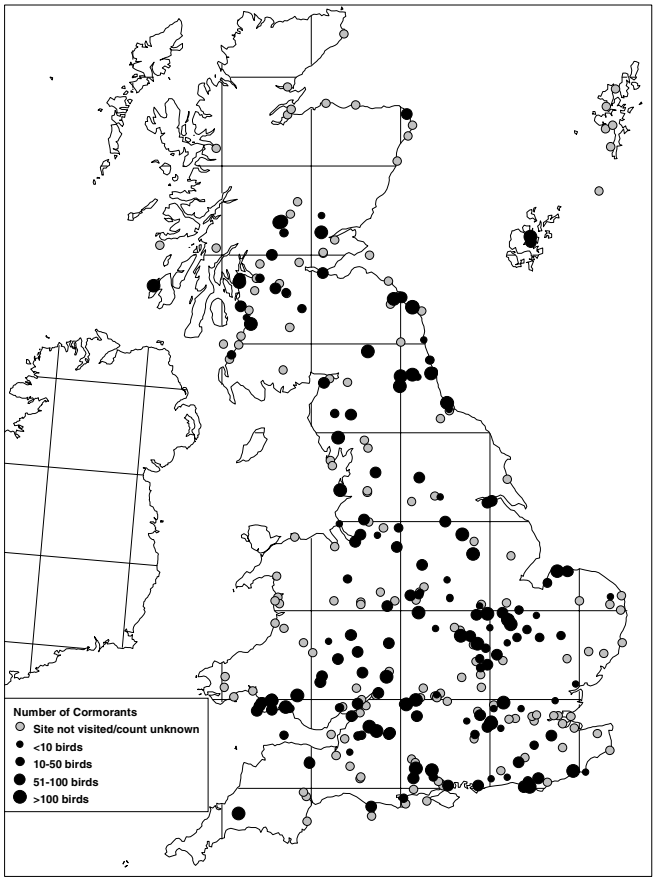

Figure 63. Numbers of Cormorants recorded at roosts in Britain in January 2003 (from Worden *et al* 2004a)

	98-99	99-00	00-01	01-02	02-03	Mon	Mean	
Sites of international importance in the UK								
Loughs Neagh & Beg	2,071	1,643	1,416	722	1,383	Oct	1,447	
Sites of national importance in Great Britain								
Morecambe Bay	963	1,030	1,223	398	(657)	Sep	904	
Forth Estuary	701	681	(744)	761	982	Sep	781	
Alt Estuary	779	574	574	960	569	Nov	691	
Thames Estuary	(287)	(437)	(740)	578	722	Oct	680	
Dee Estuary (Eng/Wal)	613	541	864	(692)	668	Oct	676	
Poole Harbour	(440)	(298)	(338)	(585)	(558)	Oct	(585)	
Abberton Reservoir	600	600	318	780	600	May	580	
Solway Estuary	(586)	628	(678)	378	500	Sep	554	
Walthamstow Reservoirs	430	580	551	(531)	570	May	533	
Clyde Estuary	470	466	606	528	553	Oct	525	
Tees Estuary	444	451	647	429	438	Sep	482	
Hanningfield Reservoir	758	539	221	585	[41] 189	Jan	458	
Rutland Water	350	330	425	520	529	Oct	431	
Dungeness Gravel Pits	550	344	294	625	220	Dec	407	
Loch Leven	442	608	488	421	68	Jun	405	
The Wash	279	462	401	233	502	Sep	375	
Besthorpe, & Girton Gravel Pits	453	304	(10)	386	415	Apr	390	
Queen Mary Reservoir	59	678	112	580	342	Jan	354	
North Norfolk Coast	310	278	294	268	581	Sep	346	
Little Paxton Gravel Pits	-	[37] 303	-	-	362	Jan	333	▲
Ranworth & Cockshoot Broads	308	317	[27] 298	[27] 398	[27] 270	Dec	318	
Ouse Washes	426	[27] 287	[27] 197	[27] 213	347	Mar	294	
Ribble Estuary	132	(163)	219	358	398	Dec	277	
Rye Harbour & Pett Level	191	211	324	218	340	Aug	257	
Blackwater Estuary	278	190	(209)	450	104	Jan	256	
Herne Bay	-	-	[37] 250	-	-		250	
Wraysbury Gravel Pits	180	276	264	306	181	Sep	241	
Grafham Water	341	212	71	204	349	Jan	235	
Lee Valley Gravel Pits	229	206	220	271	231	Dec	231	
Sites with mean peak counts of 130 or more birds in Northern Ireland†								
Belfast Lough	[38] 349	321	499	528	388	Oct	417	
Outer Ards	359	303	121	-	652	Oct	359	
Strangford Lough	300	285	275	245	358	Sep	293	
Carlingford Lough	(150)	(209)	(166)	208	206	Aug	208	
Upper Lough Erne	139	104	109	199	124	Dec	135	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Alde Complex	[38] 318	Jan	Queen Elizabeth II Reservoir	[41] 308	Jan
Dengie Flats	309	Feb	King George V Reservoirs	300	Oct
Chew Valley Lake	275	Nov	Middle Tame Valley Gravel Pits	293	Jan
Breydon Wtr & Berney Marshes	268	Jan	Rostherne Mere	293	Feb
South Stoke	[27] 266	Jan	Egilsay	287	Nov
Pagham Harbour	247	Jan	South Stoke	[41] 248	Jan
			William Girling Reservoir	240	Oct
			Pagham Harbour	240	Feb
			Mersey Estuary	236	Oct
			Inner Moray Firth	236	Oct
			Tay Estuary	233	Oct

Sites no longer of national importance

(Note, the 1% threshold has been revised from 130 to 230 for Great Britain) Attenborough Gravel Pits, Blithfield Reservoir, Chew Valley Lake, Chichester Gravel Pits, Clwyd Estuary, Dysynni Estuary, Exe Estuary, Farmoor Reservoirs, Humber Estuary, Lindisfarne, Medway Estuary, Middle Tame Valley Gravel Pits, Pagham Harbour, Queen Elizabeth II Reservoir, Queen Mother Reservoir, Rostherne Mere, Sonning Gravel Pit, Southampton Water, South Stoke, Staines Reservoirs, Stour Estuary, Swale Estuary, William Girling Reservoir, Wraysbury Reservoir

Internationally or nationally important sites not covered in last five years

Stevenston Point

† *as no all-Ireland threshold has been set, a qualifying level of 130 has been chosen to select sites for presentation in this report*

SHAG

Phalacrocorax aristotelis

International threshold:	**2,400**
Great Britain threshold:	**?**
All-Ireland threshold:	**?**

	01/02	02/03
GB Max:	**1,185 Nov**	**2,939 Jan**
NI Max:	**387 Jan**	**465 Jan**

Some 28,600 pairs of Shag breed in Britain and 300 in Northern Ireland (*Seabird 2000*). Most colonies are located in the north and west of Britain, and around two thirds of birds breed in Scotland, particularly in Shetland, Orkney, Firth of Forth and Argyll & Bute, and on the Farne Islands in England. Since the mid 1980s, numbers in Scotland and Ireland have declined by approximately 32% and 27% respectively, although moderate increases (12-16%) have been recorded in England and Wales (*Seabird 2000*).

Shags are inshore feeding specialists, usually remaining in sight of land and movements generally appear to be constrained by large areas of open sea. The majority of British and Irish breeding birds remain during the winter with birds dispersing widely from the breeding colonies – those in the northeast tend to disperse south and northwards along the east coast of Britain while those from the north and northwest are generally less migratory – and the main concentrations in winter occur in southwest England, north Wales and much of Scotland bar the southwest and the Moray Firth (*1981-84 Winter Atlas*, *Migration Atlas*). Some 100,000-150,000 were estimated to winter in Britain and Ireland in the early 1980s (*1981-84 Winter Atlas*).

Although Shag was officially added to the list of WeBS species in winter 2000/01, birds were recorded at a number of sites previously. Shags were recorded at 78 sites in 2001/02 and 77 sites in 2002/03 – compared with only 13 in 2000/01. Their winter distribution – both geographically (occurring primarily in western Scotland) and in terms of their habitat (favouring open coast sites) – means that WeBS records a relatively small proportion of the total. Many of the larger counts at the 29 sites with 50 or more birds were derived from boat-based surveys in more remote areas of Shetland. Most of the sites listed below are in Scotland, with four in Northern Ireland and only three in England (Northumberland and Devon), although the count of over 2,000 on the Forth Estuary in January 2003 is notable and may equate to 2% of the total British wintering population.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with peak mean counts of 50 or more birds in Great Britain							
Forth Estuary	-	-	-	351	2,315	Jan	1,333
South Yell Sound	[36] 1,006	[36] 1,419	[36] 1,006	[36] 1,690	[36] 710	Feb	1,079
Hascosay, B'mull & C'grave Snds	[36] 769		[36] 301	[36] 1,132	[36] 423	Mar	656
West Voe of Sumburgh	-	-	-	[36] 420	-		420
West Whalsay and Sounds	-	-	-	[36] 383	-		383
Kirkabister/Dury Voe	-	-	[36] 250	-	-		250
East Unst	-	-	-	[36] 246	-		246
Anstruther Bay	-	-	4	639	64	Sep	236
Inner Moray Firth	[38] 27	-	[30] 46	-	[30] 636	Nov	236
Lunning/Lunna Holm	-	-	[36] 156	-	-		156
Broadford Bay	-	-	-	-	150	Jan	150
Ayr to North Troon	-	-	-	63	184	Oct	124
Clyde Estuary		[38] 10	-	139	213	Sep	121
Moray Coast	-	-	-	-	121	Oct	121
Lindisfarne	-	-	[38] 27	[38] 118	[38] 156	Feb	100
Girvan to Turnberry	-	-	-	111	80	Nov	96
Arran	-	-	-	86	100	Oct	93
Loch Linnhe: Camas Shallachain	-	-	-	90	-		90
South Fetlar	-	-	-	[36] 84	-		84
North Fetlar	-	-	-	[36] 79	-		79
Egilsay	-	-	-	-	78	Nov	78
Loch Ryan	-	-	30	90	110	Oct	77
Island of Papa Westray	-	-	-	47	107	Jan	77

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with peak mean counts of 50 or more birds in Great Britain (continued)							
Widewall Bay	-	-	-	-	68	Dec	68
Ardrossan to Farland Head	-	-	-	53	78	Nov	66
Sullom Voe	-	[36] 43	[36] 62	[36] 50	[36] 106	Feb	65
Quendale Bay	-	-	-	[36] 60	[36] 61	Jan	60
Kingsbridge Estuary	-	-	-	60	47	Nov	54
Spittal to Cocklawburn	-	-	-	-	50	Oct	50
Sites with mean peak counts of 50 or more birds in Northern Ireland							
Outer Ards	-	-	-	-	227	Oct	227
Carlingford Lough	-	-	-	294	48	Sep	171
Strangford Lough	-	[38] 44	[38] 17	166	193	Nov	105
Belfast Lough	[38] 42	-	[38] 39	[38] 30	215	Jan	82

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03
Howick to Beadnell	60	Oct	none	
Guernsey Shore	50	Dec		

BITTERN

Botaurus stellaris

International threshold: **?**
Great Britain threshold: **?**
All-Ireland threshold: **?**

	01/02	02/03
GB Max:	**36 Jan**	**40 Jan**
NI Max:	**0**	**0**

The number of sites where Bitterns have been recorded by WeBS continues to increase each year with birds recorded at 38 sites in 2001/02 and a remarkable 60 in 2002/03, the highest number to date. Most of these records are of single birds, but the number of sites holding two or more birds also increased from eight in 2000/01 to 16 and 13 in the two following years.

The increased numbers between November and January prompt suggestion that the rise is due to an influx of birds from mainland Europe, as well as the increased probability of sightings during periods of cold weather when birds may be forced to seek open water. But with increasingly mild winters, the increase may also in part reflect the success of habitat management and reedbed creation following implementation of the UK Species Action Plan for Bittern. This aims to increase the UK's breeding population, which had fallen to fewer than 20 booming males by the 1990s. Although studies have shown that Bitterns show high levels of site fidelity, particularly in western England, Norfolk Broads and the southeast, radio-tagging of young birds has shown high dispersal between sites in East Anglia (Gilbert *et al* 2002) and this may account for the increased records of birds in this area.

In addition to those listed below, sites consistently holding Bitterns include Potteric Carr Nature Reserve, Rostherne Mere, Walland Marsh, Chew Valley Lake and Rye Harbour/Pett Level.

Sites with two or more birds in 2001/02 or 2002/03

	01/02			02/03	
Kenfig Pool	4	Jan	Wintersett & Cold Hiendley Rsr	5	Jan
Middle Tame Valley Gravel Pits	3	Jan	Minsmere	4	Jul
Wintersett & Cold Hiendley Rsr	3	Feb	Middle Tame Valley Gravel Pits	4	Feb
Dungeness Gravel Pits	3	Mar	Kenfig Pool	3	Jan
Chew Valley Lake	3	Dec	North Norfolk Coast	3	Nov
Par Sands Pools	2	Jan	Fleet Pond	2	Feb
Peatmoor Lagoon	2	Jan	Stodmarsh & Collards Lagoon	2	Jan
Chichester Harbour	2	Jan	Dungeness Gravel Pits	2	Jan
Lee Valley Gravel Pits	2	Jan	Middle Yare Marshes	2	Nov
Boultham Mere	2	Dec	Boultham Mere	2	Dec
Humber Estuary	2	Jan	Lee Valley Gravel Pits	2	Jan
Minsmere	2	Dec	Bedfont & Ashford Gravel Pits	[37] 2	Jan
Hen Reedbeds	2	Mar	River Cam: Kingfishers Bridge	[37] 2	Aug

Sites with two or more birds in 2001/02 or 2002/03 (continued)

Middle Yare Marshes	2	Mar
North Norfolk Coast	2	Mar
Stodmarsh & Collards Lagoon	2	Dec

LITTLE EGRET

Egretta garzetta

International threshold: **1,300**
Great Britain threshold: **?†**
All-Ireland threshold: **?†**

	01/02	02/03
GB Max:	**1,765 Nov**	**1,866 Sep**
NI Max:	**2 Jun**	**0**

Since the first notable influx of Little Egrets into Great Britain in 1989, numbers have continued to increase and the species was added to the UK's breeding avifauna just seven years later. This meteoric rise is reflected by WeBS and numbers have tripled over the past five years, fuelled by a 29% rise between 2000/01 and 2001/02, though a more modest 6% the following winter. Nevertheless, no records were received for Northern Ireland; although numbers have increased throughout Ireland, the largest increases have been seen in the southern counties of Cork, Waterford and Wexford (Smiddy & O'Sullivan 1998).

Typically, numbers increased in autumn, reflecting post-breeding dispersal from the near continent, and decreased gradually throughout winter. Interestingly, since 1993, counts have shown a small spring peak in March and it has been suggested that this may be due to the arrival of migrants from southwest Europe and Africa prospecting for new sites as part of the range expansion (Musgrove 2002).

Musgrove (2002) estimated the UK non-breeding population in 1999 to number 1,650 at its autumn peak, declining to some 800-900 during mid winter, based largely on a combination of WeBS Core Counts and roost counts. At that time, the vast majority was located in estuaries around the Solent and in southwest England; few were recorded north of south Wales or along the English east coast. The table below mirrors this situation to a large extent – most of the sites with the largest numbers are still located from Pagham Harbour to the southwest – but also demonstrates the expansion in the short time since, with an increasing number of sites in the southeast. There have been marked rises on the Thames and Medway in particular, and even as far afield as the North Norfolk Coast in the most recent two winters. Increasing records at Burry Inlet, Severn Estuary, Dyfi Estuary, Traeth Lafan, and the Dee (England/Wales) Estuary indicate a continuing consolidation and expansion in the west of the range also.

The number of sites holding a peak mean of ten or more birds increased from 18 to 54 between 1998/99 and 2002/03 and most of the 'core' sites have seen a rise in numbers also. Longueville Marsh and Chichester Harbour remain the most important sites, the latter consistently holding in excess of 200 birds in recent years. Nearly all of the key sites are estuaries, but notable numbers are now also recorded inland, particularly as birds work up the course of the River Avon in Dorset, Hampshire and into Wiltshire.

Musgrove (2002) estimated that the UK total was 50 per cent more than the total recorded by WeBS alone. Applied to recent counts, this correction factor would suggest that total numbers in autumn 2002 may have been as high as 2,800.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites with mean peak counts of ten or more birds in Great Britain†							
Chichester Harbour	134	[27] 271	[27] 220	243	218	Oct	217
Longueville Marsh	(125)	(70)	(85)	132	145	Sep	139
Tamar Complex	(50)	[23] 143	121	141	129	Sep	134
Poole Harbour	61	[19] 156	118	[27] 197	(140)	Oct	134
Medway Estuary	(21)	(71)	(19)	106	(125)	Oct	116
Thames Estuary	11	(30)	83	132	197	Aug	106
Jersey Shore	(0)	-	64	126	-		95
Kingsbridge Estuary	59	58	72	100	105	Sep	79
Exe Estuary	47	58	71	149	67	Nov	78
Burry Inlet	32	(86)	58	99	87	Sep	72

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of ten or more birds in Great Britain (continued)†								
Langstone Harbour	[38] 38	51	51	99	88	Oct	65	
Taw-Torridge Estuary	32	[19] 77	71	64	(60)	Sep	61	
Camel Estuary	56	[19] 55	(77)	48	64	Oct	60	
Pagham Harbour	41	[19] 51	76	55	76	Sep	60	
Fowey Estuary	39	[19] 40	49	79	48	Sep	51	
Guernsey Shore	(17)	(31)	46	50	48	Aug	48	
Fal Complex	(45)	(34)	39	(30)	55	Sep	47	
R. Avon: Salisbury to F'bridge	12	(20)	(38)	49	(79)	Jan	47	
Portsmouth Harbour	17	(51)	64	58	[38] 39	Dec	46	
Colne Estuary	9	[27] 27	26	[27] 118	(2)	Dec	45	
Cleddau Estuary	21	(17)	25	66	49	Mar	40	
North West Solent	27	[19] 45	(30)	(44)	(25)	Oct	39	
Severn Estuary	(7)	(10)	13	59	41	Oct	38	
Helford Estuary	(23)	(24)	30	33	47	Jul	37	
North Norfolk Coast	10	8	12	[38] 50	81	Sep	32	△
Newtown Estuary	26	[19] 46	38	22	22	Sep	31	
Fleet/Wey	6	30	37	37	38	Jan	30	
Southampton Water	(17)	(11)	25	35	(19)	Nov	30	
Swale Estuary	6	[19] 10	22	44	59	Sep	28	△
Avon Estuary	(12)	[19] 20	21	[27] 33	24	Aug	25	
Teign Estuary	23	[19] 30	25	16	31	Aug	25	
R. Avon: R'wood to Christchurch	9	(12)	26	(28)	26	Dec	22	
Crouch-Roach Estuary	(3)	4	15	24	42	Sep	21	△
Blackwater Estuary	0	4	15	35	(51)	Sep	21	△
Erme Estuary	12	[19] 26	17	32	14	Aug	20	
Christchurch Harbour	-	9	(20)	24	21	Sep	19	
Yealm Estuary	15	16	9	19	25	Oct	17	
Beaulieu Estuary	11	7	19	6	42	Sep	17	
Axe Estuary	4	6	10	35	24	Feb	16	△
Rye Harbour & Pett Level	5	[19] 16	9	25	19	Oct	15	
Pegwell Bay	7	7	17	20	23	Aug	15	△
Stour Estuary	1	5	10	29	32	Oct	15	△
Cuckmere Estuary	8	7	15	12	27	Sep	14	△
Yar Estuary	12	10	19	14	12	Sep	13	
Hamford Water	1	2	9	31	20	Dec	13	△
Dee Estuary (Eng/Wal)	5	(5)	7	[38] 18	20	Oct	13	△
Hayle Estuary	10	13	13	12	12	Oct	12	
Dengie Flats	(1)	(3)	3	[38] 18	15	Nov	12	△
Dart Estuary	4	8	22	9	10	Aug	11	△
Bardolf Water Meadows	7	6	9	10	22	Feb	11	△
Brading Harbour	3	3	9	15	26	Oct	11	△
Alde Complex	6	4	12	15	20	Nov	11	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Marazion Marsh	15	Sep	Somerset Levels	26	Mar
Somerset Levels	14	Feb	Foreland	15	Oct
Carmarthen Bay	13	Nov	Traeth Lafan	15	Nov
			Looe Estuary	13	Aug
			Breydon Wtr & Berney Marshes	13	Jul
			Allington Gravel Pit	12	Nov
			R. Avon: Fordingbridge - R'wood	12	Feb
			Cotswold Water Park (West)	10	Feb
			The Wash	10	Nov
			Dyfi Estuary	10	Jan

† *as no British or All-Ireland threshold has been set, a qualifying level of ten has been chosen to select sites for presentation in this report*

GREY HERON

Ardea cinerea

International threshold:	**2,700**
Great Britain threshold:	**?** †
All-Ireland threshold:	**?** †

	01/02	02/03
GB Max:	**3,737 Nov**	**4,285 Oct**
NI Max:	**238 Sep**	**442 Oct**

Peak total counts of Grey Herons in Britain have usually just exceeded 3,600, although increasingly since the late 1990s have surpassed 4,000 (a record 4,527 were counted in 1999/2000). Numbers in Northern Ireland have also been relatively constant, with no obvious trends, albeit at much lower levels. As usual, peak counts in 2002/03 occurred in October, numbers decreasing thereafter, with 36% fewer birds recorded in December in Great Britain and 55% in Northern Ireland.

Few sites held exceptional numbers in the last two winters, with counts at many key sites, *eg* Thames Estuary and Somerset Levels, remaining consistent between years. A particularly low count at Loughs Neagh & Beg in 2001/02 appears to have been anomalous and the site remains the most important in Northern Ireland. Other low counts were noted in 2002/03 at Montrose Basin and in both of the last two winters at Hanningfield Reservoir. Also of note are the variable counts from Walthamstow Reservoirs, numerically the most important site for much of the previous decade. The Severn Estuary held the highest numbers since 1995/96 and the count on the Inner Moray Firth was almost twice the normal number.

A new analytical technique applied to data from the BTO's Heronry Census suggested a population estimate of just over 9,000 breeding pairs in England and Wales in 2000, some 2,000 more pairs than suggested by earlier publications (Marchant *et al* 2004). Regional analysis of the 73-year dataset showed that numbers in the south have remained relatively constant since the 1970s, but with increases in the north in the 1990s. Whilst Grey Herons are known to arrive in winter from the Continent, the actual number involved is unknown (*Migration Atlas*, *1981-84 Winter Atlas*); at best, the WeBS October count represents only 10-15% of the post-breeding numbers in Great Britain, but perhaps much less.

	96-97	97-98	98-99	99-00	00-01	Mon	Mean	
Sites with mean peak counts of 50 or more birds in Great Britain								
R. Avon: Salisbury to F'bridge	92	(102)	326	(100)	(83)	Feb	209	
Walthamstow Reservoirs	330	44	117	91	133	May	143	
Somerset Levels	(105)	143	148	125	134	Mar	138	
Thames Estuary	(105)	(118)	145	129	(124)	Sep	137	
Coombe Country Park	144	11	-	-	159	Jun	105	
Dee Estuary (Eng/Wal)	(61)	(80)	124	[38] 63	111	Jul	99	
Ouse Washes	133	61	[37] 70	100	[37] 104	Apr	94	
Clyde Estuary	79	[38] 93	81	90	87	Oct	86	
Morecambe Bay	101	88	69	51	101	Oct	82	
Severn Estuary	51	(51)	(67)	69	[38] 104	Nov	75	
Taw-Torridge Estuary	47	78	69	(20)	(41)	Jul	65	
Tees Estuary	51	57	83	58	66	Aug	63	
Solway Estuary	75	63	(48)	[38] 27	69	Oct	59	△
Hanningfield Reservoir	57	137	57	20	21	Aug	58	
The Wash	42	91	56	49	54	Aug	58	
Montrose Basin	42	83	87	55	24	Oct	58	
Inner Moray Firth	[38] 40	48	44	56	91	Oct	56	△
Durham Coast	(50)	60	63	60	41	Apr	56	
Southill Lake	70	60	44	46	55	Apr	55	△
Forth Estuary	44	46	59	47	62	Oct	52	△
Tamar Complex	62	(45)	45	44	[38] 53	Nov	51	
Ribble Estuary	54	88	48	27	40	Oct	51	
Humber Estuary	(39)	85	40	31	43	Oct	50	△
Sites with mean peak counts of 50 or more birds in Northern Ireland								
Loughs Neagh & Beg	359	269	267	87	225	Oct	241	
Strangford Lough	85	96	92	113	103	Sep	98	

Other sites surpassing table qualifying levels in 2,001/02 or 2,002/03

	01/02			02/03	
Harrow Lodge Park	88	Apr	Rutland Water	52	Sep
Dee Flood Meadows	52	Feb			
Poole Harbour	50	Feb			

Sites no longer meeting table qualifying levels
Alde Complex, Besthorpe & Girton Gravel Pits

† *as no British or All-Ireland threshold has been set, a qualifying level of 50 has been chosen to select sites for presentation in this report*

SPOONBILL

Platalea leucorodia

International threshold: 100
Great Britain threshold: ?
All-Ireland threshold: ?

	01/02	02/03
GB Max:	**12 Feb**	**28 Sep**
NI Max:	**0**	**0**

The overall number of sites for which records of Spoonbill were received has remained relatively constant over the last five years; those holding two or more birds have, however, increased over that period. The summed site maxima for 2002/03 was the highest recorded by WeBS, producing 80 birds at a total of 20 sites, though this will undoubtedly include some individuals more than once. Peak numbers occurred at most sites during late summer or autumn, with double-figure counts at several sites on the east coast of England in 2002/03, presumably due to post-breeding dispersal, particularly from Dutch colonies. A small number of birds remained during the winter with records mainly in the south and southwest.

Sites with two or more birds in 2001/02 or 2002/03

	01/02			02/03	
Breydon Wtr & Berney Marshes	14	Jun	Alde Complex	16	Sep
Taw-Torridge Estuary	9	Feb	Breydon Wtr & Berney Marshes	11	Jul
Exe Estuary	2	Jan	North Norfolk Coast	10	Aug
Exe Estuary	2	Feb	Camel Estuary	8	Mar
Humber Estuary	2	May	Taw-Torridge Estuary	7	Feb
Morecambe Bay	2	Jun	Exe Estuary	4	Dec
North Norfolk Coast	2	Jul	Humber Estuary	4	Jul
Rutland Water	2	Sep	Dee Estuary (Eng/Wal)	3	Jul
Exe Estuary	2	Dec	Burry Inlet	3	Aug
			Severn Estuary	2	Sep
			Beaulieu Estuary	2	Sep
			Medway Estuary	2	Dec

WATER RAIL

Rallus aquaticus

International threshold: ?
Great Britain threshold: ?†
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**536 Dec**	**634 Nov**
NI Max:	**4 Jan**	**3 Dec**

The previous British peak of 521 in December 1988 was surpassed in 2001/02 and that, in turn, was exceeded considerably in 2002/03. The peak in Northern Ireland was, typically, of only a few birds. Preferring to remain hidden among vegetation, Water Rails often only venture out to forage in the open during colder conditions when the ground and water freeze (*1981-84 Winter Atlas*); it may be the cold spell in mid November 2002 that caused birds to become more conspicuous, resulting in the record total.

Though highly elusive and difficult to monitor, Water Rails were seen at 311 and 310 sites (including two and four in Northern

Ireland) in 2001/02 and 2002/03, respectively, and counts at many of the key sites appear remarkably consistent between years. More than five birds were seen at nearly one quarter of these, and there were notably large counts at Kenfig NNR, the Thames Estuary, Norfolk Norfolk Coast, Middle Yare Marshes and Drakelow Gravel Pit in one or both of these winters. The addition of ten new sites to the table since the last report is also noteworthy. Given the problems in assessing numbers at individual sites, notably low counts – as at Fleet Pond, Rye Harbour & Pett Level and Southampton Water – are difficult to interpret and should be treated with caution.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of ten or more birds in Great Britain†								
Somerset Levels	38	34	43	45	(45)	Jan	41	
Rye Harbour & Pett Level	61	40	31	13	(8)	Dec	36	
Grouville Marsh	(10)	(40)	(30)	30	25	Nov	32	
Stodmarsh NNR & Collards Lagoon	23	41	25	27	28	Mar	29	
Kenfig Pool	[10] 14	[10] 24	[10] 12	30	39	Jan	24	
Leighton Moss	28	15	-	-	-		22	
Shipley Country Park	-	(20)	(8)	-	-		(20)	
Fleet Pond	15	20	25	-	6	Nov	17	
Thames Estuary	(3)	(7)	(6)	12	21	Nov	17	△
Lee Valley Gravel Pits	10	22	18	18	18	Nov	17	
Chew Valley Lake	42	4	29	4	0		16	
Southampton Water	(6)	16	13	20	(1)	Dec	16	△
Longueville Marsh	(10)	(10)	(10)	15	15	Dec	15	
Poole Harbour	7	16	15	15	24	Nov	15	
North Norfolk Coast	16	10	13	22	10	Feb	14	
Severn Estuary	26	5	8	5	15	Nov	12	
Chichester Harbour	8	8	12	14	16	Dec	12	△
Ingrebourne Valley	-	10	14	10	14	Nov	12	△
Marston Sewage Treatment Works	5	18	-	-	-		12	
Kilconquhar Loch	9	14	15	8	14	Nov	12	
Middle Yare Marshes	1	-	4	23	17	Nov	11	△
Burry Inlet	(5)	9	9	16	10	Feb	11	△
Loe Pool	16	(8)	4	1	19	Dec	10	△
Doxey Marshes SSSI	10	11	8	8	(14)	Nov	10	
Dee Estuary (Eng/Wal)	2	(7)	16	[38] 8	13	Nov	10	△
Drakelow Gravel Pit	3	9	7	11	20	Feb	10	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Harrow Lodge Park	24	Apr	Llangorse Lake	15	Dec
Meadow Lane Gravel Pits	14	Jan	Exe Estuary	13	Nov
Wigan Flashes	13	Nov	Swale Estuary	13	Mar
Swale Estuary	12	Jun	Arun Valley	(12)	Nov
Llangorse Lake	10	Jan	Middle Tame Valley Gravel Pits	12	Feb
Unspecified SE England Site	10	Apr	Rutland Water	10	Jan

Sites no longer meeting table qualifying levels
Colwick Country Park, Lower Derwent Valley

† *as no British or all-Ireland thresholds have been set, a qualifying level of ten has been chosen to select sites for presentation in this report*

MOORHEN

Gallinula chloropus

International threshold: 20,000
Great Britain threshold: 7,500†
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**13,568 Dec**	**13,812 Oct**
NI Max:	**453 Jan**	**291 Oct**

Moorhens have an extensive distribution and occupy a wide range of wetland habitats in the UK, for example rivers, canals and small inland waterbodies, and total counts by WeBS

therefore only comprise a small proportion of the estimated population. The Northern Ireland maximum in 2001/02 was the highest since 830 in 1993/94. During both of these winters, the maximum was greatly influenced by large counts at Loughs Neagh & Beg (618 at that site in 1993/94), the most important site in the Province, as might be expected simply by virtue of its size.

Relatively large numbers were recorded in both 2001/02 and 2002/03 in Great Britain, though numbers at most key sites were within their normal range of variation. Peak counts on the Severn Estuary have gradually declined, largely because of lower numbers at the New Grounds Slimbridge, Gloucestershire (a peak of 850 was recorded in March 1999 compared with just 426 in October 2002). Notably low counts were also made on the Durham Coast and numbers dropped sharply on the Ouse Washes in 2001/02 and remained low the following winter. Interestingly, peak numbers on the Orwell Estuary were all recorded during Low Tide Counts, all around twice the respective Core Count maxima, perhaps a combination of birds venturing in more open habitats at this time, and counters venturing through habitats favoured by Moorhens during the different count routes used by this survey method.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 100 or more birds in Great Britain†								
Severn Estuary	860	679	735	557	476	Oct	661	
Martin Mere	640	570	510	485	490	Oct	539	
Thames Estuary	(150)	(269)	(268)	345	448	Feb	397	
Lower Derwent Valley	371	419	-	-	-		395	
Somerset Levels	[6] 424	407	310	308	322	Mar	354	
North Norfolk Coast	291	441	309	334	243	Feb	324	
Lee Valley Gravel Pits	215	278	315	357	312	Sep	295	
Durham Coast	269	307	240	225	160	Feb	240	
Rutland Water	160	229	252	211	189	Aug	208	
Pitsford Reservoir	(123)	172	175	267	209	Oct	206	
Arun Valley	231	(240)	202	148	172	Jan	199	
Burry Inlet	198	213	196	209	175	Nov	198	
Bewl Water	170	122	230	200	254	Sep	195	
Dee Estuary (Eng/Wal)	(98)	(120)	134	199	(116)	Nov	167	△
Ouse Washes	287	141	[37] 206	61	70	Nov	153	
Chew Valley Lake	145	130	185	165	105	Oct	146	
Chichester Gravel Pits	138	138	132	157	149	Feb	143	
Sutton & Lound Gravel Pits	-	136	-	160	118	Aug	138	
Rye Harbour & Pett Level	222	162	99	107	71	Feb	132	
Tring Reservoirs	207	90	149	110	106	Oct	132	
Grouville Marsh	(80)	(140)	(120)	120	122	Feb	127	
Humber Estuary	(105)	64	(87)	101	215	Feb	127	△
Blackwater Estuary	126	138	96	(75)	(51)	Feb	120	
Marston Sewage Treatment Works	(110)	118	-	-	-		118	
Orwell Estuary	[38] 48	[38] 157	[38] 160	[38] 117	[38] 100	Feb	116	△
R. Wye: Bakewell to Haddon	101	114	101	89	131	Oct	107	
Ingrebourne Valley	-	107	76	122	116	Feb	105	
Stodmarsh NNR & Collards Lagoon	41	136	152	105	78	Mar	102	△
Thanet Coast	122	83	87	95	123	Feb	102	
Fairburn Ings	120	113	115	86	73	Nov	101	
Sites with mean peak counts of 30 or more birds in Northern Ireland†								
Loughs Neagh & Beg	201	124	183	374	155	Oct	207	
Upper Lough Erne	100	67	59	60	46	Dec	66	
Broad Water Canal	69	-	55	19	69	Sep	53	
Belfast Lough	[38] 27	[38] 46	44	47	62	Dec	45	△
Upper Quoile River	43	38	(9)	(27)	(4)	Jan	41	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
London Wetland Centre	170	Dec	Hamford Water	134	Dec
Woolston Eyes	154	Sep	London Wetland Centre	131	Aug
Colne Valley Gravel Pits	(149)	Nov	Colne Valley Gravel Pits	(110)	Feb
Blagdon Lake	129	Sep	Clumber Park Lake	104	Feb
Old Moor Wetlands	122	Dec	Tees Estuary	104	Oct
Brent Reservoir	104	Nov	Ravensthorpe Reservoir	103	Oct
			Priory Water	102	Sep
			Bosherston Lakes	102	Oct

Sites no longer meeting table qualifying levels
Lancaster Canal, Leighton Moss, Swanbourne Lake

† *as no sites exceed the British threshold, and no all-Ireland threshold has been set, qualifying levels of 100 and 30 have been chosen to select sites, in Great Britain and Northern Ireland respectively, for presentation in this report*

COOT

Fulica atra

International threshold: 17,500
Great Britain threshold: 1,730
All-Ireland threshold: 250

	01/02	02/03
GB Max:	**112,876 Dec**	**101,212 Oct**
NI Max:	**4,994 Jan**	**5,032 Oct**

	5	10	25
GB Alert:	O	O	-

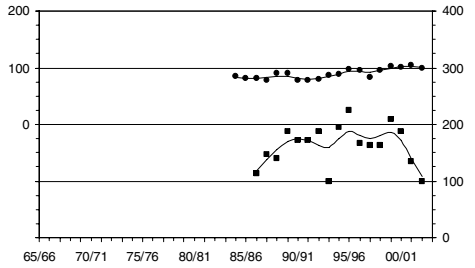

Figure 64. Annual indices for Coot in GB (circles, left axis) and NI (squares, right axis)

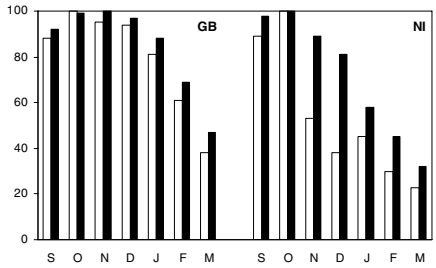

Figure 65. Monthly indices for Coot in GB and NI (white bars 2002/03; black bars 1998/99 to 2002/03)

During the 1990s, the British index showed a small but sustained increase, which continued in 2001/02 to its highest levels, co-inciding with the largest British total on record, just exceeding that of 112,089 in 1999/00. There followed, however, a marked drop in 2002/03, with the peak somewhat earlier than normal in October and the lowest since 1995. In Northern Ireland, the annual index crashed in 2001/02 and fell yet further in 2002/03, in part a consequence of the rapid decline in numbers after the October peak. This level, however, only matched the low of 1993/94 and such fluctuations in the Province suggest that this may yet be a temporary situation and recovered quickly.

Counts at most British sites were close to their five-year means, though numbers have declined at Abberton in 2001/02 and 2002/03. Low counts were also made in these winters at Hanningfield and Blithfield Reservoirs and on the Ouse Washes; numbers at Chew Valley Lake, the Fleet/Wey and Loch Leven were the only ones at key sites to be notably higher than average. Numbers dropped sharply at Loughs Neagh & Beg in 2001/02 but, contrary to the Northern Ireland index, recovered the following winter.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Abberton Reservoir	6,493	9,673	11,645	7,610	6,885	Sep	8,461	
Cotswold Water Park (West)	3,718	3,980	3,806	4,161	(2,528)	Nov	3,916	
Rutland Water	3,971	3,759	3,375	3,283	3,969	Oct	3,671	
Lee Valley Gravel Pits	(2,708)	3,559	2,751	3,245	3,250	Nov	3,201	
Hanningfield Reservoir	3,337	2,809	4,282	1,369	3,426	Sep	3,045	
Cheddar Reservoir	2,400	2,500	3,410	2,950	2,975	Dec	2,847	
Chew Valley Lake	2,650	1,980	3,500	2,360	3,715	Oct	2,841	
Cotswold Water Park (East)	3,608	2,944	2,227	2,634	2,365	Dec	2,756	
Hickling Broad	2,136	4,993	1,021	-	-		2,717	
Ouse Washes	2,611	3,803	[37] 2,062	[37] 2,488	1,349	Feb	2,463	
Fleet/Wey	1,777	1,862	2,346	3,418	2,353	Dec	2,351	
Pitsford Reservoir	2,281	2,415	2,331	2,746	1,949	Oct	2,344	
Loch Leven	2,285	2,340	2,100	1,818	3,205	Oct	2,250	
Lower Windrush Valley GPs	2,619	2,188	2,274	1,720	(2,016)	Oct	2,200	
Alton Water	1,465	3,090	655	2,536	2,491	Dec	2,047	
Blithfield Reservoir	2,305	1,946	1,731	890	1,830	Aug	1,740	
Sites of all-Ireland importance in Northern Ireland								
Loughs Neagh & Beg	5,568	7,307	6,579	2,535	4,269	Oct	5,252	
Upper Lough Erne	562	646	899	1,660	1,447	Dec	1,043	
Strangford Lough	328	703	400	581	420	Sep	486	
Lower Lough Erne	-	-	-	-	272	Feb	272	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Blagdon Lake	2,846	Sep	Chichester Gravel Pits	2,213	Nov
Chichester Gravel Pits	2,545	Jan	Stodmarsh and Collards Lagoon	1,964	Aug
Middle Tame Valley Gravel Pits	(2,106)	Nov	Little Paxton Gravel Pits	1,831	Nov
Stanford Reservoir	1,950	Oct	Upper Quoile River	268	Jan
Sutton & Lound Gravel Pits	1,882	Dec			
Fen Drayton Gravel Pits	1,790	Dec			

Sites no longer of national importance

(Note, the 1% threshold has been revised from 1,100 to 1,730 for Great Britain) Baston Langtoft Gravel Pits, Dungeness Gravel Pits, Fairburn Ings, Fen Drayton Gravel Pits, Little Paxton Gravel Pits, Middle Tame Gravel Pits, North Norfolk Coast, R. Avon: Fordingbridge to Ringwood, Stanford Reservoir, Sutton & Lound Gravel Pits, Windermere

OYSTERCATCHER

Haematopus ostralegus

International threshold: 10,200
Great Britain threshold: 3,200
All-Ireland threshold: 500

	01/02	02/03
GB Max:	**220,580 Dec**	**281,118 Oct**
NI Max:	**16,215 Oct**	**20,270 Oct**

	5	10	25
GB Alert:	O	O	O

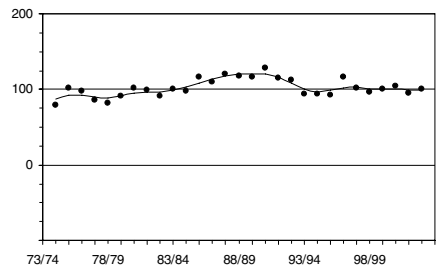

Figure 66. Annual indices for Oystercatcher in the UK

Oystercatchers wintering in Britain and Ireland comprise birds from the *ostralegus* population, which breeds in north and west Europe and winters in west Europe, and south to west Africa (*Migration Atlas*). Numbers have increased in almost all parts of the wintering range (Stroud *et al* 2004) except the Netherlands, where declines have been linked to decreases in food availability as a result of mechanised cockle fishing in the Wadden Sea (Piersma *et al* 2001). WeBS maxima have been very consistent in recent years, but low counts in 2001/02 and high counts in 2002/03 both fell outside the range of variation over the previous

five winters for Britain (241,000-266,000), and almost so in Northern Ireland (17,000-21,000). Annual indices, however, suggest continuing stability, with little change since the early 1990s.

Total numbers in Great Britain in 2002/03 increased substantially in August, coinciding with the southward movement of British breeders and arrival of birds predominately from Iceland, Faeroes, and Norway. Numbers peaked in October, and were then sustained throughout winter in Britain, but dropped slightly in Northern Ireland to a lower winter level.

In keeping with the national picture, many sites hold remarkably consistent numbers between years. Northwest British estuaries along with the Burry Inlet, Wash and Thames, comprise seven sites of longstanding international importance for both wintering and passage Oystercatchers. Steadily increasing numbers at Swansea Bay, and a lowering of the 1% threshold for Britain, saw this site attain national importance. After lows in the late 1990s, numbers have recovered and then increased at Traeth Lafan resulting in a 45% rise in the five-year mean since 2000/01. Likewise, a large count at the Thames Estuary in January 2003 raised the five-year mean by 35% from the previously reported mean in 2000/01.

Numbers recorded by WeBS equate to 88% of the estimated British total and 28% of the flyway (Europe & NW Africa) population. Although Oystercatchers are widespread around British and Irish coasts during winter, large concentrations are found at relatively few large estuaries; Morecambe Bay and the Solway Estuary support 5% and 4% of the flyway population, respectively, and almost one third of British numbers between them, emphasising the importance of maintaining these sites in favourable condition. Deterioration of such important feeding sites can have major impacts on winter distribution and survival. Recent data show that age- and sex-related feeding specialisations exist within many shorebird species, including Oystercatchers, and consideration of these specialisations should play an important role in site protection and policy decisions (Durell 2003). Use of alternative feeding sites by immature birds and differences in feeding strategies between sexes, through morphological differences such as bill size, can dictate vulnerability to potential habitat loss or environmental change. Higher mortality in a particular age group or sex is suggested to result in a greater reduction in population size than if all groups were affected equally.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Morecambe Bay	52,780	50,990	50,831	47,286	48,752	Jan	50,128	
Solway Estuary	42,038	(36,752)	(34,196)	(35,035)	(47,415)	Nov	44,727	
Dee Estuary (Eng/Wal)	18,932	12,506	21,326	[38] 31,851	20,373	Nov	20,998	
Thames Estuary	(12,162)	12,760	(14,938)	18,814	25,953	Jan	19,176	
Ribble Estuary	15,491	19,535	17,784	23,072	(12,395)	Jan	18,971	
Burry Inlet	13,344	(17,867)	13,347	15,253	14,570	Dec	14,876	
The Wash	12,068	15,701	13,457	13,371	16,760	Jan	14,271	
Sites of national importance in Great Britain								
Forth Estuary	6,935	8,744	6,814	(6,631)	9,279	Feb	7,943	
Traeth Lafan	(2,062)	(5,781)	6,897	7,831	7,612	Feb	7,447	
Duddon Estuary	6,499	6,890	4,867	6,907	(6,476)	Jan	6,328	
Inner Moray Firth	5,550	4,785	6,049	5,153	6,087	Jan	5,525	
Swale Estuary	5,042	5,539	5,427	6,270	5,058	Nov	5,467	
Carmarthen Bay	(6,423)	[38] 4,851	(4,154)	(5,575)	4,530	Feb	5,345	
Clyde Estuary	4,197	4,878	5,060	5,488	5,386	Nov	5,002	
Humber Estuary	(2,906)	(5,292)	3,834	(3,318)	2,963	Dec	4,030	▲
North Norfolk Coast	3,825	3,980	3,755	3,990	3,011	Nov	3,712	
Medway Estuary	4,152	(4,452)	2,448	2,294	(3,034)	Nov	3,337	
Swansea Bay	2,541	2,826	3,500	3,563	3,797	Dec	3,245	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	6,661	[38] 7,781	7,149	8,298	8,625	Jan	7,703	
Belfast Lough	[38] 6,653	[38] 6,216	5,647	[38] 4,276	[38] 5,542	Dec	5,667	
Lough Foyle	3,609	3,087	2,730	2,294	2,326	Feb	2,809	
Dundrum Bay	(3,328)	1,103	1,707	(1,428)	(1,250)	Dec	2,046	
Outer Ards	1,761	1,872	1,621	-	1,968	Jan	1,806	
Carlingford Lough	(1,184)	1,289	(1,184)	986	1,289	Dec	1,188	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Dengie Flats	[38] 7,061	Jan	Alt Estuary	3,209	Mar

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
Solway Estuary	(34,257)	Oct	Morecambe Bay	72,653	Oct
Morecambe Bay	(23,945)	Sep	Solway Estuary	(48,339)	Oct
Dee Estuary (Eng/Wal)	23,327	Sep	Ribble Estuary	23,881	Sep
Burry Inlet	17,343	Oct	Dee Estuary (Eng/Wal)	21,727	Sep
Ribble Estuary	11,643	Sep	The Wash	21,680	Oct
The Wash	11,176	Aug	Thames Estuary	17,396	Oct
			Burry Inlet	10,647	Oct

Internationally or nationally important sites not covered in last five years
Carlingford to Newcastle, Dundrum Outer Bay

AVOCET

Recurvirostra avosetta

	01/02	02/03
GB Max:	**6,157 Feb**	**4,423 Dec**
NI Max:	**0**	**0**

International threshold: **730**
Great Britain threshold: **35***
All-Ireland threshold: **+**
** 50 is usually used as a minimum threshold*

	5	10	25
GB Alert:	△	▲	▲

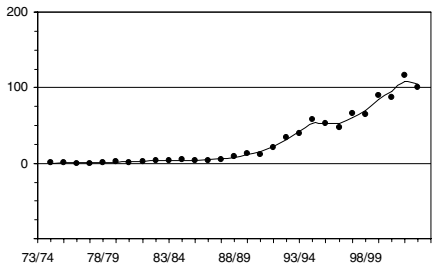

Figure 67. Annual indices for Avocet in the UK

The British maximum in 2001/02 was the highest yet recorded by WeBS, an increase of 35% from the record peak the previous winter, but numbers dropped sharply in 2002/03. Nevertheless, the underlying trend is still one of rapid growth since the mid 1980s, and the fastest rate of increase of any wader in the UK.

Most key sites are located on the south coast and in East Anglia. Avocets have only rarely been recorded by the scheme in Scotland, with only four records there since 1995/96. The range of the Avocet in Britain is, however, extending northwards, a phenomenon illustrated by the continued increase in the numbers recorded at the Humber Estuary. This site attained national importance only in 1998/99 – and none was recorded into two of the four preceding winters – yet just four years later, the mean on the Humber has increased ten fold and is almost five-fold larger than the (increased) national 1% threshold. Avocets have recently been recorded as a breeding species in Yorkshire (Ogilvie *et al* 2004), perhaps fuelled by this local overwintering source.

Large counts were recorded at many of the key sites in winter 2002/03, corresponding with the exceptional national total, but particularly on the Wash, Poole Harbour and the Thames Estuary, elevating the last site to international importance. In contrast, numbers on the Alde appear to have leveled in recent years. Despite iconic status at Minsmere, numbers of Avocets barely reached double figures at the site in the last two winters (although no counts were available for January-March 2003).

Data in the key sites table suggest site use by Avocet is something of an all-or-nothing affair. For many waterbirds, a high proportion of the key sites hold just a few more birds than the national threshold; in contrast, although a mean of 35 birds is required for national importance for Avocet, just one site has an average of fewer than 122. Moreover, very few other sites hold large numbers even irregularly: only three additional sites held more than 35 birds in 2002/03, with highest just 43. The rapid rise to large numbers on the Humber would support this quick 'colonisation'; it remains to be seen whether counts at Minsmere in the last two winters will show abandonment to be similarly swift.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Poole Harbour	832	823	1,491	1,862	1,007	Jan	1,203	
Alde Complex	1,336	1,330	1,007	1,174	1,089	Jan	1,187	
Thames Estuary	668	766	563	1,447	839	Feb	857	▲
Sites of national importance in Great Britain								
Medway Estuary	(500)	(374)	301	(860)	(650)	Dec	604	
Blyth Estuary (Suffolk)	-	-	524	463	-		494	
Exe Estuary	400	544	366	528	436	Jan	455	
Swale Estuary	306	402	(145)	532	318	Mar	390	
Hamford Water	276	532	242	485	406	Nov	388	
Colne Estuary	266	417	351	465	(383)	Dec	376	
Tamar Complex	(220)	(207)	452	277	[38] 317	Jan	349	
North Norfolk Coast	301	321	(72)	228	334	Mar	296	
Breydon Wtr & Berney Marshes	94	177	272	172	224	Nov	188	
Deben Estuary	[38] 135	172	165	193	170	Jan	167	
Humber Estuary	(49)	82	(126)	121	281	Mar	161	
The Wash	23	183	6	347	130	Mar	138	
Blackwater Estuary	(38)	44	167	125	[38] 151	Feb	122	
Minsmere	120	-	120	10	1	Dec	63	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Crouch-Roach Estuary	43	Nov	Ouse Washes	43	Mar
			Pagham Harbour	36	Feb
			Orwell Estuary	36	Mar

Sites no longer of national importance
Abberton Reservoir, Horsey Mere, Pagham Harbour

LITTLE RINGED PLOVER

Charadrius dubius

International threshold: ?
Great Britain threshold: ?
All-Ireland threshold: ?

	2001	2002
GB Max:	**36 Sep**	**233 Jul**
NI Max:	**1 Jul**	**0**

Following an extremely low peak in the 2001, total numbers in Great Britain the following year were average. Birds had already arrived by the March count, followed in both years, despite greatly differing numbers, by a rapid rise and more or less constant numbers during summer, before a rapid departure in September. There has been evidence of a shift in spring phenology with earlier arrival and breeding of migrant waders possibly linked to climate change (Rehfisch & Crick 2003). Using data from 1950 to 1998, it was shown that arrival dates of Little Ringed Plover in Essex have advanced by six days per decade and three days per degree centigrade in relation to mean January to March temperatures (Sparks & Mason 2001).

Little Ringed Plovers were recorded at 107 sites in 2002 (though only at 44 in 2001, no doubt a consequence of access restrictions that summer), most in southern England. One at Dundrum Bay, Northern Ireland in July 2001 was only the second recorded by WeBS in the Province during the last ten years. Peak totals recorded by WeBS represent only a small proportion of the overall British breeding population: the most recent estimate was of 825-1,070 pairs in 1991, since when numbers are thought to have fallen (Ogilvie *et al* 2004).

Sites with ten or more birds in 2001 or 2002

	2001			2002	
The Wash	16	Sep	Medway Estuary	25	Aug
London Wetland Centre	15	Jun	Rutland Water	23	Jul
Rutland Water	10	Aug	Barton Pits	14	Jul
			Sandbach Flashes	14	Jul
			London Wetland Centre	14	Jun

Sites with ten or more birds in 2002 (continued)

	2002	
Carsington Water	12	Jul
Severn Estuary	12	May
Upton Warren LNR	11	Jun
Lee Valley Gravel Pits	11	Apr

RINGED PLOVER

Charadrius hiaticula

International threshold:	**730**
Great Britain winter threshold:	**330**
Great Britain passage threshold:	**300**
All-Ireland threshold:	**125**

	01/02	02/03
GB Max:	**13,265 Oct**	**18,409 Sep**
NI Max:	**547 Oct**	**1,212 Oct**

	5	10	25
GB Alert:	○	▽	▽

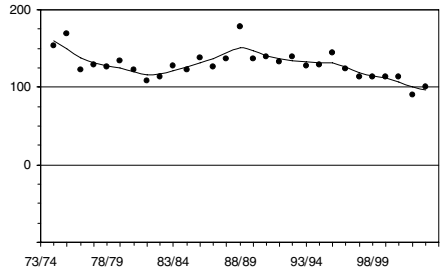

Figure 68. Annual indices for Ringed Plover in the UK

Britain and Ireland are of major importance for Ringed Plovers, providing both wintering resorts for British and continental breeding birds, and passage sites for long-distance migrants (Stroud *et al* 2004). The UK also supports substantial breeding numbers which comprise a large proportion of the nominate race *hiaticula.*

Although peak totals for both Great Britain and Northern Ireland were particularly low in 2001/02, numbers recovered in 2002/03 and were very similar to the mean of 18,600 for recent winters in Britain and comfortably higher than the 725 for the Province. UK indices nevertheless show a steady downward trend since 1988/89, falling 12% over the most recent five years and 22% over the last ten, triggering 10- and 25-year medium alerts for Britain and also causing this species to remain on the Amber list of Birds of Conservation Concern (Gregory *et al* 2002). These declines are not, however, reflected in the wider flyway trend where the nominate race has shown strong overall increases in the most recent decade (Stroud *et al* 2004).

Some 33% of UK numbers are found on non-estuarine coasts in winter – areas that are not comprehensively covered by WeBS – and periodic surveys show numbers using these habitats to have decreased by 15% between 1984/85 and 1997/98, and by more than 25% between 1989/90 and 1999/2000 (Rehfisch *et al* 2003b). An increase in numbers on non-estuarine coasts in the east and northeast suggest an eastward shift in distribution in response to climate change (Rehfisch *et al* 2004).

Numbers in Great Britain and Northern Ireland increased in September to a peak in October, presumably coinciding with passage of arctic-breeding birds from Canada, Greenland, Iceland and Fennoscandia (*Migration Atlas*). Thereafter, numbers declined throughout the winter though a second, lower peak seen in spring indicates passage of northbound migrants.

Numbers at many key sites were lower than average in 2001/02 and 2002/03, those on the Humber Estuary and Morecambe Bay continuing steady declines over the last five years. Large numbers recorded during Low Tide Counts in 2001/02 at Hamford Water saw this site elevated to international importance, while that scheme also found large numbers at Strangford Lough in the same winter.

Northwest estuaries, as well as the Humber Estuary and North Norfolk Coast, in particular, are of extreme importance during passage periods with high numbers recorded on both spring and autumn passage. Eleven sites held internationally important numbers at these times in 2002/03, and a further 14 held nationally important numbers, emphasising the potential impacts of loss of coastal habitat on passage migrants. Several sites in Northern Ireland, including Carlingford Lough, Outer Ards and Lough Foyle also hold large numbers during passage periods.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Thames Estuary	(620)	(775)	954	765	768	Feb	829	
Solway Estuary	(906)	(276)	(330)	(289)	599	Nov	753	▲
Hamford Water	570	365	(678)	[38] 1,302	(201)	Dec	746	▲
Sites of national importance in Great Britain								
Tiree	[33] 561	-	-	-	-		561	▼
Medway Estuary	(540)	(351)	(126)	(89)	(249)	Dec	(540)	
Thanet Coast	386	558	528	407	412	Jan	458	
South Ford	-	570	341	-	373	Nov	428	
Langstone Harbour	383	605	413	268	394	Dec	413	▼
Humber Estuary	[38] 504	466	409	350	225	Jan	391	
Morecambe Bay	367	522	473	298	246	Nov	381	
Forth Estuary	469	441	356	266	343	Nov	375	
North Norfolk Coast	318	373	369	(471)	262	Nov	359	
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	279	[38] 278	[38] 494	[38] 618	[38] 236	Dec	381	
Outer Ards	485	223	313	-	315	Jan	334	
Carlingford Lough	(174)	(125)	(116)	203	240	Nov	222	
Belfast Lough	167	192	142	188	189	Nov	176	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Swansea Bay	436	Nov	Blackwater Estuary	362	Nov
			Pegwell Bay	[38,]359	Dec

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
North Norfolk Coast	(1,858)	Aug	Humber Estuary	1,971	May
The Wash	1,519	Aug	North Norfolk Coast	1,965	Sep
Hamford Water	(1,208)	Oct	Ribble Estuary	1,887	Aug
Thames Estuary	1,019	Oct	Dee Estuary (Eng/Wal)	1,168	Aug
Humber Estuary	(946)	Sep	The Wash	1,135	Sep
Stour Estuary	809	Oct	Swale Estuary	1,057	Sep
			Thames Estuary	(1,034)	Sep
			Tyninghame Estuary	984	May
			Stour Estuary	959	Sep
			Tees Estuary	[37,]878	May
			Solway Estuary	782	Oct

Sites surpassing passage threshold for Great Britain in 2001/02 or 2002/03

	01/02			02/03	
Severn Estuary	(681)	Aug	Mersey Estuary	690	Aug
Chichester Harbour	581	Aug	Hamford Water	571	Sep
Colne Estuary	537	Oct	Morecambe Bay	570	Aug
Swale Estuary	525	Oct	Pegwell Bay	560	Sep
Forth Estuary	495	Oct	Blackwater Estuary	560	Oct
Solway Estuary	(492)	Sep	Forth Estuary	545	Sep
Pegwell Bay	440	Sep	South Ford	512	Sep
South Ford	[37] 420	Aug	Breydon Wtr & Berney Marshes	416	May
Tay Estuary	410	May	Chichester Harbour	415	Sep
Blackwater Estuary	361	Sep	Duddon Estuary	372	Sep
Tyninghame Estuary	347	Aug	Severn Estuary	371	Sep
Thanet Coast	320	Oct	Thanet Coast	362	Sep
Dengie Flats	(300)	Oct	Tay Estuary	(330)	Aug
			Dengie Flats	315	Oct

Sites no longer of national importance

Colne Estuary, Stour Estuary, Swale Estuary

Internationally or nationally important sites not covered in last five years

Carlingford to Newcastle, East Sanday Coast, Kilkeel to Lee Stone Point, South Uist (West Coast), Traighear

GOLDEN PLOVER

Pluvialis apricaria

International threshold:	**9,300**
Great Britain threshold:	**2,500**
All-Ireland threshold:	**2,000**

	01/02	02/03
GB Max:	**135,492 Feb**	**131,998 Dec**
NI Max:	**15,285 Feb**	**12,446 Mar**

Both the British and Northern Ireland maxima reflected the continuing fluctuation in the numbers of this species recorded by WeBS. Numbers in Great Britain in both 2001/02 and 2002/03 were slightly below average for recent years. The peak in Northern Ireland in 2001/02 rose sharply to more normal levels after the low of the previous winter, but fell again in 2002/03. Such fluctuations will, to a large degree, reflect the mobile nature of this species, particularly movement to and from the UK in response to changing weather, but also between wetland and non-wetland habitats, where a large proportion of wintering birds is found.

Golden Plovers leave their breeding grounds shortly after the young reach independence (*Migration Atlas*), and this is reflected in the early build up of numbers, particularly at coastal sites, from August onwards. Many British-bred birds are thought to remain in Britain, where they are joined by birds from Fenno-Scandia and Iceland. Others move south, to Spain and beyond, as there have been very few recoveries in France, and, notably, none has been recovered wintering in Ireland, where Icelandic birds dominate (*Migration Atlas*). Changing numbers in response to cold weather, as often noted by WeBS, may therefore involve a rather more complex web of movements of the different sub-populations than simply west or south to avoid inclement weather. Numbers in Northern Ireland consistently show an early winter peak (in November or December) and another that is similar or even larger in late winter or spring (February, as in 2001/02 or March, as in 2002/03). It might be speculated that this represents pre-migration gathering of birds before departure to Iceland, Northern Ireland acting as the departure point for larger numbers that have overwintered in Ireland, or possibly that more birds have moved onto wetland habitats at this time where they will be counted by WeBS.

Peak counts at the key sites are characterised by large changes between winters, and notable counts therefore have to fall outwith this normal range of variation. Those on the Swale, the Stour and Strangford Lough in 2001/02 and at Pegwell Bay in 2002/03 were all much larger than their respective five-year means, that on the Somerset Levels in 2002/03 less than one third. Peak numbers at several sites are recorded during Low Tide Counts, presumably because Golden Plovers choose high tide roosts well inland and outside the area surveyed during Core Counts.

The use of farmland during the winter months means that a significant number of wintering Golden Plovers is not counted by WeBS. Historically this species has preferred to feed on pastures, in particular favouring older fields with earthworms (*Migration Atlas*), but changes in farm management have led to many pastures being converted to arable land or being improved through reseeding and the application of fertilisers. The results of the International Golden Plover Survey, carried out in October 2003 (Gillings 2003), will help to understand the effects of these changes on distribution and habitat use and to estimate winter abundance.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Humber Estuary	(42,848)	42,381	25,133	29,607	40,585	Dec	36,111	
The Wash	20,467	42,761	13,740	14,109	19,089	Dec	22,033	
Blackwater Estuary	(9,150)	14,902	18,826	8,082	[38] 12,455	Nov	13,566	▲
Breydon Wtr & Berney Marshes	10,300	10,600	13,280	10,200	8,900	Nov	10,656	▲
Sites of national importance in Great Britain								
Swale Estuary	(7,722)	7,010	6,217	13,898	3,282	Nov	7,626	
Blyth Estuary (Suffolk)	-	-	10,000	3,510	-		6,755	
Solway Estuary	5,374	[38] 3,984	[38] 8,065	3,333	3,708	Nov	6,116	
Carmarthen Bay	(500)	(9)	(5,001)	(800)	(500)	Jan	(5,001)	
Lower Derwent Valley	6,200	3,400	-	-	-		4,800	
Old Moor Wetlands	(3,500)	4,100	4,700	5,500	(7,700)	Jan	(7,700)	
Thames Estuary	3,318	4,166	7,911	3,538	(3,268)	Nov	4,733	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Medway Estuary	(47)	(4,500)	(30)	(14)	(75)	Jan	(4,500)	▲
Pegwell Bay	94	3,800	4,000	7,000	[38] 7,229	Feb	4,425	▲
Stour Estuary	817	[38] 2,160	[38] 6,620	[38] 8,531	[38] 2,567	Feb	4,139	▲
Morecambe Bay	3,618	3,628	4,121	5,649	3,349	Feb	4,073	
Somerset Levels	3,366	5,401	5,077	5,169	1,260	Nov	4,055	
Taw-Torridge Estuary	(1,070)	3,440	(1,900)	(4,500)	(2,612)	Feb	3,970	▲
Clifford Hill Gravel Pits	3,620	5,500	4,500	3,560	2,500	Nov	3,936	
Lindisfarne	(4,990)	4,830	3,598	2,881	3,383	Dec	3,936	
Colne Estuary	(3,795)	(5,000)	4,045	1,820	(82)	Jan	3,665	
Ribble Estuary	4,397	3,546	(4,341)	3,075	2,671	Dec	3,606	
North Norfolk Coast	4,165	3,442	3,386	4,917	1,919	Feb	3,566	
Hamford Water	3,847	2,245	4,164	2,464	2,384	Jan	3,021	
Crouch-Roach Estuary	4,455	1,730	3,889	2,602	2,165	Jan	2,968	
Nene Washes	3,223	2,260	500	4,440	4,320	Nov	2,949	
Unspecified SE England site	4,500	5,000	1,600	2,600	500	Nov	2,840	
Ouse Washes	[37] 1,691	[37] 4,986	216	4,035	[37] 2,828	Mar	2,751	▲
Sites of all-Ireland importance in Northern Ireland								
Loughs Neagh & Beg	(8,974)	(6,675)	7,621	(2,817)	(3,767)	Nov	8,298	
Strangford Lough	6,872	7,076	[38] 6,948	[38] 11,726	8,766	Jan	8,278	
Lough Foyle	[37] 7,000	2,600	2,590	4,100	3,320	Nov	3,922	
Outer Ards	2,420	2,095	1,411	-	3,164	Mar	2,273	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Old Moor Wetlands	5,500	Nov	Forth Estuary	(4,632)	Nov
Earls Barton Gravel Pits	4,506	Mar	Thanet Coast	3,941	Jan
Stanwick Gravel Pits	4,504	Feb	Dengie Flats	3,170	Jan
Ythan Estuary	3,500	Nov	St Mary's Island	3,000	Nov
			Priory Water	2,750	Dec
			Rutland Water	2,588	Dec

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
Humber Estuary	30,044	Oct	The Wash	19,587	Aug
The Wash	19,424	Oct	Humber Estuary	19,191	Aug

Sites no longer of national importance

Mersey Estuary, St Mary's Island

Internationally or nationally important sites not covered in last five years

Criddling Stubbs Quarry Pools, Dundrum Outer Bay, New Road Pits, R. Idle: Bawtry to Misterton

GREY PLOVER

Pluvialis squatarola

	01/02	02/03
GB Max:	**42,316 Mar**	**34,550 Jan**
NI Max:	**342 Jan**	**338 Jan**

International threshold: **2,500**
Great Britain threshold: **530**
All-Ireland threshold: **40***

** 50 is usually used as a minimum threshold*

	5	10	25
GB Alert:	○	○	▲

Grey Plovers occur both as passage migrants and as winter visitors to the UK, while small numbers of non-breeding immature birds also summer here, all of these birds breeding in Russia (*Migration Atlas*).

The rapid increases seen in the UK since the mid 1970s have been mirrored by similar increases in other parts of the species' range, *eg* in the Wadden Sea and the Dutch deltas in continental Europe (Moser 1988, Cayford & Waters 1996) and in Africa (Stroud *et al* 2004).

The maximum number recorded in Britain during 2001/02 dropped, however, by 19% from the previous winter, and in turn fell by a similar amount in 2002/03, while numbers in Northern Ireland in both years were slightly below the recent average. This is also reflected by the index values which, whilst they suggested a period of overall stability, despite fluctuations, in the 1990s, appear to show a distinct downturn following the two most recent winters.

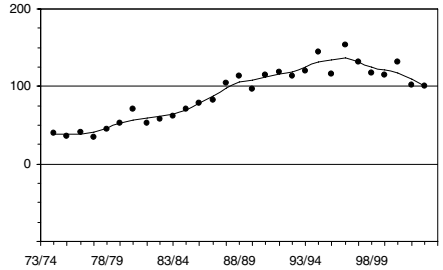

Figure 69. Annual indices for Grey Plover in the UK

The distribution of Grey Plovers in the UK is largely southeastern, and most are present in the area between the Wash and the Solent. They are relatively scarce in Scotland and Northern Ireland, but important numbers can be found on some of the larger estuaries and loughs. In 2002/03, the Wash was the most important site numerically during both winter and passage periods. As expected, following the downturn in numbers nationally, Grey Plover counts at the majority of key UK resorts during 2002/03 were below their respective five-year peak means, particularly on the Thames, Ribble, Medway, Morecambe Bay, Beaulieu and Mersey; only those on the Burry Inlet were appreciably higher than normal. Over 1,000 – likely to be first-summer birds – were counted in Britain throughout summer 2003.

A relatively large number of British sites are no longer of international importance, though the majority no longer qualify because the threshold for international importance has increased from 1,500 to 2,500.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	5,767	7,432	7,495	8,395	7,778	Dec	7,373	
Thames Estuary	(5,173)	5,871	6,923	5,160	3,188	Jan	5,286	
Ribble Estuary	(8,435)	3,234	5,139	6,285	1,658	Dec	4,950	
Dengie Flats	(1,966)	3,252	7,826	3,640	3,610	Nov	4,582	
Blackwater Estuary	(4,874)	4,649	2,920	2,228	3,230	Nov	3,580	
Stour Estuary	2,414	3,739	3,130	3,084	3,013	Jan	3,076	
Hamford Water	3,020	1,672	(2,803)	3,267	2,984	Jan	2,749	
Sites of national importance in Great Britain								
Swale Estuary	2,614	1,858	2,992	1,745	2,181	Jan	2,278	▼
Chichester Harbour	1,849	(2,145)	2,180	(3,180)	1,700	Dec	2,227	▼
Medway Estuary	2,631	(2,631)	3,221	1,616	938	Dec	2,207	▼
Alt Estuary	[38] 2,314	1,877	1,538	2,500	1,099	Mar	1,866	▼
Humber Estuary	1,849	1,446	(1,320)	1,567	(1,300)	Dec	1,621	▼
North Norfolk Coast	1,270	1,637	1,382	1,720	1,374	Jan	1,477	▼
Dee Estuary (Eng/Wal)	1,204	742	823	[38] 2,201	966	Feb	1,187	▼
Lindisfarne	1,106	(1,165)	1,230	1,016	(635)	Jan	1,129	▼
Colne Estuary	910	898	1,331	1,357	(141)	Jan	1,124	
Langstone Harbour	(1,150)	1,454	1,405	504	982	Jan	1,099	▲
Morecambe Bay	1,172	1,072	1,288	1,043	657	Feb	1,046	
Pagham Harbour	488	[38] 1,139	979	713	704	Feb	805	
Eden Estuary	580	514	646	812	690	Dec	648	
Solway Estuary	[38] 903	[38] 678	[38] 520	482	466	Feb	610	
Orwell Estuary	417	1,034	484	[38] 323	(413)	Jan	565	
Beaulieu Estuary	756	547	600	708	188	Nov	560	
Mersey Estuary	1,623	[38] 630	60	260	201	Feb	555	
Burry Inlet	543	(284)	417	392	774	Jan	532	▲
Forth Estuary	(613)	554	517	420	549	Nov	531	
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	326	320	268	273	[38] 398	Nov	317	
Dundrum Bay	(68)	(14)	(28)	(19)	(72)	Jan	(72)	▲
Carlingford Lough	65	35	(17)	45	52	Jan	49	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

01/02			02/03		
none			North West Solent	558	Jan
			Severn Estuary	[38] 555	Jan
			Pegwell Bay	543	Mar
			Lough Foyle	42	Feb

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

01/02			02/03		
The Wash	4,631	Aug	The Wash	10,649	Apr
Thames Estuary	4,228	Oct	Alt Estuary	4,890	Apr
			Dengie Flats	4,170	Oct
			Ribble Estuary	3,352	Sep
			Thames Estuary	2,861	Oct
			Humber Estuary	(2,845)	May
			Blackwater Estuary	2,629	Oct
			North Norfolk Coast	2,535	Sep

Sites no longer of national importance
Exe Estuary

LAPWING
Vanellus vanellus

International threshold: 20,000**
Great Britain threshold: 20,000†**
All-Ireland threshold: 2,500

	01/02		02/03	
GB Max:	**323,706**	**Feb**	**291,643**	**Dec**
NI Max:	**22,419**	**Jan**	**12,611**	**Dec**

Despite relatively mild winter weather in the UK, peak British totals in 2001/02 and 2002/03 were below average, and while that in 2001/02 in Northern Ireland was around the recent norm, numbers dropped sharply the following winter. Lapwings are prone to cold weather movements, and numbers wintering in the UK vary markedly as a result of their response to temperatures in Europe (*eg* Kirby & Lack 1993).

Birds quickly leave their breeding sites in summer and gather in small flocks, often associated with wetlands (*Migration Atlas*), reflected in five-figure counts by WeBS as early as June. Numbers build steadily with the arrival of continental birds and movements of British breeders. Many remain in the UK over winter, favouring inland and coastal habitats, but some – more during cold weather – move to milder areas. Ringing recoveries show that birds from northern Britain tend to move west during winter, and those from southern Britain move south to France and Iberia (*Migration Atlas*). Such movements may be relatively short-lived (Kirby & Lack 1993), and changes in WeBS monthly totals during the winter – perhaps with several peaks and troughs, as in 2001/02, rather than the more normal rise and fall from a single high, as in 2002/03 – are likely to reflect this.

Accordingly, numbers at individual sites generally fluctuate between winters, and notable highs and lows may occur in successive years, as on the Humber Estuary in 2001/02 and 2002/03. Particularly marked variation on the Ouse and Nene Washes, varying from a few thousand to several tens of thousands with some regularity, is in response to the extent of flooding at these sites. Markedly low numbers were recorded on the Colne Estuary in 2001/02 and a high count was made at Strangford Lough in the same winter.

Lapwings are widespread on areas of low-lying farmland, making assessment of numbers and monitoring changes problematic for most waterbird surveys that concentrate on wetland sites. As a result, there are few accurate national estimates, and no accurate flyway estimates (Stroud *et al* 2004). As with Golden Plover, there is clearly a need for internationally co-ordinated surveys in autumn and winter in order to estimate abundance, identify key sites and migration routes, and understand the timing of migration (Gillings 2003).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	27,585	86,129	31,165	43,558	43,672	Dec	46,422	
Somerset Levels	(55,654)	28,895	50,328	41,675	(16,036)	Feb	44,138	
Humber Estuary	(32,999)	32,720	16,870	10,719	(36,309)	Dec	25,923	
Breydon Wtr & Berney Marshes	27,300	20,500	18,300	19,380	15,230	Nov	20,142	
Sites with mean peak counts of 5,000 or more birds in Great Britain†								
Thames Estuary	(10,753)	(11,850)	(19,073)	(10,982)	16,036	Jan	17,555	
Morecambe Bay	(17,501)	18,796	16,213	13,504	(13,714)	Nov	16,504	
Swale Estuary	16,241	18,641	13,585	14,804	14,974	Jan	15,649	
Mersey Estuary	[38] 14,129	(13,620)	(1,930)	(5,284)	(5,675)	Dec	14,129	
Blackwater Estuary	(11,752)	14,154	20,309	9,005	[38] 11,053	Nov	13,630	
Ribble Estuary	15,360	11,022	(12,405)	(9,579)	(14,500)	Dec	13,627	
Severn Estuary	8,029	19,034	(9,817)	(7,439)	[38] 12,129	Dec	13,064	
Ouse Washes	4,435	29,913	1,289	[37] 19,219	[37] 8,125	Nov	12,596	
Unspecified SE England site	19,000	17,500	5,000	11,000	1,800	Nov	10,860	
Nene Washes	5,500	13,080	7,100	4,230	21,016	Nov	10,185	
Solway Estuary	[38] 7,970	8,345	[38] 8,596	(5,211)	(7,340)	Nov	8,304	
Dee Estuary (Eng/Wal)	8,828	8,278	6,270	9,206	6,470	Jan	7,810	
Medway Estuary	(4,715)	(6,728)	(1,055)	(2,488)	(1,755)	Dec	(6,728)	
North Norfolk Coast	4,682	8,744	5,799	7,830	5,124	Feb	6,436	
Colne Estuary	8,725	7,500	6,430	2,182	(765)	Jan	6,209	
R. Avon: R'wood to Christchurch	(1,552)	(2,692)	[37] 4,650	(1,564)	6,660	Dec	5,655	△
Crouch-Roach Estuary	5,696	5,962	6,537	3,697	4,939	Dec	5,366	
Tees Estuary	5,164	3,468	5,562	(3,196)	6,017	Nov	5,053	△
Sites of All-Ireland importance in Northern Ireland								
Loughs Neagh & Beg	(6,154)	10,968	(6,281)	(4,264)	(2,980)	Dec	10,968	
Strangford Lough	7,497	5,736	6,214	10,527	6,977	Jan	7,390	
Lough Foyle	(4,781)	2,990	(2,277)	(3,320)	2,629	Nov	3,467	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Pegwell Bay	6,000	Dec	Pegwell Bay	[38] 10,282	Feb
Stour Estuary	[38] 5,204	Jan	Hamford Water	5,167	Jan

Sites no longer meeting table qualifying levels

Alde Complex, Arun Valley, Forth Estuary, Hamford Water, Lower Derwent Valley, Outer Ards, Stour Estuary

† *as few sites exceed the British threshold, a qualifying level of 5,000 has been used to select sites for presentation in this report*

KNOT

Calidris canutus

International threshold: 4,500
Great Britain threshold: 2,800
All-Ireland threshold: 375

	01/02	02/03
GB Max:	**284,413 Feb**	**235,343 Jan**
NI Max:	**4,061 Jan**	**3,642 Dec**

	5	10	25
GB Alert:	O	O	O

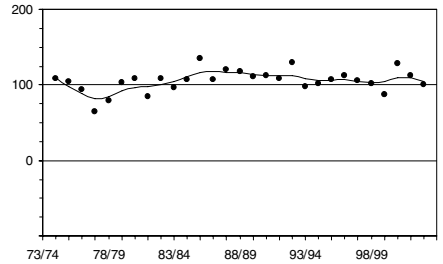

Figure 70. Annual indices for Knot in the UK

Two populations of Knot – the sub-species *canutus,* breeding in the Taimyr, and *islandica,* breeding in Greenland and northeast Canada – pass through the UK. These have different international thresholds – 3,400 and 4,500 respectively – reflecting their different population sizes. Separation in the field is, to all intents and purposes, impossible during winter but, since the nominate race winters in Africa and *islandica* in western Europe, it is assumed that all birds in the table below comprise *islandica* and thus the higher threshold is applied.

Following the sharp increase in the UK annual index in 2000/01, values fell in 2001/02 and again in 2002/03. Peak counted numbers in Great Britain in 2001/02 were correspondingly lower, and those in Northern Ireland were below the average in both winters. The *islandica* population as a whole is, however, now relatively stable after a period of steady increase during the 1980s, which represented a partial population recovery after disastrous breeding seasons in the mid 1970s (Piersma & Davidson 1992). Fluctuations in British Knot numbers occur as a consequence of factors affecting survival as well as reproduction (Boyd & Piersma 2001).

Numbers in Britain increase between October and December as many birds move west from the Wadden Sea into Britain (*Migration Atlas*). During this time birds also move northwards and westwards within the UK and the majority of the key wintering sites in the UK are the large estuaries of the southern North Sea and western Britain. Although numbers at key sites may vary greatly between winters, peak totals in 2002/03 were below average at more than two thirds of sites supporting internationally important numbers, matching the national decline. Large numbers were, however, recorded at many sites in, notably on the Wash and Humber (though declining markedly at both the following winter) and on the Alt. Numbers remained high in 2002/03 on both the Dee (England/Wales) and Montrose Basin. The 2002/03 peak on Strangford Lough was also notable. Much lower than normal numbers were noted on Hamford Water and the Burry Inlet in 2001/02. Such changes may reflect the considerable movement during the winter between estuaries in Britain, considered to be a response to annual variations between and within estuaries in the availability of their mollusc food supply (*Migration Atlas*).

The large British estuaries are also of major importance as autumn moulting sites and as early spring staging areas where birds rapidly accumulate large stores of fat and protein before flying to stage in western Iceland or in northern Norway (Piersma & Davidson 1992, Boyd & Piersma 2001). A total of eight sites supported internationally important numbers during passage periods in 2002/03, and although all these are also of international importance during the winter period, the passage count on the North Norfolk Coast is notable for being appreciably higher than any winter count over the last five years.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Morecambe Bay	71,238	59,530	72,908	66,031	61,968	Jan	66,335	
The Wash	62,211	60,711	72,939	80,452	51,642	Nov	65,591	
Ribble Estuary	36,595	22,010	(20,331)	36,202	(23,691)	Mar	31,602	
Humber Estuary	27,355	25,719	34,888	49,991	18,936	Dec	31,378	
Thames Estuary	(31,090)	21,942	(38,357)	27,425	28,060	Jan	29,375	
Alt Estuary	19,009	20,000	31,219	44,012	25,045	Dec	27,857	
Dee Estuary (Eng/Wal)	[38] 17,041	8,683	5,672	52,792	26,769	Feb	22,191	
Dengie Flats	14,560	(5,800)	19,400	13,600	10,550	Nov	14,528	
North Norfolk Coast	6,136	3,356	29,636	16,214	9,224	Jan	12,913	
Solway Estuary	(8,986)	(8,544)	[38] 9,158	(3,784)	9,620	Mar	9,389	
Stour Estuary	4,800	9,677	[38] 8,036	[38] 6,998	[38] 8,648	Nov	7,632	
Forth Estuary	7,425	6,345	5,807	7,232	8,936	Jan	7,149	
Strangford Lough	7,070	[38] 5,238	5,863	[38] 4,000	[38] 10,640	Dec	6,562	
Sites of national importance in Great Britain								
Hamford Water	5,924	3,533	5,431	1,957	2,935	Dec	3,956	▼
Lindisfarne	4,040	(1,954)	[38] 3,130	2,858	4,512	Feb	3,635	▼
Burry Inlet	3,870	(3,562)	4,800	2,000	3,800	Jan	3,618	▼
Montrose Basin	2,483	1,824	2,800	5,000	5,800	Dec	3,581	
Cromarty Firth	4,299	[38] 1,685	5,050	2,621	3,132	Feb	3,357	▼
Swale Estuary	4,020	3,400	4,200	2,900	1,500	Dec	3,204	▼
Blackwater Estuary	(4,077)	2,565	(4,470)	2,495	[38] 1,700	Dec	3,061	
Medway Estuary	2,645	(5,055)	1,370	1,950	4,085	Jan	3,021	▲
Sites of all-Ireland importance in Northern Ireland								
Dundrum Bay	(1,500)	1,000	(981)	(555)	(603)	Jan	1,250	
Belfast Lough	901	600	120	153	155	Feb	386	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Tees Estuary	4,416	Jan	Orwell Estuary	[38] 3,172	Jan
Dornoch Firth	[38] 3,113	Jan	Dornoch Firth	2,960	Feb

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
The Wash	72,295	Oct	The Wash	62,801	Oct
Humber Estuary	18,246	Oct	North Norfolk Coast	40,832	Sep
North Norfolk Coast	17,557	Aug	Ribble Estuary	36,980	Sep
Ribble Estuary	14,825	Oct	Alt Estuary	22,208	Sep
Morecambe Bay	10,033	Oct	Morecambe Bay	21,599	Oct
Alt Estuary	9,519	Sep	Humber Estuary	15,181	Oct
			Dengie Flats	9,400	Oct
			Thames Estuary	(6,806)	Oct

Sites no longer of national importance
Inner Moray Firth

Internationally or nationally important sites not covered in last five years
Dundrum Outer Bay

SANDERLING

Calidris alba

	01/02	02/03
GB Max:	**9,245 Dec**	**14,101 May**
NI Max:	**216 Apr**	**33 May**

International threshold:			**1,200**
Great Britain winter threshold:			**210**
Great Britain passage threshold:			**300**
All-Ireland threshold:			**35***
** 50 is usually used as a minimum threshold*			
	5	**10**	**25**
GB Alert:	O	O	O

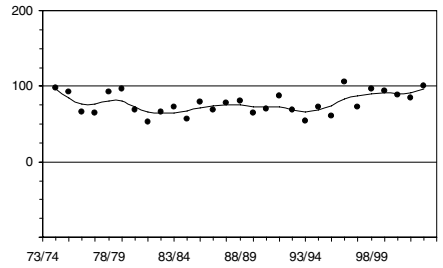

Figure 71. Annual indices for Sanderling in the UK

Over much of their wintering range, Sanderlings are widely dispersed in small numbers, and consequently relatively few sites on each flyway are of major importance in winter. The UK is an important area at this time of year, but also for moulting birds and, especially, during migration (*Migration Atlas*), when many of the largest site counts are made. Although birds may use sites only transiently at this time – and many may therefore be missed by WeBS – the largest national totals often occur during spring. The total of 14,101 in Britain during May 2002 was some 53% higher than the peak during winter months in 2001/02. There was also appreciable autumn passage in 2002, the count of 11,569 in August some 18% higher than the peak during the following winter.

Winter totals were appreciably higher in 2002/03, and marginally so in 2001/02, than in recent years and the annual index – which is based on numbers from November to February – showed an overall rise, matching the high levels of the early 1970s.

The Ribble and adjacent Alt Estuaries continue to be the only sites in the UK to support internationally important numbers of Sanderling during the winter, with large counts at the former and on the nearby Dee Estuary in 2001/02. Notably high counts were also made at both Carmarthen Bay and the North Norfolk Coast in both 2001/02 and 2002/03, and that on the Forth Estuary in the second winter was also well above normal. Low numbers were conspicuous on the Thanet Coast, given the consistent numbers in previous winters, and on the Duddon Estuary and Lade Sands in 2002/03.

Passage counts in 2002/03 included the two highest at any site for this species, with that on the Wash also exceeding the international threshold; the importance of this site for staging birds has been increasing since 1990 (*Migration Atlas*). The majority of the stopover sites used during autumn migration is located on the east coast of Britain, whereas spring migration sites tend to be located on the west.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Ribble Estuary	1,223	2,501	1,290	3,004	2,680	Dec	2,140	
Alt Estuary	[38] 1,355	1,320	967	1,556	1,431	Feb	1,326	
Sites of national importance in Great Britain								
Carmarthen Bay	797	592	730	1,600	1,770	Jan	1,098	
North Norfolk Coast	720	881	1,179	1,319	1,150	Feb	1,050	
Thames Estuary	(687)	(127)	334	552	875	Mar	612	
Tiree	[33] 589	-	-	-	-		589	
Thanet Coast	621	610	677	434	444	Jan	557	
Duddon Estuary	627	485	606	486	287	Feb	498	
Humber Estuary	406	496	546	358	440	Jan	449	
The Wash	(348)	(441)	317	504	496	Dec	440	
Jersey Shore	611	443	253	391	-		425	
Swansea Bay	379	(235)	234	356	410	Jan	345	
Tees Estuary	346	456	373	259	280	Nov	343	
Dee Estuary (Eng/Wal)	463	246	100	550	286	Jan	329	
South Ford	-	540	228	-	120	Mar	296	
Morecambe Bay	172	235	391	275	240	Dec	263	
Solway Estuary	(303)	(125)	(117)	218	(266)	Mar	262	▲
Forth Estuary	194	184	262	274	389	Jan	261	▲
Lade Sands	240	330	[37] 320	236	140	Jan	253	
Colne Estuary	215	176	252	272	-		229	
Sites of all-Ireland importance in Northern Ireland								
Dundrum Bay	(72)	(65)	(132)	(0)	(30)	Feb	(132)	
Killough Harbour	-	-	-	[38] 76	-		76	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Ryde Pier to Puckpool Point	368	Nov	Ardivachar Point	398	Nov
Chichester Harbour	(360)	Feb	Afan Estuary & Port Talbot Hbr	378	Mar
Lindisfarne	[38] 321	Dec	Pegwell Bay	[38] 373	Dec
Grogary, nam Feithean &			Lindisfarne	[38] 283	Feb
Hougharry Lochs	290	Jan	Loch Paible	225	Nov
			Inner Moray Firth	211	Feb

Sites surpassing passage threshold for Great Britain in 2001/02 or 2002/03

	01/02			02/03	
The Wash	4,216	Aug	Alt Estuary	5,118	May
Ribble Estuary	2,900	Sep	The Wash	4,239	Aug
North Norfolk Coast	1,082	Aug	Ribble Estuary	2,526	May
Alt Estuary	948	Sep	Thames Estuary	1,138	Sep
Thames Estuary	756	Oct	Humber Estuary	1,045	Aug
Humber Estuary	565	Sep	North Norfolk Coast	968	Aug
			North Bay (South Uist)	516	Oct
			Lindisfarne	442	Sep
			Morecambe Bay	435	Apr
			Forth Estuary	389	Sep
			Tees Estuary	358	Jul
			Ardivachar Point	322	Sep

Sites no longer of national importance

Durham Coast, North Bay (South Uist)

Internationally or nationally important sites not covered in last five years

Dundrum Outer Bay

LITTLE STINT

Calidris minuta

International threshold:	**2,000**
Great Britain threshold:	**?**
All-Ireland threshold:	**?**

	01/02	02/03
GB Max:	**355 Oct**	**53 Oct**
NI Max:	**2 Nov**	**5 Oct**

The peak total recorded by WeBS in 2002/03 was exceedingly low and well below the five-year peak mean. Total numbers in 2001/02 were, however, similar to the mean for the previous five years. During passage periods, birds were recorded at 60 sites in 2001 and 40 sites in 2002, with the highest numbers seen during autumn passage and relatively few records in the spring. The highest counts at a single site recorded by WeBS to date occurred in October 2001: 41 at the Thames Estuary, 47 at the North Norfolk Coast and 48 at Chichester Harbour.

The number of winter records in 2001/02 remained relatively high, as in previous years, with birds recorded at 30 sites. Notable counts included 16 at the Ribble Estuary, 15 at Chichester Harbour, and seven each at Pegwell Bay, the Solway Estuary and the North Norfolk Coast. By contrast, records were received for only 12 sites the following winter, with counts of five at each of the Severn Estuary, Mersey Estuary and Chichester Harbour the largest. Two were also present at Belfast Lough in December 2002.

Sites with five or more birds in 2001/02 or 2002/03

	01/02			02/03	
Chichester Harbour	48	Oct	Severn Estuary	12	Oct
North Norfolk Coast	47	Oct	Pegwell Bay	10	Aug
Thames Estuary	41	Oct	Thames Estuary	8	Oct
Middle Yare Marshes	31	Oct	Breydon Wtr & Berney Marshes	7	Aug
Swale Estuary	22	Sep	Ribble Estuary	7	Apr
Breydon Wtr & Berney Marshes	19	Oct	Humber Estuary	6	Aug
Blagdon Lake	17	Oct	Mersey Estuary	5	Dec
Severn Estuary	17	Oct	Chichester Harbour	5	Jan
Pool of Virkie	16	Aug			
Ribble Estuary	16	Dec			
Exe Estuary	15	Sep			
Upper Tamar Reservoir	12	Oct			
Clifford Hill Gravel Pits	11	Oct			
Rutland Water	11	Oct			
The Wash	11	Oct			
North West Solent	10	Oct			
Dee Estuary (Eng/Wal)	(8)	Oct			
Blackwater Estuary	7	Oct			
Langford Lowfields Gravel Pits	7	Oct			
Pegwell Bay	7	Nov			
Solway Estuary	7	Nov			
Colne Estuary	6	Oct			
Minsmere	6	Sep			
Southampton Water	6	Sep			
Hamford Water	[38] 6	Jan			
Humber Estuary	5	Oct			
Orwell Estuary	5	Aug			
Somersham Gravel Pits	5	Oct			
Strangford Lough	[38] 5	Dec			

CURLEW SANDPIPER

Calidris ferruginea

International threshold:	**7,400**
Great Britain threshold:	**?**
All-Ireland threshold:	**?**

	2001	2002
GB Max:	**283 Sep**	**237 Sep**
NI Max:	**7 Oct**	**9 Sep**

Most birds seen in the UK occur during autumn passage, and numbers are frequently highest in September. This coincides with the main migration of juveniles from the breeding grounds, which begins in early August, later than the adults (*Migration Atlas*).

Peak counts of Curlew Sandpiper in the UK fluctuate greatly between years and both breeding success in the Arctic and weather conditions during migration have a major influence on the number passing through Britain and Ireland. The 2001 and 2002 British maxima were higher than in the previous year, though much lower than the record counts of 1998 (1,120) and 1999 (1,042). Birds are scarcer in Northern Ireland, with total numbers from WeBS usually only just reaching double figures, and maxima for the Province in the last two winters were at the lower end of the range for recent years.

Though they rarely winter in the UK, Curlew Sandpipers were recorded between November and March at nine sites in 2001/02 and seven in 2002/03. All but three sightings were of single birds: three at the Dee Estuary (England/Wales) and four at the Taw-Torridge Estuary in November 2001.

Sites with ten or more birds in 2001 or 2002

	2001		2002	
Severn Estuary	41	Sep	Humber Estuary	53 Sep
Thames Estuary	33	Oct	Swale Estuary	29 Sep
Breydon Wtr & Berney Marshes	27	Jul	Breydon Wtr & Berney Marshes	27 Aug
Swale Estuary	26	Sep	Bann Estuary [37]	26 Sep
The Wash	26	Aug	Strangford Lough [38]	16 Feb
North Norfolk Coast	25	Aug	Severn Estuary	22 Sep
Pegwell Bay	22	Aug	North Norfolk Coast	15 Sep
Martin Mere	17	Sep	Thames Estuary	13 Sep
Middle Yare Marshes	14	Sep	Chichester Harbour	11 Sep
Chichester Harbour	12	Sep		
Humber Estuary	12	Oct		
Mersey Estuary	12	Oct		
Exe Estuary	11	Oct		

PURPLE SANDPIPER

Calidris maritima

International threshold:	**750**
Great Britain threshold:	**180†**
All-Ireland threshold:	**10***

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**1,153 Jan**	**1,118 Feb**
NI Max:	**16 Feb**	**129 Jan**

British maxima for the most recent two years were similar, and slightly below the average for recent winters. Numbers in Northern Ireland in 2002/03, although low in comparison to Great Britain, were the highest for four years, following very low counts in the preceding winter. Counted numbers rose in July and August, then decreased before rising again to a late winter peak. This reflects a first wave of arrivals (thought to be predominately Norwegian birds) to the east coast, where moult begins in July, then a second wave in October and November to the north and west coasts of Scotland of individuals (who have already completed their moult) from breeding grounds in Iceland and Canada (*Migration Atlas*).

Birds breeding in Norway account for a quarter of the British wintering number, morphologically separated from the long-billed birds which comprise the remainder of the wintering population and are thought to originate from Canada (*Migration Atlas*). Ring recoveries suggest that birds from two further

populations – from northern Russia and Svalbard – also occur in Britain.

The table of key sites reflects the northeast and northwest bias in distribution of Purple Sandpipers, linked to their preference for rocky shores and off-shore islands, with five sites holding nationally important numbers. Two additional British sites – Balranald RSPB reserve and the island of Papa Westray – have gained national importance, although counts in more years will be required to confirm regularity of use. A number of sites, including Seahouses to Budle Point, Forth Estuary and the Moray Coast, had comparatively low counts in 2002/03 and both the Tees Estuary and Durham Coast have recorded lower numbers in recent years. The five-year peak mean for South Uist (west coast) has dropped below the threshold for national importance owing to a decline in recorded numbers over the most recent ten-year period.

This species is ineffectively monitored by WeBS owing both to its favoured habitat being little covered, and to the relative inaccessibility of many key wintering haunts. Although counts were received from many of the key areas, a number of sites (two of former national importance) have not featured due to lack of data for several years. The current estimate of British wintering numbers is 17,500, of which only 424 were recorded at estuarine sites (Rehfisch *et al* 2003a). Although the overall trend for the flyway population was reported as stable over the most recent decade (Stroud *et al* 2004), an 18% decline in British numbers using both estuaries and non-estuarine coasts was found to have occurred between 1987/88 and 1998/99 (Rehfisch *et al* 2003b). A shift in the winter distribution of this species is thought to be ongoing with an increase in the proportion of birds found in the northwest, indicating a shift towards the breeding grounds in Canada (Rehfisch *et al* 2004).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Tiree	[33] 263	-	-	-	-		263	
Farne Islands	360	-	207	194	185	Nov	237	
Island of Papa Westray	-	-	-	330	120	Mar	225	▲
Seahouses to Budle Point	274	310	205	151	25	Nov	193	
Balranald (RSPB Reserve)	-	-	-	-	190	Feb	190	▲
Sites with mean peak counts of 100 or more birds in Great Britain†								
Forth Estuary	142	128	159	172	248	Nov	170	
Moray Coast	178	129	158	144	89	Dec	140	
Tees Estuary	202	137	118	89	93	Mar	128	
Durham Coast	(132)	122	(21)	(1)	-		127	
Egilsay	1	136	334	4	141	Jan	123	
Ardivachar Pt (S. Uist West Coast)	-	112	100	-	120	Mar	111	▼
East Unst	-	-	-	[36] 110	-		110	△
Sites of all-Ireland importance in Northern Ireland								
Outer Ards	147	100	82	-	122	Jan	113	
Belfast Lough	45	19	(13)	16	15	Feb	24	
Dundrum Bay	14	(9)	(5)	-	-		14	▲

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
The Houb (Whalsay)	105	Jan	none

Sites no longer meeting table qualifying levels
Cambois to Newbiggin, The Houb (Whalsay)

Internationally or nationally important sites not covered in last five years
East Sanday Coast, North Ronaldsay

† *as few sites exceed the British threshold, a qualifying level of 100 has been chosen to select sites for presentation in this report*

DUNLIN

Calidris alpina

	01/02	02/03
GB Max:	**382,693 Dec**	**413,770 Jan**
NI Max:	**9,617 Jan**	**11,305 Feb**

International threshold:	**13,300**
Great Britain winter threshold:	**5,600**
Great Britain passage threshold:	**2,000**
All-Ireland threshold:	**1,250**

	5	10	25
GB Alert:	○	▽	▽

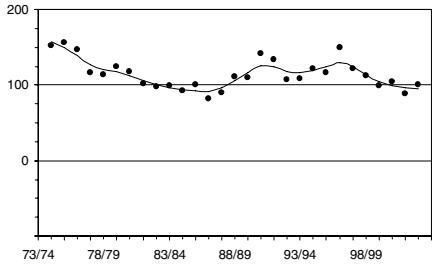

Figure 72. Annual indices for Dunlin in the UK

Five populations of three sub-species of Dunlin regularly occur in the UK (Stroud *et al* 2004): *arctica* breeds in northeast Greenland, and occurs in the UK on spring and autumn passage to and from west Africa; *alpina* breeds in northern Fenno-Scandia and western Siberia and winters in western Europe with some passage south to northwest Africa; and *schinzii* is separated into three populations, breeding in the Baltic region and wintering primarily in southwest Europe, breeding in Iceland and southeast Greenland and wintering in northwest and west Africa, and British and Irish breeders, wintering in southwest Europe and northwest Africa. Although *arctica* occurs on passage and *schinzii* is present both in the breeding season and on passage, the threshold for international importance is derived from population estimates for *alpina* since this comprises the majority of individuals wintering in Britain and Ireland.

The peak totals in both Great Britain and Northern Ireland increased in 2002/03 following three years of a downward trend in numbers, with numbers just below the five-year mean. Annual index values have fluctuated, particularly over the previous two decades, but have followed a downward trend since the mid 1990s, with a 22% decrease in index values over five years and a 16% decrease over a 25-year period; WeBS alerts for both Britain and the UK indicate medium alerts over both the 10- and 25-year periods, primarily driven by declining numbers in England as a whole, although there have been local increases in the southeast. Although the wider trend for the flyway population of *alpina* is considered stable, there have been decreases in the UK and particularly the Baltic-breeding *schinzii* populations, thought to result from loss of breeding habitat and increased predator pressure (Stroud *et al* 2004).

Numbers at many of the key sites fluctuate considerably, and there were few exceptional counts in 2001/02 or 2002/03: that on the Dengie in the first winter was around double the norm, large numbers were on the Swale in both winters, and counts made during low tide surveys of the Severn Estuary, Hamford Water and North Norfolk Coast were notably high and raised the status of the last to national importance. Numbers at Morecambe Bay and Langstone Harbour have shown continuing declines, and numbers were low on the Ribble in both recent winters and at Poole Harbour in 2002/03. Substantially lower numbers on the Medway Estuary in recent years means this site no longer surpasses the threshold for international importance, the five-year mean having decreased by 51% from that of 2000/01 and 66% since 1997/98. Nine sites saw an increase in their five-year means, with all but three on the southeast and northeast British coast, while a total of 17 sites saw a decrease in mean numbers. Climate change has been implicated in changes in estuarine distribution of a number of winter wader species, including Dunlins, over recent decades (Austin *et al* 2000), and it has been suggested that their winter distribution on the UK's non-estuarine coast is shifting north and eastwards towards breeding grounds in Fenno-Scandia and northern Russia (Rehfisch *et al* 2004).

The Wash, Ribble and Humber Estuaries were again shown to be three of the most important sites during passage, holding internationally important numbers during the autumn. Notable, also, is the Alt Estuary which, although not identified as nationally important during winter, supports numbers during passage that far exceed the national threshold.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Mersey Estuary	[38] 70,837	42,120	60,330	45,756	58,463	Nov	55,501	
Thames Estuary	(48,111)	(29,019)	44,907	48,104	53,755	Jan	48,922	
The Wash	32,556	41,503	35,080	31,069	42,794	Jan	36,600	
Dee Estuary (Eng/Wal)	31,619	21,627	41,656	[38] 34,448	21,266	Feb	30,123	
Severn Estuary	37,172	20,700	(17,417)	20,401	[38] 41,120	Feb	29,848	
Morecambe Bay	38,865	28,411	27,645	18,947	18,214	Feb	26,416	
Humber Estuary	40,121	21,561	18,502	24,378	24,168	Dec	25,746	
Blackwater Estuary	(22,890)	16,792	37,550	15,004	18,806	Feb	22,208	
Ribble Estuary	32,160	18,040	(36,473)	11,141	11,423	Dec	21,847	
Langstone Harbour	25,185	24,090	23,790	17,500	17,320	Jan	21,577	
Chichester Harbour	16,421	16,680	16,773	[38] 17,947	15,661	Dec	16,696	
Solway Estuary	(17,873)	[38] 14,746	15,093	12,861	(12,850)	Dec	15,143	
Stour Estuary	13,080	15,168	15,822	[38] 16,469	[38] 12,863	Dec	14,680	
Sites of national importance in Great Britain								
Forth Estuary	10,942	11,405	11,900	13,296	12,143	Jan	11,937	
Dengie Flats	8,900	10,800	9,700	15,720	7,350	Nov	10,494	
Swale Estuary	7,661	8,587	7,795	11,280	14,761	Jan	10,017	
Lindisfarne	9,880	(8,148)	5,777	9,085	9,991	Dec	8,683	
Medway Estuary	(11,689)	(8,591)	(5,118)	5,872	6,901	Dec	8,263	▼
Colne Estuary	6,925	8,950	9,100	6,823	(350)	Jan	7,950	
Burry Inlet	8,040	(9,271)	5,401	6,654	4,955	Jan	6,864	
Duddon Estuary	9,765	[37] 10,000	4,258	5,415	3,942	Nov	6,676	
Poole Harbour	6,816	6,693	4,852	6,929	(6,323)	Dec	6,323	
North Norfolk Coast	4,874	5,064	4,058	[38] 11,078	5,298	Feb	6,074	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	6,881	[38] 8,186	[38] 2,733	3,352	[38] 4,408	Nov	5,112	
Lough Foyle	6,600	3,560	5,800	2,804	4,209	Feb	4,595	
Carlingford Lough	(2,127)	1,861	(1,390)	(2,090)	2,872	Nov	2,367	
Belfast Lough	[38] 2,055	[38] 1,242	[38] 1,366	1,278	1,193	Feb	1,427	
Outer Ards	2,175	1,023	1,312	-	960	Jan	1,368	
Dundrum Bay	(1,259)	(352)	(1,243)	(1,080)	(733)	Dec	(1,259)	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Alt Estuary	8,438	Mar	Portsmouth Harbour	[38] 8,139	Dec
Exe Estuary	7,167	Dec	Alt Estuary	6,885	Dec
Alde Complex	[38] 6,730	Dec			
Breydon Wtr & Berney Marshes	6,280	Dec			
Hamford Water	[38] 10,686	Feb			

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
The Wash	24,790	Oct	The Wash	44,518	Sep
Humber Estuary	18,665	Oct	Ribble Estuary	30,186	Aug
Thames Estuary	15,767	Oct	Humber Estuary	23,366	Oct

Sites surpassing passage threshold for Great Britain in 2001/02 or 2002/03

	01/02			02/03	
Ribble Estuary	(10,943)	Oct	Alt Estuary	11,059	Apr
Lindisfarne	9,586	Oct	Thames Estuary	(10,593)	Oct
Stour Estuary	8,980	Oct	Dee Estuary (Eng/Wal)	9,634	Aug
Dengie Flats	(6,000)	Oct	Morecambe Bay	8,755	Oct
Blackwater Estuary	(5,074)	Oct	Blackwater Estuary	8,061	Oct
Solway Estuary	(4,394)	Oct	Lindisfarne	7,893	Oct
North Norfolk Coast	3,445	Oct	Dengie Flats	6,460	Sep
Severn Estuary	3,274	Oct	Mersey Estuary	5,050	Aug
Mersey Estuary	3,200	Oct	Swale Estuary	3,954	Oct
Forth Estuary	3,012	Oct	Stour Estuary	3,210	Oct
Dee Estuary (Eng/Wal)	(2,814)	Sep	Forth Estuary	3,131	Oct
Chichester Harbour	2,782	Oct	Chichester Harbour	[37] 3,000	Oct

Sites surpassing passage threshold for Great Britain in 2001/02 or 2002/03 (continued)

	01/02			02/03	
Swale Estuary	2,452	Oct	North Norfolk Coast	2,499	Sep
Medway Estuary	(2,434)	Oct	Hamford Water	(2,246)	Oct
Hamford Water	(2,371)	Oct	Breydon Wtr & Berney Marshes	2,219	Apr
Inner Moray Firth	2,207	Oct			

Sites no longer of national importance

Bann Estuary, Cleddau Estuary, Hamford Water, Inner Moray Firth, Orwell Estuary, Southampton Water

RUFF

Philomachus pugnax

International threshold: ?
Great Britain threshold: 7*
All-Ireland threshold: +†

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**781 Oct**	**1,020 Mar**
NI Max:	**4 Dec**	**4 Oct/Dec**

Although their breeding range is in northern Europe, primarily east from Scandinavia, and although the majority migrate to southern Africa for the winter, small numbers of Ruff are recorded by WeBS throughout the year in the UK. Peak numbers in Britain and Ireland usually occur during autumn passage, with the first influx of birds taking place in July. Total numbers in Britain show a progressive increase during the summer, then a decline through to mid winter, though typically, totals number in the high hundreds. Another peak is observed at the end of winter as birds congregate on return passage to the breeding grounds. Ruff winter in smaller numbers in Ireland, and only very low numbers are recorded by Core Counts in Northern Ireland. Strangford Lough meets all-Ireland qualifying levels on the basis of numbers recorded during Low Tide Counts.

In 2001/02, the peak count for Britain was slightly later than normal and at the lower end of the range for passage totals, as a consequence of fewer sites being covered following the Foot and Mouth Disease outbreak. In 2002/03, though numbers did peak in September, the maximum, unusually, occurred in March, making this the highest 'winter' count of Ruff recorded by WeBS to date.

The majority of nationally important sites are located in the south and east of Britain, but there is also a marked concentration in Lancashire and Cheshire, with sizeable numbers at Martin Mere, the Ribble and Dee (England/Wales) Estuaries and Sandbach Flashes. The large counts at Cresswell Pond, Co Durham and Druridge Pool, Northumberland in recent winters are notable for their occurrence so far north.

Numbers at major sites show much fluctuation between years, a pattern characteristic of passage waders. The two most recent winter maxima on the Ouse Washes are the highest received by WeBS for the site to date during those months, and are surpassed only by the 431 birds in April 2002; the count on the nearby Nene Washes is also the highest to date for that site. The peak total of 810 birds during autumn passage was lower than in previous years, particularly so given that the majority were located at the Ouse Washes alone, and only a few sites held numbers above the minimum passage threshold.

Recent studies have shown a decline in the number of Ruff breeding in Eurasia, and indicate a northern and easterly shift in distribution, with more birds using habitats in the Arctic tundra. One suggestion for this change is the loss of wet grassland, the preferred habitat of breeding Ruff, in Europe, primarily through global warming (Zöckler 2002).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of national importance in Great Britain							
Ouse Washes	292	288	189	334	359	Mar	292
Martin Mere	96	140	116	190	151	Jan	139
Lower Derwent Valley	118	111	-	-	-		115
North Norfolk Coast	[37] (78)	[27] 138	103	66	105	Jan	103
Nene Washes	98	50	38	30	275	Nov	98
Breydon Wtr & Berney Marshes	11	144	52	155	55	Jan	83
Middle Yare Marshes	(15)	70	(33)	(37)	82	Nov	76
Swale Estuary	(20)	43	29	46	95	Mar	53

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)*								
Blackwater Estuary	29	41	10	49	82	Feb	42	
Barleycroft Gravel Pits	0	0	126	-	-		42	
Ribble Estuary	5	41	63	5	76	Mar	38	
Dungeness Gravel Pits	(15)	21	55	0	42	Mar	30	
Arun Valley	50	7	28	29	22	Feb	27	
Humber Estuary	[38] 30	(18)	(4)	[37] 20	25	Mar	25	
Thames Estuary	1	25	(7)	34	35	Mar	24	
Holland Marshes	0	45	23	41	6	Mar	23	
Hamford Water	38	(7)	12	[38] 6	(26)	Jan	21	
Somerset Levels	18	[37] (4)	15	15	29	Feb	19	
Stodmarsh NNR and Collards Lagoon	7	(37)	25	15	11	Jan	19	
The Wash	69	0	3	14	3	Nov	18	
Rutland Water	31	36	9	8	4	Feb	18	
Hardley Flood	-	-	0	-	33	Mar	17	▲
Cresswell Pond	-	-	15	32	1	Dec	16	
Sandbach Flashes	11	13	8	-	26	Feb	15	
Unspecified SE England site	2	15	9	32	0	Nov	12	
Eyebrook Reservoir	18	-	25	2	0	Nov	11	
Adur Estuary	-	-	-	-	[38] 9	Feb	9	▲
Fairfield SSSI	0	11	12	9	12	Jan	9	▲
Fen Drayton Gravel Pits	0	0	46	0	0	Nov	9	
Tees Estuary	(17)	4	10	6	(8)	Nov	9	
Abberton Reservoir	0	37	0	0	2	Dec	8	
Minsmere	7	-	8	8	5	Dec	7	
Dee Estuary (Eng/Wal)	10	2	8	12	5	Nov	7	
Druridge Pool	-	-	0	21	0	Nov	7	

Sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Strangford Lough	[38] 50	Nov	Severn Estuary	21	Feb
East Chevington Pools	14	Mar	Hagnaby Lock Fen	19	Dec
Tophill Low Reservoirs	11	Nov	Rye Harbour & Pett Level	12	Mar
Pulfin Bog	9	Mar	Orwell Estuary	10	Mar
			Tophill Low Reservoirs	10	Mar
			Bothal Pond	7	Dec
			R. Avon: Ringwood to C'church	7	Mar

Sites holding 50 or more birds on passage in 2001/02 or 2002/03

	01/02			02/03	
Ouse Washes	265	Oct	Ouse Washes	431	Apr
North Norfolk Coast	121	Jul	North Norfolk Coast	178	Aug
Thames Estuary	85	Oct	Humber Estuary	167	Sep
WWT Martin Mere	73	Apr	Breydon Wtr & Berney Marshes	119	Sep
Pool of Virkie	62	Aug	The Wash	54	Oct
Swale Estuary	51	Sep	Hamford Water	(51)	Oct
Rutland Water	50	Oct			

Sites no longer of national importance

Lakenheath Fen, Romney Marsh

† *as no all-Ireland threshold has been set, a qualifying level of seven has been chosen to select sites for presentation in this report*

JACK SNIPE

Lymnocryptes minimus

International threshold: **?**
Great Britain threshold: **?**
All-Ireland threshold: **250†**

	01/02	02/03
GB Max:	**214 Dec**	**195 Dec**
NI Max:	**4 Oct**	**3 Feb**

Of all European waders, the Jack Snipe is probably the most poorly monitored on both breeding and wintering areas (Stroud *et al* 2004). Its secretive nature, and the fact that its favoured habitats of marsh and wet grassland are poorly covered by WeBS, means that the scheme does not give a true reflection of the status or trends of this species.

Peak counts in 2001/02 in Great Britain showed a marked increase of almost 70% - though this equated to just 86 birds – over the previous winter, remaining high in 2002/03. Peak numbers in Northern Ireland during both winters were around average. Jack Snipes were noted at 115 sites in both years, 23 of which held five or more birds in 2001/02 and some 30 held this number in 2002/03. Summed site maxima gave totals higher than those of previous years: 390 in 2001/02 and 557 in 2002/03. Counts at Chichester Harbour remained consistently high, given a five-year mean of 28 for this site. The high counts at Doxey Marshes SSSI in the two most recent winters give that site a five-year mean of 24.

Sites with five or more birds in 2001/02 or 2002/03

	01/02			02/03	
Chat Moss	[17] 68	Dec	Chichester Harbour	39	Jan
Doxey Marshes SSSI	64	Mar	Doxey Marshes SSSI	30	Dec
Fiddlers Ferry Power Stn Lgns	32	Nov	Dee Estuary (Eng/Wal)	13	Nov
Dornoch Firth	[38] 25	Nov	Inner Moray Firth	13	Jan
Dee Estuary (Eng/Wal)	[38] 22	Nov	Langstone Harbour	13	Feb
Inner Moray Firth	19	Dec	Waulkmill Glen & Littleton Rsrs	10	Dec
Chichester Harbour	16	Mar	Ardrossan to Farland Head	8	Mar
North Cave Gravel Pits	15	Nov	Cors Caron	8	Feb
North Norfolk Coast	[38] 14	Dec	Meadow Lane Gravel Pits	7	Mar
Stour Estuary	12	Feb	Severn Estuary	[37] 7	Feb
Dagenham Chase Gravel Pits	11	Feb	Castle Marshes Reserve	6	Jan
Morecambe Bay	10	Dec	Fiddlers Ferry Power Stn Lgns	6	Nov
Severn Estuary	9	Dec	Houghton Regis Chalk Pit	6	Mar
Kenfig Pool	8	Dec	Humber Estuary	6	Nov
Meadow Lane Gravel Pits	8	Dec	Reddish Hall	6	Mar
Houghton Regis Chalk Pit	7	Jan	Shipton on Cherwell Quarry	6	Nov
Langford Lowfields Gravel Pits	7	Mar	Upton Warren LNR	6	Nov
Pitsford Reservoir	7	Jan	Cleddau Estuary	5	Dec
Alde Complex	[38] 6	Jan	Kenfig Pool	5	Feb
Ardrossan to Farland Head	6	Nov	Mersey Estuary	5	Mar
Balgray Reservoir	6	Dec	Morecambe Bay	5	Dec
Beddington Sewage Farm	6	Mar	Ribble Estuary	5	Nov
Hillside Marsh	6	Mar	Southampton Water	5	Feb
Mersey Estuary	6	Jan			
Waulkmill Glen & Littleton Rsrs	6	Dec			
Exe Estuary	5	Jan			
Forth Estuary	5	Nov			
Humber Estuary	5	Nov			
Somerset Levels	5	Nov			
Upton Warren LNR	5	Feb			

SNIPE

Gallinago gallinago

International threshold: **20,000****
Great Britain threshold: **?†**
All-Ireland threshold: **?†**

	01/02	02/03
GB Max:	**8,078 Dec**	**6,879 Nov**
NI Max:	**234 Jan**	**368 Feb**

During September to December there is an influx of migrant birds to Britain from Norway, Sweden, Finland, Russia and Iceland that, combined with resident birds, results in a wintering population of at least 100,000 (Cayford & Waters 1996) and probably nearer 300,000 birds (Hoodless *et al* 2000). The secretive nature and mobility of this species in winter makes monitoring a major methodological problem, and there are no wide-scale schemes to do so. As with Jack Snipe, its favoured habitats of marsh and wet grassland are poorly covered by WeBS, and therefore any apparent patterns in numbers should be treated with caution. Much knowledge of population trends of Snipe in Europe derives from observed trends in the breeding birds (Stroud *et al* 2004), while game bag records give some evidence of a long-term decline in wintering Snipe in Britain (Hoodless 1991, Tapper 1992).

The Great Britain maximum in 2001/02 was the largest on record, although only marginally higher than in most winters. The peak in Northern Ireland in 2002/03 was also the highest to date, having consistently numbered around 250 in recent years. The largest counts are generally made during mid winter, but large fluctuations between years probably reflect variability in detection of the species as much as genuine changes. Nevertheless, the large count at Doxey Marshes in 2001/02 and the nil count at Maer Lake the following winter are noteworthy.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 200 or more birds in Great Britain†								
Somerset Levels	(2,196)	(1,578)	(1,817)	(854)	(963)	Dec	(2,196)	
Ouse Washes	[37] 180	[37] 356	[37] 62	[37] 1,685	[37] 126	Nov	482	△
Maer Lake	610	490	280	510	(0)	Nov	473	
Lower Derwent Valley	300	621	-	-	-		461	
Middle Yare Marshes	(25)	(57)	(217)	(545)	257	Nov	401	△
North Norfolk Coast	135	188	207	[38] 1,169	92	Feb	358	
Severn Estuary	193	396	(301)	(217)	(240)	Feb	297	
Arun Valley	237	185	335	166	242	Dec	233	
Doxey Marshes SSSI	137	65	149	544	(239)	Dec	227	△
Cleddau Estuary	189	(154)	215	189	283	Dec	219	△
Sites with mean peak counts of 50 or more birds in Northern Ireland†								
Loughs Neagh & Beg	(62)	(52)	(33)	(15)	(129)	Feb	(129)	△
Larne Lough	91	93	60	57	16	Nov	63	
Belfast Lough	[38] 58	22	65	61	48	Jan	51	△
Ballysaggart Lough	-	-	-	-	51	Nov	51	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Dee Estuary (Eng/Wal)	334	Dec	Chichester Harbour	289	Jan
Otmoor	306	Nov	Cors Crugyll	264	Nov
Pegwell Bay	250	Dec	Alde Complex	227	Jan
Stodmarsh & Collards Lagoon	250	Nov	Christchurch Harbour	200	Dec
Thames Estuary	211	Dec	Strangford Lough	75	Jan

Sites no longer meeting table qualifying levels

Morecambe Bay, Newgale Beach

† *as no British or all-Ireland thresholds have been set, qualifying levels of 200 and 50 have been chosen to select sites for presentation in this report*

WOODCOCK

Scolopax rusticola

International threshold: **20,000****
Great Britain threshold: **?**
All-Ireland threshold: **?**

	01/02	02/03
GB Max:	**42 Jan**	**34 Nov**
NI Max:	**0**	**0**

This species favours woodland and open pasture rather than wetland habitats, and combined with its secretive nature, being most active at dawn and dusk, means that it is significantly under-recorded by WeBS. Woodcocks were recorded at a total of 67 sites during 2001/02 and at 59 in 2002/03 with summed site maxima of 130 and 137 respectively. In both winters, the peak was around average for recent years.

Sites with five or more birds in 2001/02 or 2002/03

	01/02			02/03	
Tophill Low Reservoirs	15	Mar	Tophill Low Reservoirs	[37] 14	Nov
Grouville Marsh	10	Jan	Grouville Marsh	12	Feb
Longueville Marsh	8	Feb	Longueville Marsh	10	Feb
Sutton & Lound Gravel Pits	6	Jan	Hamford Water	7	Dec
Stour Estuary	[38] 5	Jan	Stour Estuary	7	Jan
			Kilconquhar Loch	5	Nov
			Fernworthy Reservoir	5	Dec

BLACK-TAILED GODWIT

Limosa limosa

International threshold: **350**
Great Britain threshold: **150**
All-Ireland threshold: **90**

	01/02	02/03
GB Max:	**24,947 Nov**	**31,175 Oct**
NI Max:	**1,004 Sep**	**805 Sep**

	5	10	25
GB Alert:	○	△	▲

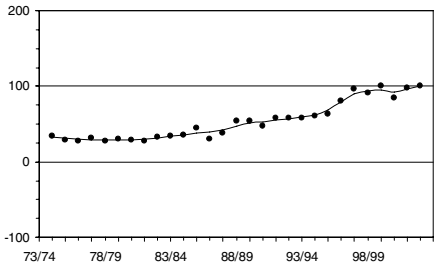

Figure 73. Annual indices for Black-tailed Godwit in the UK

British and Irish wintering and passage Black-tailed Godwits comprise Iceland-breeding birds of the *islandica* race. They begin to arrive in July and August, congregating in large moulting flocks at coastal sites. There appear to be different patterns of movement and timing between birds arriving in Britain in autumn (*Migration Atlas*). North and east coast arrivals tend to move south during the autumn, with many wintering on east coast estuaries and some moving further to the south coast, Ireland and the Netherlands. Those arriving on the south coast are more sedentary with local movements, occasionally to France. Birds in both areas often move to inland sites in spring before returning to Iceland in April and May.

The large increase in the number of sites holding internationally important numbers – from 13 in 2000/01 to 24 in 2002/03 – is primarily the result of the lower threshold for international importance. The previous value assumed that all birds wintering on the Atlantic coast of Europe and northern Morocco were of the *islandica* race, but some wintering in northern Morocco and Iberia are now considered to be nominate *limosa* (Stroud *et al* 2004). Hence, only 15% of the birds in Portugal, Spain and northern Morocco are now included in the population estimate of *islandica*, currently set at 35,000, and adjustment of the 1980s estimate of 65,000 (which incorporated *limosa* as well as *islandica*) on this basis to 27,000 suggests there has been a 30% increase between the 1980s and 1990s.

Wintering numbers in Britain have been increasing in line with the flyway population. Numbers in both Britain and Northern Ireland in the two most recent years far exceeded the average of the previous five, and the maximum for Great Britain in 2002/03 was the highest to date by a considerable margin. Although annual

indices have stabilised somewhat following substantial increases in the mid 1990s, they suggest that wintering numbers have increased by 42% over the most recent ten years and by 73% over 25 years. The national increase has been driven largely by increases in the south and southeast of Britain, while numbers have declined slightly in the southwest England and south Wales (Austin *et al* 2000).

Of the 40 sites in the table below, 25 have shown increases in their five-year means with the majority of remaining sites relatively stable. There has been a three-fold increase on the five-year mean on the Thames Estuary in the last two winters alone, and high counts in the last two winters have seen a doubling of the mean on the River Avon: Ringwood to Christchurch. Mean values have risen by around 50% on the Ouse Washes, Breydon Water & Berney Marshes, and the Dee Estuary (England/Wales) over the same period. A notably high count at the Wash in November 2001 was the highest yet by WeBS at a single site during winter. Only one site, the Mersey Estuary, has shown a substantial decrease (by 39%) in the five-year mean since 2000/01.

A remarkable count at the Wash in October 2002 (the highest recorded by WeBS during passage) was equivalent to 76% of the British wintering population and 33% of the flyway population. The Ribble Estuary, Dee Estuary (England/Wales) and the Ouse Washes all held notable passage numbers, emphasising the importance of the UK during these periods and the need to protect such sites to maintain the favourable conservation status of this species.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	1,104	1,844	3,555	9,163	2,773	Jan	3,688	
Dee Estuary (Eng/Wal)	1,602	2,543	2,366	[38] 4,624	3,955	Nov	3,018	
Ouse Washes	1,715	[37] 2,900	[37] 268	3,273	3,468	Mar	2,325	
Stour Estuary	2,105	1,862	[38] 2,846	2,593	1,927	Jan	2,267	
Blackwater Estuary	(680)	(697)	(2,094)	926	(2,939)	Mar	1,986	
Ribble Estuary	1,216	2,596	3,271	1,733	975	Mar	1,958	
Poole Harbour	1,596	2,051	1,134	(2,115)	(2,691)	Feb	1,917	
Thames Estuary	1,999	1,065	2,306	1,967	1,584	Mar	1,784	▲
Swale Estuary	1,514	1,495	2,153	[38] 1,580	1,045	Jan	1,557	
Humber Estuary	1,620	1,685	545	921	1,311	Jan	1,216	
R. Avon: R'wood to Christchurch	[37] 248	0	[37] 2,630	3	3,002	Jan	1,177	▲
Breydon Wtr & Berney Marshes	493	883	1,376	1,607	1,142	Jan	1,100	
Mersey Estuary	1,573	976	810	313	1,002	Nov	935	
Exe Estuary	667	1,113	880	737	890	Feb	857	
Medway Estuary	(551)	(389)	(0)	(662)	(199)	Mar	(662)	▲
Southampton Water	(685)	522	1,265	358	196	Jan	605	
Chichester Harbour	[38] 738	(511)	136	552	715	Nov	535	▲
Hamford Water	270	371	601	[38] 366	490	Dec	420	
Belfast Lough	266	[38] 401	[38] 383	492	545	Feb	417	▲
Colne Estuary	(412)	(135)	450	344	(190)	Mar	402	▲
Nene Washes	1,520	64	281	39	51	Nov	391	▲
Pagham Harbour	[38] 300	182	248	252	826	Jan	362	▲
Beaulieu Estuary	197	233	495	725	147	Jan	359	▲
Orwell Estuary	622	[38] 395	[38] 73	[38] 260	[38] 407	Dec	351	▲
Sites of national importance in Great Britain								
North West Solent	251	(231)	323	452	261	Nov	322	
Langstone Harbour	[38] 202	(304)	97	442	314	Mar	272	
Blyth Estuary (Suffolk)	-	-	271	244	-		258	
Crouch-Roach Estuary	236	252	(272)	(260)	(162)	Feb	255	
Newtown Estuary	198	[38] 218	86	231	510	Dec	249	
Morecambe Bay	354	82	219	(117)	(143)	Jan	218	
North Norfolk Coast	119	98	108	233	477	Mar	207	
Eden Estuary	233	182	170	[38] 221	206	Mar	202	
Deben Estuary	112	209	114	260	304	Mar	200	
Alde Complex	168	308	30	113	355	Feb	195	
Portsmouth Harbour	(4)	(211)	(70)	84	[38] 246	Dec	180	
Forth Estuary	225	93	55	243	235	Feb	170	
Meadow Lane Gravel Pits	0	0	800	0	3	Jan	161	▲
Fen Drayton Gravel Pits	0	0	780	1	0	Nov	156	

Sites of all-Ireland importance in Northern Ireland

Strangford Lough	191	[38] 259	83	153	186	Mar	174

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Belfast Lough	492	Mar	R. Avon: F'bridge to Ringwood	260	Mar
			Severn Estuary	193	Nov
			Fal Complex	163	Jan

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
Ouse Washes	[37] 684	Apr	The Wash	11,451	Oct
The Wash	6,611	Sep	Ribble Estuary	5,583	Sep
Thames Estuary	3,274	Oct	Dee Estuary (Eng/Wal)	4,231	Oct
Dee Estuary (Eng/Wal)	2,515	Sep	Ouse Washes	[37] 3,474	Apr
Stour Estuary	1,323	Aug	Humber Estuary	[37] 2,390	Oct
Breydon Wtr & Berney Marshes	1,184	Sep	Mersey Estuary	1,985	Aug
Blackwater Estuary	1,122	Aug	Stour Estuary	1,574	Apr
Poole Harbour	1,096	Oct	Thames Estuary	1,230	Oct
Humber Estuary	984	Oct	Breydon Wtr & Berney Marshes	1,179	Sep
Belfast Lough	875	Sep	Swale Estuary	1,013	Aug
Mersey Estuary	794	Sep	Poole Harbour	983	Oct
Exe Estuary	699	Oct	Blackwater Estuary	(800)	Oct
Colne Estuary	(602)	Sep	Belfast Lough	774	Sep
Ribble Estuary	593	Sep	Chichester Harbour	688	Oct
Blyth Estuary (Suffolk)	(469)	Oct	Langstone Harbour	618	Aug
Chichester Harbour	444	Aug	Blyth Estuary (Suffolk)	608	Apr
Swale Estuary	(432)	Jul	Orwell Estuary	(523)	Oct
			Exe Estuary	498	Sep
			Hamford Water	(444)	Sep
			Alde Complex	405	Oct

Sites no longer of national importance

(Note, the 1% threshold has been revised from 70 to 150 for Great Britain) Abberton Reservoir, Burry Inlet, Caerlaverock WWT, Dengie Flats, Fal Complex, Severn Estuary, Solway Estuary, Tamar Complex

BAR-TAILED GODWIT

Limosa lapponica

	01/02	02/03
GB Max:	**65,303 Feb**	**53,910 Jan**
NI Max:	**2,008 Feb**	**4,556 Mar**

International threshold:	**1,200**
Great Britain threshold:	**620**
All-Ireland threshold:	**175**

	5	10	25
GB Alert:	O	O	O

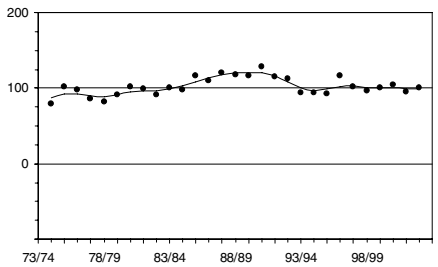

Figure 74. Annual indices for Bar-tailed Godwit in the UK

Peak totals in Britain in 2001/02 and 2002/03 were substantially higher than the 45,000-48,000 of recent winters, and that in the first winter the highest since the record of 81,319 in 1996/97. Indeed, counted numbers in February 2002 exceeded the current winter estimate for Great Britain, albeit that that figure is based on data from 1994/95 to 1998/99. Fluctuations at sites, and in the UK as a whole, are largely dependent on movements from the Wadden Sea as a result of severe winter conditions as well as factors influencing productivity on the arctic breeding grounds (*1981-84 Winter Atlas*). A cold spell on the continent in late December and early January of both winters, the former resulting in extensive ice coverage of the Wadden Sea, presumably caused an influx to Britain. Numbers in Northern Ireland in both winters were within the recent range of 1,500 to 5,300. Despite this, the annual index for the UK has remained relatively stable, following a decline from the peak in 1990/91, although there has been an overall increase of 18% over the last 25-year period.

Following a recent review of taxonomy of Bar-tailed Godwits (Engelmoer & Roselaar 1998), two races are now regarded to use Britain and Ireland during winter and passage periods. Nominate *lapponica* breeds in northern Europe and western Siberia and comprises the British and Irish wintering population, while *taymyrensis* breeds in western Siberia and occurs in the UK on passage to wintering sites in west and southwest Africa. The flyway population of *lapponica* is considered stable, but *taymyrensis* has shown an overall decrease since the mid 1980s (Stroud *et al* 2004).

The mobility of many wader species means that numbers at individual sites fluctuate between years. Of the 20 key sites for Bar-tailed Godwit, 13 held below-average numbers, with ten sites showing a decline in their five-year means. The Wash remains the most important site numerically, holding over one quarter of British wintering numbers and 14% of the flyway population. This follows a particularly high count in March 2002, perhaps surprisingly, not during the cold spell in Wadden Sea. Particularly low numbers were recorded at the Dee Estuary (England/Wales) in 2002/03, but were preceded by ten-fold higher numbers during Low Tide Counts in 2001/02 (when birds move from roosts on the Alt to the North Wirral Shore to feed). Unusually large counts were recorded on the adjacent Ribble and Alt Estuaries in 2001/02. Although four sites no longer hold internationally important numbers, the Inner Moray Firth and the Dornoch Firth fail to qualify as a result of the revised threshold, rather than a substantial drop in numbers.

Ongoing changes in the UK wintering distribution, possibly linked to climatic changes, are reflected in decreasing numbers in southwest England and south Wales, north Wales and northwest England, while increases have occurred in east England and northeast Scotland (Austin *et al* 2000). Recent mild winters may have negated the necessity for birds to travel further west in order to avoid severe conditions and associated winter mortality.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	10,319	13,062	17,223	23,751	18,374	Jan	16,546	
Ribble Estuary	4,093	4,346	(4,118)	20,950	3,111	Jan	8,125	
Alt Estuary	6,883	8,001	6,146	12,098	7,103	Jan	8,046	
Morecambe Bay	5,540	5,374	1,685	(938)	5,718	Feb	4,579	
Thames Estuary	(4,416)	2,584	(3,019)	(6,460)	3,751	Jan	4,303	
Lindisfarne	3,086	(3,993)	4,066	5,237	3,000	Dec	3,876	
Dee Estuary (Eng/Wal)	[38] 3,359	232	990	[38] 12,163	127	Jan	3,374	
Humber Estuary	[38] 3,787	3,433	2,065	3,669	2,688	Dec	3,128	
Dengie Flats	(1,050)	900	1,388	4,970	3,112	Jan	2,593	
Solway Estuary	2,592	(931)	(1,434)	2,106	1,761	Mar	2,153	
Lough Foyle	3,820	678	208	1,328	4,108	Mar	2,028	
North Norfolk Coast	2,400	1,842	1,676	[38] 1,678	1,555	Jan	1,830	
Cromarty Firth	1,779	[38] 1,852	2,193	1,044	2,212	Feb	1,816	
Forth Estuary	(2,078)	1,703	1,542	964	1,792	Jan	1,616	
Tay Estuary	1,160	(1,250)	1,400	1,944	1,351	Dec	1,464	
Strangford Lough	1,299	1,360	1,543	[38] 1,949	1,079	Jan	1,446	
Sites of national importance in Great Britain								
Inner Moray Firth	[38] 1,344	1,015	1,510	995	997	Jan	1,172	▼
Dornoch Firth	1,216	837	406	[38] 1,136	1,561	Feb	1,031	▼
Chichester Harbour	(1,175)	(462)	925	910	872	Nov	971	▼
South Ford	-	1,052	1,042	-	549	Feb	881	▼

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Hamford Water	1,002	Mar	none		
Belfast Lough	197	Jan			

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
The Wash	12,313	Aug	Ribble Estuary	15,005	Sep
Thames Estuary	3,370	Oct	The Wash	12,530	Sep
Lindisfarne	3,067	Sep	North Norfolk Coast	5,894	Sep
Ribble Estuary	1,764	Sep	Thames Estuary	(5,390)	Oct
North Norfolk Coast	1,697	Oct	Alt Estuary	4,829	Sep

Sites surpassing international threshold during passage periods in 2002/03 (continued)

Dengie Flats	2,560	Oct
Lindisfarne	2,264	Oct

Sites no longer of national importance
Hamford Water, Swale Estuary

Internationally or nationally important sites not covered in last five years
(Note, the 1% threshold has been revised from 530 to 620 for Great Britain) East Sanday Coast, North Uist (West Coast)

WHIMBREL

Numenius phaeopus

International threshold: 6,100
Great Britain threshold: +
All-Ireland threshold: +

	2001	2002
GB Max:	**602 Aug**	**1,108 May**
NI Max:	**7 Apr**	**30 Aug**

Whimbrels are familiar along all coasts of Britain and Ireland as passage migrants in spring and autumn. Spring passage is generally short-lived and typically occurs in May, while the main autumn passage is from July to September, peaking in August (*Migration Atlas*). Sparks & Mason (2001) found that arrival dates of Whimbrel in Essex between 1950 and 1998 had advanced by 22 days per decade, and six days per degree centigrade in relation to mean January to March temperatures, this change in phenology linked to climate change.

Survey during summer 2001 was considerably hampered by site access problems during the Foot and Mouth Disease outbreak, and counts were correspondingly low. The 2002 British peak was also one of the lowest on record, numbers usually varying between 1,300 and 2,700. The number of sites holding 50 or more birds also fell from 16 in 2000 to just nine in 2002. Larger flocks were recorded on the east coast in autumn and on the west coast in spring. This is to be expected, as it is known that spring passage of this species in Britain and Ireland has a more westerly distribution than the autumn passage (*Migration Atlas*). Small numbers were present through the winter months in both years, these birds at the northerly limit of the few that linger in Europe during winter, most migrating to the Afrotropical region.

Few Whimbrels are recorded in Northern Ireland. Once again, no notable spring passage was recorded in either of the last two years, although the autumn peak in 2002 was the highest of the last five years.

Sites with 50 or more birds in 2001 or 2002

	2001			2002	
North Norfolk Coast	141	Aug	Chichester Harbour	106	Aug
Burry Inlet	139	Apr	The Wash	87	Aug
Chichester Harbour	86	May	Langstone Harbour	69	May
The Wash	82	Aug	North Norfolk Coast	61	Aug
Blackwater Estuary	67	Jul	Severn Estuary	(59)	Apr
Tay Estuary	60	Aug	Tamar Complex	57	May
Pegwell Bay	56	May	Swale Estuary	55	Jul
Breydon Wtr & Berney Marshes	50	Aug	Pegwell Bay	52	May
			Breydon Wtr & Berney Marshes	51	Apr

CURLEW

Numenius arquata

	01/02	02/03
GB Max:	**81,403 Feb**	**85,619 Oct**
NI Max:	**4,244 Feb**	**5,489 Oct**

International threshold:	**4,200**
Great Britain threshold:	**1,500**
All-Ireland threshold:	**875**

	5	10	25
GB Alert:	○	○	○

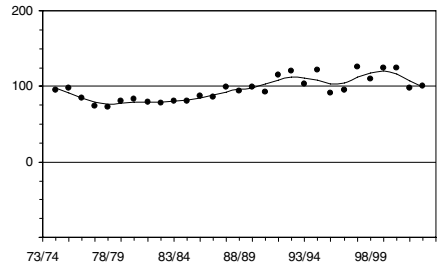

Figure 75. Annual indices for Curlew in the UK

British maxima in 2001/02 and 2002/03 were at the bottom end of the range of peak counts for recent years, and that in 2002/03 unusually during autumn passage rather than mid winter, while those in Northern Ireland were considerably below the more normal peak of around 7,000 birds. Accordingly, annual indices were markedly lower than the high values of the late 1990s, though there has been a trend of fluctuating numbers since the early 1990s, following an increase in numbers of Curlew wintering in Britain during the 1980s (Cayford & Waters 1996). Numbers in Ireland have fallen greatly, causing an overall decline in Britain and Ireland between the 1980s and 1990s, although the major decline in Ireland has been offset by the increase in Britain (Stroud *et al* 2004). This may indicate a change in distribution within these islands, with birds moving to winter in more easterly locations as has been found for other waders, a consequence of milder winters during the 1990s reducing the energetic cost of doing so (Austin *et al* 2000). The vast majority of birds found at sites on the east coast of Britain during winter are visitors from further east, while the majority of British-breeding birds migrate in a south-westerly direction to the west coast of Britain, into Ireland, or to the near Continent (Bainbridge & Minton 1978, *Migration Atlas*), though this pattern is deduced from largely historical ringing data and may, as indicated, now be changing.

Despite lower numbers at Morecambe Bay during winters 2001/02 and 2002/03, and the count on the Outer Ards in January 2003 some 75% below the previous five-year peak mean, peak counts at most internationally and nationally important sites remained within the normal range of variation for previous years; Low Tide Counts on the Severn Estuary and North Norfolk Coast were the only notable high counts. Numbers of Curlew on Morecambe Bay during passage in October 2002 were, however, the highest recorded by WeBS at any site for many years.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Morecambe Bay	16,778	16,586	13,756	9,522	10,868	Feb	13,502	
Solway Estuary	5,935	7,230	(4,497)	(4,311)	(3,701)	Nov	6,583	
The Wash	4,306	5,056	4,058	4,339	4,757	Mar	4,503	
Sites of national importance in Great Britain								
Dee Estuary (Eng/Wal)	4,490	3,373	4,583	[38] 4,305	3,270	Jan	4,004	▼
Humber Estuary	(3,980)	3,532	4,044	4,277	3,941	Jan	3,955	
Thames Estuary	2,572	(2,151)	(3,160)	(2,354)	3,763	Jan	3,168	
Forth Estuary	2,093	2,777	2,524	(3,638)	3,229	Feb	2,852	
Severn Estuary	1,784	(2,190)	(1,695)	(2,164)	[38] 3,615	Nov	2,700	
Duddon Estuary	2,629	2,576	2,516	2,041	2,280	Dec	2,408	
Traeth Lafan	(522)	(1,836)	2,240	2,381	[38] 1,922	Feb	2,181	
Inner Moray Firth	[38] 1,630	2,456	1,698	1,473	1,961	Feb	1,844	
North Norfolk Coast	1,441	1,863	1,686	[38] 2,302	1,430	Feb	1,744	
Lindisfarne	(1,420)	(1,483)	1,636	[38] 1,822	[38] 1,338	Dec	1,599	
Poole Harbour	1,508	1,712	1,484	1,577	1,605	Jan	1,577	
Ribble Estuary	880	2,631	(1,709)	990	1,553	Dec	1,553	
Blackwater Estuary	(1,511)	(1,842)	(1,502)	(1,115)	1,210	Feb	1,526	
Mersey Estuary	[38] 1,308	1,507	1,976	1,562	1,270	Nov	1,525	

Sites of all-Ireland importance in Northern Ireland

Lough Foyle	2,686	2,129	2,682	1,358	1,956	Feb	2,162
Strangford Lough	1,560	[38] 1,723	2,305	1,676	1,200	Jan	1,693
Outer Ards	1,669	2,113	1,270	-	357	Jan	1,352

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Widewall Bay	2,120	Jan	Tees Estuary	1,617	Jan
Stour Estuary	1,673	Feb	Hamford Water	2,047	Jan
Medway Estuary	1,639	Nov			
Alt Estuary	1,562	Mar			
Chichester Harbour	1,511	Nov			

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

	01/02			02/03	
The Wash	10,304	Aug	Morecambe Bay	19,170	Oct
			The Wash	10,048	Aug

Sites no longer of national importance

(Note, the 1% threshold has been revised from 1,200 to 1,500 for Great Britain) Chichester Harbour, Cleddau Estuary, Clyde Estuary, Cromarty Firth, Hamford Water, Medway Estuary, Stour Estuary, Swale Estuary, Ouse & Lairo Water, Wigtown Bay

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SPOTTED REDSHANK

Tringa erythopus

International threshold: 1,000
Great Britain threshold: +
All-Ireland threshold: +

** 50 is usually used as a minimum threshold*

	01/02	02/03
GB Max:	**190 Oct**	**249 Sep**
NI Max:	**0**	**1 Nov/Feb/Mar**

Although Spotted Redshanks occur in the UK predominantly as passage migrants and winter visitors from Scandinavia, smaller numbers are present during the summer months. Little, however, is known about population trends in this species (*Migration Atlas*).

The peak British count by WeBS in 2001/02 was among the lowest of the last 10 years – no doubt suffering as a consequence of poor survey coverage during the Foot and Mouth Disease outbreak – while that in 2002/03 was around normal, peaks in both years occurring at the time of autumn passage. The bulk of passage birds pass through eastern England, but they have been regularly recorded at sites further west. There is evidence to suggest that the timing of spring migration is affected by climate change, as earlier spring migration occurs after warmer winters (Anthes 2004).

During winters 2001/02 and 2002/03, 43 and 45 (mostly coastal) sites held Spotted Redshanks, mostly single birds or small groups. Summed site maxima for both years was similar (311 and 318) but remained well below the high numbers of the mid 1990s. Some 100-200 individuals are thought to winter in Britain and Ireland, such numbers representing a significant proportion of the total northwest European wintering population (*Migration Atlas*). The majority of wintering sites were located along the south and southwest coasts of Britain.

Sites with ten or more birds in 2001/02 or 2002/03

	01/02			02/03	
Strangford Lough	[38] 66	Jan	The Wash	65	Sep
Burry Inlet	56	Mar	Swale Estuary	48	Sep
Orwell Estuary	15	Mar	Blackwater Estuary	33	Oct
Severn Estuary	15	Nov	Humber Estuary	32	Jan
Tamar Complex	15	Feb	North Norfolk Coast	29	Oct
Dee Estuary (Eng/Wal)	14	Dec	Thames Estuary	26	Mar
Exe Estuary	12	Feb	Minsmere	23	Sep
Swale Estuary	10	Nov	Tamar Complex	20	Oct
Thames Estuary	10	Jan	Benacre Broad	20	Oct
			Dee Estuary (Eng/Wal)	17	Oct
			Ouse Washes	[37] 13	Oct
			Breydon Wtr & Berney Marshes	12	Apr

REDSHANK

Tringa totanus

International threshold: 1,300
Great Britain winter threshold: 1,200
Great Britain passage threshold: 1,200
All-Ireland threshold: 245

	01/02	02/03
GB Max:	**85,393 Oct**	**93,209 Oct**
NI Max:	**8,582 Nov**	**10,527 Oct**

	5	10	25
GB Alert:	O	O	O

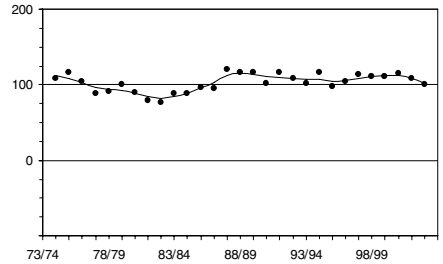

Figure 76. Annual indices for Redshank in the UK

Since *Wildfowl and Wader Counts 2000/01* was published, there has been a reassessment of Redshank populations based on movement patterns (Stroud *et al* 2004) and an improved ability to separate *britannica* from nominate *totanus* (Summers *et al* 1988). The two main populations that occur in the UK have now been reclassified as *robusta* – breeding in Iceland and the Faeroes, and wintering locally or in Britain, Ireland and the North Sea area from southern Norway to northwest France – and *britannica* – breeding in Britain and Ireland and wintering there and in northwest France. Small numbers of the East Atlantic population of *totanus,* whose main concentrations lie elsewhere, also occur in the UK.

The peak British WeBS count in 2001/02, though average for the mid 1990s, punctuated a run of otherwise high totals – between 93,000 and 98,000 – from 1999/2000 to 2002/03. The marked jump in numbers in Northern Ireland saw an increase from average levels in 2001/02 to a record high in 2002/03. Despite these large counts, index values fell slightly in both winters, though they do not yet suggest an end to the period of stability since the late 1980s.

Counts at many of the key sites in 2001/02 and 2002/03 were slightly below average, though notably so on the Alde, Swale and Ythan Estuaries in 2002/03, and continued a run of low numbers at the last site. There were high counts in one or other of the two winters on the Dee Estuary (England/Wales), the Wash, Ribble, North Norfolk Coast, Swale and Lindisfarne, two of these peaks recorded during Low Tide Counts. Small numbers of Redshank also winter inland in southern Britain but move to the coast if there is a prolonged series of frosts (*1981-84 Winter Atlas*). Largest numbers at many sites occur, however, during autumn passage, when counts in 2002 at several sites were around double the peak of the following winter. Numbers in the UK begin to decline from March as Icelandic birds begin to leave to return to their breeding grounds.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean
Sites of international importance in the UK							
Morecambe Bay	7,082	7,262	8,604	6,274	6,650	Feb	7,174
Dee Estuary (Eng/Wal)	4,907	4,792	5,893	[38] 8,579	5,847	Nov	6,004
Humber Estuary	(6,109)	5,357	4,990	(4,526)	4,787	Jan	5,311
Mersey Estuary	[38] 5,087	4,476	6,045	4,690	4,143	Nov	4,888
Forth Estuary	4,525	3,742	4,040	4,204	4,194	Feb	4,141
Solway Estuary	3,958	4,135	(3,023)	(1,489)	(2,528)	Nov	4,047
Thames Estuary	3,368	(2,997)	(4,168)	4,479	(3,603)	Feb	4,005
The Wash	3,046	2,722	3,286	4,501	3,619	Mar	3,435
Blackwater Estuary	(2,158)	2,541	(4,199)	3,539	2,849	Feb	3,282
Strangford Lough	4,157	2,827	2,729	[38] 3,273	2,871	Mar	3,171
Inner Moray Firth	[38] 2,494	2,360	2,862	2,714	2,942	Jan	2,674
Ribble Estuary	1,253	2,622	(1,734)	1,877	3,882	Nov	2,409
Alde Complex	2,825	(2,783)	2,742	[38] 2,071	1,456	Dec	2,375
Clyde Estuary	2,538	[38] 2,956	2,324	2,433	1,589	Dec	2,368
Stour Estuary	2,730	[38] 2,511	[38] 2,038	[38] 2,261	[38] 1,769	Dec	2,262
Duddon Estuary	2,356	2,367	2,816	1,596	1,849	Jan	2,197
Severn Estuary	(2,134)	(1,254)	1,528	2,616	[38] 2,439	Feb	2,194
Deben Estuary	1,729	1,996	2,881	1,999	2,017	Jan	2,124
Hamford Water	2,373	1,796	1,473	[38] 2,575	2,334	Jan	2,110

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK (continued)								
Belfast Lough	[38] 2,463	[38] 2,108	1,677	2,261	1,540	Feb	2,010	
Montrose Basin	2,093	1,800	1,509	2,511	1,830	Nov	1,949	
North Norfolk Coast	1,639	1,473	1,412	[38] 3,915	1,299	Nov	1,948	
Chichester Harbour	1,691	(1,342)	1,702	2,422	1,829	Nov	1,911	
Orwell Estuary	[38] 1,575	[38] 2,197	[38] 1,637	[38] 2,279	[38] 1,825	Dec	1,903	
Medway Estuary	(1,549)	(1,829)	(858)	(1,537)	(972)	Dec	(1,829)	
Swale Estuary	(2,116)	1,359	1,569	2,481	959	Jan	1,697	
Colne Estuary	1,640	1,823	1,342	1,871	(97)	Mar	1,669	▲
Cromarty Firth	1,404	[38] 1,842	1,157	1,849	1,604	Dec	1,571	▲
Ythan Estuary	1,976	2,990	318	985	670	Dec	1,388	
Outer Ards	1,428	1,308	1,428	-	1,351	Jan	1,379	▲
Blyth Estuary (Suffolk)	-	-	1,265	1,481	-		1,373	▲
Tees Estuary	1,386	1,282	1,441	1,332	1,398	Nov	1,368	▲
Breydon Wtr & Berney Marshes[38]	1,180	[38] 1,474	[38] 1,456	1,207	[38] 1,497	Nov	1,363	▲
Traeth Lafan	(195)	(1,124)	1,270	1,126	[38] 1,525	Feb	1,307	▲
Sites of national importance in Great Britain								
Lindisfarne	1,576	684	975	1,825	1,371	Nov	1,286	▲
Alt Estuary	979	1,627	1,470	1,090	931	Nov	1,219	
Sites of all-Ireland importance in Northern Ireland								
Lough Foyle	901	844	1,974	1,104	1,606	Mar	1,286	
Carlingford Lough	924	1,334	1,325	1,525	1,211	Dec	1,264	
Dundrum Bay	826	801	1,051	(696)	(530)	Jan	893	
Larne Lough	388	427	379	363	427	Nov	397	
Bann Estuary	346	260	422	260	324	Mar	322	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Crouch-Roach Estuary	(1,220)	Nov	none		

Sites surpassing passage threshold for Great Britain in 2001/02 or 2002/03

	01/02			02/03	
Mersey Estuary	11,595	Oct	Dee Estuary (Eng/Wal)	10,683	Oct
Humber Estuary	8,935	Sep	Morecambe Bay	8,816	Oct
Dee Estuary (Eng/Wal)	8,021	Oct	The Wash	6,628	Aug
The Wash	7,034	Aug	Humber Estuary	6,049	Sep
Forth Estuary	4,594	Sep	Forth Estuary	5,759	Oct
Thames Estuary	4,575	Oct	Mersey Estuary	4,280	Oct
Ribble Estuary	2,961	Sep	Thames Estuary	(4,088)	Sep
Lindisfarne	(2,819)	Oct	Blackwater Estuary	3,728	Oct
Montrose Basin	2,550	Oct	Ribble Estuary	3,129	Oct
Inner Moray Firth	2,453	Oct	Montrose Basin	2,539	Oct
Blackwater Estuary	2,277	Sep	Lindisfarne	2,036	Oct
Swale Estuary	(2,235)	Aug	Inner Moray Firth	1,948	Oct
Chichester Harbour	2,141	Oct	Chichester Harbour	1,911	Oct
Cromarty Firth	1,837	Oct	Ythan Estuary	1,854	Aug
Solway Estuary	(1,702)	Sep	Hamford Water	(1,800)	Oct
Morecambe Bay	(1,680)	Sep	Deben Estuary	1,751	Oct
Hamford Water	(1,652)	Oct	Solway Estuary	1,744	Sep
Stour Estuary	1,648	Oct	Tees Estuary	1,575	Aug
Severn Estuary	(1,647)	Oct	Severn Estuary	1,518	Oct
North Norfolk Coast	1,627	Aug	North Norfolk Coast	1,482	Aug
Clyde Estuary	1,616	Oct	Alde Complex	1,374	Oct
Tees Estuary	1,610	Oct	Breydon Wtr & Berney Marshes	1,323	Aug
Breydon Wtr & Berney Marshes	1,257	Sep	Stour Estuary	1,308	Aug
Blyth Estuary (Suffolk)	(1,217)	Oct	Clyde Estuary	1,306	Oct
Colne Estuary	1,210	Oct			

Sites in Northern Ireland surpassing all-Ireland threshold during passage periods

	01/02			02/03	
Strangford Lough	3,119	Oct	Strangford Lough	4,039	Oct
Belfast Lough	2,203	Sep	Belfast Lough	2,059	Oct

GREENSHANK

Tringa nebularia

	01/02	02/03
GB Max:	**1,577 Sep**	**2,124 Sep**
NI Max:	**146 Oct**	**140 Oct**

International threshold:	**3,100**
Great Britain threshold:	**6***
All-Ireland threshold:	**9***

** 50 is usually used as a minimum threshold*

In the UK, peak counts of Greenshanks occur during autumn passage when birds are migrating from their breeding grounds in northern Europe (which includes sites in Scotland) to their wintering sites in southwest Europe, and north and west Africa. Birds which overwinter in the UK are found mainly in southern and western Britain and in Northern Ireland (*1981-84 Winter Atlas*, *Migration Atlas*). This is reflected in the sites which appear in the table below, with only Tyninghame Estuary, in east Scotland, and the Wash and the Blackwater and Thames Estuaries, in south and east England, located away from these areas. In contrast, sites on the English east coast generally hold the highest numbers during autumn passage.

Maxima for Britain in 2001/02 and 2002/03 were in keeping with those of recent years, though at the lower end of the range, particularly in the first year, although summer counts in 2001 were low due to the fewer sites visited in the period following the outbreak of Foot and Mouth Disease. Typically, numbers in Northern Ireland peaked later than in Britain, with the maxima for the Province in both years falling in the middle of recent counts.

Numbers of Greenshanks counted decline as birds move through the UK, though the winter maxima in 2001/02 and 2002/03 in Britain – 351 and 336 respectively – were higher than in previous years. In Northern Ireland, the peak winter count was later than in previous years, fuelled by high numbers at Strangford Lough, the key wintering site for this species in the UK. Numbers on the Kingsbridge Estuary and the Wash were also markedly higher than average in 2002/03. Though counts during passage are much larger, none was exceptional in 2002/03 and numbers at the principal site, the Wash, have in fact fallen in recent years (428 in September 1999, 424 in August 2000 and 347 in August 2001).

Climate change has been linked to alterations in the migration timings of certain *Tringa* species, including Greenshank, particularly during spring migration when warmer temperatures result in an earlier passage to the breeding grounds (Anthes 2004).

Note that all sites in the table below attain national importance by virtue of a published estimate – and therefore 1% threshold – for wintering numbers in Great Britain (Rehfisch *et al* 2003a), although none surpasses 50.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
Chichester Harbour	20	(19)	[37] 43	44	[37] 35	Nov	36	▲
Tamar Complex	(19)	(25)	29	30	[38] 31	Dec	30	▲
Cleddau Estuary	22	(15)	27	34	28	Nov	28	▲
Fal Complex	(24)	(23)	26	26	27	Jan	26	▲
Kingsbridge Estuary	18	29	14	26	41	Nov	26	▲
Queens Valley Reservoir	-	-	17	20	19	Mar	19	▲
Grouville Marsh	(2)	13	15	11	31	Nov	18	▲
Exe Estuary	27	13	14	14	18	Nov	17	▲
Camel Estuary	(8)	(2)	(9)	(6)	(17)	Dec	(17)	▲
Taw-Torridge Estuary	(9)	16	19	14	16	Dec	16	▲
Blackwater Estuary	(5)	2	(17)	12	[38] 27	Nov	15	▲
Clyde Estuary	10	8	13	12	14	Nov	11	▲
Yealm Estuary	13	7	6	7	15	Feb	10	▲
Southampton Water	7	[38] 7	8	15	13	Feb	10	▲
Foryd Bay	13	10	9	8	10	Nov	10	▲
Jersey Shore	7	7	7	13	-		9	▲
Helford Estuary	(15)	(14)	5	6	4	Feb	9	▲
North West Solent	10	(10)	8	11	5	Dec	9	▲
Tyninghame Estuary	10	7	8	7	11	Nov	9	▲
Thames Estuary	8	(3)	(3)	8	(3)	Dec	8	▲
Solway Estuary	2	8	11	(11)	(8)	Jan	8	▲
Burry Inlet	4	(28)	2	4	4	Nov	8	▲

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain (continued)								
Broadford Bay	-	-	-	(8)	7	Nov	8	▲
Poole Harbour	4	10	4	6	11	Nov	7	▲
Traeth Lafan	(0)	(4)	5	7	9	Dec	7	▲
The Wash	7	3	0	3	18	Feb	6	▲
Morecambe Bay	6	6	(5)	7	6	Nov	6	▲
Sites of all-Ireland importance in Northern Ireland								
Strangford Lough	56	48	41	56	72	Jan	55	
Lough Foyle	28	30	16	20	22	Mar	23	
Carlingford Lough	15	14	13	18	14	Feb	15	
Dundrum Bay	16	12	11	18	15	Dec	14	
Larne Lough	11	8	9	(15)	15	Nov	12	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Stour Estuary	11	Nov	Hunterston Sands	8	Nov
North Norfolk Coast	[38] 9	Nov	Loch Bee (South Uist)	7	Mar
Medway Estuary	8	Dec	Brading Harbour	6	Jan
Rough Firth	7	Nov	Eden Estuary	6	Nov
Dee Estuary (Eng/Wal)	6	Nov	Forth Estuary	6	Nov
Avon Estuary	6	Nov			

Sites holding 50 or more birds on passage in 2001 or 2002

	2001			2002	
Blackwater Estuary	156	Sep	The Wash	304	Aug
Chichester Harbour	156	Aug	Thames Estuary	240	Sep
North Norfolk Coast	153	Aug	Chichester Harbour	191	Aug
Thames Estuary	145	Oct	North Norfolk Coast	(162)	Aug
Medway Estuary	(114)	Sep	Blackwater Estuary	102	Oct
Swale Estuary	(102)	Aug	Medway Estuary	98	Oct
Stour Estuary	90	Aug	Stour Estuary	85	Sep
Hamford Water	83	Sep	Hamford Water	85	Sep
Pegwell Bay	77	Aug	Humber Estuary	(79)	Aug
Dee Estuary (Eng/Wal)	(54)	Sep	Dee Estuary (Eng/Wal)	(74)	Sep
			Montrose Basin	73	Sep
			Strangford Lough	59	Sep

Sites no longer of national importance
Outer Ards

GREEN SANDPIPER

Tringa ochropus

International threshold: **14,500**
Great Britain threshold: **?**
All-Ireland threshold: **?**

	2001	2002
GB Max:	**312 Aug**	**533 Aug**
NI Max:	**0**	**0**

Green Sandpipers are one of the first waders seen on return passage in Britain, appearing in Britain in mid June, though peak numbers are generally recorded in August. While the 2002 peak was normal for recent years, that in 2001 was below average owing to fewer counts during the period following the outbreak of Foot and Mouth Disease. Numbers remain high through to September or early October and over 100 remained throughout the winter months in both years. During the 2002/03 winter, Green Sandpipers were recorded at 135 sites, with four of these holding five or more birds. The River Avon from Fordingbridge to Ringwood, with 12 in January, was the only site to hold ten or more birds during this period. Although WeBS records significant numbers into April, there is little indication of any northward passage in spring through Britain and Ireland (*Migration Atlas*).

There is very little evidence to suggest any major differences in the distributions of passage and wintering birds, although habitats used during the two periods differ, with gravel

pits and freshwater lagoons used during passage, and sites with flowing freshwater, such as streams and watercress beds, used in winter (Smith *et al* 1992). Coverage of the favoured winter haunts by WeBS would undoubtedly yield higher counts of this species.

Sites with 15 or more birds during passage in 2001 or 2002

	2001			2002	
Rutland Water	27	Aug	Thames Estuary	60	Sep
Southampton Water	27	Aug	Tophill Low Reservoirs	39	Aug
Barmston Ponds	25	Aug	Humber Estuary	38	Aug
Rye Harbour & Pett Level	24	Aug	Southampton Water	23	Aug
Dungeness Gravel Pits	23	Aug	Stour Estuary	22	Aug
North Norfolk Coast	23	Aug	Severn Estuary	20	Aug
Swale Estuary	21	Sep	North Norfolk Coast	19	Aug
Middle Yare Marshes	16	Oct	Rutland Water	18	Sep
Minsmere	15	Aug	Rye Harbour & Pett Level	17	Aug
Thames Estuary	15	Sep	Colne Estuary	15	Aug

WOOD SANDPIPER

Tringa glareola

International threshold: 10,400
Great Britain threshold: ?
All-Ireland threshold: ?

	2001	2002
GB Max:	**30 Aug**	**59 Aug**
NI Max:	**0**	**0**

Only a small number of Wood Sandpipers migrate through the UK, the main movement of birds occurring further to the east across the Continent. Most birds passing through Britain and Ireland are from the Scandinavian breeding population and passage south to the wintering grounds starts in late July (*Migration Atlas*). As a consequence, numbers in Britain usually peak in August, and the maxima for 2001 and 2002 were no exception. The peak count for 2002 was the second highest on record for WeBS, next to the 60 birds recorded in August 1996 and the summed site maxima of 80 was close to the high of 2000. Numbers in summer 2001 were low (summed site maxima of 37) due to site access restrictions following the outbreak of Foot and Mouth Disease; birds were recorded at only 18 sites compared with 41 in 2002/03. A small influx of birds can occur in May as birds return on spring passage, but numbers are lower than during autumn and, compared to earlier years, the total count for the most recent two years were at the bottom of the range.

Three or more birds were seen at eleven sites in 2002 and at four sites in the previous year. Most notable in 2001 were five at Breydon & Berney Marshes in May and eight on the Wash in August while 15 at Tophill Low Reservoirs in August 2002 were especially noteworthy.

It is rare for Wood Sandpipers to be seen in Britain during winter. In 2001/02, however, one was recorded at Trent Valley Pit (Leicestershire) in November, and at the Arun Valley in December.

Sites with three or more birds in 2001 or 2002

	2001			2002	
The Wash	8	Aug	Tophill Low Reservoirs	15	Aug
Breydon Wtr & Berney Marshes	5	May	Minsmere	5	Aug
Barmston Ponds	4	Aug	Barmston Ponds	5	Aug
North Norfolk Coast	3	Jul	Breydon Wtr & Berney Marshes	4	Aug
			Druridge Pool	4	Aug
			Severn Estuary	[37] 4	Sep
			Humber Estuary	3	Aug
			North Norfolk Coast	3	Aug
			Ouse Washes	3	Sep
			Swale Estuary	3	Aug
			The Wash	3	Aug

COMMON SANDPIPER

Actitis hypoleucos

International threshold: **17,000**
Great Britain threshold: **?**
All-Ireland threshold: **?**

	2001	2002
GB Max:	**606 Aug**	**1,246 Aug**
NI Max:	**4 Jul**	**8 Aug**

Typically, the British maximum occurs in August when most Common Sandpipers are on passage from breeding sites in the north, particularly Scandinavia, to the wintering grounds in West Africa south of the Sahara. As is common amongst passage waders, adults migrate earlier than juveniles, and numbers usually reach a peak following the influx of these younger birds (*Migration Atlas*). Total numbers during 2001 and 2002 reflect this autumn passage, with fewer birds remaining during the winter period. Whilst the peak count for 2002 was average for recent years, the maximum for the previous year was notably low, autumn survey being greatly reduced in the period following the Foot and Mouth Disease outbreak.

Numbers are often highest at sites in southern and eastern Britain, and Abberton Reservoir, the Wash and the North Norfolk Coast regularly hold over 40 birds, and the count in 2001 at the North Norfolk Coast was the highest for the site to date. In 2002, peak numbers at key sites were above average.

Small numbers of Common Sandpipers overwinter in the milder parts of Britain, and records were received from 49 sites during November-February in 2001/02, and 41 in 2002/03. The largest count in these two winters was six birds on the Thames Estuary in November 2001. Larger numbers are recorded in March as passage birds return, particularly since they use the larger still waterbodies at this time.

Sites with 40 or more birds in 2001 or 2002

	2001			2002	
North Norfolk Coast	110	Aug	The Wash	79	Aug
The Wash	54	Aug	North Norfolk Coast	73	Aug
			Rye Harbour & Pett Level	69	Aug
			Thames Estuary	65	Aug
			Abberton Reservoir	56	Aug
			Humber Estuary	50	Aug

TURNSTONE

Arenaria interpres

International threshold: **1,000**
Great Britain threshold: **500**
All-Ireland threshold: **225**

	01/02	02/03
GB Max:	**11,413 Nov**	**12,211 Oct**
NI Max:	**760 Nov**	**1,869 Oct**

	5	10	25
GB Alert:	○	▽	○

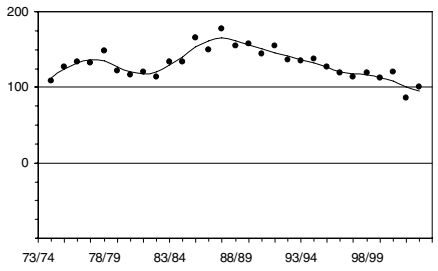

Figure 77. Annual indices for Turnstone in the UK

Winter 2001/02 saw the lowest annual maxima for five years in Great Britain and Northern Ireland, and the lowest index value to date. Although numbers rose again in Great Britain in 2002/03, they remained below the mean of previous years; the peak total in Northern Ireland for the same year was, however, notably higher than the recent average.

Britain receives two discrete populations of the nominate race *interpres*, from breeding areas in northeast Canada and northern and eastern Greenland, and from Fenno-Scandia and west Russia (Stroud *et al* 2004). The former winters in the UK, while the latter visits on passage to the wintering grounds in west Africa. The recently revised flyway population estimate is considered more reliable than the previous, largely due to improvements in coverage of the wintering range, but, based on midwinter counts of largely estuarine habitats, may still be

an underestimate due to the paucity of data from non-estuarine coastal habitat across much of the range (Stroud *et al* 2004). In addition, the flyway estimate excludes any birds which may migrate further south to winter in west Africa.

Despite difficulties in deriving trends from such estimates, this population is thought to have undergone a substantial increase between the 1970s and mid 1990s. More recent comparisons of British numbers between the periods 1987/88-1991/92 and 1994/95-1998/99 have, however, shown a 24% decrease (Rehfisch *et al* 2003a). WeBS annual indices show this decline to be continuing since the record high in 1987/88, and values have fallen by 19% during the most recent five years and by 35% over a ten-year period. The wintering distribution of Turnstone appears to be shifting in a northwest direction towards their breeding grounds, changes may be linked to increasingly warmer winters (Rehfisch *et al* 2004). Birds wintering closer to the breeding grounds may have an advantage in terms of earlier arrival at the breeding ground, hence securing better territories with the possibility of higher breeding success.

Of the current British wintering estimate of 49,550, some 77% occur on non-estuarine coast, emphasising the importance of this habitat for Turnstones (Rehfisch *et al* 2003a), but relatively few sites are listed in the table below owing to poorer coverage of this habitat and perhaps also the problems of site definition for such linear habitats. The number of sites holding internationally important numbers has fallen from seven to just two, largely as a result of the increase in the recently revised threshold. Two of these sites, however, no longer feature at any level due to the lack of count data (for East Sanday Coast) and the absence of Low Tide Count data (for the mouth of the Mersey Estuary). At the latter site, birds tend to roost at adjacent sites at high tide so are not recorded during Core Counts. Noticeably lower counts have been recorded at Morecambe Bay over the two most recent years with a 15% decline in the five-year mean since 2000/01. Despite fluctuations between years, few sites held exceptional numbers in 2001/02 or 2002/03, although four sites, all located on the east coast of Britain, have attained the status of national importance.

Ringing data have provided some evidence for an east/west split in the wintering and breeding range (*Migration Atlas*). Those birds wintering in west Britain are more likely to migrate to western parts of northeast Canada and northwest Greenland to breed while those wintering in eastern regions likely to breed in northeast Greenland. Conditions on the arctic breeding grounds may therefore influence regional differences in wintering numbers, since Turnstones exhibit considerable site fidelity, with birds often returning to the same stretch of shore each winter. Within-winter movements are most likely related to tidal changes on feeding grounds and stability of food availability, but movements of more than ten kilometres are rare. According to current estimates, Britain holds 53% of the flyway population during winter, with non-estuarine coast of considerable importance, emphasising the need for regular coverage and effective protection of this poorly monitored habitat.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Outer Ards	1,136	1,102	879	-	1,086	Mar	1,051	
Morecambe Bay	1,402	1,181	1,175	825	588	Nov	1,034	
Sites of national importance in Great Britain								
Thanet Coast	1,097	892	827	964	694	Nov	895	▼
Tiree	[33] 858	-	-	-	-		858	▼
Forth Estuary	893	762	989	610	940	Nov	839	
Thames Estuary	(456)	(512)	632	(879)	(425)	Dec	756	▲
The Wash	(965)	(641)	515	(270)	579	Jan	686	
Dee Estuary (Eng/Wal)	771	453	791	(405)	726	Jan	685	▼
Humber Estuary	[38] 747	785	659	499	(529)	Dec	673	▲
Stour Estuary	680	716	708	614	640	Nov	672	▲
North Norfolk Coast	588	416	461	744	833	Feb	608	▲
Sites of all-Ireland importance in Northern Ireland								
Belfast Lough	566	399	524	432	401	Feb	464	
Strangford Lough	194	301	248	227	206	Nov	235	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Hamford Water	[38] 642	Feb	Pagham Harbour	523	Nov

Sites surpassing international threshold during passage periods in 2001/02 or 2002/03

01/02			02/03		
none			Thanet Coast	1,118	Oct
			The Wash	1,324	Aug

Sites no longer of national importance
Mersey Estuary

Internationally or nationally important sites not covered in last five years
East Sanday Coast

MEDITERRANEAN GULL

Larus melanocephalus

International threshold: 8,400
Great Britain threshold: ?
All-Ireland threshold: ?

	01/02	02/03
GB Max:	**115 Mar**	**235 Sep**
NI Max:	**1 Jan**	**0**

Counts in both 2000/01 and 2002/03 surpassed all previous records, mirroring the increase of this species in Great Britain. Although the peak in 2001/02 surpassed the previous record of 100 birds, this number more than doubled the following winter. Peaks are noted in late summer and early spring, reflecting post-breeding dispersal and passage to the breeding grounds, respectively.

Mediterranean Gulls were recorded at more sites – 83 in 2001/02 and 76 in 2002/03 – than in any previous year, while the number of sites holding more than five birds has also increased, to 13 and 17 respectively. Summed site maxima were above those of the last five years, particularly in 2002/03 with a total of 487 (*cf.* 292, 282, 259, 169 and 215 in the preceding five years). Most records were in south and southwest England, those on the Isle of Wight being particularly important. Exceptional numbers were recorded at Brading Harbour in September 2002, surpassing any previous national, let alone site, total, and numbers have been steadily increasing at Newtown Estuary and the Thames Estuary.

A steady increase has been seen in the northwest Europe breeding population since the 1960s with a distinct pattern of colonisation spreading westwards across Europe from the Mediterranean (*Migration Atlas*, *Seabird 2000*). This has presumably been a factor in the increased records of Mediterranean Gulls in Britain, particularly in the south and east of England. The number of confirmed breeding pairs in Britain has increased dramatically since the early 1990s with a peak of 90 confirmed pairs at a total of 28 localities in 2000, although there was a marked decline in 2002 (Ogilvie *et al* 2004).

Sites with five or more birds in 2001/02 or 2002/03

01/02			02/03		
Newtown Estuary	65	Apr	Brading Harbour	126	Sep
Brading Harbour	28	Mar	Newtown Estuary	80	Mar
Swansea Bay	20	Aug	Ryde Pier to Puckpool Point	45	Sep
Tamar Complex	14	Oct	Tamar Complex	30	Aug
Thames Estuary	13	Mar	Thames Estuary	20	Aug
Ribble Estuary	9	Mar	Pagham Harbour	16	Dec
Ryde Pier to Puckpool Point	8	Jun	Swansea Bay	16	Aug
Medway Estuary	6	Mar	North Norfolk Coast	13	Jul
Llanrhystud - Morfa Mawr	6	Mar/Jun	Camel Estuary	8	Nov
North Norfolk Coast	6	May	Taw-Torridge Estuary	7	Sep
Kennington Park	5	Apr	Burry Inlet	7	Aug
			Ribble Estuary	7	Oct
			Alt Estuary	6	Jul
			Chichester Harbour	6	Mar
			Afan Estuary & Port Talbot Hbr	5	Sep
			Medway Estuary	5	Mar
			Portsmouth Harbour [38]	5	Nov

LITTLE GULL

Larus minutus

International threshold: **840**
Great Britain threshold: **?**
All-Ireland threshold: **?**

	01/02	02/03
GB Max:	**906 Sep**	**161 Sep**
NI Max:	**1 Jan**	**1 Sep**

The peak total in 2001/02 was high in comparison to previous years due to a large count at Hornsea Mere during autumn passage, though numbers in 2002/03 were similar to preceding years. Birds were recorded at 54 sites in total in 2001/02 and 41 in 2002/03, with high numbers during autumn passage concentrated at just a few sites. Supplementary roost count data gave exceptional counts – exceeding the threshold for international importance – at Hornsea Mere for the most recent two years. Similar numbers, and exceptionally 10,000, have been recorded at roost off nearby Spurn Point in recent autumns, birds which boat surveys have shown to feed approximately 15 km offshore (Hartley 2004). These numbers suggest that the western North Sea is becoming increasingly important for Little Gulls in autumn. Two records in Northern Ireland occurred in Upper Lough Erne and Belfast Lough in 2002. During winter, numbers were low, with that of seven birds at the Thames Estuary in January 2003 the largest.

Low numbers were recorded during spring. Passage over northern England to the North Sea of birds known to winter in the Irish Sea was largely unobserved, numbers recorded being dependent on WeBS priority dates coinciding with such movements. Passage numbers have increased through Britain and Ireland since the 1970s, possibly as a consequence of a westerly expansion in breeding range (*Migration Atlas*). Similarly, a northward expansion of the wintering range has also occurred over recent years, which may reflect the general increase seen in winter numbers in Britain and Ireland.

Sites with five or more birds in 2001/02 or 2002/03

	01/02			02/03	
Hornsea Mere	[27] 3,150	Sep	Hornsea Mere	[27] 1,350	Sep
Alt Estuary	80	Apr	Monikie Country Park	60	Mar
North Norfolk Coast	70	Oct	Tay Estuary	50	Sep
Morecambe Bay	31	Feb	Forth Estuary	41	Nov
Tay Estuary	22	Jun	Minsmere	15	Aug
Forth Estuary	22	Sep	Rescobie Loch	11	Mar
St Andrews Bay	8	Mar	Tophill Low Reservoirs	10	Aug
Dungeness Gravel Pits	7	Oct	Anstruther Bay	8	Sep
			Thames Estuary	7	Jan
			East Chevington Pools	5	Sep
			Loch Fleet Complex	5	Feb

BLACK-HEADED GULL

Larus ridibundus

International threshold: **20,000**
Great Britain threshold: **19,000**[†]
All-Ireland threshold: **?**[†]

	01/02	02/03
GB Max:	**208,460 Mar**	**215,295 Jan**
NI Max:	**13,437 Mar**	**13,774 Jan**

In 2002/03, the total numbers counted by WeBS of the UK's most widespread and numerous wintering gull peaked, typically, in January in both Northern Ireland and Great Britain, though oddly, both peaks were in March in the previous year. Peak counted totals in Britain were a little below average, those in Northern Ireland around normal. Results from the 1993 national gull roost survey show that numbers of wintering Black-headed Gulls had declined slightly at both inland and coastal sites in England since the 1980s (Burton *et al* 2003). Conversely, in Wales and Scotland, increases were seen inland, perhaps associated with increased food availability from rubbish tips and formation of new inland roost sites in the way of reservoirs and flooded gravel pits. In Northern Ireland, an overall increase in

numbers had been seen since the 1980s, particularly at coastal sites.

Black-headed Gulls breed largely in the north and west of Great Britain with some large colonies located in the south and southeast of England. Surveys of breeding colonies during 2001-2002 showed a decrease in numbers in southwest Scotland, northeast England and southeast England, while an increase was seen in east England and particularly in southwest England, although productivity was low in many areas due to flooding and high predation (Mavor *et al* 2003). Dispersal from UK breeding colonies – largely in the north and west, but with some large colonies in south and southeast England also – generally occurs from August, and the majority remains in Britain and Ireland for the winter. Winter numbers are considerably boosted by birds from northern and eastern Europe and the increase in counted totals from late summer onwards is most likely attributed to the arrival of continental birds.

Counts at many sites fluctuate considerably between years (primarily a result of whether roost counts have been undertaken) and caution is urged when interpreting changes at individual sites. There were no particularly exceptional counts in 2002/03, although high counts were noted at Tophill Low Reservoirs and on the Ribble in 2001/02 and those at Morecambe Bay were low. Continued high counts on the Thames have elevated this site to international importance. It should also be noted that the Wash attains the same status on the basis of counts in one year, counts in four of the last five years having been incomplete for this species.

Numbers of Black-headed Gulls recorded by WeBS in Great Britain in early summer represent at most 10% of the breeding population, estimated at 130,000 pairs (*Seabird 2000*). The WeBS peak total in 2002/03 equates to only 13% of the 1.68 million estimated by Burton *et al* (2003) as the minimum number wintering in Great Britain, perhaps a reflection of the optional recording of gulls during WeBS counts, and the use of many non-wetland habitats for feeding. Roost counts may give more accurate estimates of total numbers than during daytime, when birds disperse to feeding areas; significantly, many sites such as the Severn Estuary, known to be major roost sites holding internationally important numbers, do not feature in the table below. Conversely, the sum of the five-year means for the key sites in Northern Ireland is 23,500, greatly exceeding the minimum estimate of 15,400 from limited coverage of the Province during the 1993 survey. Clearly, summing peak means may result in some individuals being double-counted (since they occur in different months), and birds present at some sites by day may roost in Ireland. Nevertheless, given that counts from sites not listed in the table would boost the total further, and that peak WeBS totals in the last two winters were only marginally lower than the estimate when counting of gulls is optional, suggests that numbers have continued to increase in the Province over the last 10 years.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
The Wash	(8,191)	31,403	(9,008)	(16,136)	(15,999)	Oct	31,403	▲
Thames Estuary	(11,337)	(18,250)	35,410	22,911	30,275	Jan	29,532	▲
Sites with mean peak counts of 10,000 or more birds in Great Britain†								
Morecambe Bay	(26,624)	17,670	17,610	7,795	17,772	Aug	17,494	▼
Tophill Low Reservoirs	17,000	18,000	12,500	25,000	11,900	Dec	16,880	▼
Forth Estuary	(3,676)	(3,818)	(16,521)	(2,343)	(2,195)	Sep	(16,521)	△
Ribble Estuary	(350)	(12,450)	6,793	24,460	(821)	Jul	15,627	△
North Norfolk Coast	[27] 33,000	8,764	(3,726)	4,786	5,882	Jun	13,108	△
Poole Harbour	13,861	10,629	(10,162)	(7,386)	12,461	Feb	12,317	
Chasewater	12,000	-	-	-	-		12,000	
Portsmouth Harbour	9,388	(15,509)	(14,247)	4,881	[38] 15,311	Dec	11,867	
Pitsford Reservoir	(15,000)	10,000	[27] 10,000	[27] 10,000	[27] 12,000	Oct	11,400	
Eccup Reservoir	10,000	10,000	8,000	14,000	15,000	Dec	11,400	△
Southampton Water	[38] 14,356	[38] 8,129	[38] 9,751	(1,788)	(826)	Sep	10,745	
Sites with mean peak counts of 1,000 or more birds in Northern Ireland†								
Belfast Lough	4,303	[38] 4,028	[38] 7,496	[38] 8,986	[38] 5,503	Dec	6,063	
Outer Ards	6,141	8,040	3,290	-	4,945	Jan	5,604	
Loughs Neagh & Beg	4,409	-	-	2,637	(4,036)	Mar	3,694	
Strangford Lough	4,693	[38] 2,767	3,588	[38] 3,503	[38] 3,518	Jan	3,614	

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peak counts of 1,000 or more birds in Northern Ireland (continued)†								
Lough Foyle	1,521	3,019	1,214	1,627	2,780	Nov	2,032	
Larne Lough	1,663	2,639	942	2,060	733	Sep	1,607	
Upper Lough Erne	911	1,445	(504)	800	(65)	Dec	1,052	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02		02/03
Bewl Water	[27] 33,000 Jan	none	

Sites no longer meeting table qualifying levels
Dundrum Bay, Lower Derwent Valley, Tyne Estuary

† *as few sites exceed the British threshold and as no All-Ireland threshold has been set, qualifying levels of 10,000 and 1,000 have been chosen to select sites in Great Britain and Northern Ireland respectively, for presentation in this report*

COMMON GULL

Larus canus

International threshold: 17,000
Great Britain threshold: 9,000†
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**73,589 Feb**	**57,227 Dec**
NI Max:	**4,480 Feb**	**7,937 Feb**

Some 48,000 pairs of Common Gulls bred in Great Britain, largely confined to Scotland, and 550 in Northern Ireland during 1999-2002 (*Seabird 2000*). Most of these remain in winter, dispersing more widely throughout Britain and Ireland in late summer. The large rise seen in total numbers in August, continuing through the winter, is due to the arrival of continental birds from north Europe, Russia and Iceland, and a minimum of 430,000 are estimated to be present in mid winter in Britain (Burton *et al* 2003, *Migration Atlas*).

WeBS records a relatively small proportion of the total in Britain, a consequence of the optional recording of these species and their use of non-wetland areas. Nevertheless, counts in Northern Ireland greatly exceeded the minimum estimate of 1,600 from limited coverage there during the 1993 gull roost survey. Peak WeBS counts in Britain in 2001/02 were at the lower end of the range of recent winters (70,000 to 99,000), but dropped markedly the following year. Conversely, average numbers in the Province during the first winter rose to the highest number yet recorded there by WeBS in 2002/03. Highest numbers are most commonly recorded in October or November in Northern Ireland (the February peak in the two most recent years is unusual), and usually occur later in the winter in Great Britain.

The 1993 gull roost survey showed an overall increase in wintering numbers of Common Gulls between 1983-1993, particularly at inland sites in England and Wales, but decreases at coastal sites (Burton *et al* 2003). Distribution is largely dependent on availability of suitable feeding habitat and proximity to suitable roost sites and inland areas may have become more attractive due to the exploitation of rubbish tips as feeding grounds and the increase in availability of roosts in the form of reservoirs and flooded gravel pits. All of the sites holding highest numbers in the table below are reservoirs, although counts have generally been smaller at most since 2000.

Owing to the large fluctuations in numbers at many sites, notable counts have to fall well outside the normal range of variation to be noteworthy. Large counts were noted in 2001/02 at Eccup Reservoir and on the Ribble and Tees Estuaries, and in 2002/03 on the Solway Estuary. The count of 63,000 at Bewl Water in March 2002 was truly exceptional; not only was it the largest submitted count of Common Gulls at any site to date, numbers were not far short of half the total recorded at all inland sites during the 1993 survey. Significantly, no counts were received for Bewl Water during that survey.

Interpretation of numbers at key sites should, however, be treated with caution. The largest counts are obtained during roost surveys, and these are provided as supplementary counts – rather than part of WeBS survey methods – and are reliant upon counters visiting at the appropriate time of day and year. Indeed, although counts are available for most sites in most years, those provided during WeBS Core Counts might be best treated in the same way as incomplete counts for sites used as roosts, and excluded when

calculating site means, *eg* the count of four birds at Hallington Reservoir in 2001/02, and all counts bar the roost count at Bewl Water. Whilst these counts were complete according to WeBS methods, they are clearly an underestimate of the importance of the site. Caution is urged, therefore, when assessing the status of sites against qualifying thresholds on the basis of the five-year means given in the table, particularly when data from different survey methods have been used.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Bewl Water	(20)	(450)	(50)	[27] 63,000	(50)	Jan	63,000	▲
Tophill Low Reservoirs	38,000	42,000	24,500	33,000	23,100	Nov	32,120	
Hallington Reservoir	[27] 46,000	[27] 32,000	[27] 19,000	(4)	[27] 24,000	Nov	30,250	
Derwent Reservoir	[27] 20,000	[27] 33,000	[27] 41,000	6,500	[27] 11,800	Nov	22,460	
Haweswater Reservoir	[27] 19,541	[27] 11,000	[27] 26,480	[27] 16,566	[27] 13,674	Feb	17,452	
Sites with mean peak counts of 3,000 or more birds in Great Britain†								
Colt Crag Reservoir	[27] 6,850	[27] 1,140	[27] 16,000	-	[27] 8,200	Nov	8,048	▼
West Water Reservoir	(8,000)	(5,400)	-	-	-		(8,000)	
Moray Firth	-	-	[30] 4,494	[30] 5,961	[30] 5,037	Nov	5,164	△
Eccup Reservoir	4,000	4,000	3,500	9,000	5,000	Feb	5,100	
North Norfolk Coast	[27] 8,400	5,271	460	(1,420)	(1,283)	Mar	4,710	
Alt Estuary	[38] 5,423	4,800	3,850	(1,235)	(810)	Sep	4,691	
Hule Moss	[37] 1,100	[37] (5,500)	-	-	[37] 6,300	Oct	4,300	
Morecambe Bay	5,869	3,397	4,860	3,632	3,194	Dec	4,190	
Dee Estuary (Eng/Wal)	(1,000)	(3,466)	(572)	(1,519)	4,182	Aug	4,182	△
Pitsford Reservoir	5,500	6,000	[27] 2,000	[27] 3,000	[27] 4,000	Jan	4,100	
Thames Estuary	(3,164)	(3,870)	6,848	3,135	2,041	Jan	4,008	
Ribble Estuary	6	(591)	3,077	8,653	(146)	Aug	3,912	△
Tees Estuary	1,089	3,617	3,258	8,130	2,804	Feb	3,780	
The Wash	(1,693)	(4,324)	3,681	(1,784)	2,482	Oct	3,496	
Solway Estuary	2,668	(2,671)	2,247	1,398	7,193	Sep	3,377	△
Sites with mean peak counts of 1,000 or more birds in Northern Ireland†								
Lough Foyle	2,802	3,759	6,095	3,300	4,606	Sep	4,112	
Belfast Lough	805	[38] 533	1,416	[38] 2,103	2,718	Feb	1,515	△
Larne Lough	464	2,506	761	1,941	338	Nov	1,202	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Cameron Reservoir	5,600	Feb	Inner Moray Firth	[38] 3,545	Feb
Wigtown Bay	(4,277)	Feb	Chichester Harbour	4,142	Jan
Tay Estuary	2,505	Jan	Poole Harbour	3,519	Nov

Sites no longer meeting table qualifying levels
Cromarty Firth, Lower Derwent Valley, Rutland Water

† *as few sites exceed the British threshold and as no All-Ireland threshold has been set, qualifying levels of 3,000 and 1,000 have been chosen to select sites in Great Britain and Northern Ireland respectively, for presentation in this report*

LESSER BLACK-BACKED GULL

Larus fuscus

International threshold: 5,300
Great Britain threshold: 500
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**17,015 Nov**	**51,682 Aug**
NI Max:	**259 Mar**	**1,429 Sep**

Lesser Black-backed Gulls have exhibited considerable changes in numbers and behaviour during the second half of the last century. Breeding numbers have increased markedly, and they have changed from being a summer visitor in this country (wintering in Iberia and further south) to overwintering in large numbers. The national winter gull roost census estimated that a minimum 60,000 Lesser Black-backed Gulls were present in January 1993 (Burton *et al* 2003). These comprise both British-bred birds – derived from

the 117,000 locally-breeding pairs – and birds from Iceland, the Faroes and the near Continent (*Migration Atlas*, *Seabird 2000*).

WeBS counts are highest during summer – indeed, it is one of the most numerous waterbirds in these months – and typically are largest in late summer, following the appearance of young birds and dispersal from breeding colonies. Peak numbers in Britain have, however, gradually declined from the 60,000 at the turn of the century, a trend that continued in 2002/03. There is a marked fall to a mid winter low – between 9,000 and 11,000 in recent years – before an increase in spring, sometimes observed as early as the February count date. As with all gulls, such numbers will be a considerable underestimate, as counting these species within WeBS is optional, and many birds away from wetlands will have been missed. Counts in Northern Ireland fluctuate greatly, from fewer than 100 to around 4,500 in recent years, no doubt in the greater part reflecting variation in counting effort.

Largest numbers of Lesser Black-backed Gulls are counted at Morecambe Bay, a consequence of the two large breeding colonies close by, which between them held 37,000 pairs at the turn of the century (*Seabird 2000*). The general decline in counted numbers at this site – over half the national total – is largely responsible for the decline in British numbers as a whole. Recorded numbers fluctuate greatly between years, and, as for Common Gull (*qv*), caution is urged when interpreting numbers, particularly when drawn from different methods. There were few exceptional counts in 2001/02 and 2002/03, bar that at Rutland Water in the second year which was more than two-and-a-half times the five-year mean.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Morecambe Bay	43,590	41,945	40,590	31,620	36,461	Aug	38,841	
Alde Complex	15,000	5,661	(36)	[38] 767	4,474	Mar	6,476	
Sites of national importance in Great Britain								
Llys-y-fran Reservoir	0	[27] 12,000	[27] 11,000	6	2,000	Dec	5,001	▼
Chasewater	3,400	-	-	-	-		3,400	
Wellington Gravel Pits	(3,350)	(2,500)	(2,400)	-	(1,400)	Dec	(3,350)	
Severn Estuary	7,224	2,798	669	945	(3,072)	May	2,942	▼
Hule Moss	[37] 5,200	[37] 810	[37] 3,300	[37] 3,090	[37] 2,100	Sep	2,900	
Alt Estuary	2,230	769	1,122	1,619	4,341	Jul	2,016	
R. Avon: Fordingbridge to R'wood	320	2,508	960	3,478	2,309	Sep	1,915	
Rutland Water	300	1,500	600	[27] 2,000	5,000	Aug	1,880	
Great Pool Westwood Park	2,000	2,000	2,000	1,350	2,000	Dec	1,870	
Lower Windrush Valley GP	865	(1,339)	2,424	3,166	871	Oct	1,832	
Longnewton Reservoir	2,600	1,800	340	970	2,680	Sep	1,678	
Thames Estuary	(913)	(405)	1,783	1,560	1,507	Jan	1,617	▲
The Wash	2,206	1,993	1,139	(582)	855	Jan	1,548	
Chew Valley Lake	6,000	0	0	0	-		1,500	
Llangorse Lake	1,280	1,060	1,050	[37] 1,170	[27] 1,110	Oct	1,134	
Portworthy Mica Dam	(500)	465	750	(2,000)	419	Jul	909	
Blyth Estuary (Suffolk)	-	-	886	(93)	-		886	▲
Pitsford Reservoir	(1,000)	700	[27] 1,000	[27] 550	[27] 1,000	Aug	850	
Rodbourne Sewage Works	562	(1,100)	-	-	-		831	
Audenshaw Reservoirs	-	[37] 800	-	-	-		800	▲
Cleddau Estuary	414	(1,246)	625	825	659	Mar	763	
Hayle Estuary	690	1,750	852	340	130	Jan	752	
Solway Estuary	(181)	(725)	(195)	(243)	(673)	Aug	(725)	
Colliford Reservoir	43	3,040	52	140	144	Nov	684	
Crowdy Reservoir	410	1,000	1,000	60	850	Nov	664	
Middle Tame Valley Gravel Pits	(243)	(711)	425	(170)	(384)	Nov	568	▲
Aqualate Mere	[37] (1,500)	[37] (800)	14	20	[27] 500	Jan	567	
NE Glamorgan Moorland Pools	330	-	732	-	-		531	
Poole Harbour	264	888	565	(237)	285	Nov	501	
Sites with mean peak counts of 500 or more birds in Northern Ireland†								
Loughs Neagh & Beg	(1,129)	-	-	228	(1,218)	Sep	858	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Frampton Pools	1,500	Dec	Nosterfield Gravel Pits	1,480	Oct
Redmires Reservoirs	845	Oct	Heaton Park Reservoir	[27] 920	Feb
Cotswold Water Park (West)	(687)	Nov	Hurleston Reservoir	700	Nov
Stanford Reservoir	650	Feb	Blucks Pool to Freshwater West	630	Oct
Lackford Gravel Pits	[27] 600	Jan	Clyde Estuary	544	Jul
Clyde Estuary	557	Jun	Godmanchester Gravel Pit	540	Mar
Hogganfield Loch	530	Sep			
Siblyback Reservoir	(500)	Oct			
Chelmarsh Reservoir	500	Dec			

Sites no longer of national importance

Caistron Quarry, King's Mill Reservoir, Heaton Park Reservoir, River Nith: Kennethbank to Nunholm, Otmoor, Sprotborough Flash

† *as no All-Ireland threshold has been set, a qualifying level of 500 has been chosen to select sites for presentation in this report*

HERRING GULL

Larus argentatus

International threshold: 13,000
Great Britain threshold: 4,500†
All-Ireland threshold: ?†

	01/02	02/03
GB Max:	**57,060 Jan**	**52,209 Oct**
NI Max:	**9,737 Dec**	**9,200 Jan**

Herring Gulls have undergone a marked decline in Britain over the last 50 years, the 143,000 breeding pairs in 1998-2002 being fewer than half the total in 1969-1970 (*Seabird 2000*). Peak counts by WeBS occur in late summer, following general dispersal from the largely coastal breeding sites, though there is little interchange between opposite sides of the country during winter; resident birds are then joined by those from Scandinavia, seemingly using the east coast and inland areas in particular (*Migration Atlas*).

Peak counts by WeBS have varied between 60,000 and 70,000 in recent years, and the drop in 2001/02 and again the following winter, to the lowest value since the mid 1990s, was particularly marked following the high of 79,000 in 2000/01. This was caused by a significant reduction in numbers at Morecambe Bay, perhaps indicating a decline in the breeding colony at South Walney, which held some 10,000 pairs during *Seabird 2000* and was by far the most important for Herring Gulls in Britain during that survey. Conversely, numbers counted by WeBS in Northern Ireland appear to be variable but increasing, peaks in both 2001/02 and 2002/03 being above the 3,800-8,500 recorded since the late 1980s, despite a large decline in breeding birds in the Province – from 17,500 pairs to fewer than 1,000 – over the last 15 years (*Seabird 2000*).

The coastal distribution of this species is apparent from the list of key sites, with no large roosts at inland sites as for some other gull species. The peak on the Inner Moray Firth in 2002/03 was especially noteworthy, not only the largest at any site in the last five years, but also obtained during Low Tide Counts, perhaps suggesting an important loafing or daytime roost site.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of international importance in the UK								
Morecambe Bay	19,168	20,553	20,530	12,170	14,373	Aug	17,359	
Sites of national importance in Great Britain								
Moray Firth	-	-	[30] 10,429	[30] 9,564	[30] 10,335	Jan	10,109	▲
The Wash	(4,430)	(5,589)	10,003	(7,603)	(7,640)	Oct	10,003	
Inner Moray Firth	[38] 1,013	401	650	-	[38] 27,956	Feb	7,505	▲
North Norfolk Coast	4,923	15,291	3,895	5,062	3,964	Feb	6,627	
Ribble Estuary	1,250	(7,287)	9,032	9,767	209	Nov	5,509	▲
Alt Estuary	[38] 9,070	6,800	3,967	1,440	3,153	Oct	4,886	

Sites with mean peak counts of 2,500 or more birds in Great Britain†

Solway Estuary	4,759	(2,962)	(2,165)	(2,719)	3,281	Sep	4,020	
Forth Estuary	(2,453)	(3,605)	(3,828)	(1,868)	(1,925)	Feb	(3,828)	
Dee Estuary (Eng/Wal)	(105)	(1,412)	(2,000)	(778)	3,602	Dec	3,602	△
Thames Estuary	(1,901)	(3,317)	4,180	2,867	(3,330)	Jan	3,524	△
Alde Complex	5,002	7,186	1,196	[38] 2,061	2,087	Mar	3,506	
Burry Inlet	(2,434)	2,693	4,428	2,106	2,834	Sep	3,015	△
Chasewater	3,000	-	-	-	-		3,000	
Guernsey Shore	(1,409)	(1,850)	(3,525)	1,972	2,127	Jul	2,541	
River Devon: Tullibody Bridge	2,500	-	-	-	-		2,500	

Sites with mean peak counts of 500 or more birds in Northern Ireland†

Belfast Lough	5,291	(3,637)	6,749	9,157	7,046	Jan	7,061	
Outer Ards	2,179	3,003	898	-	1,001	Jan	1,770	
Strangford Lough	719	544	567	664	[38] 751	Jan	649	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Kingsbridge Estuary	2,700	Sep	Severn Estuary	[38] 2,981	Jan
			Llyn Padrig	2,500	Dec
			Loughs Neagh & Beg	548	Feb

Sites no longer meeting table qualifying levels
Gaddon Loch

† *as few sites exceed the British threshold and as no All-Ireland threshold has been set, qualifying levels of 2,500 and 500 have been chosen to select sites in Great Britain and Northern Ireland respectively, for presentation in this report*

YELLOW-LEGGED GULL

Larus cachinnans

International threshold (*michahellis*): 7,000
Great Britain threshold: ?
All-Ireland threshold: ?

	01/02	02/03
GB Max:	**168 Oct**	**96 Oct**
NI Max:	**0**	**0**

In the five years in which Yellow-legged Gulls have been recorded by WeBS, 2001/02 produced the highest total to date and, conversely, 2002/03 the lowest. Total numbers increased from July and peaked in October, following post-breeding dispersal, and then decreased during winter with fewer than ten birds recorded in most winter months. Birds were recorded at a total of 44 sites in 2001/02 and 47 in 2002/03. Of those birds which were racially identified in 2002/03, only four records related to *cachinnans* or Caspian Gull, and ten to *michahellis* or Western Yellow-legged Gull (although most of those unspecified are likely to have been the latter). International estimates for these populations number 100,000-1,000,000 and 630,000-768,000 respectively (*WPE3*).

Numbers in Britain have increased in recent years following spread from Southern Europe, though increased observer awareness and interest in gulls has possibly been a factor also. There appear to be differences in the seasonal pattern of distribution between regions: whilst a late summer/autumn peak occurs in most areas, numbers usually decline in southern locations throughout the winter, and a second peak occurs mid winter in many Midland counties (Dean 2004). Two possible explanations are that the birds arriving on the south coast in summer relocate to inland areas, perhaps exploiting resources such as rubbish tips and gravel pits, or alternatively this could indicate a second influx of birds arriving from the continent.

Sites with five or more birds in 2001/02 or 2002/03

	01/02			02/03	
Southampton Water	70	Oct	Poole Harbour	38	Oct
Poole Harbour	47	Sep	Pitsford Reservoir	[27] 10	Jan
R. Avon: F'dingbridge to R'wood	42	Oct	Severn Estuary	9	Dec
Thames Estuary	21	Oct	Portworthy Mica Dam	6	Jul
Pitsford Reservoir	[27] 10	Jan	R. Avon: F'dingbridge to R'wood	5	Nov
Portworthy Mica Dam	6	Aug			

GREAT BLACK-BACKED GULL

Larus marinus

International threshold:	**4,700**
Great Britain threshold:	**400**
All-Ireland threshold:	**?†**

	01/02	02/03
GB Max:	**13,294 Oct**	**10,458 Dec**
NI Max:	**918 Jan**	**689 Jan**

Peak counts in 2001/02 and 2002/03 in Great Britain were at the upper and lower ends of the range of variation in recent years, while those in Northern Ireland were around average. Unlike other gulls, peak numbers of Great Black-backeds are normally counted by WeBS in early or mid winter, rather than late summer, a consequence of there being few colonies close to the major estuaries; the vast majority of Britain's 17,000 pairs breed in northern and western Scotland – areas with relatively poor coverage by WeBS – while fewer than 100 pairs are found in Northern Ireland (*Seabird 2000*).

Most breeding birds remain in Britain and Ireland during winter, when numbers are swollen, at least on the east coast, by immigrants from Fenno-Scandia, particularly Norway (*Migration Atlas*); the timing of peak counts and total numbers at east coast sites show considerable inter-annual variation, presumably as a result of variable numbers of these migrants. Although Great Black-backed Gulls have a largely coastal and pelagic distribution, a few inland sites hold large numbers, with notable counts at Tophill Low Reservoirs and Chasewater. The peak count on the Wash in 2001/02 was the largest at any site yet recorded by WeBS. Numbers at Creswell to Chevington Burn and perhaps on the Fleet/Wey have declined in recent winters, while those at Pegwell Bay have shown a sustained increase. An especially large count was made during Low Tide Counts on the Inner Moray Firth, as for Herring Gull (*qv*). The 1993 winter gull roost survey estimated a minimum of 43,100 birds in Britain (Burton *et al* 2003).

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites of national importance in Great Britain								
The Wash	745	3,025	1,303	4,515	1,959	Sep	2,309	
Tophill Low Reservoirs	2,600	2,200	1,880	900	3,030	Dec	2,122	
Thames Estuary	(466)	(505)	1,530	(412)	[38] 1,236	Dec	1,383	
Don Mouth to Ythan Mouth	(397)	(511)	(1,225)	(67)	(55)	Sep	(1,225)	
Tees Estuary	482	463	1,558	1,038	701	Nov	848	
Moray Firth	-	-	[30] 651	[30] 884	[30] 1,001	Jan	845	▲
Pegwell Bay	150	364	1,050	1,000	[38] 1,305	Dec	774	
Portsmouth Harbour	1,329	872	1,028	54	304	Dec	717	
Loch of Strathbeg	(153)	134	[37] 1,280	(129)	569	Sep	661	
North Norfolk Coast	[27] 800	548	567	748	617	Sep	656	
Forth Estuary	(178)	(183)	575	(108)	(211)	Sep	575	▲
Morecambe Bay	(907)	451	(716)	331	353	Nov	552	
Inner Moray Firth	[38] 268	99	330	-	[38] 1,432	Feb	532	▲
Creswell to Chevington Burn	1,700	612	190	49	45	Nov	519	
Fleet/Wey	(1,195)	312	213	576	87	Mar	477	
Chasewater	460	-	-	-	-		460	
Sites with mean peak counts of 500 or more birds in Northern Ireland†								
Belfast Lough	1,035	[38] 319	398	458	397	Jan	521	

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Fairburn Ings	480	Nov	Hayle Estuary	551	Feb
			Tyne Estuary	491	Aug

Sites no longer of national importance

Dungeness Gravel Pits, Lossie Estuary, Lower Derwent Valley

† *as no all-Ireland threshold has been set, a qualifying level of 500 has been chosen to select sites for presentation in this report*

KITTIWAKE

Rissa tridactyla

International threshold: **20,000**
Great Britain threshold: **?**
All-Ireland threshold: **?**

	01/02	02/03
GB Max:	**1,739 Oct**	**3,103 Sep**
NI Max:	**9 Feb**	**52 Sep**

This is a largely pelagic species, particularly outside the breeding season, and total counts in mid winter number in the low hundreds, and usually dip below three figures in at least one month. All sites holding over 200 birds in 2002/03, with the exception of Loch nan Gabhar, were located on the east coast of Britain. Aerial surveys of near-shore marine waters in winter 2002/03 showed concentrations of Kittiwakes off the southeast and east English coasts, but with markedly different distributions between months presumably reflecting the mobile nature of food resources (Cranswick *et al* 2003, Hall *et al* 2003).

The September peak includes records from 31 sites, although just three accounted for 80% of the total. Coverage and coincidence of WeBS priority count dates with relatively short-lived post-breeding congregations greatly influences numbers recorded by WeBS; peak counts in recent years have varied between 1,500 and 8,900 in Britain and just 27 and 323 in Northern Ireland. These numbers represent a tiny proportion of the 370,000 pairs breeding in Britain (*Seabird 2000*).

Sites with 200 or more birds in 2001/02 or 2002/03

	01/02			02/03	
Arran	1,700	Oct	Tay Estuary	1,100	Sep
Farne Islands	920	Aug	Loch of Strathbeg	940	Sep
Solway Estuary	574	Apr	Thames Estuary	[16] (556)	Jan
Loch Linnhe: Camas Shallachain	500	Mar	The Wash offshore area	[8] (481)	Mar
Tweed Estuary	340	Jun	Tweed Estuary	470	Aug
Forth Estuary	274	Sep	Forth Estuary	453	Sep
Tay Estuary	266	Aug	Ythan Estuary	320	Aug
			Loch nan Gabhar	200	Aug
			Broadford Bay	200	Sep

LITTLE TERN

Sternula albifrons

International threshold: **340**
Great Britain threshold: **?** †
All-Ireland threshold: **?** †

	2001	2002
GB Max:	**392 Jul**	**836 Jul**
NI Max:	**0**	**0**

The majority of the UK's 1,900 breeding pairs are found along the southern and eastern coasts of England (*Seabird 2000*), and most large counts by WeBS are from sites located in these areas. Numbers peaked in Britain during July, the decline in August perhaps indicative of their early migration, although the movements of this species are poorly understood (*Migration Atlas*). Little Terns forage in waters closer to shore than other tern species, so counts by WeBS are more likely to be representative of the numbers in any area. This may explain the rather more consistent counts between years than for other terns.

Although the UK holds a sizeable proportion of the international population of Little Terns, numbers here have declined by one quarter over the last 15 years, largely because of low breeding success (*Seabird 2000*). Whilst the 2002 WeBS peak total fell within the range of 450-960 of recent years, that in 2001 was noticeably low, though perhaps simply as a result of poorer coverage following the outbreak of Foot and Mouth Disease.

	1998	1999	2000	2001	2002	Mon	Mean	
Sites with mean peak counts of 50 or more birds in Great Britain†								
Thames Estuary	(422)	297	161	(1)	(99)	Aug	293	
North Norfolk Coast	209	300	(241)	(265)	(280)	Jul	264	
The Wash	(114)	148	(56)	(103)	(36)	Jul	148	
Dee Estuary (Eng/Wal)	(150)	(200)	111	0	242	Jul	141	
Langstone Harbour	-	-	-	-	(140)	Jul	(140)	△
Blackwater Estuary	(36)	(120)	(101)	(50)	(3)	Aug	(120)	
Fleet/Wey	203	154	125	0	59	Jun	108	
Chichester Harbour	(7)	0	15	[37] 200	(42)	Aug	72	△
Hamford Water	142	102	8	12	27	Sep	58	
Swale Estuary	57	63	40	(8)	51	Jun	53	

Other sites surpassing table qualifying levels in 2001 or 2002

2001			2002		
none		Stour Estuary	73	Aug	

† *as no British or all-Ireland thresholds have been set, a qualifying level of 50 has been chosen to select sites for presentation in this report*

BLACK TERN

Chlidonias niger

International threshold: 4,000
Great Britain threshold: ?
All-Ireland threshold: ?

	2001	2002
GB Max:	**97 Aug**	**22 Aug**
NI Max:	**1 Oct**	**0**

Numbers in 2001 and 2002 were unremarkable, particularly in the latter year when the British peak was the lowest since 1993 (12 in November). The majority of birds were seen during autumn passage; only three sightings in 2002 and one in 2001 were of birds on spring migration (all four records were in May). In 2002 most were seen in August and September, but that over 50% of records in 2001 were from the October and November WeBS counts suggests later that normal passage that year.

Twenty-two sites held birds in 2002, compared with 42 in the previous year, and whilst in 2002, only a handful of sites held more than a single bird, 24 held two or more Black Terns in 2001, four of these recording double-figure counts. In Northern Ireland, a single bird was recorded during a WeBS Core Count at Belfast Lough in 2001, while another was seen at the Bann Estuary in same month during a supplementary daytime count.

Sites with two or more birds in 2001 or 2002

2001			2002		
The Wash	52	Aug	Staines Reservoirs	8	Aug
Cheddar Reservoir	11	Oct	Tees Estuary	4	Aug
Dengie Flats	11	Aug	Forth Estuary	3	Sep
North Norfolk Coast	11	Aug	Alton Water	2	Sep
Thrapston Gravel Pits	8	Oct	Humber Estuary	2	Aug
Bittell Reservoirs	7	Oct			
Thames Estuary	6	Aug			
Arlington Reservoir	4	Oct			
Blackmoorfoot Reservoir	4	Aug			
Dungeness Gravel Pits	4	Oct			
Priory Country Park	4	Aug			
Severn Estuary	4	Sep			
Bough Beech Reservoir	3	Oct			
Chew Valley Lake	3	Oct			
Portworthy Mica Dam	3	Oct			
Swithland Reservoir	[37] 3	Oct			

SANDWICH TERN

Sterna sandvicensis

International threshold:	**1,700**
Great Britain threshold:	**?**[†]
All-Ireland threshold:	**?**[†]

	2001	2002
GB Max:	**4,379 Jul**	**10,607 Jul**
NI Max:	**617 Sep**	**994 Aug**

Sandwich Terns exhibit the most erratic population trends and distribution of any seabird breeding in Britain and Ireland (*Seabird 2000*). WeBS peak totals in recent years have been fairly consistent, but the peaks in 2001 and 2002 both fell outside the normal range of variation (5,700-8,800); that in 2001 may, however, have been depressed owing to access restrictions following Foot and Mouth Disease. Numbers in Northern Ireland in those two years were both above the range of 290-606 since 1996. As usual, peak numbers in the UK were observed during autumn, when post-breeding adults and juveniles from colonies in the UK move south and are joined by those returning south from colonies in northern Europe.

Sites with notable counts of Sandwich Terns are distributed widely but patchily around the coasts of the UK, and although most contain or are close to a breeding colony, some are a considerable distance away; the regular presence of large numbers on the Dee Estuary (England/Wales) in late summer indicates an important post-breeding site. The distribution of breeding sites varies as a result of mass movements of birds between colonies, and this and variations in the proportion of mature birds attempting to breed (*Seabird 2000*) may in part be the reason for fluctuating counts between years during WeBS. Large counts were notable in 2002 on the Norfolk Norfolk Coast, Dee (England/Wales), Ythan and Tay Estuaries and Dundrum Bay. Most recent estimates put the number breeding in Britain at 11,000 pairs and in Northern Ireland at around 2,000 (*Seabird 2000*).

Some caution is necessary when considering trends and five-year means for terns, both because counts of this species are optional, but also because counts during summer are less frequent at some sites, and low counts at sites that have held large counts in some years may simply be an absence of counts in late summer; counts in spring or autumn, although valid for WeBS, will underestimate the true importance of the site in the absence of summer survey.

	1998	1999	2000	2001	2002	Mon	Mean	
Sites of international importance in the UK								
Forth Estuary	(918)	(3,868)	3,424	(994)	(2,317)	Aug	3,646	
North Norfolk Coast	1,165	1,574	5,015	3,365	4,600	Jul	3,144	
Sites with mean peak counts of 200 or more birds in Great Britain[†]								
Humber Estuary	(62)	(154)	1,329	(124)	(396)	Jul	1,329	
Dee Estuary (Eng/Wal)	1,256	629	672	(11)	1,632	Jul	1,047	
Tees Estuary	1,386	1,238	897	35	974	Jul	906	
Duddon Estuary	656	1,204	994	0	704	Jun	712	
Pegwell Bay	750	432	320	660	360	Aug	504	
Ythan Estuary	-	-	-	0	930	Jul	465	
The Wash	674	(420)	310	512	150	Aug	413	
Lindisfarne	(355)	(350)	(260)	(100)	-		(355)	
Tay Estuary	225	300	132	167	461	Sep	257	
Loch of Strathbeg	(1,000)	0	(24)	2	10	May	253	
Blyth Estuary (Northumberland)	[37] 93	[37] 600	[37] 202	[37] 237	22	Jul	231	
Loch Ryan	250	-	200	-	(60)	Jul	225	△
Sites with mean peak counts of 200 or more birds in Northern Ireland[†]								
Dundrum Bay	353	234	166	296	722	Aug	354	
Belfast Lough	194	239	195	409	357	Sep	279	

Other sites surpassing table qualifying levels in 2001 or 2002

	2001			2002	
Solway Estuary	(235)	Sep	Bann Estuary	270	Aug
			Morecambe Bay	220	Sep
			Tyne Estuary	215	Jul
			Solway Estuary	(206)	Aug
			Dee Estuary (Scotland)	200	Sep

Sites no longer meeting table qualifying levels
Cemlyn Bay & Lagoon, Don Mouth to Ythan Mouth

† *as no British or all-Ireland thresholds have been set, a qualifying level of 200 has been chosen to select sites for presentation in this report*

COMMON TERN

Sterna hirundo

International threshold: 6,400
Great Britain threshold: ?†
All-Ireland threshold: ?†

	2001	2002
GB Max:	**1,722 Aug**	**4,414 Aug**
NI Max:	**37 May**	**21 Aug**

The Common Tern population of Britain and Ireland has remained broadly stable over the last three decades, although there have been marked variations in trends between regions: declines in western Scotland and England are probably due to increased predation by American Mink *Mustela vison* and Red Fox *Vulpes vulpes*, although the species has benefited from human activity through the creation of gravel pits and islets in industrial lagoons, and the provision of tern rafts and structures in ports (*Seabird 2000*). The majority of birds recorded by WeBS were located on the coast, but smaller numbers were also recorded inland on lakes, reservoirs and gravel pits. The range of inland breeding expanded between the 1970s and 1990s, but this trend may have reversed in recent years (*Seabird 2000*). Around 10,000 pairs breed in Britain and 1,700 in Northern Ireland.

Peak counts by WeBS in Great Britain have ranged between 4,000 and 7,600 in recent years, and that in 2001 was the lowest to date, though perhaps affected by poor coverage in the period following the outbreak of Foot and Mouth Disease. Rather curiously, only low numbers are recorded in Northern Ireland and those in 2001 and 2002 were around average.

Peak counts at many of the key sites in 2002 were below their five-year peak means, and many were regarded as incomplete. Counts at the main sites are quite variable, perhaps due to the fact that Common Terns spend little time at their autumn staging sites, and as a result actual peak numbers at such sites may only rarely coincide with WeBS Core Count dates. Especially low counts may, however, be due to lack of survey during summer months (see also Sandwich Tern).

	1998	1999	2000	2001	2002	Mon	Mean	
Sites with mean peak counts of 200 or more birds in Great Britain†								
Humber Estuary	(23)	(21)	2,165	(6)	(291)	Aug	2,165	
Alt Estuary	1,004	1,156	1,292	129	868	Aug	890	
Tees Estuary	620	1,038	876	5	696	Jul	647	
North Norfolk Coast	620	599	611	(213)	(321)	Jul	610	
Forth Estuary	(98)	(200)	356	(40)	(691)	Aug	524	
Thames Estuary	(487)	(229)	(284)	(190)	(143)	Aug	(487)	
Dee Estuary (Eng/Wal)	(567)	(348)	246	(3)	422	Jul	412	
The Wash	300	370	(262)	(435)	(102)	Aug	368	
Chichester Harbour	(8)	(59)	209	[37] 500	(167)	Aug	355	△
Tay Estuary	150	600	40	6	700	Sep	299	

Other sites surpassing table qualifying levels in 2001 or 2002

	2001			2002	
Southampton Water	(300)	Aug	St Mary's Island	200	Aug

† *as no British or all-Ireland thresholds have been set, a qualifying level of 200 has been chosen to select sites for presentation in this report*

ARCTIC TERN

Sterna paradisaea

International threshold: **?**
Great Britain threshold: **?**†
All-Ireland threshold: **?**†

	2001	2002
GB Max:	**1,047 May**	**2,235 Aug**
NI Max:	**2 Jun**	**3 Jul**

Only small numbers of Arctic Terns are recorded by WeBS, having varied between 500 and 1,300 in recent years, so the peak in 2002 was notably large. Peak counts at key sites vary considerably between years, those on the Forth and Tay Estuaries being especially large and contributing to the record high. This may be partly explained be the fact that Arctic Terns, like Common Terns, stage very briefly during autumn migration and peak numbers at key sites probably only rarely coincide with WeBS count dates. Low numbers may also simply be a consequence of variable coverage during summer (see Sandwich Tern). Very few birds were recorded in Northern Ireland, perhaps largely due to low-level coverage during the summer months, as there are several colonies in the Province, containing around 750 pairs (Mavor *et al* 2003, *Seabird 2000*).

Most key sites were located in northern and eastern Scotland. Population declines and redistribution have been seen in western Scotland and the Western Isles as a result of predation by American Mink *Mustela vison*, and future trends in these areas may depend on the success of mink eradication and control projects being implemented (Clode & MacDonald 2002). Many colonies at the southern end of the British range are increasing, probably in response to site management for breeding birds (*Seabird 2000*). Around 52,600 pairs breed in Great Britain.

	1998	1999	2000	2001	2002	Mon	Mean	
Sites with mean peak counts of 50 or more birds in Great Britain†								
Forth Estuary	(139)	94	76	[37] 2	1,214	Aug	347	
Farne Islands	(12)	0	-	(600)	0	May	200	△
Tay Estuary	55	150	80	32	660	Aug	195	
Eden Estuary	115	361	220	53	125	Aug	175	
Loch of Clumlie	-	-	250	150	0	Apr	133	
St Andrews Bay	(10)	283	170	44	29	Jul	132	
Morecambe Bay	144	80	(103)	-	94	Jul	106	
Loch of Brow	-	-	200	100	0	Apr	100	
Braewick Loch	-	-	45	70	170	Jul	95	△
Loch Bhasapoll	80	-	-	-	-		80	△
Loch of Beith	-	-	5	-	[37] 150	Jul	78	△
Loch of Tankerness	-	(4)	75	-	-		75	△
The Houb (Whalsay)	-	-	100	0	120	Jul	73	
Lunda Wick	-	-	190	0	6	Aug	65	
Cambois to Newbiggin	0	-	0	5	246	Sep	63	△
Loch of Spiggie	-	-	100	85	0	Apr	62	
Ythan Estuary	-	-	-	0	106	Jul	53	
Don Mouth to Ythan Mouth	18	207	34	0	1	Oct	52	

Sites no longer meeting table qualifying levels
North Ronaldsay Lochs, Balranald RSPB Reserve

† *as no British or all-Ireland thresholds have been set, a qualifying level of 50 has been chosen to select sites for presentation in this report*

KINGFISHER

Alcedo atthis

International threshold: **?**
Great Britain threshold: **?**†
All-Ireland threshold: **?**†

	01/02	02/03
GB Max:	**375 Nov**	**459 Sep**
NI Max:	**3 Nov**	**3 Feb**

Kingfishers are a difficult species to monitor accurately. The most recent estimate of the British breeding population is 3,300-5,500 pairs (*1988-91 Atlas*); annual reported totals (albeit

not based on rigorous criteria, and perhaps reflecting simply greater reporting) have increased in recent years to 1,117 pairs in 2002 (Ogilvie *et al* 2004); while Waterways Bird Survey data suggest a decline along linear waterways until the mid 1980s, and subsequent recovery (Baillie *et al* 2005). A general increase in totals recorded by WeBS in recent years, having ranged between 280 and 418 since 1996/97 and reaching a record high in 2002/03, supports the general picture, although the non systematic nature of WeBS coverage for this species and the small numbers involved preclude any great confidence in apparent trends. That few rivers feature in the table below – which comprises mainly gravel pits and reservoirs, with some estuaries (used particularly during colder weather) – also advocates caution in interpretation, although peak counts are reasonably consistent between years for what can be a very inconspicuous species.

	98/99	99/00	00/01	01/02	02/03	Mon	Mean	
Sites with mean peaks counts of five or more birds in Great Britain†								
Somerset Levels	[6] 12	14	(10)	16	13	Dec	14	
Colne Valley Gravel Pits	(9)	(9)	11	(3)	(4)	Sep	11	
Wraysbury Gravel Pits	0	14	8	14	19	Oct	11	△
Lee Valley Gravel Pits	12	8	6	12	(4)	Sep	10	
Middle Tame Valley Gravel Pits	8	(11)	(8)	(3)	(4)	Nov	10	
Ditchford Gravel Pits	7	8	8	7	-		8	
River Irwell	8	(6)	(2)	(1)	(2)	Jan	8	△
Southampton Water	7	[38] 7	8	5	(4)	Jan	7	
Pitsford Reservoir	4	4	5	11	9	Oct	7	△
Colwick Country Park	7	6	-	-	-		7	△
Deben Estuary	6	3	7	5	10	Oct	6	△
Poole Harbour	4	11	4	3	6	Oct	6	△
Eversley Cross & Yateley GP	5	4	6	11	6	Nov	6	
Stour Estuary	3	6	4	6	11	Nov	6	△
North Norfolk Coast	3	11	3	[38] 4	7	Sep	6	△
Old Moor Wetlands	3	6	8	4	8	Mar	6	
R. Avon: Fordingbridge to R'wood	(1)	4	6	3	(7)	Dec	5	△
Taw-Torridge Estuary	(3)	(3)	(3)	4	5	Oct	5	△
Stodmarsh NNR and Collards Lagoon	8	(4)	4	3	3	Oct	5	△
Thames Estuary	2	3	(6)	3	9	Oct	5	
Ouse Washes	[37] 2	5	[37] 3	6	[37] 8	Oct	5	△
Avon Valley: Salisbury to F'bridge	(4)	(5)	(3)	(3)	(4)	Sep	(5)	△
Hamford Water	(3)	(2)	(5)	(4)	(5)	Nov	(5)	△

Other sites surpassing table qualifying levels in 2001/02 or 2002/03

	01/02			02/03	
Middle Yare Marshes	7	Mar	Exe Estuary	7	Dec
Fairburn Ings	6	Jan	Lower Windrush Valley GPs	(7)	Nov
Bewl Water	6	Jul	Grand Western Canal: Greenway to Ayshford	6	Sep
Thorpe Water Park	6	Sep	Bewl Water	6	Sep
Fairburn Ings	6	Oct	Walthamstow Reservoirs	6	Aug
Alde Complex	[38] 5	Nov	Meadow Lane Gravel Pits	6	Oct
Walthamstow Reservoirs	5	Nov	Fairburn Ings	6	Aug
			Arun Valley	(6)	Sep
			Fal Complex	5	Sep
			Blenheim Park Lake	5	Sep
			Nocton Fen	5	Aug
			Rutland Water	5	Sep
			Cleddau Estuary	5	Sep

Sites no longer meeting table qualifying levels
R. Teith: Daldorn to Deanston, R. Wye: Putson

† *as no British or all-Ireland thresholds have been set, a qualifying level of five has been chosen to select sites for presentation in this report*

SCARCE, VAGRANT AND ESCAPED WATERBIRDS

Brief accounts are given below for species that are recorded in only very small numbers by WeBS. This includes all species listed on category E of the BOU list. A total of 29 category E species were recorded in 2001/02 and 27 in 2002/03, around average for the most recent five years (Fig 78). Summed site maxima of 599 birds were recorded at 200 sites in the first year, and 596 birds at 190 sites for the second, both figures around average since the mid 1990s. These data exclude species which occur in both category A and E (*eg* Pink-footed Goose) since separation of escaped from wild birds is not readily possible using WeBS methods. Note, also, that numbers of established populations (*eg* Greater Canada Goose and Ruddy Duck, which are placed in category 'C') are excluded from the statistics below since the large numbers involved would swamp numbers of other species.

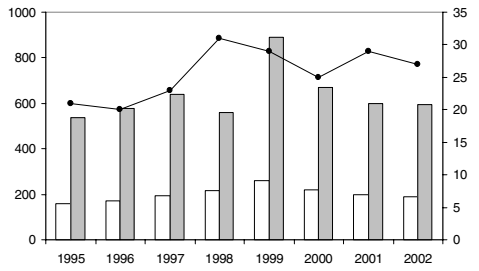

Figure 78. Number of species (line, right axis), number of sites at which birds were recorded (white bars, left axis) and summed site maxima (grey bars, left axis) for escaped waterbird species.

It should be noted that some category E species – mostly wildfowl – recorded by WeBS counts may not be free-flying but are pinioned or feather-clipped. The presence of the same birds, particularly rarer species, in several months or years at the same site suggests that these birds are kept in 'collections' on private or estate lakes. Distinguishing such birds from free-flying individuals may not be readily possible in the field, and no provision is made in WeBS to record these birds separately. Whilst caution is urged, therefore, in suggesting that these birds are 'at large' in the UK, it remains possible that these birds may still produce free-flying offspring.

It should be noted, also, that the listing of vagrant species in this section does not imply acceptance of these individuals by the relevant rarities committees. Similarly, no attempt is made to distinguish genuine vagrants from escapes, and flagging these species as 'escape' or 'vagrant' indicates simply the likely source of the majority of individuals recorded.

The native range of escape and vagrant species is also indicated.

Species with the status 'scarce' occur regularly in the UK but, either being scarce migrants or because of their habits, are rarely recorded by WeBS.

FULVOUS WHISTLING DUCK
Dendrocygna bicolor
Escape: C & S America, Africa, S Asia

Singles were present on Ravensthorpe Reservoir in March 2002 and the Nene Washes in February 2003.

LESSER WHISTLING DUCK
Dendrocygna javanica
Escape: S & E Asia

A single bird was seen at Nosterfield Gravel Pit Nature Reserve, North Yorkshire in September 2001 and March 2002.

BLACK SWAN
Cygnus atratus
Escape: Australia

Following a marked increase in the late 1990s, total numbers counted in Great Britain dropped by 32% from 2000/01. The number of sites holding at least three birds also declined, from 14 to 11 in 2001/02 and seven in 2002/03. Summed site maxima in both years (104 and 103) were lower than those of the preceding three years (156, 157, and 111). Distribution in southern England seems to be consistent, with swans occurring at 10 of the 11 main sites in both years. None were reported in Northern Ireland in 2001/02, but two were at Lough Foyle in February and March 2003.

Sites with three or more birds in 2001/02

Hanningfield Reservoir	5	Aug
Fleet/Wey	5	Nov
Exe Estuary	5	Dec
Walland Marsh	4	Nov
Blenheim Park Lake	4	Mar
Cotswold Water Park (West)	4	Sep
Woburn Park Lakes	3	Apr
Abberton Reservoir	3	May
Timsbury GPs & River Test	3	Oct
R. Cam: Owlstone Rd/Baits Bite	3	Nov
Ramsbury Lake	3	Dec

Sites with three or more birds in 2002/03

Woburn Park Lakes	5	Aug
R Cam: Owlstone Rd/Baits Bite	5	Oct
Fleet/Wey	4	Nov
Ramsbury Lake	4	Nov
Nene Washes	3	Jan
Loch Ken	3	Sep
Dee Estuary (Eng/Wal)	3	Jan

SWAN GOOSE
Anser cygnoides
Escape: E Asia

Birds were reported from 16 sites in 2001/02 and ten in 2002/03, slightly fewer than in the previous winter, but remaining higher than in the 1990s. The highest count was 19 at Etherow Country Park in 2001/02, with 13 at Esthwaite Water in that year and 15 in 2002/03, similar to counts at both sites in recent winters. Counts of more than five birds also came from Diss Mere in both years and Parloes Park Lake in 2002/03.

LESSER WHITE-FRONTED GOOSE
Anser erythropus
Vagrant and escape: SE Europe, Asia

In 2001/02, two birds were reported from the Avon Valley in Hampshire, and a single remained there during 2002/03. Singles were also observed in 2002/03 at Holkham and Burnham Overy Marshes, Norfolk and the New Grounds, Slimbridge, on the Severn Estuary. Wintering flocks of European White-fronteds still occur at all of these sites, although the numbers in the Avon Valley are now very small, providing some credence to the likelihood that these Lesser White-fronteds were genuine vagrants.

BAR-HEADED GOOSE
Anser indicus
Escape: S Asia

Following relatively low figures in 2000/01, those in the following two winters returned to more normal numbers, with summed site maxima of 86 birds at 54 sites in 2001/02 and 90 at 48 sites in 2002/03. These numbers will include the same individuals at different sites, particularly since few sites consistently hold birds between months. Although the peak national total of 24 in 2001/02 was normal, numbers were substantially higher the following winter, reaching 46 in February. The latter is close to the total of 52 recorded by the Naturalised Goose Survey in 2000, when breeding was also noted at Stratfield Saye, Hampshire (Rowell *et al* 2004). Larger counts by WeBS in the last two winters included 14 at Stodmarsh, nine at Chichester Harbour, eight at Spade Oak Gravel Pit, and six at each of Baston/Langtoft Gravel Pits, Stratfield Saye and Theale Gravel Pits.

SNOW GOOSE
Anser caerulescens
Vagrant and escape: N America

Snow Geese were reported from 30 sites in 2001/02 and 24 sites in 2002/03, notably fewer than in recent years. Likewise, summed site maxima of 88 and 73 respectively, was lower than the preceding three winters (121, 129 and 110). In 2001/02, eight held four or more birds and there were double-figure counts of 17 at Eversley Cross & Yateley Gravel Pits and 14 at Bramshill Park Lake. In 2002/03, just four sites held four or more birds, with counts of 26 at Eversley Cross & Yateley Gravel Pits and 12 at Bramshill Park Lake notable.

The Naturalised Goose Survey in 2000 recorded a total of 86 Snow Geese (Rowell *et al* 2004), although this did not include the well-known and self-sustaining population on Coll, Argyll, where approximately 50 birds are present. This survey did, however, detect Snow Geese at a number of sites not covered by WeBS, including 22 at Thamesmead Lakes, Greater London, and ten at the University of York.

ROSS'S GOOSE
Anser rossii
Escape: Alaska, NE Siberia

Single birds were reported from seven sites in 2001/02 and five in 2002/03, with birds present in both years on the Orwell Estuary, Holkham & Burnham Overy Fresh Marshes and Ardrossan to Farland Head.

EMPEROR GOOSE
Anser canagicus
Escape : NE Siberia, Alaska

Birds were reported from eight sites in 2001/02 and seven in 2002/03, producing summed site maxima of 22 and 27 respectively. Peak counts in each year came from Morecambe Bay, with 14 and 16 in the two winters, respectively. Five at Hamford Water in January 2003 was the only other count of more than two birds.

The Naturalised Goose Survey 2000 recorded a total of 14 birds, 11 of which were at Hamford Water (Rowell *et al* 2004).

HAWAIIAN GOOSE
Branta sandvicensis
Escape : Hawaii

A single bird was recorded at Harewood Lake, West Yorkshire in February 2003.

BLACK BRANT
Branta bernicla nigricans
Vagrant: N America, E Asia

Black Brants were recorded at five sites in each of 2001/02 and 2002/03, all sites of national or international importance for Dark-bellied Brent Geese. Three were at the Wash in 2001/00, and two at both Langstone Harbour in 2002/03 and the North Norfolk Coast in 2001/02, the remainder involving single birds.

RED-BREASTED GOOSE
Branta ruficollis
Vagrant and escape: SE Europe, Asia

Red-breasted Geese were counted at seven sites in 2001/02 and eight in 2002/03. All were of single birds, except two at Harewood Lake in both years. The provenance of these birds is, in most cases, impossible to confirm, but some at least did occur at sites that also support other geese from breeding areas in the Russian tundra. The majority, however, were seen during the summer and are therefore extremely unlikely to have been of wild origin.

The Naturalised Goose Survey 2000 recorded three birds, all at Roath Park Lake, Glamorgan (Rowell *et al* 2004).

RUDDY SHELDUCK
Tadorna ferruginea
Escape and possible vagrant: Asia, N Africa, S Europe

Ruddy Shelducks were recorded at 16 sites in 2001/02 and 2002/03, producing summed site maxima of 29 and 21 respectively. Most sites held only single birds, but seven at Cley on the North Norfolk Coast in August 2001 and six at the Middle Yare Marshes in 2001/02 perhaps point to continental origins. Three were on the Nene Washes in 2002/03, and two at Killington Reservoir, Clennon Valley and Sennowe Park Lake, with singles observed at a further 13 sites.

CAPE SHELDUCK
Tadorna cana
Escape: S Africa

One was present at Brading Harbour on the Isle of Wight in June 2002, and two were later recorded at the same site in August and November 2002. A single was present on Par Sands Pools/St Andrews Road in Cornwall from December 2002 to March 2003.

AUSTRALIAN SHELDUCK
Tadorna tadornoides
Escape: Australia

As in 2000, one was recorded at Benacre Broad in 2002 during September.

PARADISE SHELDUCK
Tadorna variegata
Escape: New Zealand

Individuals were seen at two East Sussex sites in 2002: Cuckmere Estuary in September and Barcombe Mills Reservoir in October.

MAGELLAN GOOSE
Chloephaga picta
Escape: S America

One was at Auchlochan Pond, Lanarkshire from September 2001 to March 2003.

MUSCOVY DUCK
Cairina moschata
Escape: S America

The 2001/02 peak national total was around average for recent years, as was the number of sites (36) at which Muscovy Ducks were recorded, but dropped to the lowest figure yet recorded by WeBS the following winter. Likewise, the summed site maxima at 31 sites in 2002/03 was substantially lower than that of the preceding year (78, *cf.* 134). Surprisingly, the species was still relatively widely spread: birds were recorded at 30 sites in 2002/03 – a marked contrast to the peak of 137 in 1996/97 when birds were found at just 20 sites.

Sites with five or more birds in 2001/02 or 2002/03

	01/02	
Par Sands Pools/St Andrews Rd	20	Nov
R. Devon: Kersiepow Ponds	16	Jan
Fort Henry Ponds & Exton Park Lake	14	Nov
Derwent Water	10	Nov
Wilderness Pond	10	Jun
Swinsty Reservoir	8	Feb
Nafferton Mere	7	Jan
Three Sisters Recreation Area	7	Nov
	02/03	
Wilderness Pond	12	Nov
Derwent Water	6	Oct
Par Sands Pools/St Andrews Rd	6	Dec
Stanley Park Lakes	5	Feb

RINGED TEAL
Callonetta leucophrys
Escape: S America

Two were on Warren Pond in October 2001 and singles were on the Taw-Torridge Estuary in December 2001 and at Port Meadow in March 2002. Singletons were observed at Hanningfield Reservoir at Stanley Park Lakes in autumn 2002, and at the Cotswold Water Park (East) and Mote Park in February 2003.

WOOD DUCK
Aix sponsa
Escape: N America

Wood Ducks were recorded at nine sites in 2001/02 and at ten the following winter. Most involved single birds, with the exception of six at Stanton Lake in 2001/02, five at the Lower Windrush Valley Gravel Pits and four at Stanton Lake in 2002/03, and two at Middle Pool in both winters – an average showing for recent years.

MANED DUCK
Chenonetta jubata
Escape: Australia

One was seen at Petworth Park Lakes, West Sussex in March 2003.

AMERICAN WIGEON
Anas americana
Vagrant and escape: N & Central America

Single birds were recorded at 13 sites in 2001/02, mainly in Scotland, with smaller numbers in England and at one site – the Clwyd Estuary – in Wales. Birds were seen at nine sites in 2002/03, roughly split between Scotland and England, although those at Dorchester Gravel Pits between July to September and at Harewood Lake in July were presumably of captive origin.

CHILOE WIGEON
Anas sibilatrix
Escape: S America

Birds were present at eight sites during 2001/02, including two at each of Ramsbury Lake, Connaught Water and Letton Lake. They were seen at just three sites during Core Counts in 2002/03, including two on the Severn Estuary, and one was recorded on the Orwell Estuary during Low Tide Counts.

FALCATED DUCK
Anas falcate
Escape: E Asia

One was present at Minsmere, Suffolk, in June 2002.

BAIKAL TEAL
Anas formosa
Escape: E Asia

One at Minsmere, Suffolk, in December 2001 was the subject of much debate regarding its potential as a genuine vagrant.

GREEN-WINGED TEAL
Anas carolinensis
Vagrant: N America

Between November and March 2001/02 there were sightings at 16 sites, all widely spread throughout the country, and all involving single birds bar two at Poole Harbour in March. They were seen at 12 sites in 2002/03, again all singles except for two on the Inner Moray Firth in January. These observations coincide with record numbers of Green-winged Teal in Britain in 2002 (Fraser & Rogers 2005).

SPECKLED TEAL
Anas flavirostris
Escape: S America

In 2002/03, two were recorded at Bramshill Park Lake in December and January, and single birds were seen at Woburn Park Lakes in September and during Low Tide Counts on the Orwell Estuary in November.

BLACK DUCK
Anas rubripes
Vagrant: N America

Increased numbers of this species in Great Britain since 1998 (Rogers *et al* 2002) are also reflected by WeBS, with several records in southwest England in 2001/02: the long-staying bird was again present at Stithians Reservoir; one was reported in several months at Slapton Ley; and singles were seen on the Kingsbridge Estuary in October, Colliford Reservoir in November, and Crowdy Reservoir in December. In 2002/03, one was observed at Loe Pool in October.

YELLOW-BILLED PINTAIL
Anas georgica
Escape: S America

A single bird was present on the Dee Estuary (England/Wales) in August 2002.

BAHAMA PINTAIL
Anas bahamensis
Escape: S America

Singles were at Harrow Lodge Park in April 2002, Barton Pits in May 2002, and Theydon Bois Ponds in both May and October 2002.

RED-BILLED TEAL
Anas erythrorhyncha
Escape: Africa

Nine were at Harrow Lodge Park in April 2002, and a single was recorded at Harewood Lake in July 2002.

SILVER TEAL
Anas versicolor
Escape: S America

Two were found at Connaught Water, Essex, in November 2002 and singles at the Dee Estuary (Eng/Wal) in October 2001 and the Thames Estuary in August 2002.

BLUE-WINGED TEAL
Anas discors
Vagrant and escape: Americas

A single was present at Connaught Water in November 2002.

CINNAMON TEAL
Anas cyanoptera
Escape: Americas

One was recorded at Frensham Little Pond, Surrey in September and October 2002.

RED SHOVELER
Anas platalea
Escape: S America

One was seen at Connaught Water, Essex, in October 2001.

ROSYBILL
Netta peposaca
Escape: S America

One was present at the North Norfolk Coast in April 2002.

CANVASBACK
Aythya valisineria
Vagrant and escape: N America

There was one record of this species, at Blagdon Lake in July 2001.

REDHEAD
Aythya americana
Vagrant and escape: N America

One recorded during WeBS counts on several occasions during 2001/02 and 2002/03 at Kenfig Pool – and at Llanishen & Lisvane Reservoirs in February 2002 – was the first record for Wales and only the second for Britain, its appearance linked with a severe hurricane affecting Cuba and the Caribbean (Rogers *et al* 2002).

RING-NECKED DUCK
Aythya collaris
Vagrant: N America

Birds were recorded at 15 sites during 2001/02, but this will have undoubtedly have included the same individuals being recorded at more than one site. All sites held singles with the exception of Loch Ore, where two birds were present in November. In 2002/03, birds were recorded at seven different sites. Numbers recorded in Britain have been increasing in recent years and over 25% of all birds ever recorded here arrived in the four years 1998 to 2001 (Fraser & Rogers 2003).

FERRUGINOUS DUCK
Aythya nyroca
Vagrant and escape: N Africa, Asia

This near threatened species was recorded at seven sites in 2001/02 and at five in 2002/03. One returned to the Somerset Levels in 2001/02 for its fourth consecutive winter. One was at Minsmere in November (and two in January), and singles were also recorded at Loch of North Haa & Loch of Beith, Morden Park Lake and Lee Valley Gravel Pits in October, at Tame Valley Gravel Pits in November, and at Stanford Training Area in February and March. In 2002/03, singles were recorded at Chew Valley Lake in September, Swithland Reservoir in October, Tring Reservoirs and Ouse Washes in November, and Minsmere in February.

NEW ZEALAND SCAUP
Aythya novaeseelandiae
Escape: New Zealand

One was present on Connaught Water from January to March and in November 2002.

LESSER SCAUP
Aythya affinis
Vagrant: N America

Two records in 2001/02 – singles at Poole Harbour and Tring Reservoirs – were followed by four during 2002/03, all singles, at Foremark Reservoir, Loch Bee, Brent Reservior and Swillington Ings.

KING EIDER
Somateria spectabilis
Vagrant: Arctic

Four records in 2001/02 – on North Norfolk Coast, Forth Estuary, Belfast Lough and unusually far south on the Camel Estuary – were followed by just one the following winter, at Loch Ryan in December 2002.

SURF SCOTER
Melanitta perspicillata
Vagrant: N America

In 2001/02, five were recorded in the Forth Estuary, two at both the Moray Firth and Traigh Luskentyre, and a single off the North Norfolk coast. There were three in the Forth Estuary in 2002/03, five in the Moray Firth and two in the Fal.

BUFFLEHEAD
Bucephala albeola
Vagrant and escape: N America

One was seen at Livermere, Suffolk, in June 2002.

HOODED MERGANSER
Lophodytes cucullatus
Escape: N America

Two individuals were recorded at Copped Hall Pond, Essex, in several months during 2002.

ARGENTINE BLUE-BILL
Oxyura vittata
Escape: S America

A single was recorded at Netherfield Gravel Pits in several winter months during 2001/02.

NIGHT HERON
Nycticorax nycticorax
Vagrant: Americas, Africa, Europe, Asia

A single was recorded at Bainton Pits in September 2002.

SQUACCO HERON
Ardeola ralloides
Vagrant: Southern Europe, Middle East, Africa

One was reported at Morecambe Bay in June 2002.

CATTLE EGRET
Bubulcus ibis
Vagrant: SW Europe, Asia, Africa, Americas

Singles were recorded on the Northwest Solent in August 2001 and at the Helford Estuary, Cornwall, in April and May 2002.

GREAT WHITE EGRET
Ardea alba
Vagrant: S Europe, Africa, Asia, N & C America

Singles were reported from Haverton Hole in July 2001, the adjacent Tees Estuary in September 2001, and the Humber Estuary in November 2003. A single bird was also present at the Dee Estuary (Eng/Wal) from September to November 2001. Given increases in continental populations, this species is perhaps showing signs that if might follow in footsteps of its smaller cousin and become a regular part of the UK's avifauna.

PURPLE HERON
Ardea purpurea
Scarce

Single birds were recorded at Langstone Harbour in April and Slapton Ley in May 2002.

WHITE STORK
Ciconia ciconia
Vagrant and escape: Europe, Africa, Asia

All records were from Harewood Park in West Yorkshire, where these birds are associated with the collection there but are free-flying and tend to wander from time to time. A maximum of three was seen in 2001/02 and two in 2002/03.

GLOSSY IBIS
Plegadis falcinellus
Vagrant: S Europe, Africa, Asia, Australia, N & C America

A long-staying individual on the Exe Estuary was recorded in November 2002 and March 2003.

LESSER FLAMINGO
Phoenicopterus minor
Escape: Africa, S Asia

A single was on the Humber Estuary at Spurn Head in December 2001.

SPOTTED CRAKE
Porzana porzana
Scarce

During 2001, singles were seen at Chew Valley Lake and Barrow Gurney Reservoir in August, and at Fleet/Wey, Thornton Reservoir and Filey Dams in September. In 2002, one was recorded at a Scottish site in June, and two were seen on the Dee Estuary (England/Wales) in September.

CRANE
Grus grus
Scarce

Two were recorded on the Thames Estuary in September 2001, and singles on the Humber Estuary and the Loch of Strathbeg in May 2002, at Metheringham Fen in August 2002, and on the Solway Estuary in October 2002.

BLACK-WINGED STILT
Himantopus himantopus
Vagrant: worldwide distribution

The long-staying bird was again present on the North Norfolk Coast in 2001/02 and 2002/03, its tenth consecutive winter.

STONE-CURLEW
Burhinus oedicnemus
Scarce

Due to its preference for dry habitats and its nocturnal habits, the Stone-curlew is rarely recorded by WeBS. Two at Nunnery Lakes, Thetford in April 2002 and a single the following month are perhaps not greatly surprising, given the species' nearby Breckland breeding stronghold.

KENTISH PLOVER
Charadrius alexandrinus
Scarce

Singles were seen at Minsmere in July 2001, the Exe Estuary in September 2001, Pegwell Bay in May 2002 and the Swale Estuary in June 2002.

AMERICAN GOLDEN PLOVER
Pluvialis dominica
Vagrant: Americas

One was present at Maer Lake in Cornwall from December 2001 to February 2002.

TEMMINCK'S STINT
Calidris temminckii
Scarce

A single was observed at the Wash in August of both 2001 and 2002. Elsewhere, singles were recorded at Blagdon Lake in October 2001 and at the Thames Estuary in September 2002.

WHITE-RUMPED SANDPIPER
Calidris fuscicollis
Vagrant: Americas

In 2002/03, single birds were seen on St Mary's Island in July, on the Tees Estuary and Blackwater Estuary in August, and on the Farne Islands and the North Norfolk Coast in September.

PECTORAL SANDPIPER
Calidris melanotos
Vagrant: America, N Siberia and Australia

During 2001/02, singles were seen at Rye Harbour and Pett Level in August, at Drift Reservoir and Winchester Sewage Treatment Works in September, and at Christchurch Harbour in November and December. Pectoral Sandpipers were recorded at seven sites in 2002/03, all single birds with the exception of two at Loch of Strathbeg in October.

BROAD-BILLED SANDPIPER
Limicola falcinellus
Vagrant: NE Europe, Asia, E & S Africa and Australia

Singles were recorded at the North Norfolk Coast and Loch Paible (North Uist) in June and August 2002 respectively, the former corresponding with the sighting of two juveniles at Cley, the first record of multiple juveniles for Britain (Rogers *et al* 2003).

LONG-BILLED DOWITCHER
Limnodromus scolopaceus
Vagrant: NE Siberia and N America

Singles were recorded on Belfast Lough in 2001/02, and on the Burry Inlet, Dornoch Firth and the Dee Estuary (England/Wales) in 2002/03, often present for several months.

MARSH SANDPIPER
Tringa stagnatilis
Vagrant: Africa, Asia and Australia

Singles were present at Leventhorpe Flood Meadows in June 2002 and on the Humber Estuary in July 2002.

LESSER YELLOWLEGS
Tringa flavipes
Vagrant: N & S America

Birds were seen at Roadford Reservoir, Devon, Tophill Low Reservoir and Lough Foyle during September to December 2001, and at Belfast Lough and the Middle Yare Marshes, Norfolk, in autumn 2002. Photographs of the Devon bird confirmed, on the basis of its moult pattern, it was the same individual later sighted at a number of Norfolk sites in October and November 2001 (Rogers *et al* 2002).

SPOTTED SANDPIPER
Actitis macularius
Vagrant: Americas

A single bird was recorded at the Cleddau Estuary in December 2001.

RED-NECKED PHALAROPE
Phalaropus lobatus
Scarce

Single birds were recorded by WeBS in Shetland and on the Colne Estuary, Essex, in June and August 2002 respectively. For the third successive year, total numbers of migrant Red-necked Phalaropes recorded in Britain in 2002 were below the annual mean of the previous two decades (Fraser & Rogers 2005).

LAUGHING GULL
Larus atricilla
Vagrant: Americas

One was recorded at the Fal, Cornwall, in January 2002.

SABINE'S GULL
Larus sabini
Scarce

In 2001, three were recorded at Dengie Flats, Essex, in August, two at The Wash in September and one at the Tees Estuary in October. One was seen at the Swale Estuary in August 2002. This is a highly pelagic species away from its breeding grounds, usually encountered when weather brings birds close to shore in autumn; there were only 249 accepted records in Britain in 2001, and 108 in 2002 (Fraser & Rogers 2003, 2005).

BONAPARTE'S GULL
Larus philadelphia
Vagrant: Americas

One was present on the Tamar from January to March 2002.

RING-BILLED GULL
Larus delawarensis
Vagrant: North America

This trans-Atlantic vagrant was recorded at 13 sites in 2001/02, with a peak of nine in January, and at nine sites in 2002/03, with a peak of five, again in January. All records were of singles except for three at Swansea Bay in March 2002 and two at Belfast Lough in February 2002; a long-staying individual was present throughout winter 2002/03 at the latter site. Most records were in south and southwest England and south Wales, and birds have been recorded in at least four of the five previous winters at Swansea Bay, the Thames Estuary and Belfast Lough. Ringing evidence shows that some Ring-billed Gulls that reach Europe make the return crossing to North America some individuals may even have established a routine of trans-Atlantic migration (Fraser & Rogers 2005).

ICELAND GULL
Larus glaucoides
Scarce

There were scattered records of Iceland Gulls in Britain and Ireland in both 2001/02 and 2002/03, with most in January and February. They were recorded at 20 sites in the first winter, all singles with the exception of two at Summerston, Strathclyde and Chew Valley Lake, and four at Belfast Lough. Singles were seen at just nine sites in 2002/03, giving maxima of five birds in Great Britain and one in Northern Ireland.

GLAUCOUS GULL
Larus hyperboreus
Scarce

Birds were recorded at 18 sites in 2001/02 and 11 in 2002/03, numbers similar to those for Iceland Gulls in both years. Most records occurred in January and February and were of single birds, with the exception of six at Belfast Lough in February, and two at West Loch and the Tyne Estuary in January and February 2002 respectively. Two were also recorded at Brogborough Pit, Burra Firth, and the Humber Estuary, all in February 2003. Glaucous Gulls have been known to return to the same wintering sites for a series of years, and Belfast Lough has held birds each winter since gulls were first included in WeBS.

ROSS'S GULL
Rhodostethia rosea
Vagrant: Arctic

A single on the Plym Estuary, Devon, in February-March 2002 was part of an exceptional influx of eight into Britain in early 2002, compared with an annual average of just two records (Rogers *et al* 2003).

GULL-BILLED TERN
Gelochelidon nilotica
Vagrant: S Europe, Africa, Asia, Australasia and Americas

One seen during WeBS counts at Titchwell, North Norfolk Coast, was the only British record in 2001, while that recorded at Drift Reservoir, Cornwall, in September 2002 was one of only two in the country that year (Rogers *et al* 2002, 2003).

ROSEATE TERN
Sterna dougallii
Scarce

The most notable count in 2001 was of 27 birds in August at St Mary's Island, the only other records of Roseate Tern being 10 at the same site in September and a single at Pegwell Bay in July. In 2002, numbers at St Mary's Island peaked at 25, two were noted on both the Alt and Tees Estuaries in July, and singles were noted on the Tyne Estuary and at East Chevington Pools in August. In Northern Ireland a single was seen in May on the Bann Estuary.

Principal sites

Table 11 lists the principal sites for non-breeding waterfowl in the UK as monitored by WeBS and the Icelandic-breeding Goose Census (IGC). All sites supporting more than 10,000 waterbirds are listed, as are all sites supporting internationally important numbers of one or more species or population of waterbird.

Counts made using non-WeBS methods, such as those of seaducks on the Moray Firth, are not incorporated into the site totals presented in the table (with the exception of IGC roost counts). Thus, it should be borne in mind that other sites that are important for certain waterbird species are not included in the table, while the sites listed may be of 'greater importance' for the species listed if additional data were included.

Naturalised species (*eg* Canada Goose and Ruddy Duck) or non-native species presumed to have escaped from captive collections have been excluded from the calculations, as have gulls and terns since recording of these species is optional (see *Analysis* for further details).

Of a total of 198 listed sites, 185 (175 in Great Britain and 10 in Northern Ireland) are of international importance for one or more species or populations of waterbirds (meeting Ramsar Criterion 6). Of these, 52 (49 in Great Britain and three in Northern Ireland) also qualify as internationally important by virtue of regularly supporting more than 20,000 waterbirds (Ramsar Criterion 5). Some 36 sites (35 in Great Britain and one in Northern Ireland) held five-year peak mean waterbird totals of 10,000 or more birds.

The top 20 listed sites remain identical to the previous published list of 2000/01 with the exception of Lindisfarne which has replaced Montrose Basin in twentieth position, largely because of increased numbers of Svalbard Light-bellied Brent Geese over recent years. The Wash, Morecambe Bay and the Ribble Estuary remain numerically the most important sites and the Humber now sits above the Thames and North Norfolk Coast in terms of overall numbers of waterbirds.

Of those sites supporting 10,000 or more waterbirds, 34% showed stable numbers (within ±10% of the five-year peak mean waterbird total for 2000/01), 21% saw a rise in numbers (an increase of 10% or more) and 45% showed a decline (a decrease of 10% or more). A similar pattern was seen in 2002/03 when numbers at 35% of sites were stable, 17% showed an increase and 48% a decrease. This was the sixth consecutive year in which more sites have shown a decrease in numbers rather than an increase.

The 2001/02 totals at seven sites were more than 30% higher than the 2000/01 mean; totals at three sites in 2002/03 were 30% higher than their previously reported mean. At the Alt Estuary, a large count of Common Scoters influenced total numbers in 2001/02 and a large number of the same species was recorded at the Dee Estuary in 2001/02 along with high counts of Shelduck and Pintail. A large count of Pink-footed Geese at West Water Reservoir in 2002/03 accounted for increased totals at this site and at Traeth Lafan, large numbers of Oystercatchers and Redshanks noted in recent years were again present in 2002/03. High counts of several species including Bewick's Swan, Wigeon, Teal, Pintail, Pochard, Golden Plover and Lapwing accounted for exceptional increases at the Nene washes. Large increases in several dabbling duck species saw the 2002/03 total on the River Avon: Ringwood to Christchurch some two and a half times larger than the current five-year mean.

In contrast to the above increases, totals at ten sites in 2001/02 were more than 30% below their 2000/01 five-year mean; this figure increased to 16 sites in 2002/03. Continuing declines were noted at Loch Leven, Dupplin Lochs, Hule Moss, Loughs Neagh & Beg, Medway Estuary, Abberton Reservoir and Loch of Harray. Low numbers of Pink-footed Geese will have accounted for the changes seen at Hule Moss over the most recent two years, and low numbers of several wildfowl and wader species for declines on the Medway Estuary. Dramatic declines in numbers of Tufted Duck, Pochard, Goldeneye and Scaup have been recorded at Loughs Neagh & Beg in recent years, particularly in 2002/03. Similarly at Loch of Harray, recent counts of Wigeon and Pochard have been lower than average. At the Colne Estuary, low numbers of Dark-bellied Brent geese were recorded in 2002/03, as well as several wader species including Redshank, Golden Plover, Grey Plover and Dunlin. Poole Harbour held low numbers of Avocet, Black-tailed Godwits and Dunlin. Low counts of roosting Pink-footed Geese at Dupplin Lochs have influenced the totals at this site.

Table 11. Total number of waterbirds at principal sites in the UK, 1998-99 to 2002-03 (includes only WeBS Core Count data and roost counts of Pink-footed and Greylag Geese), and species occurring in internationally important numbers at each (based on all survey data). Species codes are listed at the end of the table.

Site	98/99	99/00	00/01	01/02	02/03	Mean	Species
The Wash	289,698	374,104	286,315	332,665	337,496	324,056	DB SU OC RP GP GV L. KN SS DN BW BA CU RK TT BH
Morecambe Bay	265,421	230,483	244,461	211,231	250,036	240,326	PG SU PT CA OC KN DN BA CU RK TT LB HG
Ribble Estuary	255,139	229,010	215,560	200,958	230,842	226,302	SU WN T. PT OC RP GV KN SS DN BW BA RK
Humber Estuary	192,590	172,528	163,110	159,875	169,362	171,493	PG DB SU RP GP GV L. KN DN BW BA RK
Thames Estuary	158,042	128,117	182,103	169,141	183,292	164,139	DB SU GA T. SV OC AV RP GV KN DN BW BA RK BH
North Norfolk Coast	155,751	187,818	143,634	146,896	178,623	162,544	DB WN T. PT RP GV KN BA RK TE
Solway Estuary	152,351	141,921	129,540	104,596	127,639	131,209	WS PG YS SU PT OC RP KN DN BA CU RK
Dee Estuary (Eng/Wal)	107,882	92,193	134,963	166,905	126,170	125,623	SU T. PT OC RP KN DN BW BA RK
Mersey Estuary	93,868	105,956	109,876	102,679	108,711	104,218	SU T. DN BW RK
Somerset Levels	96,853	76,110	114,210	115,046	102,576	100,959	MS WN GA T. PT SV L.
Forth Estuary	89,582	75,886	92,690	86,222	103,034	89,483	SZ SU KN BA RK TE
Blackwater Estuary	77,463	84,504	122,135	66,475	75,066	85,129	DB GP GV DN BW RK
Loughs Neagh & Beg	103,054	97,237	100,883	63,314	52,151	83,328	MS WS PO TU SP GN CA
Swale Estuary	80,067	76,471	80,826	87,656	61,144	77,233	WN PT SV RP BW RK
Strangford Lough	69,359	61,035	63,008	70,187	71,419	67,002	QN SU KN BA RK
Breydon Wtr & Berney Marsh	61,929	59,400	71,931	77,901	63,630	66,958	PG WN SV AV GP L. BW RK
Severn Estuary	75,608	69,320	62,788	60,587	63,441	66,349	SU T. PT DN RK
Alt Estuary	46,701	50,753	58,612	89,336	59,178	60,916	GV KN SS BA
Ouse Washes	44,898	85,387	38,843	69,170	53,821	58,424	MS BS WS WN PT SV PO BW
Lindisfarne	48,778	40,677	58,860	62,323	59,611	54,050	PG QS BA RK
Inner Moray Firth	39,512	46,909	56,166	59,051	59,009	52,129	JI RK
Montrose Basin	58,450	41,156	49,600	63,742	36,878	49,965	PG RK
Stour Estuary	45,101	53,739	48,726	48,117	39,302	46,997	PT RP GV KN DN BW RK
Loch of Strathbeg	46,481	35,182	51,698	58,396	42,098	46,771	WS PG YS
Chichester Harbour	45,134	47,016	47,368	44,871	44,804	45,839	DB DN BW RK
Burry Inlet	52,062	52,662	39,100	41,434	43,802	45,812	PT SV BI OC
Dengie Flats	36,539	33,369	48,666	53,712	37,661	41,989	GV KN BA
Hamford Water	48,120	32,746	42,671	37,993	40,186	40,343	DB T. RP GV BW RK
Langstone Harbour	42,072	43,949	42,334	33,575	37,451	39,876	DB DN BW
Lough Foyle	45,086	36,766	37,202	29,449	33,946	36,490	WS QN BA
Medway Estuary	45,466	51,190	23,424	29,797	27,278	35,431	BS DB PT BW RK
Dornoch Firth	30,584	31,378	36,943	35,957	37,874	34,547	JI
Nene Washes	33,833	28,414	32,161	19,235	52,862	33,301	BS PT BW
Loch Leven	35,325	30,881	31,869	(17,200)	(13,258)	32,692	MS PG T. SV
Lower Derwent Ings	32,390	28,629	-	-	-	30,510	T.
Alde Complex	36,751	29,362	26,525	25,760	29,656	29,611	AV BW RK LB
SW Lancashire	36,260	29,955	16,885	33,180	31,645	29,585	PG
Cromarty Firth	30,215	23,430	33,349	32,869	24,659	28,904	BA RK
West Water Reservoir	21,969	28,427	26,500	23,276	40,000	28,034	PG
Colne Estuary	33,808	35,398	36,324	25,664	4,188	27,076	DB BW RK
Duddon Estuary	31,994	29,248	23,110	24,918	21,318	26,118	PT RK
Abberton Reservoir	24,523	33,812	25,934	20,586	19,468	24,865	MS SV PO
Rutland Water	23,242	24,111	19,210	22,164	26,183	22,982	MS GA SV
Poole Harbour	26,246	23,886	24,478	24,536	15,191	22,867	AV BW
Crouch-Roach Estuary	22,174	25,161	24,734	21,033	21,217	22,864	DB
Clyde Estuary	20,068	23,013	23,671	22,713	22,909	22,475	RK
Exe Estuary	23,444	20,948	21,169	24,718	20,478	22,151	BW
Tay Estuary	27,720	17,319	22,304	22,429	20,470	22,048	PG JI BA
Tees Estuary	22,119	19,584	22,781	20,168	24,941	21,919	RP RK
Dupplin Lochs	42,504	22,826	15,550	17,502	9,507	21,578	PG

Site	98/99	99/00	00/01	01/02	02/03	Mean	Species
Orkney Islands	18,252	20,565	16,527	23,449	26,641	21,087	JI YN
Carsebreck & Rhynd Lochs	23,808	20,208	23,456	19,941	15,252	20,533	PG
Belfast Lough	20,746	20,063	20,701	18,745	17,437	19,538	BW RK
Walland Marsh	30,714	28,981	9,713	21,016	5,081	19,101	
Cleddau Estuary	20,366	19,009	15,551	18,587	18,024	18,307	
WWT Martin Mere	18,347	21,410	17,013	19,174	15,544	18,298	WS T.
Slains Lochs	16,405	15,535	23,594	14,055	19,756	17,869	PG
Deben Estuary	14,629	18,126	18,879	-	17,085	17,180	BI RK
Blyth Estuary (Suffolk)	-	-	18,876	13,713	-	16,295	BW RK
Traeth Lafan	5,152	18,392	18,852	17,277	21,226	16,180	RK
Southampton Water	17,248	14,137	17,896	16,874	11,573	15,546	BW
Fleet/Wey	16,514	12,513	14,128	19,635	14,541	15,466	MS
Pegwell Bay	5,049	11,447	17,422	19,405	22,609	15,186	
WWT Caerlaverock	16,974	21,845	7,387	11,080	18,562	15,170	WS YS
Arun Valley	16,299	14,350	17,400	10,721	15,669	14,888	PT
Pagham Harbour	13,943	14,568	16,064	14,290	13,199	14,413	DB BW
Taw-Torridge Estuary	13,274	19,237	12,245	14,197	11,698	14,130	
Orwell Estuary	17,134	15,323	15,617	8,770	13,389	14,047	BW RK
Beaulieu Estuary	17,434	12,299	16,976	11,774	11,141	13,925	BW
Outer Ards	16,786	14,720	11,647	-	12,465	13,905	QN RK TT
Eden Estuary	13,773	11,640	15,397	13,099	15,036	13,789	
Dungeness Gravel Pits	13,428	14,951	14,717	11,087	13,659	13,568	
Loch Spynie	9,802	5,370	16,001	15,467	19,528	13,234	PG JI
Mersehead RSPB Reserve		8,708	14,416	13,265	15,673	13,016	YS
Carmarthen Bay	12,832	12,563	14,670	11,278	12,933	12,855	CX
Loch of Skene	13,497	9,065	12,485	17,136	11,003	12,637	PG JI
Wigtown Bay	17,123	8,838	9,024	17,664	9,539	12,438	PG
Cotswold Water Park (West)	16,096	12,245	11,603	10,090	9,155	11,838	
Dyfi Estuary	9,983	14,582	11,787	10,296	11,804	11,690	
Thanet Coast	11,539	11,032	9,666	9,432	16,153	11,564	TT
North West Solent	12,833	10,719	10,847	12,307	10,068	11,355	
Rye Harbour & Pett Level	13,487	10,955	9,881	11,226	10,483	11,206	
Hule Moss	10,016	15,403	14,830	8,625	7,026	11,180	PG
Middle Yare Marshes	9,893	9,399	10,067	13,921	10,730	10,802	
Ythan Estuary	16,221	12,977	2,025	12,868	9,156	10,649	RK
R Avon: R'wood to C'hurch	4,966	6,982	11,167	4,838	24,596	10,510	PT BW
Wath Main Ings	7,618	8,648	13,283	12,089	-	10,410	
Loch of Harray	10,319	10,655	14,768	8,264	7,656	10,332	MS
Stodmarsh NNR	7,974	14,239	10,968	10,171	7,664	10,203	
Carlingford Lough	9,172	10,030	8,432	9,299	10,540	9,495	QN
Loch of Lintrathen	8,526	14,616	4,537	10,477	9,241	9,479	PG JI
Loch Eye & Cromarty Firth	9,476	5,704	4,317	5,995	21,078	9,314	PG JI
Dundrum Bay	11,966	7,039	10,015	8,410	6,849	8,856	QN
Lee Valley Gravel Pits	6,801	8,740	8,137	9,561	9,323	8,512	GA
Caithness Lochs	12,743	10,066	9,860	5,932	2,792	8,279	NW JI
Chew Valley Lake	7,254	7,116	8,200	8,794	8,389	7,951	SV
Upper Lough Erne	7,140	8,279	7,800	7,231	8,778	7,846	WS
Loch Fleet Complex	7,336	5,328	7,616	11,678	5,646	7,521	JI
Hornsea Mere	6,857	7,530	6,285	5,917	8,891	7,096	LU
R Avon: F'bridge to R'wood	5,368	5,835	6,689	7,420	10,032	7,069	GA
Tophill Low Reservoirs	5,639	9,510	7,500	5,421	6,515	6,917	CM
Tyninghame Estuary	6,901	5,413	6,476	7,520	6,688	6,600	RP
Cameron Reservoir	6,065	4,487	1,453	15,662	3,996	6,333	PG
R Nith: Keltonbank-Nunholm	8,541	8,363	6,032	6,234	2,162	6,266	YS
Wraysbury Gravel Pits	6,710	5,617	4,256	4,759	5,966	5,462	GA
Tay-Isla Valley	8,640	4,775	4,553	4,225	3,997	5,238	PG JI
Strathearn (west sites)	-	-	-	-	5,150	5,150	PG JI
Fala Flow	2,100	7,550	4,910	7,500	2,790	4,970	PG
Larne Lough	4,270	4,455	4,677	4,463	5,001	4,573	QN

Site	98/99	99/00	00/01	01/02	02/03	Mean	Species
Loch Gruinart	7,151	3,529	2,679	-	-	4,453	YN
Holburn Moss	4,927	2,384	6,067	1,751	6,363	4,298	PG
Horsey Mere	3,706	3,995	3,620	5,000	4,300	4,124	PG
Ashleworth Ham	2,679	6,924	5,173	1,870	1,381	3,605	PT
Loch Long	8,000	6,356	2,834	323	0	3,503	PG
Cochrage Loch	-	-	-	3,400	-	3,400	JI
Dee Flood Meadows	1,864	2,392	4,098	4,550	3,885	3,358	PT
Tweed Estuary	2,356	2,714	3,927	3,611	3,498	3,221	MS
Kilconquhar Loch	2,953	2,911	2,995	3,272	2,945	3,015	JI
Clwyd Estuary	2,447	4,230	2,923	2,333	3,067	3,000	JS
Brading Harbour	3,264	3,210	2,630	2,553	2,805	2,892	JS
R Eden: Warcop-Little Salkeld	-	-	2,860	-	-	2,860	JI
Gladhouse Reservoir	2,017	6,520	1,610	3,064	743	2,791	PG
Orchardton & Auchencairn	2,658	2,735	2,117	-	3,563	2,768	YS
Killough Harbour	-	-	-	-	2,732	2,732	QN
Loch Tullybelton	8,600	0	4,050	0	0	2,530	PG
Drummond Pond	5,185	2,906	2,887	231	653	2,372	JI
Loch Bee (South Uist)		2,356	3,350	911	2,767	2,346	JH
Balranald RSPB Reserve	-	-	-	-	2,288	2,288	JH
Loch Ken	1,963	2,078	2,678	1,725	2,609	2,211	NW JI
Loch Mullion	2,000	5,500	660	900	1,600	2,132	PG
Loch Garten	-	1,650	2,700	2,804	1,000	2,039	JI
Haddo House Lakes	4,310	2,870	1,104	619	736	1,928	JI
Loch Lomond	2,651	1,485	1,219	1,609	2,163	1,825	NW
R Clyde: Carstairs-Thankert'n	1,013	1,645	2,096	2,752	1,057	1,713	PG
Bute	1,056	1,780	1,530	2,306	1,381	1,611	JI JH
Loch a'Phuill	1,620	1,657	1,420	-	-	1,566	JH
R Avon: Salisbury to F'bridge	1,055	1,254	2,496	1,202	1,207	1,443	MS
Derwent Reservoir	1,813	1,101	1,392	1,053	1,529	1,378	CM
Loch Bhasapoll	1,213	1,629	978	-	-	1,273	JH
Melbost Sands/Tong	1,134	1,070	1,149	1,533	-	1,222	JH
Saltings/Broad Bay (Lewis)							
Tarbat Ness	-	-	-	-	830	830	PG
Black Cart Water	830	657	803	767	1,092	830	WS
Ravenstruther	-	-	347	-	1,224	786	WS
Loch Riaghain	733	777	846	-	-	785	JH
R Eamont & Eden: H'pot-E'hall	640	248	538	-	1,246	668	JI
Threipmuir & Harlaw Rsrs	958	480	831	530	350	630	JI
Loch an Eilein (Tiree)	467	572	270	-	-	436	JH
Hallington Reservoir	316	510	354	377	247	361	CM
Lower Teviot Valley	96	3	816	-	-	305	JI
R Earn: Lawhill Oxbows	-	-	308	143	-	226	JI
Haweswater Reservoir	219	232	208	265	190	223	CM
Tayinloan	304	275	145	61	174	192	NW
Rhunahaorine	165	-	-	-	-	165	NW
Machrihanish	266	28	148	18	341	160	NW JH
Branahuie Saltings	62	-	-	223	-	143	JH
Clachan/Whitehouse	139	-	-	-	-	139	JH
Loch Broom	74	66	170	-	-	103	JH
Loch Urrahag	52	33	36	0	-	30	JH
Aberlady & Gullane Bays							PG
Aberlady Bay							PG
Sandoyne to Holme Sound							ND
Beauly Firth							JI
Benbecula							JH
Berney Marshes							PG
Deer/Shapinsay Sounds							ND
Eriska/Benderloch/Lismore							NW
Findhorn Bay							PG JI

Site	98/99	99/00	00/01	01/02	02/03	Mean	Species
Fort Georgo to Nairn							PG
Gigha, Kintyre							ND
Holbeach St Matthew							PG
Holkham & Burnham Overy							PG
Holkham Bay							PG
Islay							NW YN
Islands south of Barra							YN
Coll							NW JH YN
Isle of Danna							YN
Keills Peninsula & Danna							NW
Lentran							JI
Loch Ashie							SZ
Lochs Davan & Kinnord							JI
Moray Firth							SZ
Munlochy Bay							JI
North Sutherland							YN
North Uist							JH YN
Scapa Flow							ND SZ
Scolt Head							PG
Skinflats							PG
Snettisham							PG
Sound of Gigha							ND
Sound of Harris							YN
South Lancashire Mosses							PG
South Uist							JH YN
Stanraer Lochs							NW JI
Thornham							PG
Tiree							NW JH YN
Wells-next-the-Sea							PG
Whiteness to Scarvister							SZ
Whiteness to Skelda Ness							SZ

Species codes

AV Avocet
BA Bar-tailed Godwit
BH Black-headed Gull
BS Bewick's Swan
BW Black-tailed Godwit
CA Cormorant
CM Common Gull
CO Coot
CU Curlew
CX Common Scoter
DB Dark-bellied Brent Goose
DN Dunlin
E. Eider
EW European White-fronted Goose
GA Gadwall
GD Goosander
GN Goldeneye
GP Golden Plover
GV Grey Plover
HG Herring Gull
JI Greylag Goose (Icelandic population)
JH Greylag Goose (Northwest Scotland population)
KN Knot
L. Lapwing
LB Lesser Black-backed Gull
LN Long-tailed Duck
MA Mallard
MS Mute Swan
ND Great Northern Diver
NW Greenland White-fronted Goose
OC Oystercatcher
PG Pink-footed Goose
PO Pochard
PT Pintail
QS Light-bellied Brent Goose (Svalbard population)
QN Light-bellied Brent Goose (Greenland poplulation)
RK Redshank
RM Red-breasted Merganser
RP Ringed Plover
SP Scaup
SS Sanderling
SU Shelduck
SV Shoveler
SZ Slavonian Grebe
T. Teal
TE Sandwich Tern
TT Turnstone
TU Tufted Duck
WM Whimbrel
WN Wigeon
WS Whooper Swan
YN Barnacle Goose (Greenland population)
YS Barnacle Goose (Svalbard population)

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 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

Tables 12 & 13 present three statistics for 18 of the more numerous waterbird species present on 17 estuaries covered during the 2001/02 winter and 15 estuaries covered during the 2002/03 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. 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 500 m out from the intertidal sections has been

Sub-tidal: 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 are marked with an asterisk. It is hoped that dot density distributions and habitat components will lead to an easier and fuller appreciation of low tide estuarine waterbird distribution. Where maps appear in colour (Internet version only), the following conventions apply: blue = water; yellow = intertidal habitat (e.g. mudflat, sandflat); green = non-tidal habitat (e.g. saltmarsh, reedbed); grey = not counted. 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.

COVERAGE

WeBS Low Tide Counts were carried out in winter 2001/02 at 23 sites, with accounts for 17 presented here. Other counts were made on Breydon Water (partial), Killough Harbour, Langstone Harbour (partial), Morecambe Bay (partial, mid-tide count) and the Severn Estuary (partial). In 2002/03, 19 estuarine sites were counted at low tide with 15 site accounts presented. Additional data available for the Adur Estuary, Dornoch Firth (partial), Langstone Harbour (partial) and Morecambe Bay (partial, mid-tide count) can be obtained from the WeBS Low Tide Count National Organiser.

In both winters, data were collected during the period November to February. Assessment of national and international importance is based on five-year peak mean counts from Core Counts (as presented in this report). Figure 79 shows the location of the sites discussed, and a site description is presented for each estuary. Distribution maps are presented for selected species, with two maps for sites visited in one winter and four for sites visited in both winters. The report first discusses those sites counted in 2001/02 only, then those in 2002/03 only, then finally those sites counted in both winters.

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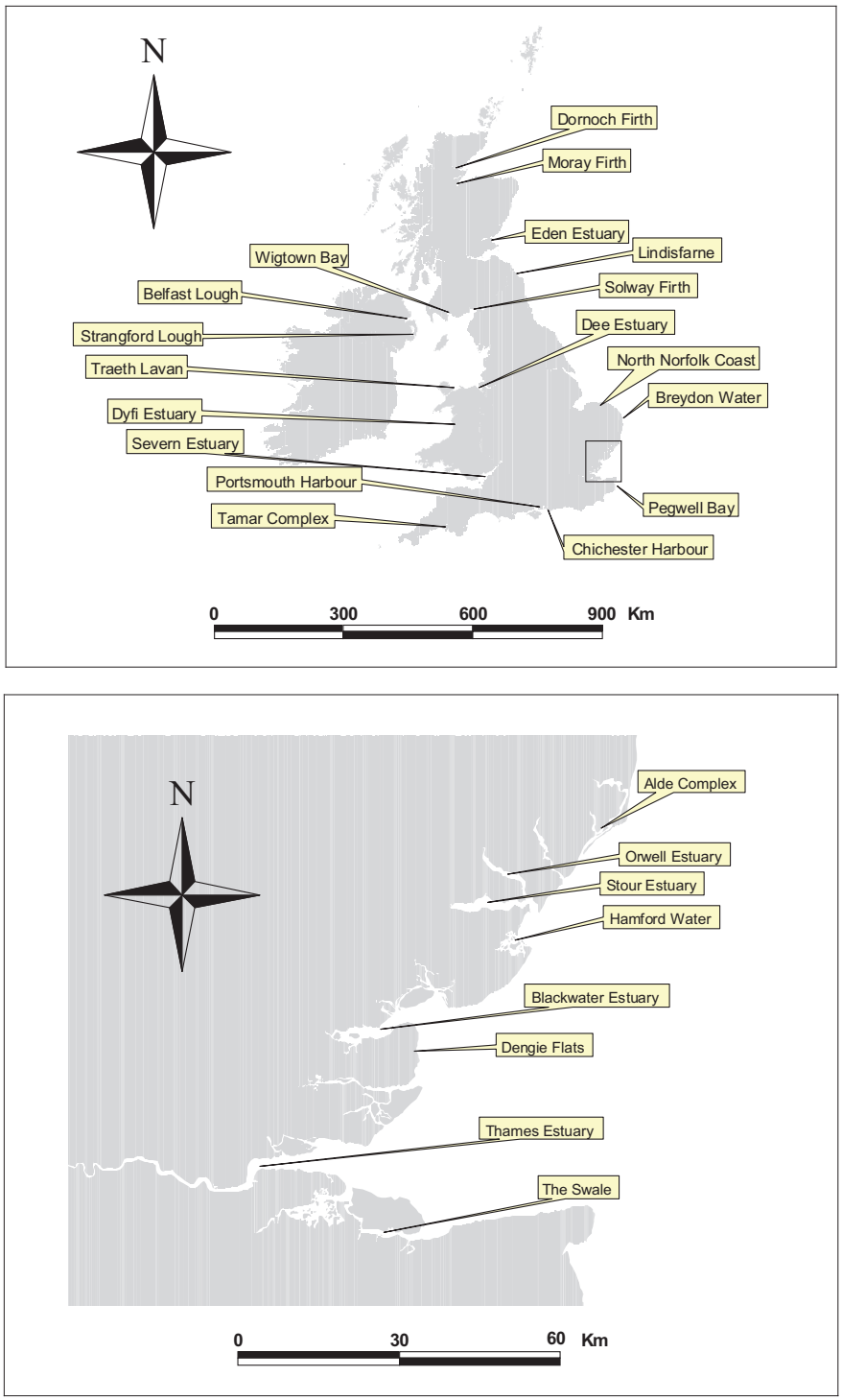


Figure 79. Sites surveyed for WeBS Low Tide Counts in 2001/02 and 2002/03. The lower map shows detail of area within rectangle in the top figure.

Table 12. Peak and mean counts, and mean density (birds per hectare) of 18 waterbird species present on estuaries covered by the 2001/02 WeBS Low Tide Counts. '+' indicates non-zero densities of <0.01 birds per hectare.

	Alde Complex			Belfast Lough			Chichester Harbour		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	135	71	0.02	3	2	+	5,695	3,632	1.44
Shelduck	866	821	0.19	310	227	0.49	1,014	704	0.28
Wigeon	6,647	4,919	1.12	120	110	0.24	1,036	728	0.29
Teal	2,039	1,773	0.4	278	260	0.56	1,752	1,096	0.43
Mallard	445	360	0.08	282	224	0.48	341	301	0.12
Pintail	632	435	0.1	0	0	0	180	113	0.04
Oystercatcher	232	111	0.03	4,276	4,026	8.62	484	438	0.17
Ringed Plover	85	42	0.01	154	125	0.27	78	65	0.03
Golden Plover	460	283	0.06	0	0	0	914	654	0.26
Grey Plover	45	30	0.01	2	1	+	590	480	0.19
Lapwing	2,241	1,844	0.42	2,086	1,776	3.8	2,922	1,847	0.73
Knot	401	139	0.03	80	40	0.09	1,094	564	0.22
Dunlin	6,730	3,486	0.79	698	615	1.32	17,947	14,824	5.88
Black-tailed Godwit	64	39	0.01	308	247	0.53	467	364	0.14
Bar-tailed Godwit	20	12	+	26	19	0.04	626	442	0.18
Curlew	937	758	0.17	258	253	0.54	608	476	0.19
Redshank	2,071	1,771	0.4	1,766	1,574	3.37	855	714	0.28
Turnstone	31	13	+	167	145	0.31	33	26	0.01

	Dee Estuary			Dengie Flats			Dornoch Firth		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	35	18	+	628	610	0.2	0	0	0
Shelduck	9,624	5,642	0.41	362	209	0.07	213	164	0.04
Wigeon	4,941	3,517	0.25	79	31	0.01	8,417	6,371	1.51
Teal	6,887	4,548	0.33	878	552	0.18	2,493	1,928	0.46
Mallard	1,865	1,215	0.09	398	297	0.1	1,032	1,036	0.25
Pintail	4,698	1,988	0.14	0	0	0	264	203	0.05
Oystercatcher	31,851	26,904	1.95	7,061	6,523	2.18	1,563	1,522	0.36
Ringed Plover	119	70	0.01	98	61	0.02	154	148	0.04
Golden Plover	18	12	+	910	712	0.24	43	17	+
Grey Plover	2,201	1,561	0.11	1,170	1,051	0.35	41	29	0.01
Lapwing	7,835	4,814	0.35	622	280	0.09	10	3	+
Knot	35,138	19,853	1.44	3,980	3,903	1.3	3,113	1,441	0.34
Dunlin	34,448	24,151	1.75	4,992	4,235	1.42	3,105	3,355	0.8
Black-tailed Godwit	4,624	3,365	0.24	20	5	+	9	5	+
Bar-tailed Godwit	12,163	8,778	0.64	758	769	0.26	1,136	678	0.16
Curlew	4,305	3,849	0.28	408	372	0.12	920	899	0.21
Redshank	8,579	6,692	0.49	1,002	837	0.28	939	766	0.18
Turnstone	286	188	0.01	103	79	0.03	88	58	0.01

Table 12. WeBS Low Tide Counts in 2001/02 (continued).

	Dyfi Estuary			Eden Estuary			Hamford Water		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	0	0	0	4	2	+	3,813	2,282	2.85
Shelduck	135	125	0.06	578	489	0.51	1,737	1,157	1.45
Wigeon	1,921	1,219	0.63	523	408	0.42	2,826	1,962	2.45
Teal	203	147	0.08	98	57	0.06	9,055	4,936	6.17
Mallard	318	307	0.16	114	86	0.09	242	193	0.24
Pintail	304	301	0.15	15	5	0.01	233	123	0.15
Oystercatcher	426	415	0.21	2,122	1,610	1.67	1,903	1,555	1.94
Ringed Plover	31	27	0.01	32	14	0.01	1,302	794	0.99
Golden Plover	800	760	0.39	1,410	513	0.53	1,863	673	0.84
Grey Plover	26	24	0.01	186	131	0.14	3,063	2,291	2.86
Lapwing	1,105	968	0.5	257	129	0.13	2,474	1,096	1.37
Knot	0	0	0	310	174	0.18	397	339	0.42
Dunlin	585	534	0.27	1,498	899	0.93	10,686	7,101	8.88
Black-tailed Godwit	3	2	+	221	184	0.19	366	162	0.2
Bar-tailed Godwit	20	15	0.01	378	203	0.21	628	330	0.41
Curlew	615	489	0.25	559	290	0.3	401	318	0.4
Redshank	142	106	0.05	573	428	0.44	2,575	2,033	2.54
Turnstone	0	0	0	4	1	+	642	432	0.54

	Lindisfarne			North Norfolk Coast			Orwell Estuary		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	3,224	3,199	1.08	6,148	5,083	0.81	1,215	731	0.59
Shelduck	1,546	1,546	0.52	2,012	1,450	0.23	754	522	0.42
Wigeon	2,362	2,362	0.8	6,618	2,426	0.39	2,576	1,841	1.47
Teal	438	438	0.15	3,302	2,310	0.37	698	575	0.46
Mallard	479	479	0.16	1,660	1,118	0.18	415	336	0.27
Pintail	272	272	0.09	1,171	528	0.08	473	202	0.16
Oystercatcher	801	801	0.27	3,744	3,271	0.52	1,679	1,234	0.99
Ringed Plover	27	27	0.01	410	372	0.06	181	127	0.1
Golden Plover	1,844	1,844	0.62	2,928	1,301	0.21	558	162	0.13
Grey Plover	572	572	0.19	1,429	1,170	0.19	323	206	0.16
Lapwing	1,742	1,742	0.59	3,340	1,964	0.31	1,736	1,041	0.83
Knot	2,261	2,261	0.76	10,627	5,212	0.83	1,601	549	0.44
Dunlin	3,963	3,963	1.34	11,078	8,764	1.4	4,729	3,698	2.96
Black-tailed Godwit	0	0	0	181	87	0.01	260	183	0.15
Bar-tailed Godwit	1,769	1,769	0.6	1,678	1,161	0.19	4	2	+
Curlew	1,822	1,822	0.61	2,302	1,650	0.26	1,045	796	0.64
Redshank	972	972	0.33	3,915	3,188	0.51	2,279	1,812	1.45
Turnstone	27	27	0.01	585	543	0.09	131	124	0.1

Table 12. WeBS Low Tide Counts in 2001/02 (continued).

	Solway Firth			Stour Estuary			Strangford Lough		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	0	0	0	1,373	1,209	0.74	8,380	3,881	0.99
Shelduck	1,639	1,701	0.11	1,441	1,192	0.73	3,507	2,492	0.64
Wigeon	1,023	744	0.05	2,920	2,244	1.37	2,013	1,025	0.26
Teal	266	191	0.01	1,314	645	0.39	824	704	0.18
Mallard	855	641	0.04	336	283	0.17	392	321	0.08
Pintail	1,716	1,736	0.11	438	340	0.21	294	126	0.03
Oystercatcher	27,833	26,353	1.74	1,566	1,337	0.82	5,817	5,755	1.47
Ringed Plover	62	46	+	191	134	0.08	618	449	0.11
Golden Plover	1,752	1,238	0.08	8,531	3,884	2.37	11,726	5,113	1.31
Grey Plover	202	208	0.01	1,926	1,465	0.89	171	88	0.02
Lapwing	1,941	1,510	0.1	5,204	2,810	1.71	5,563	3,226	0.82
Knot	1,625	436	0.03	6,998	4,364	2.66	4,000	4,361	1.11
Dunlin	11,364	11,552	0.76	16,469	13,264	8.09	3,348	3,440	0.88
Black-tailed Godwit	0	0	0	1,553	1,187	0.72	47	42	0.01
Bar-tailed Godwit	84	33	+	28	21	0.01	1,949	981	0.25
Curlew	3,840	2,069	0.14	1,119	1,012	0.62	1,478	1,236	0.32
Redshank	1,668	1,241	0.08	2,261	1,934	1.18	3,339	2,617	0.67
Turnstone	43	32	+	392	336	0.21	70	44	0.01

	Swale Estuary			Wigtown Bay		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	1,702	848	0.36	0	0	0
Shelduck	2,039	1,707	0.72	384	292	0.1
Wigeon	1,187	974	0.41	1,002	586	0.19
Teal	692	697	0.29	0	0	0
Mallard	264	213	0.09	53	30	0.01
Pintail	503	196	0.08	59	38	0.01
Oystercatcher	6,085	5,072	2.14	1,711	1,499	0.49
Ringed Plover	206	134	0.06	26	9	+
Golden Plover	2,335	997	0.42	30	10	+
Grey Plover	1,567	1,386	0.58	0	0	0
Lapwing	1,941	1,294	0.55	190	84	0.03
Knot	1,110	958	0.4	130	49	0.02
Dunlin	9,189	7,876	3.32	2,380	1,364	0.45
Black-tailed Godwit	1,580	688	0.29	0	0	0
Bar-tailed Godwit	383	349	0.15	53	43	0.01
Curlew	1,174	898	0.38	728	524	0.17
Redshank	1,777	1,619	0.68	96	39	0.01
Turnstone	389	335	0.14	0	0	0

Table 13. Peak and mean counts, and mean density (birds per hectare) of 18 waterbird species present on estuaries covered by the 2002/03 WeBS Low Tide Counts. '+' indicates non-zero densities of <0.01 birds per hectare.

	Belfast Lough			Blackwater Estuary			Breydon Water		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	17	9	0.02	1,856	1,055	0.69	0	0	0
Shelduck	199	199	0.42	1,251	1,057	0.69	245	132	0.33
Wigeon	138	115	0.24	1,297	945	0.61	15,999	10,082	25.08
Teal	316	221	0.46	2,818	2,114	1.37	109	46	0.11
Mallard	386	282	0.59	72	59	0.04	460	224	0.56
Pintail	0	0	0	471	339	0.22	192	105	0.26
Oystercatcher	5,542	4,291	9.01	310	387	0.25	59	31	0.08
Ringed Plover	91	90	0.19	90	75	0.05	32	24	0.06
Golden Plover	15	11	0.02	12,455	6,518	4.23	8,126	3,046	7.58
Grey Plover	0	0	0	877	684	0.44	30	12	0.03
Lapwing	1,186	1,088	2.29	11,053	5,525	3.59	10,088	4,513	11.23
Knot	0	0	0	1,700	2,003	1.3	280	99	0.25
Dunlin	959	887	1.86	13,786	15,510	10.07	5,273	3,437	8.55
Black-tailed Godwit	424	264	0.55	1,066	622	0.4	753	487	1.21
Bar-tailed Godwit	104	91	0.19	55	64	0.04	10	8	0.02
Curlew	479	372	0.78	356	329	0.21	664	357	0.89
Redshank	1,194	1,093	2.3	1,860	1,613	1.05	1,497	1,151	2.86
Turnstone	225	183	0.38	107	105	0.07	5	4	0.01

	Dyfi Estuary			Traeth Lafan			Lindisfarne		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	1	0	+	9	6	+	1,929	1,817	0.61
Shelduck	179	146	0.07	503	442	0.14	1,527	1,274	0.43
Wigeon	1,863	1,460	0.73	1,263	924	0.29	1,293	1,152	0.39
Teal	938	450	0.22	43	33	0.01	870	687	0.23
Mallard	232	174	0.09	189	165	0.05	400	300	0.1
Pintail	196	86	0.04	77	55	0.02	219	146	0.05
Oystercatcher	537	421	0.21	7,178	5,612	1.74	811	660	0.22
Ringed Plover	29	11	0.01	60	39	0.01	41	39	0.01
Golden Plover	1,250	884	0.44	0	0	0	3,098	2,356	0.79
Grey Plover	20	12	0.01	4	1	+	502	420	0.14
Lapwing	1,475	1,044	0.52	230	86	0.03	1,458	1,454	0.49
Knot	0	0	0	127	61	0.02	3,829	3,747	1.26
Dunlin	572	348	0.17	4,419	2,910	0.9	4,128	3,343	1.13
Black-tailed Godwit	0	0	0	0	0	0	4	3	+
Bar-tailed Godwit	5	1	+	10	6	+	2,862	1,949	0.66
Curlew	815	482	0.24	1,922	1,398	0.43	1,338	1,218	0.41
Redshank	52	33	0.02	1,525	953	0.3	941	870	0.29
Turnstone	0	0	0	56	32	0.01	42	41	0.01

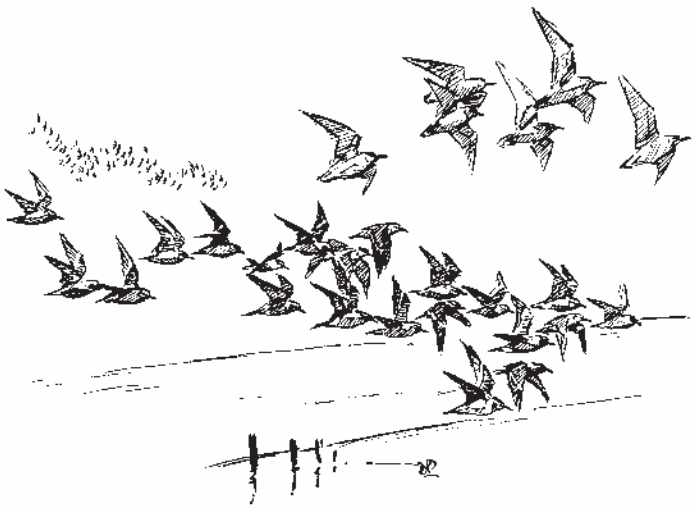
Table 13. WeBS Low Tide Counts in 2002/03 (continued).

	Moray Firth			Orwell Estuary			Pegwell Bay		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	0	0	0	1,525	889	0.71	115	68	0.08
Shelduck	348	239	0.08	715	552	0.44	282	185	0.23
Wigeon	6,475	5,851	1.97	2,898	2,459	1.97	1,630	1,103	1.37
Teal	2,948	2,651	0.89	1,607	763	0.61	136	94	0.12
Mallard	1,005	797	0.27	506	404	0.32	649	301	0.37
Pintail	302	260	0.09	372	218	0.17	6	2	+
Oystercatcher	3,666	3,455	1.16	1,863	1,404	1.12	2,004	1,449	1.8
Ringed Plover	82	50	0.02	203	173	0.14	359	274	0.34
Golden Plover	321	158	0.05	84	24	0.02	7,229	3,313	4.11
Grey Plover	1	0	+	358	296	0.24	523	382	0.47
Lapwing	556	406	0.14	1,454	756	0.61	10,282	4,912	6.09
Knot	906	690	0.23	3,172	2,111	1.69	365	212	0.26
Dunlin	2,242	1,880	0.63	5,555	4,146	3.32	1,906	1,565	1.94
Black-tailed Godwit	3	1	+	407	247	0.2	14	4	+
Bar-tailed Godwit	987	671	0.23	4	2	+	408	262	0.32
Curlew	1,282	1,103	0.37	733	681	0.55	601	477	0.59
Redshank	2,047	1,569	0.53	1,825	1,678	1.34	356	303	0.38
Turnstone	53	35	0.01	210	173	0.14	307	167	0.21

	Portsmouth Harbour			Severn Estuary			Stour Estuary		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	1,823	1,551	1.61	11	3	+	1,369	988	0.6
Shelduck	200	130	0.13	3,495	2,797	0.13	1,906	1,614	0.98
Wigeon	163	146	0.15	3,331	3,269	0.15	4,068	2,541	1.55
Teal	112	66	0.07	1,624	1,558	0.07	1,060	757	0.46
Mallard	92	60	0.06	1,793	1,568	0.07	547	375	0.23
Pintail	2	1	+	478	306	0.01	613	475	0.29
Oystercatcher	536	438	0.45	829	811	0.04	1,804	1,397	0.85
Ringed Plover	79	44	0.05	84	57	+	120	110	0.07
Golden Plover	173	43	0.04	1,215	624	0.03	2,567	1,236	0.75
Grey Plover	165	112	0.12	555	323	0.01	2,038	1,719	1.05
Lapwing	482	323	0.34	12,129	8,696	0.39	4,137	1,514	0.92
Knot	2	1	+	1,703	1,297	0.06	8,648	4,387	2.68
Dunlin	8,139	5,412	5.61	41,120	31,864	1.44	12,863	10,348	6.31
Black-tailed Godwit	246	134	0.14	42	27	+	1,689	1,195	0.73
Bar-tailed Godwit	2	1	+	59	23	+	145	106	0.06
Curlew	420	332	0.34	3,615	3,535	0.16	868	775	0.47
Redshank	438	362	0.38	2,439	1,634	0.07	1,769	1,520	0.93
Turnstone	101	63	0.07	274	213	0.01	453	327	0.2

Table 13. WeBS Low Tide Counts in 2002/03 (continued).

	Strangford Lough			Tamar Complex			Thames Estuary		
Species	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**	**Peak**	**Mean**	**Density**
Brent Goose	10,765	4,304	1.12	1	0	+	48	30	0.01
Shelduck	4,199	2,946	0.77	633	384	0.25	603	315	0.13
Wigeon	1,372	660	0.17	319	269	0.17	7,029	2,219	0.89
Teal	830	842	0.22	225	165	0.11	565	175	0.07
Mallard	350	292	0.08	324	261	0.17	123	67	0.03
Pintail	123	91	0.02	2	1	+	335	160	0.06
Oystercatcher	6,378	5,671	1.48	277	224	0.14	901	590	0.24
Ringed Plover	236	221	0.06	16	8	0.01	50	43	0.02
Golden Plover	5,413	3,221	0.84	14	5	+	185	91	0.04
Grey Plover	398	164	0.04	147	46	0.03	1,222	932	0.38
Lapwing	3,876	2,944	0.77	251	182	0.12	1,473	767	0.31
Knot	10,340	7,147	1.86	0	0	0	11,103	5,496	2.22
Dunlin	4,408	3,479	0.91	1,763	660	0.43	28,880	20,080	8.09
Black-tailed Godwit	189	140	0.04	53	32	0.02	953	473	0.19
Bar-tailed Godwit	960	551	0.14	25	11	0.01	161	52	0.02
Curlew	1,159	1,089	0.28	518	408	0.26	785	681	0.27
Redshank	2,879	2,304	0.6	430	327	0.21	554	455	0.18
Turnstone	63	33	0.01	33	20	0.01	23	16	0.01



ALDE COMPLEX
Suffolk

Internationally important: Avocet, Redshank

Nationally important: European White-fronted Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Black-tailed Godwit

Site description

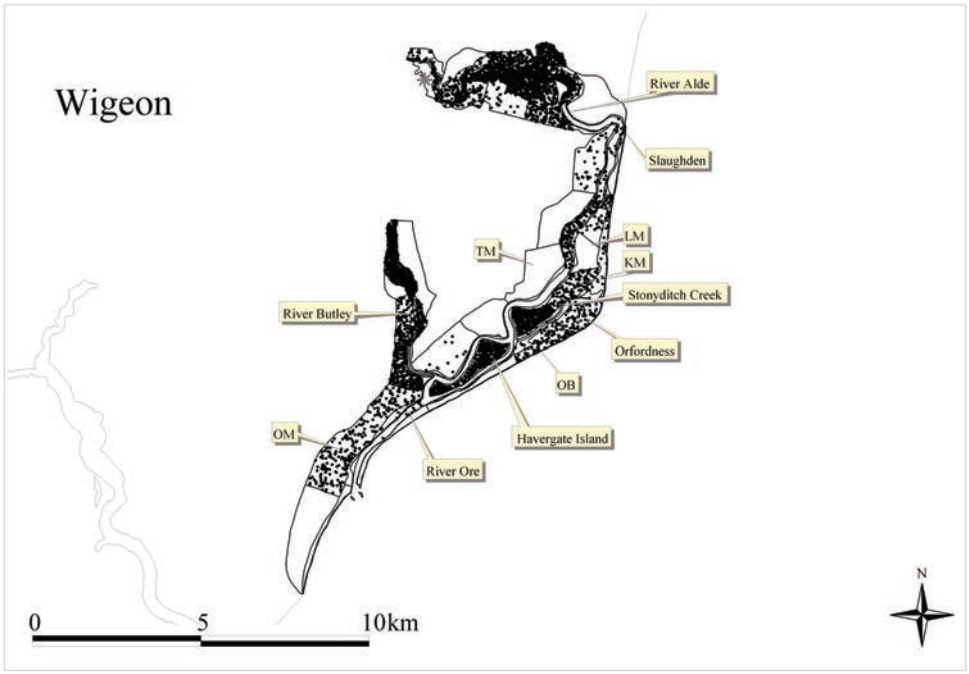
The Alde Complex is separated from the sea by the large shingle spit of Orfordness and the estuary is comprised of three rivers; the Alde, Butley and Ore. The spit has been extending continually southwards since 1530, with the consequent effect of pushing the mouth of the River Ore progressively further to the south-west. Havergate Island lies at the confluence of the Rivers Ore and Butley and hosts the largest breeding colony of Avocets in Britain. The River Alde is relatively wide and shallow with mudflats in the upper reaches and saltmarsh including some *Spartina* exposed at low tide along both banks. The Butley River has extensive areas of mudflat, grading into saltmarsh and reedbed along its length. Industrial operations are virtually absent and water quality is excellent, however, a wide range of recreational activities occurs. Sailing occurs throughout, with moorings at Aldeburgh and Orford, and windsurfing, canoeing and water-skiing are permitted in the lower zones. Leisure use of the beach occurs around the mouth and wildfowling takes place over parts of the Alde, Butley and Orfordness. Other activities include oyster cultivation, fish trawling, eel netting, reed cutting and bait digging (Buck 1997).

Bird distribution 2001/02

Little Grebe peaked at 61 birds in November, mostly found on the pools and creeks of Lantern Marshes and Havergate Island. Cormorants were present in nationally important numbers, with most of the birds resting on Orford Beach. A few Little Egret and up to 38 Grey Heron were generally distributed, with the former species avoiding, and the latter species favouring, the upper part of the Alde. Mute Swan were widely distributed, frequenting both the Town and King's Marshes. Oxley Marshes also attracted many of the Dark-bellied Brent Geese present in December. Shelduck were distributed relatively evenly throughout the estuary. The densest concentrations of Wigeon occurred on the Alde, Havergate Island, King's Marshes and the saltmarsh around Butley River. Teal distribution was similar, although higher counts were made at Stonyditch Creek. Mallard and Pintail were both evenly distributed and the highest density of the latter was found on Havergate Island. Habitat near Stonyditch Creek hosted the highest congregations of Shoveler. Pochard and Tufted Duck frequented the pools on King's and Lantern Marshes and small numbers of Goldeneye were present off Orford Beach.

Oystercatcher were present generally only in the upper reaches. High numbers of Avocet were recorded in February (1,765) reflecting the continued population increase within the UK in general, and East Anglia in particular. Avocet were concentrated in the broader estuarine part of the Alde, on the river adjacent to Slaughden, along the Butley River and around Havergate Island. Ringed Plover were confined to the upper parts of the Alde, whilst the majority of Knot frequented the western mudflats of the Alde. Small numbers of Grey Plover occurred on Havergate Island and the saltmarsh near Slaughden. The highest Lapwing count occurred in December, when more than 2,200 were present, widely distributed, although absent from Orfordness and the marshes around Orford. The greatest concentrations of Golden Plover occurred around Stonyditch Creek and on the flats off Sandy Point at the north-western part of the Alde. Dunlin were present in nationally important numbers in December but this was a short-lived influx. Black-tailed Godwit were sparse throughout most of the winter but numbers rose to 64 in February when the majority were found along Butley River. Curlew and Redshank were evenly distributed, with the latter concentrated along the Butley River, Stonyditch Creek, the saltings near Slaughden and the north-western corner of the Alde. Turnstone were mostly found along the narrow stretch of shingle adjacent to Havergate Island.

Six species of gull were noted, of which Black-headed were the most abundant, peaking at over 5,600 individuals. Herring Gull were the next most abundant, with 2,061 birds in December. A sudden increase in the numbers of Lesser Black-backed Gull in February may have indicated the start of the return movement to breeding grounds.



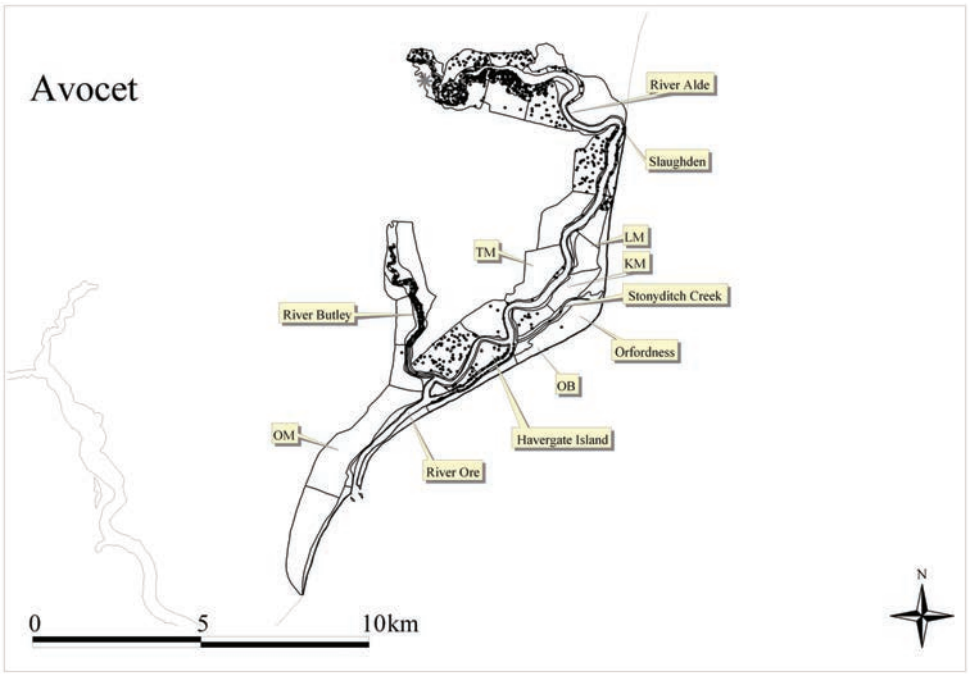


Figure 80. WeBS Low Tide Count distributions of Wigeon and Avocet at Alde Complex, winter 2001/02. (KM=King's Marshes, LM=Lantern Marshes, OB=Orford Beach, OM=Oxley Marshes, TM=Town Marshes)

CHICHESTER HARBOUR

West Sussex

Internationally important: Little Grebe, Dark-bellied Brent Goose, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Redshank

Nationally important: Shelduck, Red-breasted Merganser, Grey Plover

Site description

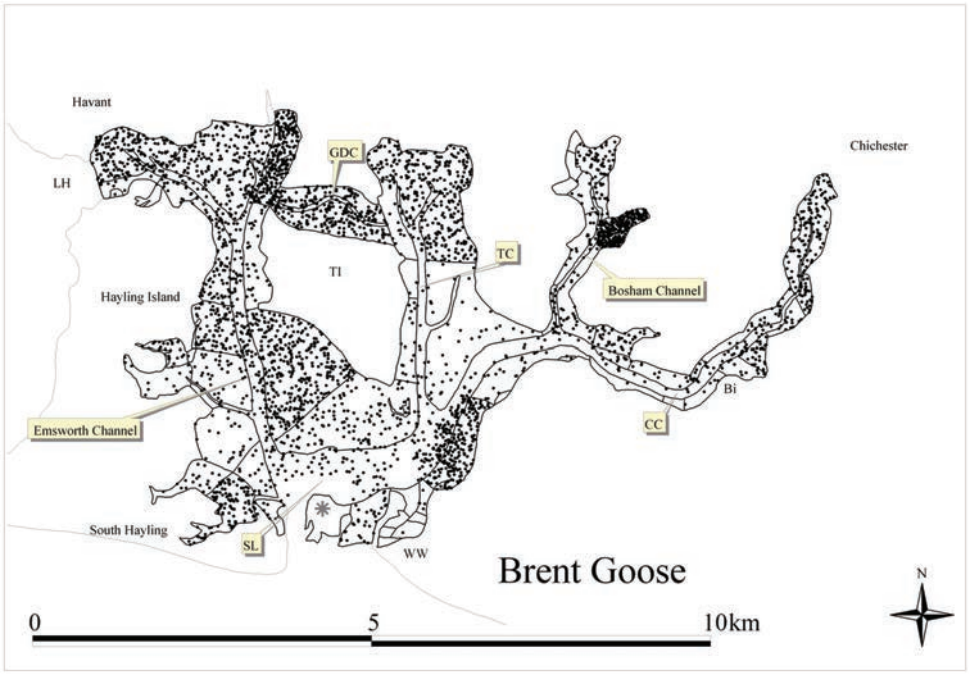
Chichester Harbour is situated between Chichester and Havant, linked to Langstone Harbour to the west by a channel along the north side of Hayling Island. There are four major arms: Chichester Channel, Bosham Channel, Thorney Channel and Emsworth Channel. The estuary was originally formed by land sinking along four small river valleys. These run into a wider area near the mouth of the estuary and there is also a fairly wide opening to the eastern Solent. The river channels are muddy, whereas the intertidal areas south of Thorney Island are much sandier and support extensive areas of eelgrass and algae. The estuary is extremely popular with water-sports enthusiasts and although the majority of the shoreline is undeveloped with restricted access, those areas with public access are heavily used. Pressure for the construction of further marinas and slipways is always present. Wildfowling occurs along with commercial dredging of oysters, hand gathering of cockles and winkles and bait-digging (Buck 1997, Pritchard *et al* 1992, Davidson 1997, A de Potier pers comm).

Bird distribution 2001/02

Numbers of Little Grebe peaked in November and generally frequented the upper reaches of the main channels, particularly the Great Deep Channel across Thorney Island. Great Crested Grebe and Cormorant were widely distributed in the channels, including Stocker's Lake towards the mouth. Large numbers of Little Egret were widely scattered and thus relatively difficult to count during Low Tide counts. Mute Swans favoured the northern part of the Harbour, particularly Bosham Channel and the River Ems at Emsworth, whilst most of the Canada Geese frequented the Great Deep Channel on Thorney Island. Dark-bellied Brent Geese peaked at 5,695 individuals in January and were distributed throughout the estuary. Shelduck were also widely scattered within the harbour with a January peak of 1,036. Wigeon and Teal were found at the end of the creeks and channels and in particular, along the Great Deep Channel, where up to 54 Gadwall were also seen. The greatest densities of Mallard were around Emsworth and Langstone. Pintail were more generally distributed in the northern half of the Harbour, especially along Chichester Channel and the Great Deep Channel. Small numbers of Pochard and Tufted Duck frequented the Great Deep Channel, whilst Goldeneye and Red-breasted Merganser were located in the main Emsworth, Thorney and Chichester channels, as well as Stocker's Lake in the case of the latter species. In December, a peak of 118 Red-breasted Merganser was counted.

Oystercatcher were generally distributed throughout, whilst up to 21 Avocets frequented the upper part of Thorney Channel. Most Golden Plover occurred within the western half of the harbour, particularly on the saltings off Hayling Island, West Wittering and the southern end of Thorney Island. The distributions of Ringed and Grey Plover were more scattered, with the former present in low numbers, particularly around South Hayling, and the latter in nationally important numbers over most of the harbour. The peak count of Grey Plover (590) was well below recent Core Counts, which recorded totals in excess of 2,000 birds. Lapwing were also widely distributed, occurring along all the channels, although in the greatest densities off Birdham and Bosham. Lapwing numbers were relatively low in November and subsequently increased in December to nearly 3,000 birds, with counts fluctuating thereafter. The highest densities of Knot were found on the mudflats at either end of the Great Deep Channel, with a scattering elsewhere. Small numbers of Sanderling were confined to the sandier substrate off the southern end of Thorney Island. Dunlin occurred throughout, with the densest congregations at the head of the Thorney and Emsworth Channels and off South Hayling Island. Black-tailed Godwit were located on the muddier substrate in the upper reaches of the main channels, whilst Bar-tailed Godwit were found on the sandier areas towards the mouth of the harbour. Both Curlew and Redshank were widely scattered.

Of the five species of gull present, Black-headed was the most abundant. All of the gulls preferred the upper reaches of the main estuary channels.



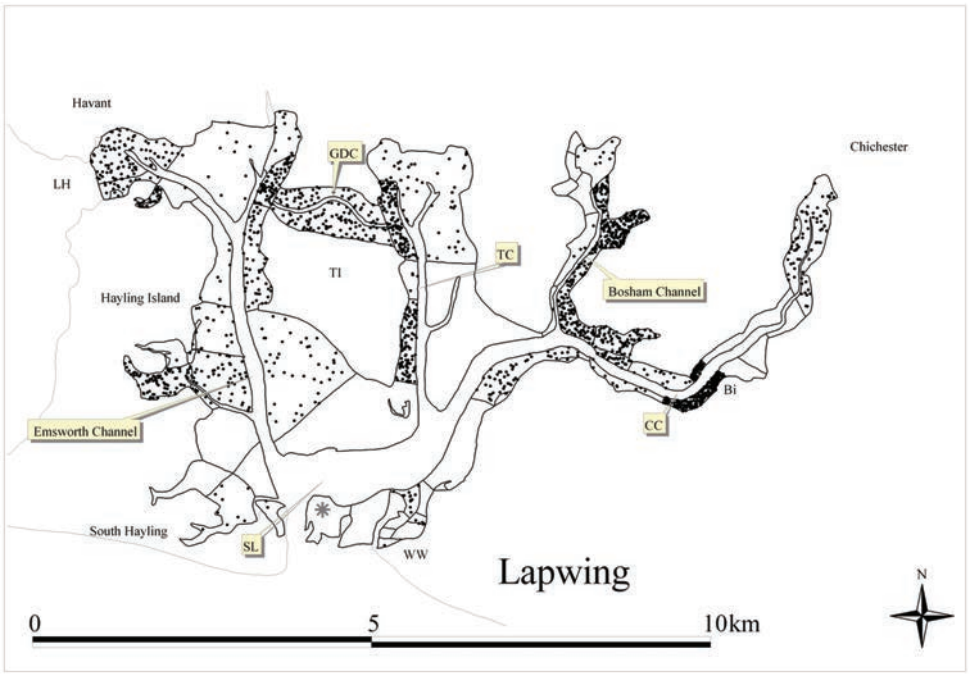


Figure 81. WeBS Low Tide Count distributions of Dark-bellied Brent Goose and Lapwing at Chichester Harbour, winter 2001/02. (Bi=Birdham, CC=Chichester Channel, GDC=Great Deep Channel, LH=Langstone Harbour, SL=Stocker's Lake, TC=Thorney Channel, TI=Thorney Island, WW=West Wittering)

DEE ESTUARY & NORTH WIRRAL SHORE

Merseyside, Cheshire, Clwyd

Internationally important: Cormorant, Shelduck, Pintail, Teal, Oystercatcher, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Redshank, Turnstone

Nationally important: Bewick's Swan, Common Scoter, Grey Plover, Sanderling, Curlew

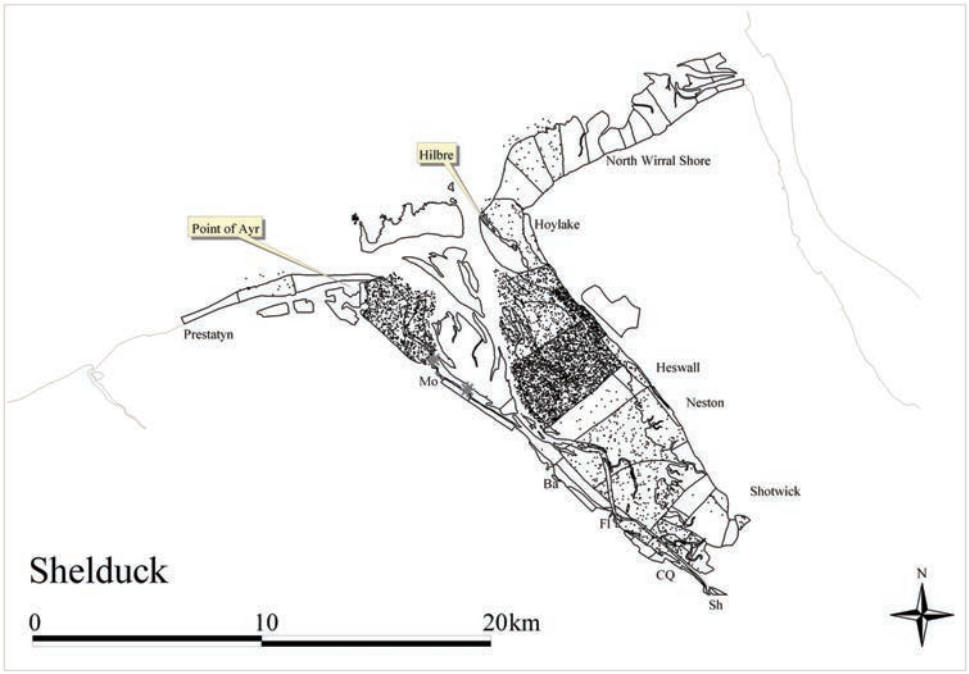
Site description

The Dee is a large estuary situated between The Wirral and the North Wales coast and is characterized by extensive sand flats, mudflats and saltmarsh. The main channel of the Dee runs close to the Welsh shore for much of its length where the mudflats are less wide. On either side of the estuary mouth there are long expanses of sandy beaches and sand dunes. A line of cliffs stretches between Hoylake and Hesswall along the eastern side of the Dee. At the northern end, close to the eastern shore at Hilbre, there are a series of small rocky islands. The Dee is heavily industrialised, particularly along the Welsh shore. There are steel and paper mills at Shotton, a gas-fired power station and former coal mine at Point of Ayr, docks at Mostyn and several chemical works concentrated along the inner estuary shores. Recreational disturbance is widespread, especially from sailing, windsurfing and jet-skiing. A recent increase in kite-surfing has led to roost disturbance in some areas. Around the estuary mouth, the sands are used for vehicular sports and horse-riding. Other activities include: leisure beach use, cockling, bait-digging, shrimp trawling and some fish-netting. Wildfowling also occurs over some of the marshes (Buck 1993, Musgrove *et al* 2003).

Bird distribution 2001/02

Cormorant were generally only located along the shore off Prestatyn and up to 18 Little Egret frequented the saltmarsh of the inner zones. Mute and Bewick's Swan were also found amongst the inner saltmarshes. Over 1,500 Canada Geese were present in the fields around Shotwick and off Connah's Quay during December. Small numbers of Light-bellied Brent Geese occurred and an unusual 32 were identified in February. The highest densities of Shelduck occurred in the middle zones and on Mostyn Bank on the Welsh side. Wigeon were mostly confined to the inner part of the Dee while Teal and Mallard frequented the saltmarsh between Heswall and Neston, with fewer around Connah's Quay and Point of Ayr. Teal peaked at 6,887 in November, which exceeded recent peak Core Counts. Pintail numbers were also highest in November, mainly distributed along the Welsh shoreline from Connah's Quay to Mostyn Quay, along with smaller numbers on Mostyn Bank. There is known to be some interchange between the Dee and the adjacent Mersey Estuary, which may account for fluctuations in Pintail counts during the winter. The channels towards the mouth hosted to up to 21 Scaup in December. Common Scoter flocked off Prestatyn in November and December, where 4,000 were present in November.

Peak numbers of nearly 32,000 Oystercatcher were recorded in January, widely distributed, particularly in the outer zones, in the saltmarsh around Flint and the North Wirral shore. Ringed Plover were scattered along the North Wirral shore and the flats off Hoylake and Mostyn. Grey Plover distribution was very similar but was also recorded on the central flats between Bagillt and Neston. Most Lapwing were found around the Point of Ayr, along with the saltmarsh and fields at the head of the Dee, with another small congregation along the North Wirral shore. A count of 35,000 Knot recorded in January was considerably higher than recent Core Count peaks. In November, Sanderling counts peaked at 462, distributed west of Hoylake, along the North Wirral coast. Small numbers of Purple Sandpiper frequented the extreme western end of the Wirral shore and on Hilbre, whilst Dunlin were more evenly distributed. The saltmarshes of the south-eastern section hosted Snipe and Jack Snipe, with peaks of 334 and 22 individuals respectively. Peak numbers of both Black-tailed (4,624 in November) and Bar-tailed Godwit (around 12,000 in January) exceeded recent Core Counts, when virtually all were located on the flats at the western end of the North Wirral shore. The godwits appeared to use the shore for feeding, but roosted away from the Dee. Curlew and Redshank were both widely distributed within the estuary and along the Wirral shore, with the latter species exceeding 8,500 individuals in November. Turnstone frequented the western end of the Wirral coast and the shore off Hoylake. Of the five species of gull present, Common Gull occurred in the highest numbers.



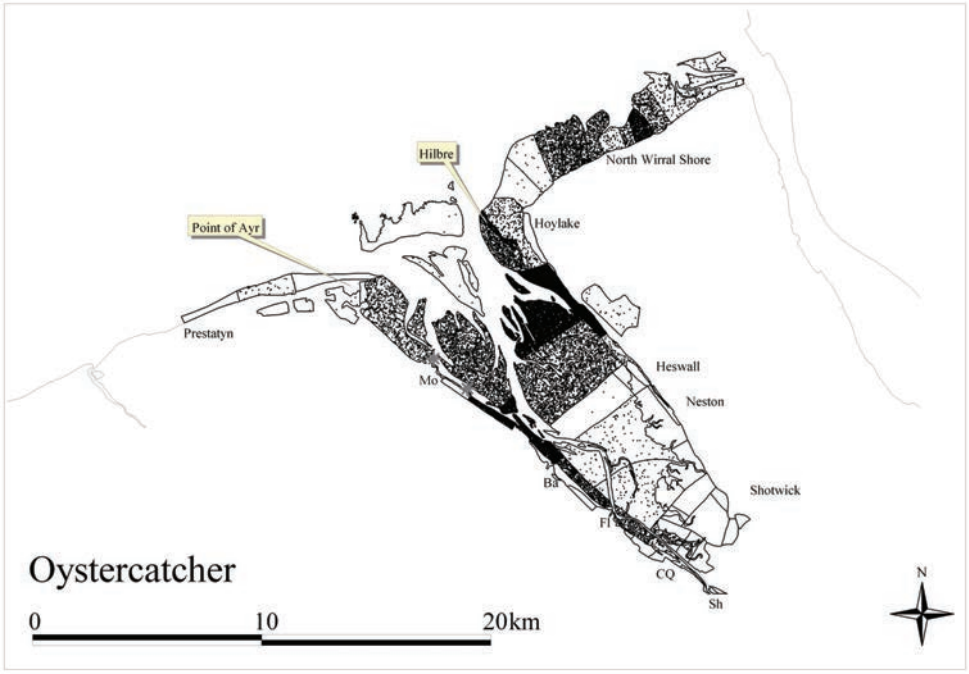


Figure 82. WeBS Low Tide Count distributions of Shelduck and Oystercatcher at Dee Estuary & North Wirral Shore, winter 2001/02. (Ba=Bagillt, CQ= Connah's Quay, Fl=Flint, Mo=Mostyn, Sh=Shotton)

DENGIE FLATS

Essex

Internationally important: Grey Plover, Knot, Bar-tailed Godwit

Nationally important: Red-throated Diver, Dark-bellied Brent Goose, Dunlin

Site description

Dengie Flats lie between the Blackwater and Crouch-Roach Estuaries. The Flats are comprised of an extensive area of tidal mudflat with saltmarsh towards the eastern end of the Dengie peninsula. Evidence suggests that there is considerable interchange of the waterbirds between these adjacent estuaries. The mudflats support extensive growth of *Enteromorpha* alga along with populations of molluscs, marine worms and crustaceans. Unusually, for an open-coast situation, the mudflats grade into saltmarsh and the transition zone is characterised by mud-mounds with shell-lined gullies between them. The saltmarsh vegetation is relatively intact, despite being exposed to wave action, and a series of drainage channels bisect this habitat. Opposite Bradwell, at the northern end of the site, there is a small sand and shingle spit, the front of which has been severely eroded during recent years. Agricultural operations have claimed most of the historic grazing marshes, which are now located behind the sea wall. Although a relatively remote site, there is some recreational activity; for example: water sports, beach recreation, bait-digging and wildfowling. Bradwell Nuclear Power Station, at the extreme north-west corner, represents the only major industrial development adjacent to the site (Buck 1997, Musgrove *et al* 2003).

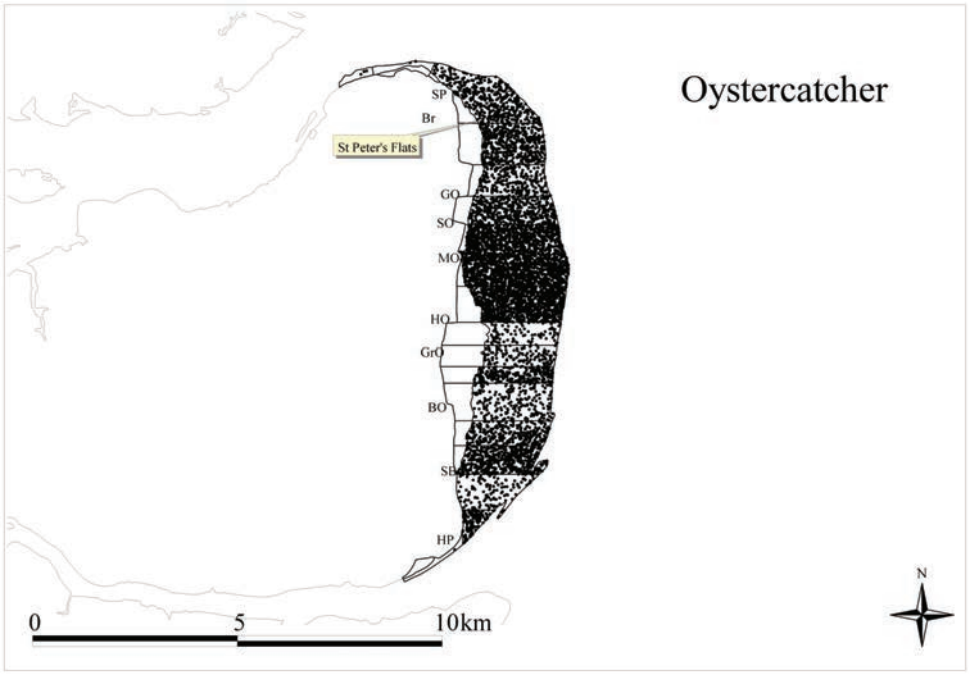
Bird distribution 2001/02

Up to 18 Little Egret frequented the saltmarsh around the Grange outfall. Shelduck were widely distributed over most of the flats with the exception of the northernmost mudflats. Teal counts peaked in December (878) and large numbers were concentrated on the saltmarsh and mudflats between the Howe and Grange outfalls. Smaller groups of Teal were also seen on the small area of saltmarsh at Holliwell Point. Mallard frequented the southern half of the area, however, Shoveler were confined to the saltmarsh just north of the Howe outfall.

Dark-bellied Brent Geese numbers peaked at 627 in December, decreasing to only 100 in February. The highest densities of this species were located between the Glebe and Sandbeach outfalls. Counts were considerably lower than those recorded by Core Counts, suggesting that many of the birds recorded at roost move elsewhere to feed. For instance, some flocks may move inland to agricultural habitat, in order to exploit winter crop resources.

In December, over 6,000 Oystercatcher occurred and in January, the total was over 7,000. Numbers, however, were much lower either side of these two months. The December and January counts represented a large increase over the previous Low Tide peak counts of between 2,000 and 3,000 birds. Oystercatchers were distributed over most of the mudflats, apart from those in the extreme north and south of the area. In contrast, Ringed Plover were confined to the mudflats off Sales Point in the north and Shell Bank towards the south. Golden Plover numbers peaked at 910 birds in January and large concentrations occurred on the central Dengie Flats. Smaller groups were also located on the saltmarsh adjacent to the Howe outfall, on St Peter's flats in the north and off Shell Bank in the south. The peak count of 1,170 Grey Plover was considerably lower than the 2001/02 peak Core Count figure of 3,640. Lapwing used the mudflats and saltmarsh between the Marshhouse and Bridgewick outfalls. The southern half of the area was the most important for Knot. Although Knot numbers exceeded the threshold of international importance, counts were considerably lower than the peak Core Count five-year mean. Similarly, Dunlin numbers were well below recent Core Counts. They were distributed relatively evenly throughout the area. The small group of Black-tailed Godwit recorded in November were confined to the flats opposite the Howe outfall; this site no longer holds nationally important numbers of this species. Bar-tailed Godwit, however, generally frequented the northern half of the flats. Both Curlew and Redshank were fairly evenly distributed throughout the area of the flats. The peak count of 103 Turnstone was made in January, when they were located on the northernmost and southernmost mudflats.

Gull counts were generally low, with Black-headed Gull the most abundant of the five species recorded, peaking at 340 individuals in December.



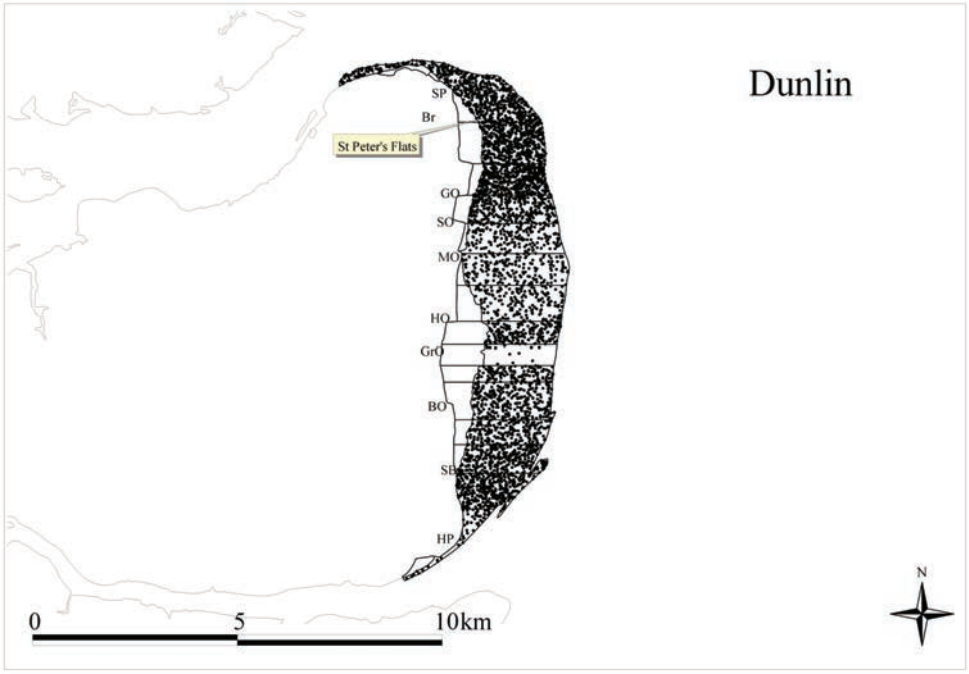


Figure 83. WeBS Low Tide Count distributions of Oystercatcher and Dunlin at Dengie Flats, winter 2001/02. (BO=Bridgewick Outfall, Br=Bradwell, GO=Glebe Outfall, GrO=Grange Outfall, HO=Howe Outfall, HP=Holliwell Point, MO=Marshhouse Outfall, SB=Shell Bank, SO=Sandbeach Outfall, SP=Sales Point)

DORNOCH FIRTH
Highland

Internationally important: Greylag Goose

Nationally important: Whooper Swan, Wigeon, Teal, Bar-tailed Godwit

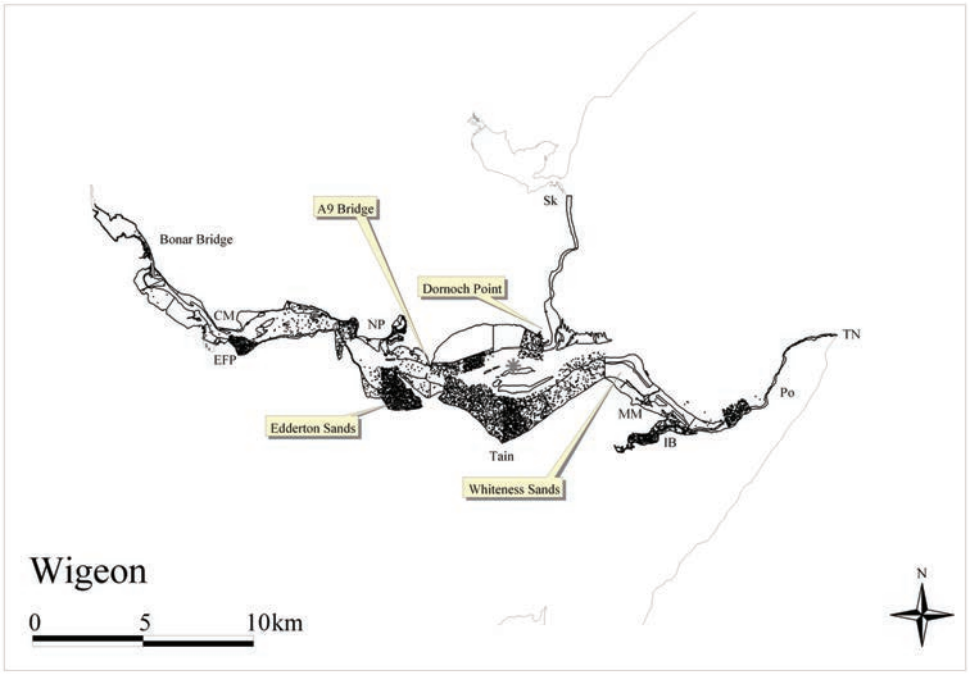
Site description

Dornoch Firth is a relatively narrow and steep-sided estuary and the most northerly of the large Scottish Firths. The Kyle of Sutherland, in the upper reaches, is connected to the main estuary by a narrow channel and is bordered by floodplain terraces consisting of grassland and fen. The estuary widens below Bonar Bridge where large mudflats and sheltered inlets occur. There is limited saltmarsh development at Bonar Bridge and more extensive patches at Skibo and Dornoch Point. The sediments in the outer half of the Firth are generally sandy. Mussel beds occur along the southern shoreline and south of Portmahomack, rocky shore predominates. Industrial activity is limited and includes a small harbour at Portmahomack, oil pipeline construction and small-scale sand extraction. Military aircraft use Morrich More as a training area and wildfowling occurs on both shores. Beach recreation is widespread, particularly around Dornoch, Portmahomack and Ardjachie Point. Around Tarbat Ness, bag-netting for fish, crabs and lobster occurs and a mussel fishery operates at Tain.

Bird distribution 2001/02

Slavonian Grebe, mostly located around the estuary mouth, were the more abundant of the two grebe species recorded. Generally, Mute Swan were seen within the inner zones, from the A9 road bridge westwards, whilst up to 52 Whooper Swans frequented the small bay off Skibo Castle and adjacent areas. Pink-footed and Greylag Geese both favoured Inver Bay and the flats off Creich Mains. Concentrations of Greylags were also found off Easter Fearn Point and north west of Bonar Bridge. Many geese were missed by diurnal counts because they used the Firth as a nocturnal roosting site. The outer zones, east of the A9 bridge, hosted virtually all the Shelduck, particularly around the Mussel Scalps. Peak Wigeon counts of 8,400 birds occurred in November and were widely distributed, with concentrations especially seen west of the road-bridge, particularly off Tain. Edderton Sands, Newton Point and off Easter Fearn Point were also frequented. Teal were mostly found on the Mussel Scalps and Pintail were confined to Ardjachie Point, adjacent to the A9 bridge. Small numbers of Shoveler frequented the channels off Tain. Tufted Duck were mostly found around Bonar Bridge, at the western end, with a few individuals also off Skibo Castle and towards Portmahomack at the mouth. Conversely, Scaup were confined to a small part of Cambuscurrie Bay near Edderton Sands. Although 104 Scaup were present in January, they were largely absent during the rest of the winter. Eiders were concentrated in the mouth and along the northern coastline, whilst Common Scoter and a few Velvet Scoter flocked off Inver Bay. Goldeneye peaked at 199 in December, exceeding the threshold of national importance, and were concentrated within the inner half of the estuary, especially just to the west of the A9 Bridge. Red-breasted Merganser were mostly seen within the outer half, particularly off the coastline to the north of the mouth.

Oystercatcher were generally confined to the outer zones, east of the road-bridge, with the densest concentrations within Inver Bay. Ringed Plover peaked at 154 birds in December and were concentrated on the outer flats, including Inver Bay and Whiteness Sands. Relatively low numbers of Golden and Grey Plovers frequented Inver Bay and Dornoch Sands. Knot were concentrated largely within three areas: the Mussel Scalps off Tain, Whiteness Sands and the mouth of Inver Bay. More than 3,000 Knot were present in January, exceeding the threshold of national importance. Dunlin distribution was very similar to that of Knot, however, fewer birds frequented Whiteness Sands and denser concentrations were seen on Dornoch Sands. The peak count of 66 Purple Sandpiper occurred in January. Along with the majority of Turnstone, they were located along the coastline between Dornoch and Skelbo. The saltings adjacent to Inver Bay hosted both Snipe and Jack Snipe and both species peaked in November. Bar-tailed Godwit and Curlew were mostly located from Cambuscurrie Bay westwards along the southern shore. Small numbers of the godwits and Curlew also utilised Dornoch Sands on the northern shore. Redshank were largely distributed along the southern shoreline, east of the road bridge .



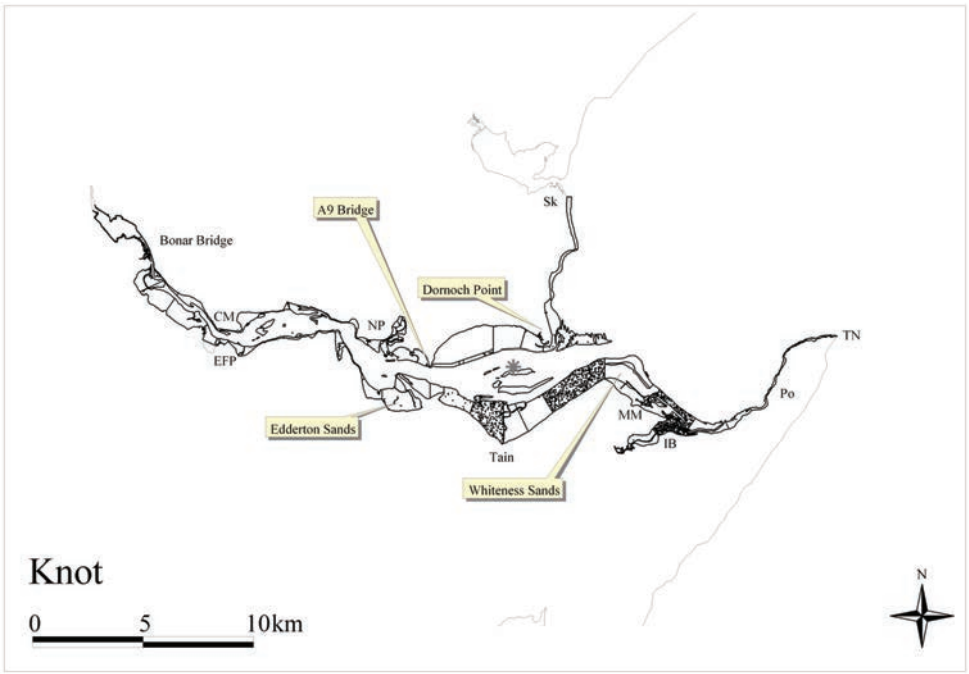


Figure 84. WeBS Low Tide Count distributions of Wigeon and Knot at Dornoch Firth, winter 2001/02. (CM=Cambuscurrie Bay, EFP=Easter Fearn Point, IB=Inver Bay, MM=Morrich More, NP=Newton Point, Po=Portmahomack, Sk=Skelbo, TN=Tarbat Ness)

EDEN ESTUARY
Fife

Internationally important: None

Nationally important: Grey Plover, Black-tailed Godwit

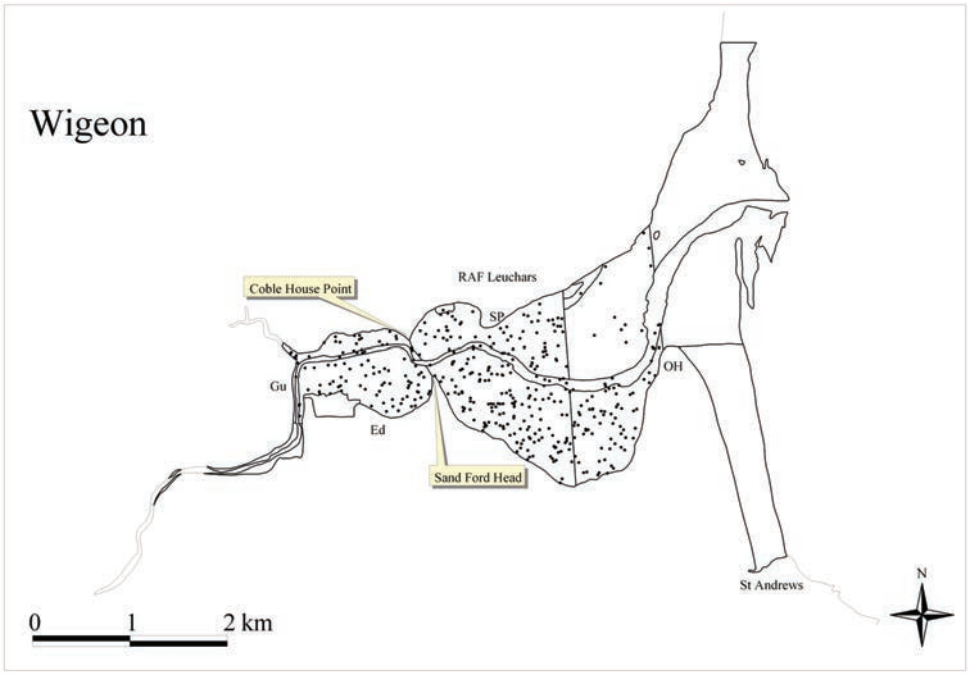
Site description

The Eden is a relatively small estuary positioned between the Firth of Tay to the north and the Firth of Forth to the south. The River Eden enters the estuary in the south-west corner and at low tide a narrow subtidal channel meanders across extensive intertidal flats. The estuary is predominately muddy in nature, although towards the mouth, the substrate becomes increasingly sandy. Areas of mussel beds and eelgrass occur in the western zones. Saltmarsh vegetation is present along the shores, with the greatest development at the south-western end, off Edenside. In some areas *Spartina* is invading the saltmarsh. The estuary mouth is flanked by sand dunes on both the northern and southern sides, with a spit on the southern shore extending into the estuary. The outer southern section of the estuary abuts an area of rocky shore at St Andrews. Regular over-flying of the estuary from RAF Leuchars occurs and this airbase also severely limits access along the northern shore. A paper mill with associated outfall is situated at Guardbridge. Recreational disturbance includes sailing, windsurfing, bait-digging and wildfowling.

Bird distribution 2001/02

Small numbers of Greylag Geese frequented the flats off the River Eden beyond Guardbridge, with a peak count of 37 in November. Shelduck peaked at 578 individuals in February and were distributed over much of the estuary with the exception of the beach around the mouth. Wigeon distribution was similar in that they also avoided the sandier substrates towards the mouth. Both Mallard and Teal occurred within the inner part of the estuary, with the greatest numbers around Guardbridge. Eider numbers steadily increased throughout the winter and were located within the main river channel and also offshore from south of the estuary mouth. Small numbers of Goldeneye occurred along the river channel throughout the length of the estuary, including upriver from Guardbridge. Red-breasted Merganser numbers peaked at 61 in November and generally occurred in the outer half of the estuary. The outer zones also hosted small numbers of Long-tailed Duck and up to 70 Common Scoter.

The highest Oystercatcher count was made in December when over 2,100 birds were recorded, located within the outer half of the estuary, from Coble House Point eastwards on the northern side, and from Sand Ford Head eastwards on the southern side. Small numbers of Ringed Plover used the mudflats mostly on the southern side of the channel between Sand Ford Head and Out Head. Conversely, virtually all of the Golden Plover were recorded within the inner zones around Guardbridge and north of the main channel around Shelley Point. There was a large influx of Golden Plover in November, when over 1,400 birds were present. By December, numbers had more than halved to 641 individuals and totally disappeared during the latter half of the winter. Grey Plover showed a reversed trend, with the peak count of 186 individuals made in January, when they were generally located on the southern flats between Sand Ford Head and Out Head. Lapwing numbers fluctuated throughout the winter, with the highest counts recorded at the start and end of the winter. They largely occurred on mudflats around Guardbridge, along with small numbers from both the middle of the estuary and the mouth. Both Knot and Dunlin frequented the central part of the estuary, although the distribution of the latter also extended onto the inner mudflats around Guardbridge. Dense concentrations of Dunlin also occurred south of Sand Ford Head. Highest numbers of Knot were counted in January, whilst Dunlin counts peaked in February. The peak count of 221 Black-tailed Godwit occurred in January. This was considerably higher than recent Core Counts and represented nationally important numbers. They were located mostly within the inner part of the estuary, adjacent to Guardbridge and also around Shelley Point. Bar-tailed Godwit counts steadily increased over the course of the winter, reaching a peak of 378 birds in February. In contrast to Black-tailed, Bar-tailed Godwit generally fed in the outer half of the estuary. Curlew were distributed over most of the estuary, with the densest concentrations around Guardbridge. After a mid-winter decline in numbers, the highest count of the season occurred in February, when 559 birds were again concentrated at the eastern end of the estuary.



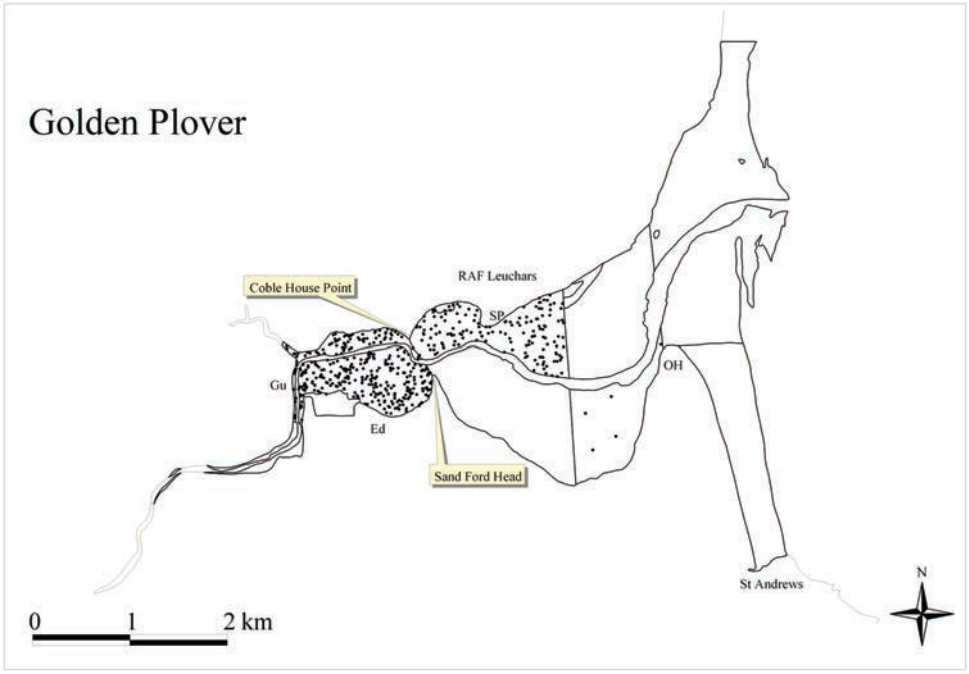


Figure 85. WeBS Low Tide Count distributions of Wigeon and Golden Plover at Eden Estuary, winter 2001/02. (Ed=Edenside, Gu=Guardbridge, OH=Out Head, SP=Shelley Point)

HAMFORD WATER
Essex

Internationally important: Dark-bellied Brent Goose, Teal, Ringed Plover, Grey Plover, Black-tailed Godwit, Redshank

Nationally important: Shelduck, Pintail, Avocet, Golden Plover, Knot, Dunlin, Curlew

Site description

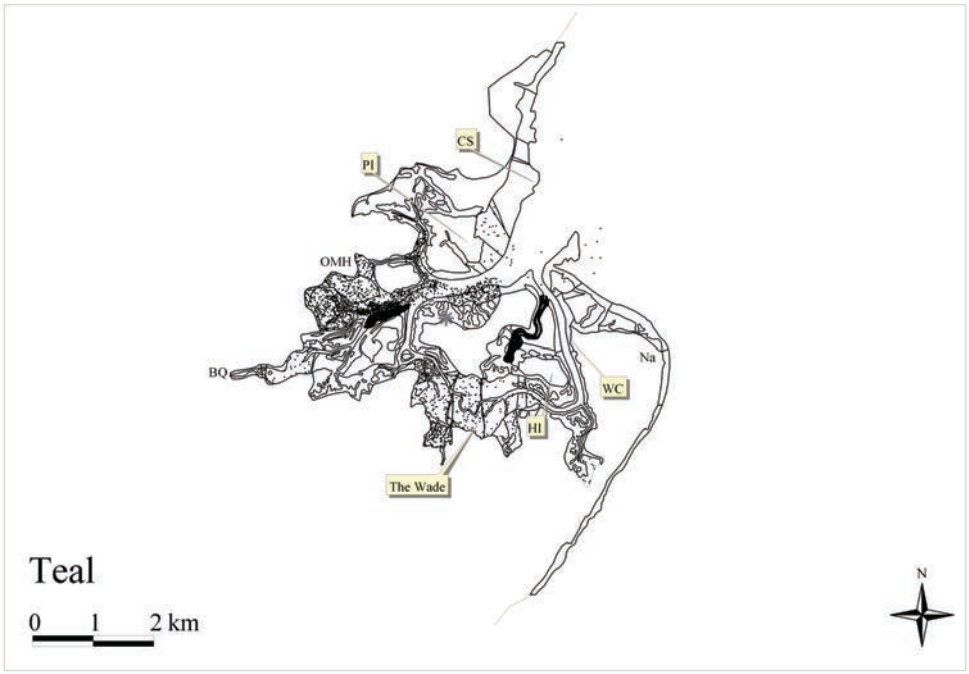
Hamford Water is a large, shallow, estuarine basin hosting a diverse mixture of habitats. On either side of the mouth there are shingle spits, topped by sand dunes and shell banks. The combined action of wind and waves are slowly pushing them inland over the saltmarsh. The rest of the area is a matrix of dissected saltmarshes, islands, channels and mudflats backed by a range of brackish, fresh and reed-fringed marshes. Many of the islands are former saltmarshes, now embanked and converted to wet grassland. However, some have reverted to saltmarsh after sea walls were breached at the end of the 19th century. Algae, such as *Enteromorpha* and eelgrass (*Zostera*) grow on the soft intertidal sediments. Industrial activity and urban sprawl are virtually absent with the exception of an explosive works along the north shore. There are high levels of aquatic recreational activities along the main channels, with marinas and moorings along the Walton Channel. Military helicopter training is a major source of disturbance to the waterfowl and three local wildfowling clubs shoot over some of the saltings and flats. As sea levels continue to rise, saltmarsh erosion is an ongoing problem (Buck 1997, Musgrove *et al* 2003).

Bird distribution 2001/02

Little Grebes were only found in the main channel and creeks and numbers reached a peak of 57 in January. A few Little Egret and Grey Heron were scattered amongst the saltmarsh creeks, along with up to 14 Mute Swan. Dark-bellied Brent Geese were distributed throughout the area, including both Crabknowe Spit to the north and The Naze to the south of the mouth. Single Light-bellied Brent Geese were identified in December and February. The highest numbers of Shelduck were also noted in February when the birds were widely distributed within the estuary, with the densest concentrations on the saltings off Old Moze Hall. Wigeon and Teal both frequented most of the creeks, channels and saltmarsh. Teal counts peaked in January when more than 9,000 were recorded. Pintail counts peaked in January and thereafter declined markedly. They were confined to the saltmarsh off Old Moze Hall. Most Shoveler were found in the main channel of Hamford Water, with the peak count of 107 seen in January. A few Eider, Goldeneye and Red-breasted Merganser also frequented the main channel.

Most Oystercatchers were found on the flats around Crabknowe Spit, north of the estuary mouth. There were lesser concentrations within the estuary, especially on the Wade saltings and on the flats off Old Moze Hall. More than 1,300 Ringed Plover were counted in November when they the majority were located on the Crabknowe Flats. Avocets also peaked in November when 386 birds were present, although they declined to 16 individuals by February. The creeks around Pewit Island and Crabknowe Spit were the most important areas for Avocets. Golden Plover increased during the winter and they were concentrated on the saltmarsh off Old Moze Hall and off the southern end of Hedge-end Island. Over 3,000 Grey Plover were recorded in January, mostly on the Crabknowe Flats and also on the Wade saltmarsh. Lapwing were generally scattered throughout the estuary, with most around Beaumont Quay and off Old Moze Hall. The former area was also favoured by Knot, along with the Wade saltings, whereas the Sanderling present were located on the coastal flats to the north and south of the estuary mouth. More than 10,600 Dunlin were recorded in February and they were distributed throughout the estuary, while a count of six Little Stint in January was more unusual. The distribution of the two species of godwit was distinctive. Bar-tailed Godwit were confined to the coastal flats, notably around Crabknowe, whereas Black-tailed Godwit utilised the muddier sediments found around Beaumont Quay and on the Wade saltings. Curlew were widely distributed and Redshank were present in high numbers throughout the winter, peaking at over 2,500 birds in February. Turnstone numbers were also at their highest in February, when more than 640 were present, mostly on the flats around Crabknowe Spit.

Of the five species of gull present, the most abundant was Black-headed, with an excess of 4,300 individuals counted in January.



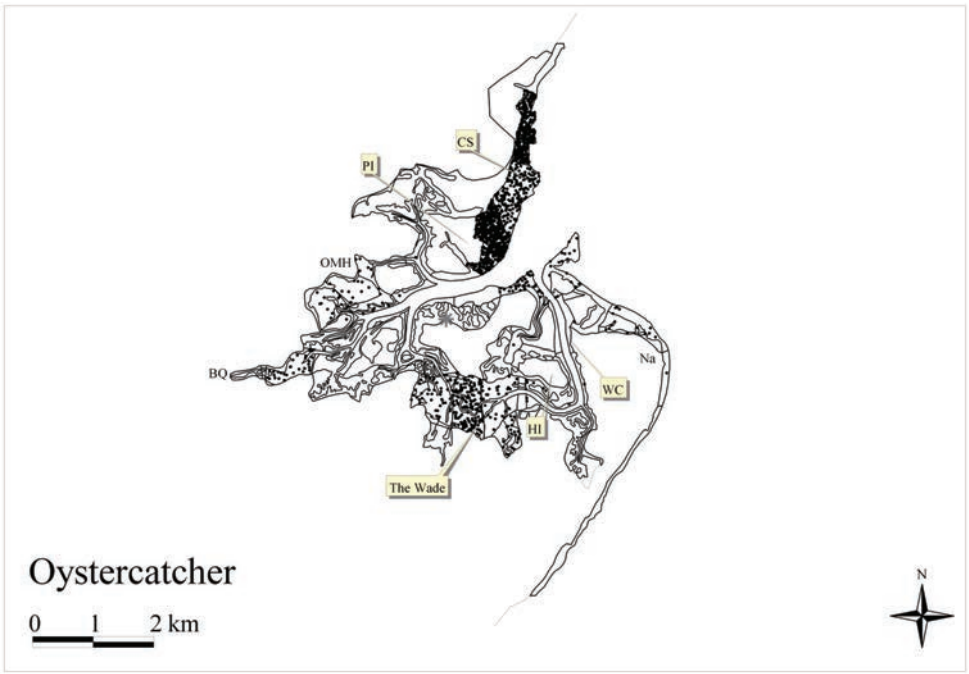


Figure 86. WeBS Low Tide Count distributions of Teal and Oystercatcher at Hamford Water, winter 2001/02. (BQ=Beaumont Quay, CS=Crabknowe Spit, HI=Hedge-end Island, Na=Naze, OMH=Old Moze Hall, PI=Pewit Island, WC=Walton Channel)

NORTH NORFOLK COAST

Norfolk

Internationally important: Little Grebe, Pink-footed Goose, Dark-bellied Brent Goose, Wigeon, Teal, Pintail, Knot, Bar-tailed Godwit, Redshank

Nationally important: Cormorant, European White-fronted Goose, Shelduck, Gadwall, Shoveler, Common Scoter, Red-breasted Merganser, Oystercatcher, Avocet, Ringed Plover, Golden Plover, Grey Plover, Sanderling, Dunlin, Black-tailed Godwit, Curlew, Turnstone

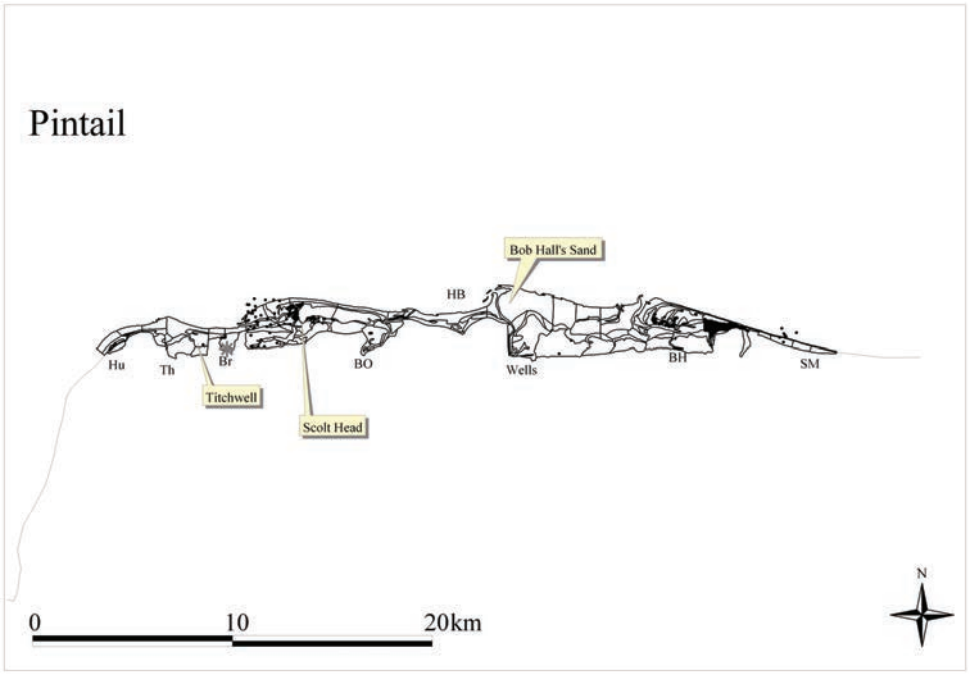
Site description

The North Norfolk Coast comprises the coastline from the northern edge of Hunstanton in the west to Salthouse Marshes in the east. The Coast forms one of the most diverse and complex estuarine systems anywhere within the UK with many small rivers and streams entering the sea along its length. There is no single principal river system present. This stretch of coast is the most extensive example of a barrier beach system in the UK and the large areas of saltmarsh (over 2,000 hectares) are the most important in the UK in terms of geomorphology and biology. There is also a coastal lagoon system (Blakeney Spit Pools). Industrial activity is largely absent and the main pressures are from recreation and exploitation of natural resources. Longer-term threats from sea-level rise may be a serious problem in the future (Prater 1981, Pritchard *et al* 1992, Davidson 1995, M Rooney pers comm).

Bird distribution 2001/02

The count of 100 Little Grebe in December was higher than numbers recorded during Core Counts over the most recent five years. Cormorant peaked at 81 birds, well below the Core Count totals. Little Egret numbers peaked at 50 birds in December exceeding the current threshold of National Importance. Most of these birds were found within the coastal saltmarsh. Up to 31 Grey Heron were recorded in the early winter period, with numbers declining by February, presumably as the herons returned to breeding colonies. As during previous winters, the majority of Dark-bellied Brent Geese frequented the saltmarsh, with the densest flocks located between Blakeney and Wells. Shelduck numbers exceeded all peak Core Counts over the last five years and occurred in greatest densities off Scolt Head and in Blakeney Harbour. Wigeon tended to feed within inland areas, away from the coastal saltmarshes. Gadwall were concentrated on the marshes at Titchwell in the west and Blakeney in the east, whilst Teal were widely distributed, apart from Holkham Bay. Mallard distribution was similar to Teal, however, the greatest concentrations occurred in the harbours at Brancaster, Wells and Blakeney. Similar to recent winters, internationally important numbers of Pintail also favoured Brancaster and Blakeney Harbours. The presence of an immature male King Eider brightened the Eider flock off Holkham Gap during the second part of the period. Goldeneye and Red-breasted Mergansers were generally located in the harbours.

Oystercatchers were widely distributed, with the fewest birds around Wells and Holkham. Ringed Plover and Grey were scattered throughout, although they avoided Holkham Bay. Conversely, Golden Plover were confined to Blakeney and Brancaster Harbours and the saltmarshes of Burnham Overy, Brancaster and Thornham. Lapwing were widespread and the greatest numbers occurred on the saltings between Brancaster and Burnham Ovary Staithe. As in previous years, most Knot were seen on Bob Hall's Sand. The peak count of more 1,200 Sanderling occurred in February and represented one of the few wader species to occur in Holkham Bay. Over 11,000 Dunlin were counted in January, approaching the threshold of international importance. Although widely distributed, the highest densities were found on Bob Hall's Sand. An impressive 1,169 Snipe were counted in January and the majority were recorded within saltmarsh areas. Up to 14 Jack Snipe were also noted from the marshes. Black-tailed Godwit were concentrated in Blakeney Harbour and they peaked at 181 birds in February, again higher than recent Core Counts. Both Bar-tailed Godwit and Curlew were found along the entirety of the Coast. Redshanks were present throughout in internationally important numbers, peaking at more than 3,900 birds in December, well above recent peak Core Counts. Most Turnstone were located at the eastern and western extremities of the Coast. The December peak of 585 individuals exceeded the threshold of national importance.



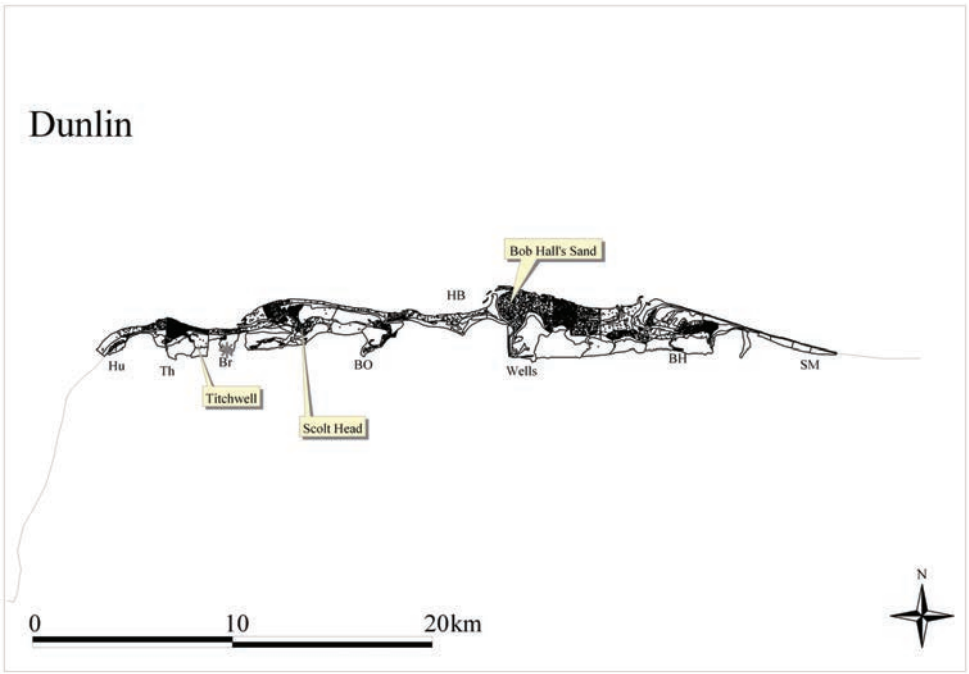


Figure 87. WeBS Low Tide Count distributions of Pintail and Dunlin at North Norfolk Coast, winter 2001/02. (BH=Blakeney Harbour, BO=Burnham Overy, Br=Brancaster, HB=Holkham Bay, Hu=Hunstanton, SM=Salthouse Marshes, Th=Thornham)

SOLWAY FIRTH

Cumbria, Dumfries & Galloway

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

Nationally important: Great Crested Grebe, Cormorant, Wigeon, Teal, Shoveler, Scaup, Common Scoter, Red-breasted Merganser, Golden Plover, Grey Plover, Sanderling

Site description

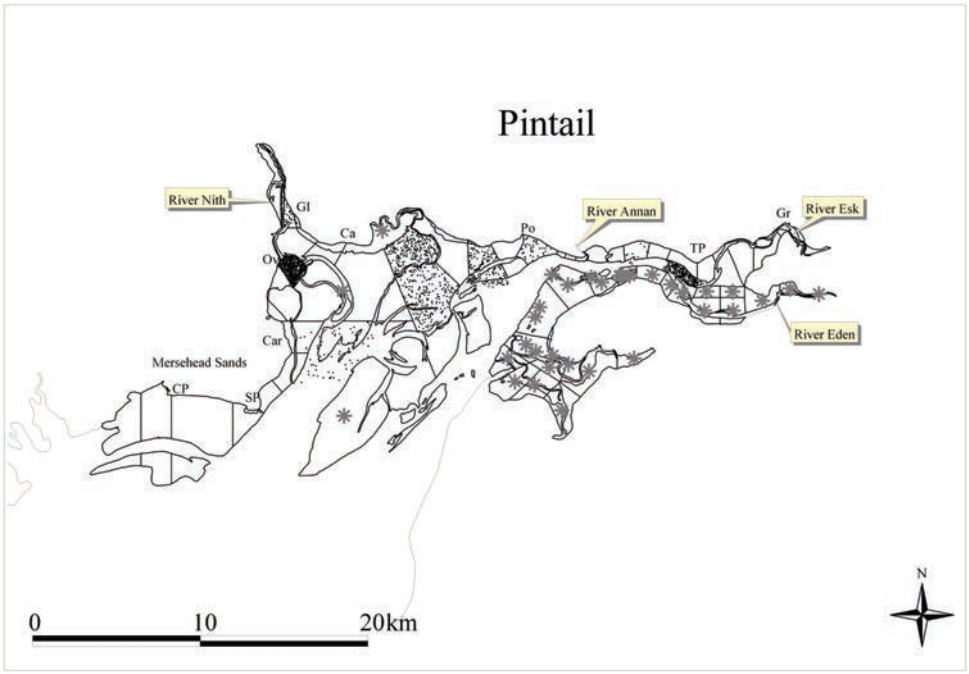
The Solway Firth, as considered by WeBS, comprises the coastline between Mersehead Sands on the Scottish coast to Workington in Cumbria, but only the northern side of the firth was counted during 2001/02. The principal inputs to the estuary are from the rivers Esk, Eden, Nith and Annan. The majority of the substrate is sandy in character and there are several isolated rocky scars, principally at the mouth of Moricambe Bay. The estuary is dynamic in nature, with mobile subtidal sand banks and intertidal sand flats. Large 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, such as the presence of shellfisheries (Davidson 1996a, C Hartley pers comm)

Bird distribution 2001/02

Great Crested Grebe and Cormorant counts peaked in the first half of the winter, with subsequent rapid declines by February. Barnacle Geese peaked at 4,872 birds in January when the majority were found around Glencaple and Caerlaverock. Shelduck were widely distributed between Overton and Torduff Point. Wigeon and Teal were concentrated along the River Nith creek from Glencaple northwards, although both species were also found scattered along the northern coastline between Powfoot and Gretna. Mallard were widely distributed, with the greatest concentrations off Craigneuk Point in the west and Powfoot in the east. Pintail were concentrated in discrete areas, namely along the River Nith off Overton, around the channel off Torduff Point and around Powfoot. More than 1,700 Pintail were noted in November, which represented the maximum count. Nationally important numbers of Scaup mainly aggregated offshore between Carsethorn and Southerness, with lesser numbers off Powfoot. Goldeneye were scattered along the channels of the River Nith and Esk, with their numbers gradually increasing during the course of the winter. Small numbers of both Red-breasted Merganser and Goosander were widely scattered along the channels.

Oystercatchers were ubiquitous in their distribution, with over 27,000 recorded in December, followed by a sharp decline in January. The majority of Ringed Plover were found in the outer part of the estuary, whilst Grey Plover frequented the mudflats off Caerlaverock. Golden Plover peaked in November, when 1,752 were present, concentrated between Powfoot and Torduff Point and off Overton, with lesser numbers adjacent to Southerness Point. Lapwing distribution was similar to that of Golden Plover, although Southerness was avoided. January was the only month in which appreciable numbers of Lapwing were recorded, when they were concentrated to the south of Carsethorn. Substantially fewer Knot were present than in previous years, although it is possible that the majority of the 'missing' birds were on mudflats along the southern side of the Solway, which was not counted. Numbers of Purple Sandpiper and Turnstone were lower than the previous winter and, as in previous years, Southerness was the most important area. The peak count of Dunlin was similar to that of winter 2000/01, and birds were generally distributed throughout, with the densest concentrations off Caerlaverock. Bar-tailed Godwit were virtually absent after November, with the bulk of the birds frequenting parts of the estuary not covered during winter 2001/02. Curlew and Redshank both exceeded the threshold of international importance, with the greatest numbers between the mouth of the River Annan and Torduff Point, and also around the River Nith.

Black-headed Gull was the most abundant of the four species of gull recorded, with Herring Gull the next most abundant. Small numbers of Common and Lesser Black-backed Gulls were also present.



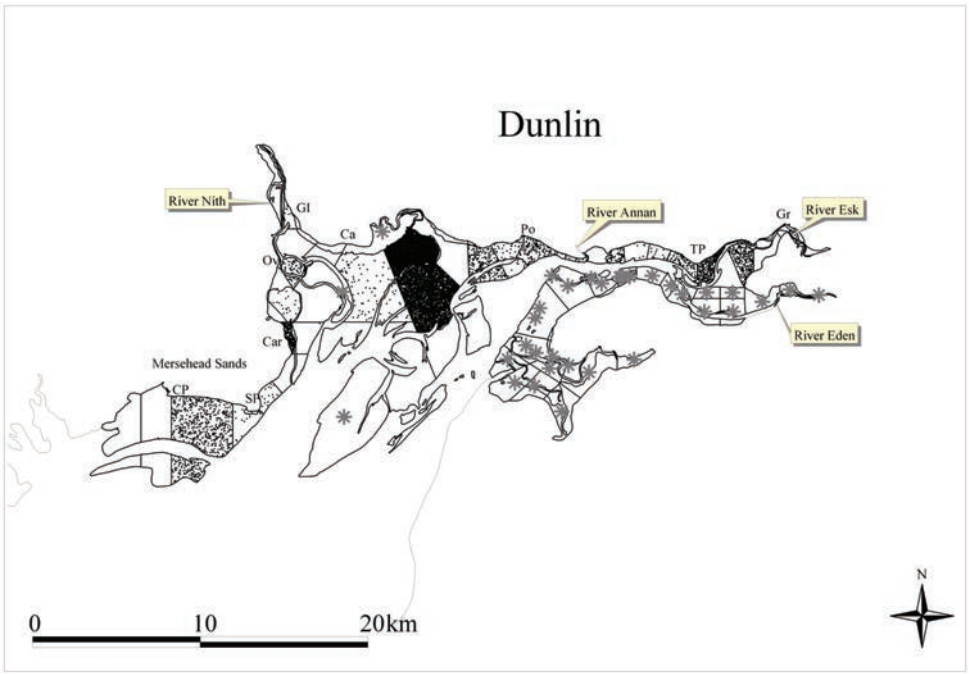


Figure 88. WeBS Low Tide Count distributions of Pintail and Dunlin at Solway Firth, winter 2001/02. (Ca=Caerlaverock, Car=Carsethorn, CP=Craigneuk Point, Gl=Glencaple, Gr=Gretna, Ov=Overton, Po=Powfoot, SP=Seafield Point, TP=Torduff Point)

SWALE ESTUARY

Kent

Internationally important: Wigeon, Pintail, Shoveler, Black-tailed Godwit, Redshank

Nationally important: Little Grebe, European White-fronted Goose, Dark-bellied Brent Goose, Shelduck, Teal, Oystercatcher, Avocet, Golden Plover, Grey Plover, Knot, Dunlin

Site description

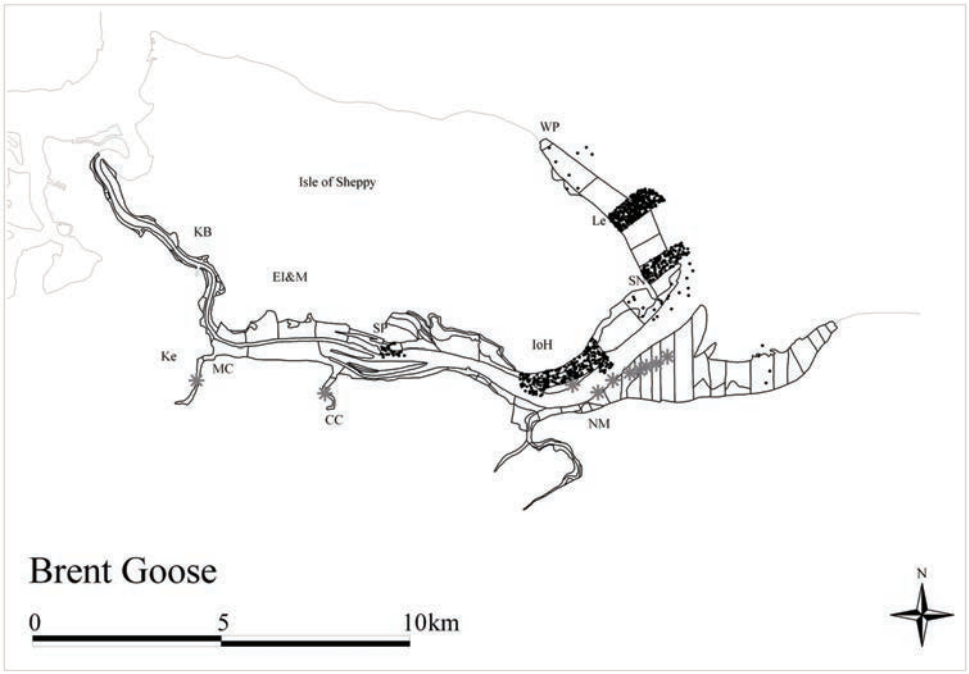
The Swale Estuary separates the Isle of Sheppey from the Kent mainland and adjoins the Medway Estuary to the west. At low tide there are extensive inter-tidal flats, with a relatively narrow water channel. The inner zones are muddy and the sediments become increasingly sandy towards the mouth. Most of the site is surrounded by saltmarsh, with the most substantial expanses along the northern shore. There is a sand and shingle spit at Shell Ness, behind which is a mixture of saltmarsh grading into grassland. Industrial activity is limited and includes port and harbour facilities, a paper mill at Kemsley and boat building facilities at Conyer Creek. Most leisure activities are centred on sailing and other water sports and there are three marinas within the estuary. Much of the area is subject to active wildfowling (Buck 1997, Musgrove *et al* 2003).

Bird distribution 2001/02

Little Grebe peaked at 64 birds in January and were mostly concentrated in the main channel off Kemsley within the inner zone, with a few towards Kingsferry Bridge. Most Great Crested Grebe were found on the sea off Leysdown. The maximum count of 311 birds in February was much higher than usual and breached the threshold of national importance on this occasion. Up to 19 Little Egret were scattered throughout the saltmarsh and creeks. From December onwards, counts of Dark-bellied Brent Geese increased reaching a maximum in February. They were mainly recorded on the flats between Warden Point and Shell Ness and off the Isle of Harty - different to the previous pattern recorded during 1992/93, when virtually all of the birds occurred within the estuary itself. Shelduck were widely distributed throughout. Wigeon and Teal occurrence was similar, with concentrations south of the Isle of Harty, and off Conyer Creek and Elmley Marshes. Pintail and Shoveler were mostly located off Elmley Island at the inner end of the Swale. Pochard and Goldeneye were confined to the main channel at the confluence of Milton Creek, with the largest count of the former recorded in February. Low numbers of Red-breasted Merganser were widely scattered.

Oystercatcher frequented the coastal stretches of the Swale between Warden Point and Shell Ness on the northern side and on the flats off Seasalter on the southern side. Counts fluctuated from a peak of over 6,000 in December (higher than recent Core Counts) to 350 recorded in January. The peak count of 118 Avocet in December reflected the recent decline of this species on the Swale, occurring mainly off Spitend, Elmley Island. Ringed Plover were generally located in the inner zones and on the outer coastal flats, whilst Golden Plover were widely distributed within the estuary, particularly along the southern shoreline and off Seasalter. The greatest numbers of Grey Plover and Lapwing were found off Harty Ferry in the north and on the flats off Nagden Marshes on the southern side of the channel. Virtually no Lapwing occurred outside the estuary, whilst Grey Plover also used the coastal flats. The distribution of Knot was also mainly coastal, although there was an additional group off Elmley Marshes. Sporadically occurring Sanderling were generally confined to the mudflats at Shell Ness. Dunlin peaked at over 9,000 individuals in December, the greatest concentrations recorded in the inner half and on the flats off Seasalter. Snipe were scattered within the estuary, although the majority were recorded from the inner sections. Most Black-tailed Godwit also occurred in the inner half of the Swale, particularly off Elmley Island, whereas the majority of the Bar-tailed Godwit utilised the coastal flats around Leysdown and Seasalter. Curlew were found throughout the area and their numbers fluctuated, with the highest count made in February. The distribution of Redshank was similar to that of Curlew, although greater concentrations occurred within the creeks. The peak count of 1,777 Redshank was higher than recent Core Counts. Most Turnstone were found on the coastal mudflats, with small numbers also present off Elmley Island.

Of the five species of gull present, Black-headed were the most abundant, followed by Herring and Common Gulls.



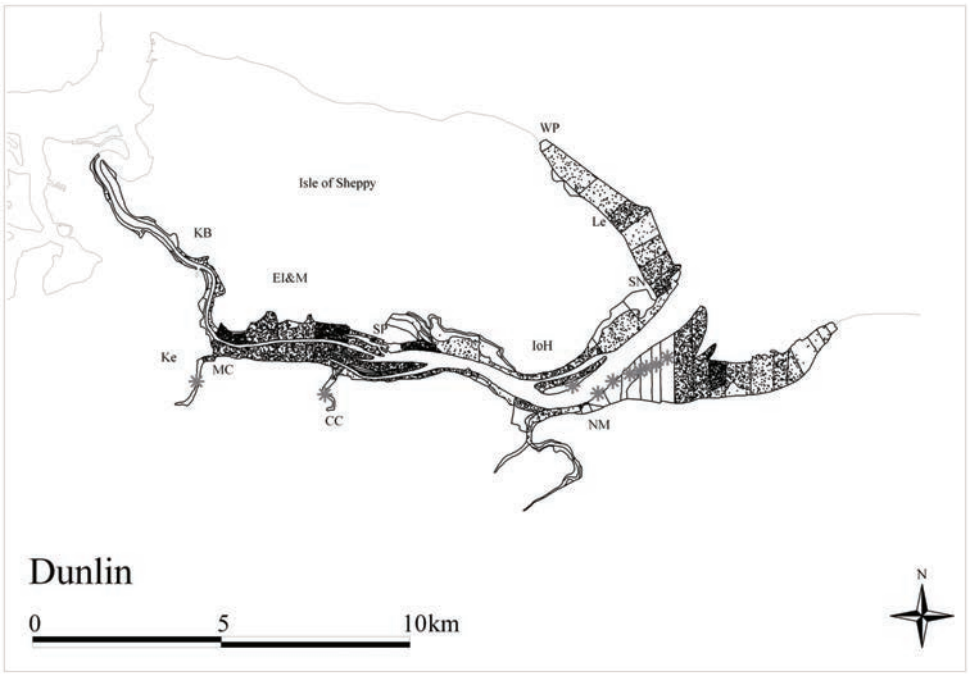


Figure 89. WeBS Low Tide Count distributions of Dark-bellied Brent Goose and Dunlin at the Swale Estuary, winter 2001/02. (CC=Conyer Creek, El&M=Elmley Island & Marshes, IoH=Isle of Harty, KB=Kingsferry Bridge, Ke=Kemsley, Le=Leysdown, MC=Milton Creek, NM=Nagden Marshes, SN=Shell Ness, Sp=Spitend, WP=Warden Point))

WIGTOWN BAY

Dumfries & Galloway

Internationally important: Pink-footed Goose

Nationally important: Whooper Swan

Site description

Wigtown Bay is the estuary of the River Cree and is one of the largest estuaries in south-west Scotland. The River Bladnoch along with Palnure and Moneypool Burns also flow into the Bay. At low tide, the site is composed of extensive intertidal flats of mud and sand, rich in invertebrates. Much of the western shore, particularly the north-west, is fringed by saltmarsh. On the eastern shore there is a long ridge of sand and shingle. Wigtown Bay is one of the few estuaries along this part of the Scottish coastline to support large numbers of wintering waterfowl. Most activities around the site involve natural resource exploitation, such as fishing, bait-digging and wildfowling. Leisure activities are not intensive.

Bird distribution 2001/02

It should be noted that no Low Tide counts were made in December 2001. Pink-footed Geese were recorded on the estuary during the second half of the winter, with numbers increasing to a peak of 1143 during February. However, it is likely that the estuary is more important as a nocturnal roosting area, rather than a diurnal feeding area. The majority of the geese were found on the south west part of Baldoon Sands. Shelduck were widely distributed within the Bay, particularly on Baldoon Sands and associated saltings and Kirkbride Bank on the eastern shore. Numbers fluctuated during the winter and the peak count of 384 was recorded in February. Wigeon and Pintail showed a similar distribution; both species were concentrated within the south western corner of Baldoon Sands (adjacent to the Lady Burn) and near the River Bladnoch on Wigtown Sands. Some Wigeon also fed within the saltmarsh immediately to the south of the Bladnoch. Just over 1,000 Wigeon were noted in November, although numbers declined rapidly to a mere 35 by February. Pintail numbers also peaked at 59 in November, before a mid-winter decline to 15 in December. This was followed by a small increase to 39 individuals in February. Small numbers of Mallard (up to 53), Shoveler (up to 20) and Red-breasted Merganser frequented Kirkbride Bank, the Rivers Cree and Bladnoch and the East Channel respectively.

Although Oystercatcher were widely distributed, the Baldoon Flats off Orchardton in the south western quarter, Kirkbride Bank on the eastern shore and along the northern part of the River Cree held the greatest concentrations. The highest numbers were recorded in January, when just over 1,700 individuals were present. Small numbers of Ringed Plover and around 30 Golden Plover were noted in November only, when both frequented the same area of Baldoon Sands adjacent to the disused Baldoon Airfield. Lapwing peaked at 190 in January. They frequented the saltmarsh to the north of Wigtown and the south west corner of Baldoon Sands. The distribution of Knot and Bar-tailed Godwit was centred on Kirkbride Bank in the east (a sector including areas comprising Kirkbride Fisheries), and the area around Innerwell in the west, with additional Knot found at Baldoon Sands. Numbers were generally low, with a peak of 130 in January for the former and 53 in November for the latter. Dunlin were present in greater abundance, with over 3,300 birds in November. The densest concentrations were seen around the outer flats of Baldoon Sands. Several species of wader showed a similar pattern of decline over the winter, with the maximum counts in the first part of the winter and very low numbers or absence by February. The peak count of 728 Curlew occurred in February. This was slightly higher than the peak Core Count of 2001/02, but substantially lower than the peak Core Counts made during the winters of 2000/01 and 1999/00. Their distribution was generally scattered, although larger concentrations were located around Wigtown. It is possible that individuals feeding within the saltmarsh were missed, which would underestimate the Low Tide count. In contrast to several other wader species, Curlew numbers steadily increased through the winter. Redshank numbers declined from the November peak of 96 to a single bird in February, with most birds recorded around the channels of the Cree and Bladnoch in the northern half of the Bay.

Of the five species of gull present, Common Gull was the most abundant, with over 300 individuals in November and February.

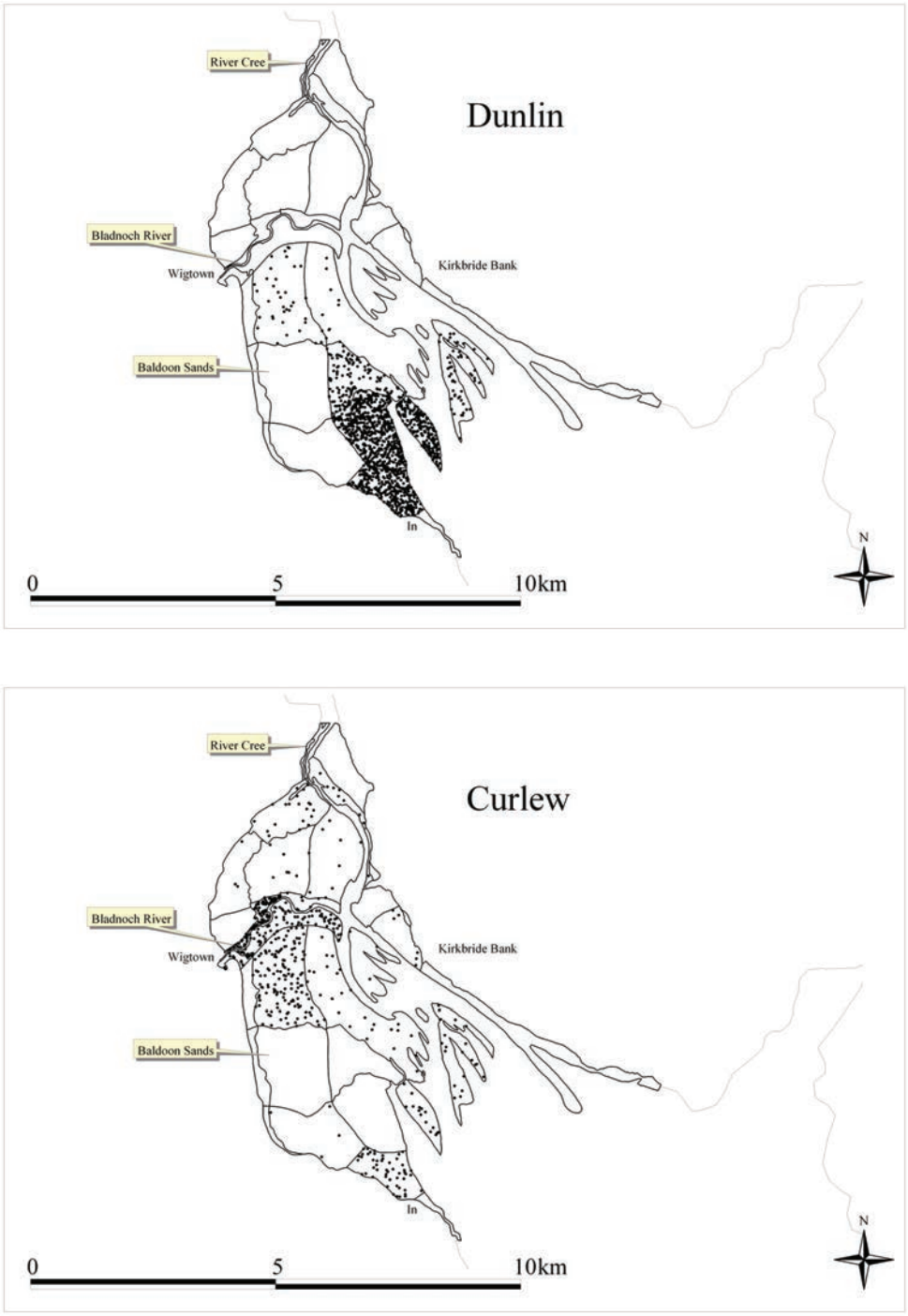


Figure 90. WeBS Low Tide Count distributions of Dunlin and Curlew at Wigtown Bay, winter 2001/02. (In=Innerwell)

BLACKWATER ESTUARY

Essex

Internationally important: Dark-bellied Brent Goose, Golden Plover, Grey Plover, Dunlin, Black-tailed Godwit, Redshank

Nationally important: Cormorant, Shelduck, Wigeon, Teal, Pintail, Goldeneye, Avocet, Knot, Curlew

Site description

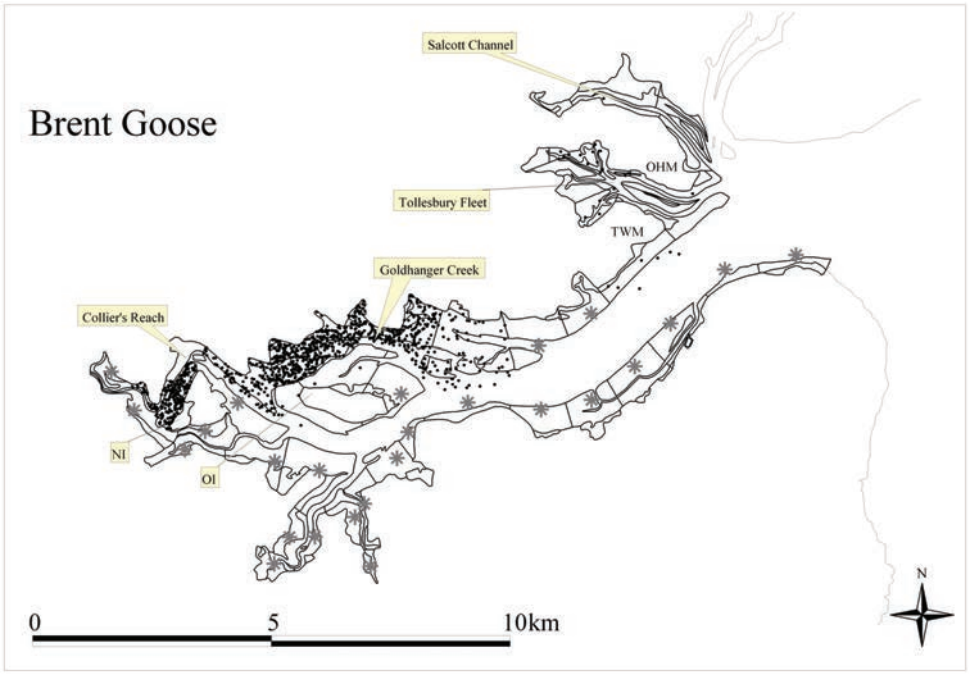
The Blackwater Estuary is the largest estuary in Essex and forms part of the Mid-Essex Coast SPA Complex. The northern part is characterised by small channels running through large tracts of saltmarsh and grazing marsh. Old Hall Marshes, an extensive area of grazing marsh, managed by the RSPB, is found within this section of the estuary. Tollesbury Wick Marshes is managed by Essex Wildlife Trust, and is also important for wintering waterbirds. The main part of the Blackwater SPA is characterised by mudflats fringed by saltmarsh on the upper shores, with shingle, shell banks and offshore islands a feature of the tidal flats. The surrounding terrestrial habitats (the sea wall, ancient grazing marsh and its associated fleet and ditch systems, plus semi-improved grassland) are also of conservation interest. The site suffers from saltmarsh and mudflat erosion, which may contribute to the re-suspension of dormant pollutants. Recreational disturbance and dredging could also impact on birds using the estuary.

Bird distribution 2002/03

Counts were undertaken predominantly on the northern shore only. Little Grebe and Great Crested Grebe did not exceed 20 individuals. The former tended to shelter in Salcott Channel, whilst the latter were more concentrated in the main estuary, in the vicinity of Osea Island. Cormorant, Little Egret and Grey Heron were found in low numbers throughout the main estuary channel at low tide. Dark-bellied Brent Geese were found on the northern shore, especially to the north of Osea Island. Shelduck showed a similar distribution, perhaps reflecting their similar foraging habits, although the south side of Osea Island was also favoured. Wigeon and Teal also displayed associative distributions, and were found in high densities at two of the Blackwater's outer arms, Tollesbury Fleet and Salcott Channel, possibly as a result of directed management at the nearby nature reserves. These species were also located in lower densities in the inner and middle estuary, especially near Osea and Northey Islands. Mallard, Pintail and Goldeneye were scattered throughout, with concentrations at Tollesbury and Salcott. Pintail showed similarly high densities at Goldhanger Creek and to the northeast of Northey Island. Red-breasted Merganser peaked at 32 in November, with a small congregation south of Osea Island.

The majority of Oystercatcher occurred around Osea Island, with a few also on the outer estuary. The outer reaches also contained some Avocet, numbers of which increased to a maximum of 151 in February. These birds were seen in greatest concentrations at Collier's Reach, whilst Ringed Plover were scattered throughout the estuary. The area around Old Hall Marshes supported high densities of Golden Plover, extending throughout Tollesbury Fleet and into the outer estuary. Large aggregations were also seen at Collier's Reach and the area north of Osea Island. Grey Plover were present in sizeable flocks; favouring the outer estuary, with concentrations in Salcott Creek, Tollesbury Fleet and the Tollesbury Wick Marshes area. Lower densities were recorded on sectors further upriver, which were considerably more densely populated in 1994/95. Lapwing peaked at 11,053 and the greatest concentrations were also seen in the northern creeks, especially on the islands situated in the channels. The areas west and north of Northey Island were also frequented. Substantial numbers of Knot and Dunlin were seen, with peak counts of 1,700 and 13,786 birds respectively. Goldhanger Creek was a popular area for foraging Knot, whilst Dunlin were ubiquitous. Bar-tailed Godwit were largely restricted to Goldhanger Creek and Tollesbury Fleet. Black-tailed Godwit were more heavily concentrated in Salcott Channel and around Northey Island. Movement into the former appears to be relatively recent. Curlew and Redshank and Turnstone were evenly distributed throughout, although the latter did show some aggregation on the outer estuary sectors, which are likely to be characterised by coarser sediments utilised by Turnstone prey.

Gulls were not recorded in high numbers, the November peak count of 829 Black-headed Gull representing the maximum. Apart from a peak of 140 Common Gull, no other gull species was ever counted in numbers greater than 32.



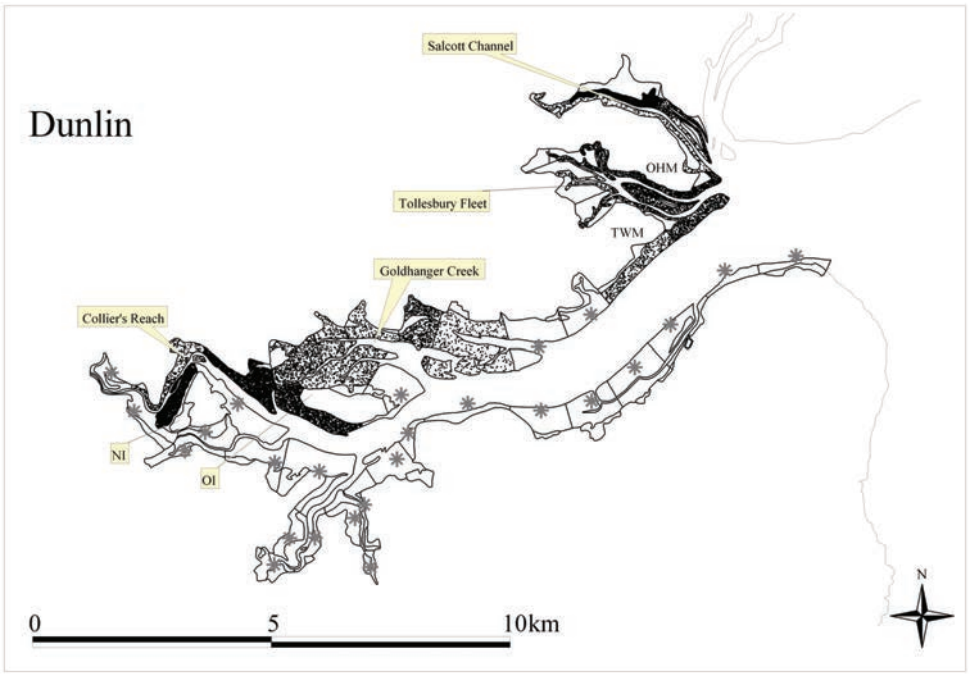


Figure 91. WeBS Low Tide Count distributions of Dark-bellied Brent Goose and Dunlin at Blackwater Estuary, winter 2002/03. (NI=Northey Island, OHM=Old Hall Marshes, OI=Osea Island, TWM=Tollesbury Wick Marshes)

BREYDON WATER
Norfolk

Internationally important: Pink-footed Goose, Wigeon, Shoveler, Golden Plover, Black-tailed Godwit, Redshank

Nationally important: Bewick's Swan, European White-fronted Goose, Teal, Pintail, Avocet

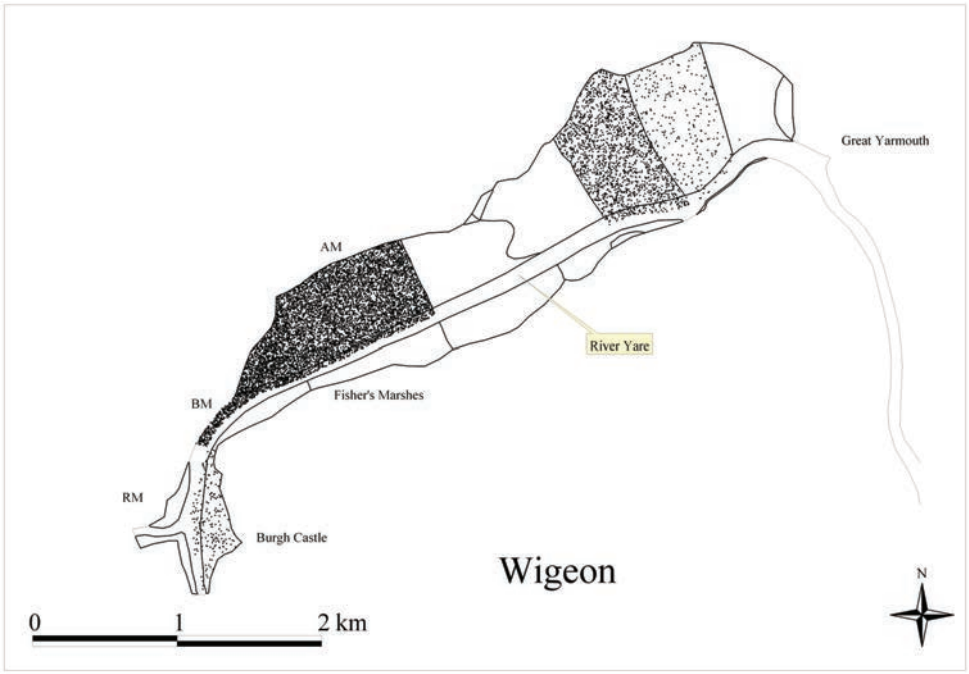
Site description

Breydon Water is a bar-built estuary separated from the North Sea by the spit of land on which Great Yarmouth sits. The estuary forms the lower reaches of the Yare and Waveney rivers, which drain much of central East Anglia. The rivers are tidal for many miles inland but only the estuary area from the confluence of the rivers is considered here. At high tide, Breydon Water forms a large lake but as the tide recedes, the only water that remains forms a narrow channel, well marked by buoys for the numerous leisure cruisers. There are 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. These form an extensive area of grazing marsh that has been subject to varying degrees of drainage in recent years. The main high tide roosts occur at the RSPB reserve at Berney Marshes (only accessible by boat, train or a very long walk) and in the eastern saltmarsh. The main conservation issues in the area involve boating, shooting and grazing marsh management. The river channel leading out through Great Yarmouth to the sea is highly industrialized (Davidson 1995).

Bird distribution 2002/03

This account is based on three months' data only, as no counts were made in December. Cormorant were confined to the main channel off Burgh Castle, with a mid-winter dip in numbers. Shelduck were thinly scattered throughout, although a small congregation was located adjacent to Reedham Marshes. As in previous winters, peak Shelduck numbers occurred in November (245 birds), before falling rapidly to 30 individuals by January. Shelduck Low Tide and Core Counts have both decreased over the past few years, from the high point of 2000/01, when around 500 individuals were noted by both surveys. The peak count of Wigeon exceeded the threshold of international importance with 16,000 individuals present in January. Greatest densities occurred on the mudflats bordering Halvergate and Reedham Marshes, with lesser concentrations towards the eastern end of the estuary. Both Teal and Mallard were mostly found at the eastern end of the estuary, with both species recording their highest counts in January. Pintail numbers were at their highest in February, with the birds scattered within the eastern half. Shoveler frequented the mudflats around the Acle Mill.

The numbers of Avocet wintering at Breydon Water has increased dramatically in recent years; the peak count of 192 individuals in November represented a record Low Tide count. They were widely distributed within the central part of the estuary, on either side of the River Yare. Oystercatcher were also present in the central part of the estuary, although mainly north of the Yare. Small numbers of Ringed Plover were confined to the southern flats off Fisher's Marshes. Golden Plover were fairly mobile around the estuary, often moving to the surrounding marshes. This is reflected in the counts, when more than 8,000 Golden Plover were counted in November, only nine in January and none in February. These birds were concentrated in two main areas and virtually all were located north of the River Yare. Similarly, Lapwing occurred in large numbers on the surrounding marshes and numbers on the estuary were prone to large fluctuations. Again, the counts show that over 10,000 were recorded in November, with few in January and February. Unlike the previous species, Lapwing were widely distributed, both to the north and south of the River Yare and off Burgh Castle at the south-western end of the estuary. Both Grey Plover and Knot were only recorded in low numbers during the second half of the winter, with the majority to be found at the eastern end of the estuary. Dunlin numbers were at their highest at the end of the winter. Both Black-tailed Godwit and Curlew were widely scattered, although they generally avoided the mudflats in the north-east. Redshank numbers at low tide have increased over recent years, although peak Core Counts are relatively stable. They occurred in nationally important numbers in November when the peak of 1,497 was present. Generally widely distributed, some denser concentrations were along the south-eastern shoreline, along with the extreme south-western end off Burgh Castle.



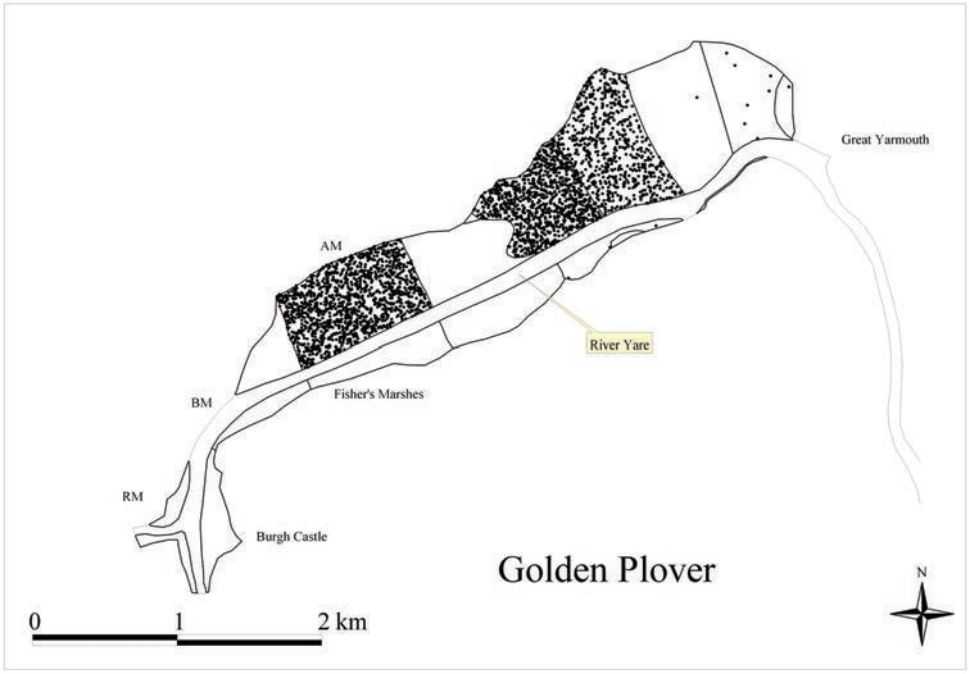


Figure 92. WeBS Low Tide Count distributions of Wigeon and Golden Plover at Breydon Water, winter 2002/03. (AM=Acle Mill, BM=Berney Marshes, RM=Reedham Marshes)

MORAY FIRTH
Highland

Internationally important: Redshank

Nationally important: Red-throated Diver, Whooper Swan, Greylag Goose, Wigeon, Teal, Pintail, Scaup, Long-tailed Duck, Common Scoter, Velvet Scoter, Goldeneye, Red-breasted Merganser, Oystercatcher, Bar-tailed Godwit, Curlew

Site description

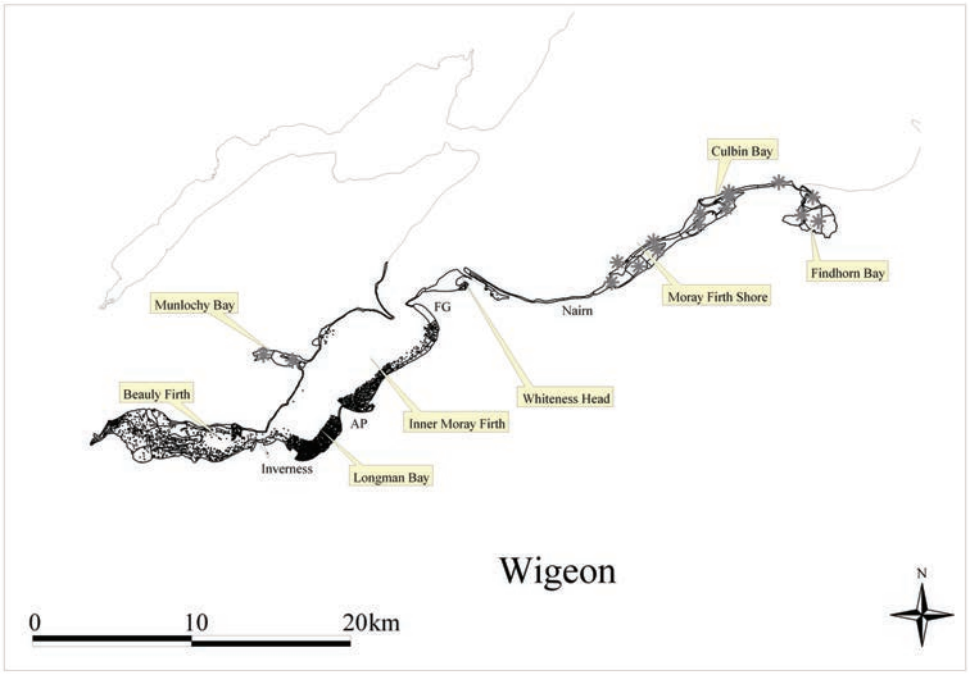
The Moray Firth is a large estuary on the north-east coast of Scotland. The estuary comprises three main sections; the innermost Beauly Firth, the central inner Moray Firth and the outer Moray Firth shore, that extends eastwards from Fort George to encompass Whiteness Head, Nairn, Culbin Bar and Findhorn Bay. At low tide there are muddy intertidal flats exposed in the uppermost parts of the Beauly Firth, Munlochy Bay and Findhorn Bay. There are sand flats in the central part of the Beauly Firth and along the outer shore around Whiteness Head, Culbin Bar and the outer parts of Findhorn Bay. There are also intertidal flats that are a mixture of shingle, mud and sand. Large beds of *Zostera* and *Ruppia* occur in Beauly Firth and saltmarsh has developed in several areas. There is widespread recreational use of the area, including boating, trial-biking, horse riding and walking. Much of the saltmarsh at Findhorn and Whiteness Head is grazed and fish-netting takes place at Findhorn, Ardersier (near Fort George) and Whiteness. Commercial cockling and bait-digging also occur, whilst wildfowling takes place over much of the estuary, particularly at Findhorn and Culbin. Industrial activity includes port facilities at Inverness and Whiteness and boat yards at Inverness and Findhorn. Fishing harbours are found at Nairn, Beauly and Charleston Ferry.

Bird distribution 2002/03

During 2002/03, only the Beauly Firth and Inner Moray Firth were covered. Red-throated Diver peaked in February, when most of the birds occurred between the A9 and Longman Bay. Up to 67 Slavonian Grebe were also concentrated off Longman Bay. Cormorant were generally distributed within the Beauly Firth and the inner Moray Firth. Mute Swan gradually increased during the course of the winter, mostly concentrated between Alturlie Point and Inverness. Pink-footed Geese were recorded from the inner reaches of the Beauly Firth to Alturlie Point, with a few also around Whiteness Head. The distribution of Greylag Goose was similar although they were absent from Whiteness Head. Shelduck mostly occurred along the southern side of the inner zones, with only a few birds in the Beauly Firth. Numbers of Wigeon peaked in January with dense concentrations in the Beauly Firth as well as between Inverness and Fort George. Teal peaked at over 2,700 in November and their distribution was similar to Wigeon, although fewer birds were located in the Beauly Firth and towards Fort George. Mallard were widely distributed, whilst Pintail, reaching maximum numbers in December, were concentrated in Longman Bay. The peak Scaup count (553 in February) was higher than the mean five-year peak Core Count and apart from small numbers occurring at the mouth of the Caledonian Canal at Inverness, most frequented the estuary between Longman Point and east of Alturlie Point. Both Eider and Long-tailed Duck were present around Fort George and Whiteness Head, the latter also present around Inverness. The greatest densities of Goldeneye were in Longman Bay, although they were also scattered along the channels in the Beauly Firth and along the northern shore of the Inner Moray Firth. Red-breasted Merganser were scattered throughout, with the densest concentrations in Longman Bay.

Oystercatcher counts were relatively stable and were widely distributed, with denser concentrations in Longman Bay, around Alturlie Point and Whiteness Head. Lapwing numbers were generally low and displayed a widely scattered distribution, including the inner Beauly Firth. Low numbers of Knot were recorded with the favoured areas being Longman Bay and Whiteness Head. Dunlin frequented the southern side of the Inner Moray Firth and the inner part of the Beauly Firth. Bar-tailed Godwit were concentrated around Whiteness Head, Fort George and Longman Bay with smaller numbers in the Beauly Firth. The distribution of Curlew and Redshank was generally similar to that of the Bar-tailed Godwit, although in greater numbers within the Beauly Firth and fewer birds around Fort George and Whiteness Head.

The most abundant gull species was Herring Gull followed by Black-headed Gull (27,000 and 7,000 in February respectively).



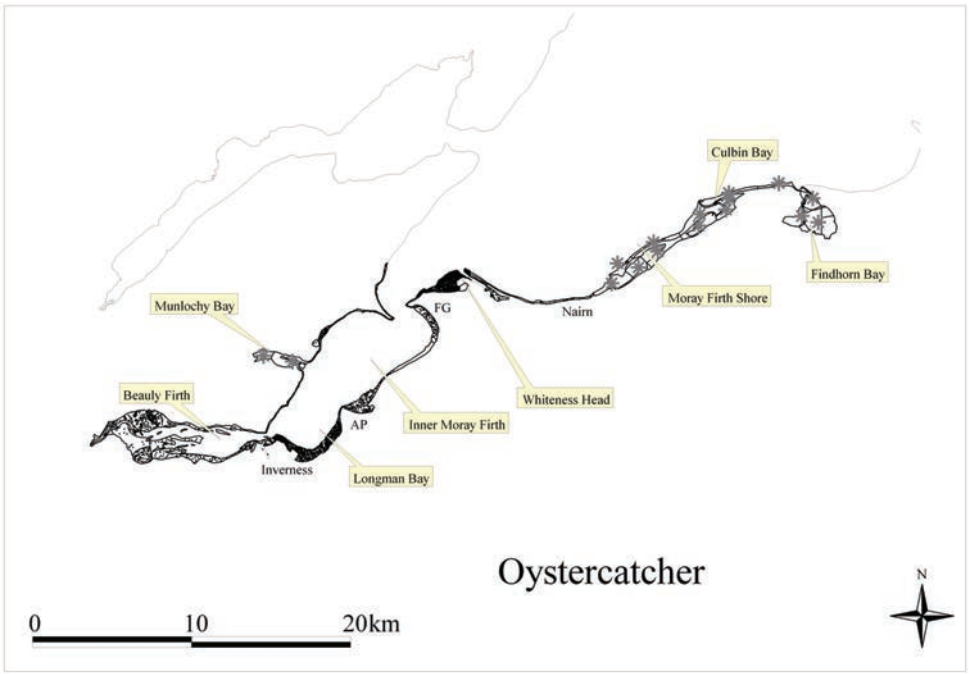


Figure 93. WeBS Low Tide Count distributions of Wigeon and Oystercatcher at Moray Firth , winter 2002/03. (AP=Alturlie Point, FG=Fort George)

PEGWELL BAY
Kent

Internationally important: None

Nationally important: Red-throated Diver, Great Crested Grebe, Golden Plover

Site description

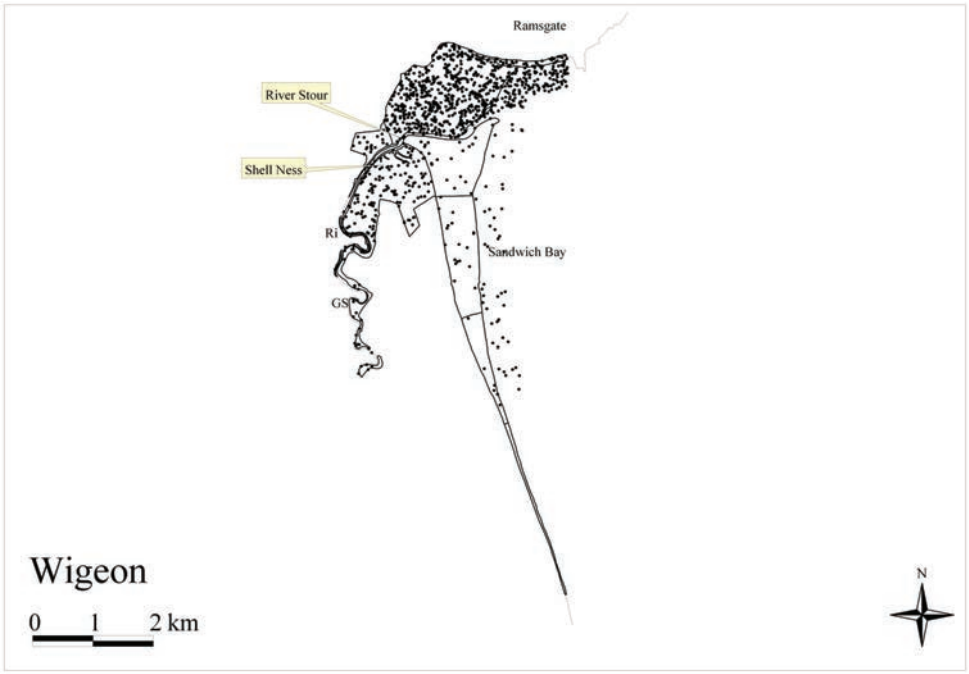
Pegwell Bay is a small estuary at the mouth of the River Stour in east Kent. For much of the length, the Stour is narrow, although it broadens considerably at the mouth. The inner estuary substrates are composed of fine, muddy particles and the sediments become increasingly sandier as the estuary broadens into Sandwich Bay. There are narrow rocky outcrops in the north-eastern section, between the Pegwell and West Cliff areas of Ramsgate. Saltmarsh has developed around both banks of the River Stour. Along the western side, however, most saltmarsh has been lost via land-claim. Saltmarsh habitat along the eastern bank is more extensive. The shoreline to the south of the Stour is backed by a long stretch of bare shingle, behind which there are extensive dunes and sandy grassland. The dune system is growing rapidly northwards and diverting the channel of the Stour. There is relatively little industrial activity, with a power station and industrial wharf at Richborough, a chemical works further upriver at Great Stonar and a harbour at Ramsgate. Leisure activities are more abundant. These include sailing, wind-surfing and water-skiing, along with a marina at Ramsgate. Beach recreation is also widespread and wildfowling takes place on the grazing marshes.

Bird distribution 2002/03

Although absent during November and December, Red-throated Diver numbers increased rapidly to 96 birds by February, exceeding the threshold of national importance. They were generally located at the mouth of Pegwell Bay. Great Crested Grebe exhibited a similar pattern of occurrence; they were absent for the first half of the winter, followed by an influx during the second half. This species peaked in January, when 408 individuals were scattered along the coast. Up to 8 Little Egret frequented the saltmarsh behind Shell Ness and Pegwell Bay, whilst 26 European White-fronted Geese were recorded along the Stour between Sandwich and Shell Ness during February. Although small numbers of Dark-bellied Brent Geese were also found along the river, the majority occurred on the saltmarsh at Shell Ness and on the flats off Pegwell Bay. Shelduck and Wigeon were both widely distributed throughout, although they occurred in the highest densities in Pegwell Bay and, for Shelduck, on the saltmarshes. Most Teal were recorded from the saltmarsh and meadows around the Stour, particularly around Shell Ness, whilst Mallard were more generally located on the Pegwell Bay flats. Shoveler numbers increased during the winter, up to a maximum of 58 individuals by February, all of which frequented the northern half of the estuary. A small flock of Eider were recorded off Ramsgate Harbour during the later winter period.

Oystercatcher and Golden Plover were both widely distributed, although they occurred in the greatest densities on the muddy flats of Pegwell Bay. Golden Plover also frequented the meadows and saltmarsh along the Stour. More than 7,200 Golden Plover were present in February, exceeding the level of national importance. Ringed Plover and Grey Plover were both present in substantial numbers in December, exceeding the threshold of national importance. Both these species were widely distributed throughout the area. Lapwing frequented Pegwell Bay along with the saltmarsh and meadows around the Stour. The February peak of over 10,000 Lapwing exceeded the maximum Core Count for 2002/03. Most Knot and Dunlin occurred in Pegwell Bay, north of the River Stour. Sanderling, however, were generally located on the coastline south of the river. Sanderling numbers exceeded the threshold of national importance during December. Substantial numbers of Snipe were present in the saltmarsh behind Shell Ness and around the edges of Pegwell Bay. The highest count was made in February when 92 individuals were present. Bar-tailed Godwit, Curlew and Redshank showed a similarly broad distribution, with the exception that the latter two species also occurred in the saltmarsh around the Stour. Up to 4 Spotted Redshank also wintered in the saltmarsh creeks. Turnstone were virtually confined to the northern side of Pegwell Bay between Ramsgate and Shellness.

Seven species of gull were recorded, of which Black-headed and Herring were the most abundant.



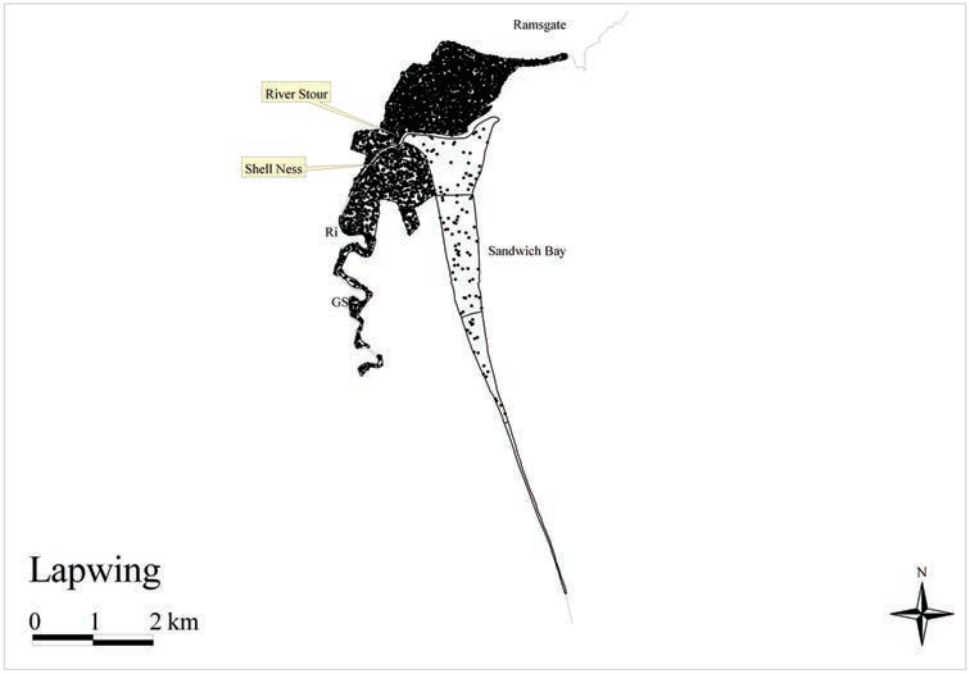


Figure 94. WeBS Low Tide Count distributions of Wigeon and Lapwing at Pegwell Bay, winter 2002/03. (GS=Great Stonar, Ri=Richborough)

PORTSMOUTH HARBOUR

Hampshire

Internationally important: None

Nationally important: Dark-bellied Brent Goose, Red-breasted Merganser, Black-tailed Godwit

Site description

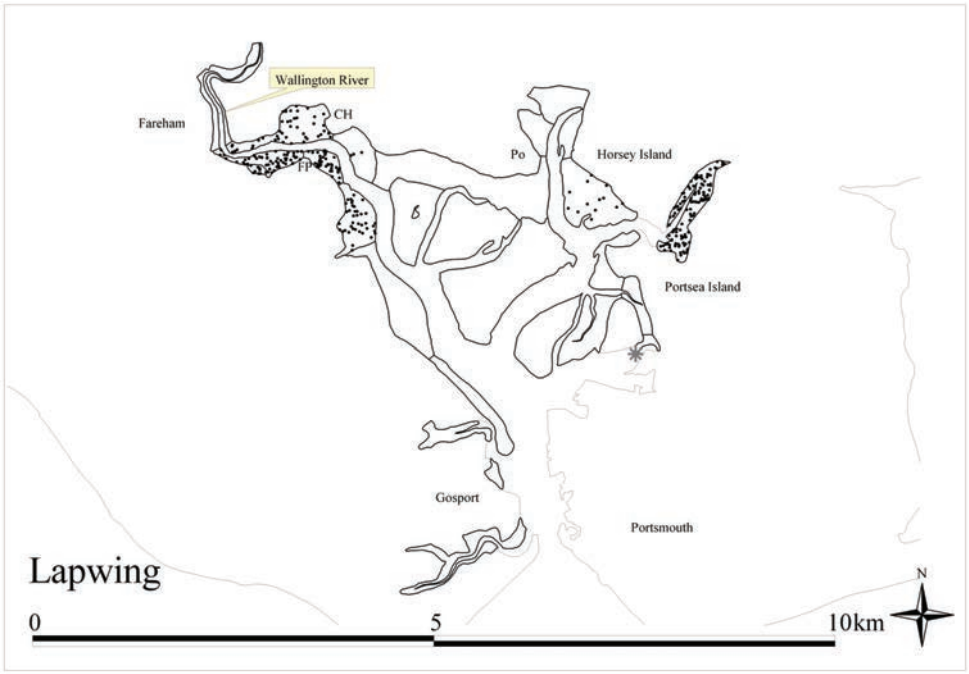
This large harbour in the Solent lies between Portsmouth to the east and Gosport and Fareham to the west. The main freshwater inflow is Wallington River to the north-west. This becomes Fareham Lake, which restricts the freshwater input to the Harbour. The connection to the sea is via the Solent, which is only 200 metres wide at the narrowest point. Saltmarsh is a relatively limited habitat around the shores of the estuary. However, eelgrass and algal growth on the mudflats is more extensive. The shores of the harbour are heavily industrialized, including port and housing developments, along with major naval docks and installations. There are additional impacts on the estuary via land-claim for refuse disposal (Prater 1981, Pritchard *et al* 1992, Davidson 1996b).

Bird distribution 2002/03

Little Grebe counts remained relatively constant (29 to 33) occurring mostly on the River Wallington off Foxbury Point and also within the mouth of the harbour. Conversely, Great Crested Grebe were rarely recorded in the outer part of the harbour, mostly preferring the channels within the middle and inner sections. Cormorant counts remained stable for much of the winter; after the November peak of 57 individuals, between 21 and 24 birds were recorded for the remainder of the winter. Up to 39 Little Egret were widely scattered on the saltings. The majority of Mute Swan and Canada Geese were found around the entrance to the harbour, with peak counts for both species recorded in November. Dark-bellied Brent Geese were generally distributed throughout, although the area around Portchester hosted higher densities. Shelduck were widely distributed and counts were generally higher than those undertaken during winter 1997/98. Wigeon frequented the Wallington River channel and associated flats in the north-western corner. Teal peaked at 112 birds in February and their distribution was very similar to that of Wigeon. Mallard were widely distributed in low densities, although they were not generally recorded in the central part of the Harbour. Both Goldeneye and Red-breasted Merganser were confined to the main channels within the Harbour, with up to 77 of the latter recorded in February.

Oystercatcher numbers peaked during the middle of the winter and the greatest densities were found on the flats between Cam's Hall and Portchester. Higher numbers of Ringed Plover were recorded during 2002/03 than the previous Low Tide survey. The peak count also occurred mid-winter, when 79 were noted in December. Generally, these plover frequented the mudflats along the eastern side of the harbour. Golden Plover were only recorded in reasonable numbers in November, when they frequented the flats adjacent to Foxbury Point. In contrast, Grey Plover were present throughout the winter and were widely distributed. Lapwing were mostly concentrated within two main areas of the Harbour; the inlet between Horsea and Portsea Islands and the mudflats adjacent to the river channel to the north-west. Numbers peaked in December at over 480 individuals. In December, over 8,100 Dunlin were counted, which exceeded the threshold of national importance on this occasion. This site has previously been nationally important for Dunlin; however, decreasing Core Counts have led to a downgrading of Portsmouth Harbour's status for this species. Knot were virtually absent, continuing the downward trend seen during the 1987/88 winter (Cranswick *et al* 1999). Conversely, Black-tailed Godwit counts continued their upward trend. They were generally were located in the inner and upper zones. Bar-tailed Godwit were only recorded in November. Curlew were widely distributed and peaked at 420 individuals in December. They were one of the few species of wader to use the flats in the middle of the harbour. Redshank were mostly found on the peripheral mudflats along the northern and eastern edges of the estuary. Peak numbers were higher than those of the previous WeBS Low Tide counts. Small numbers of Greenshank were present throughout the winter, preferring the eastern flats. December was also the peak month for Turnstone, with most of the birds confined to the flats to the west of Portchester.

Seven species of gull were recorded of which Black-headed and Common Gull were the most abundant (over 15,300 and 700 in December respectively).



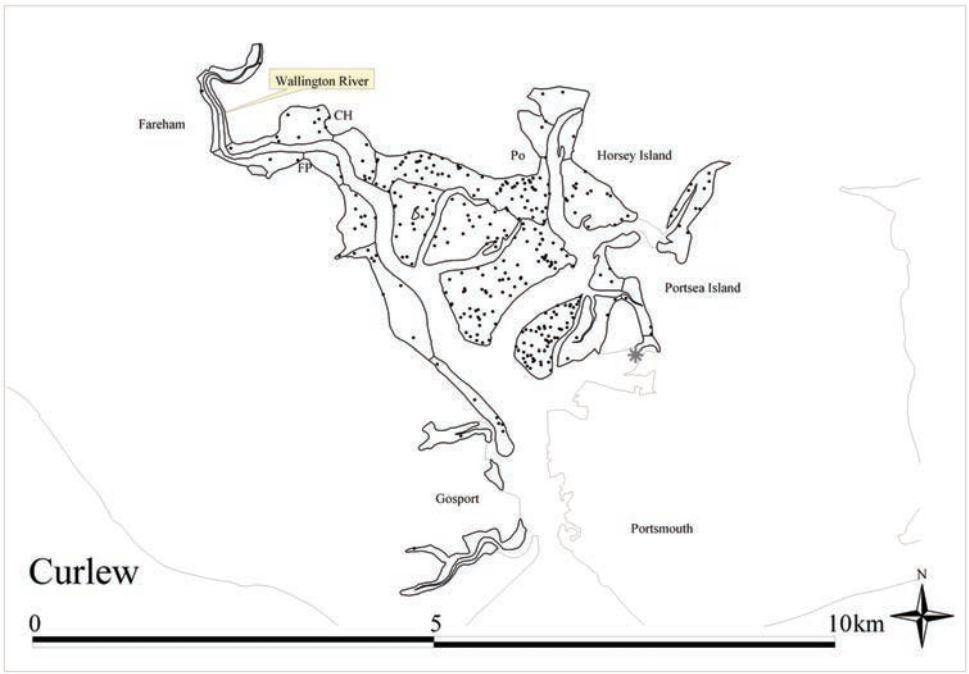


Figure 95. WeBS Low Tide Count distributions of Lapwing and Curlew at Portsmouth Harbour, winter 2002/03. (CH=Cam's Hall, FP=Foxbury Point, Po=Portchester)

SEVERN ESTUARY

Gloucestershire, Avon, Somerset, Gwent, East Glamorgan

Internationally important: Shelduck, Teal, Pintail, Dunlin, Redshank

Nationally important: Bewick's Swan, European White-fronted Goose, Wigeon, Gadwall, Shoveler, Pochard, Curlew

Site description

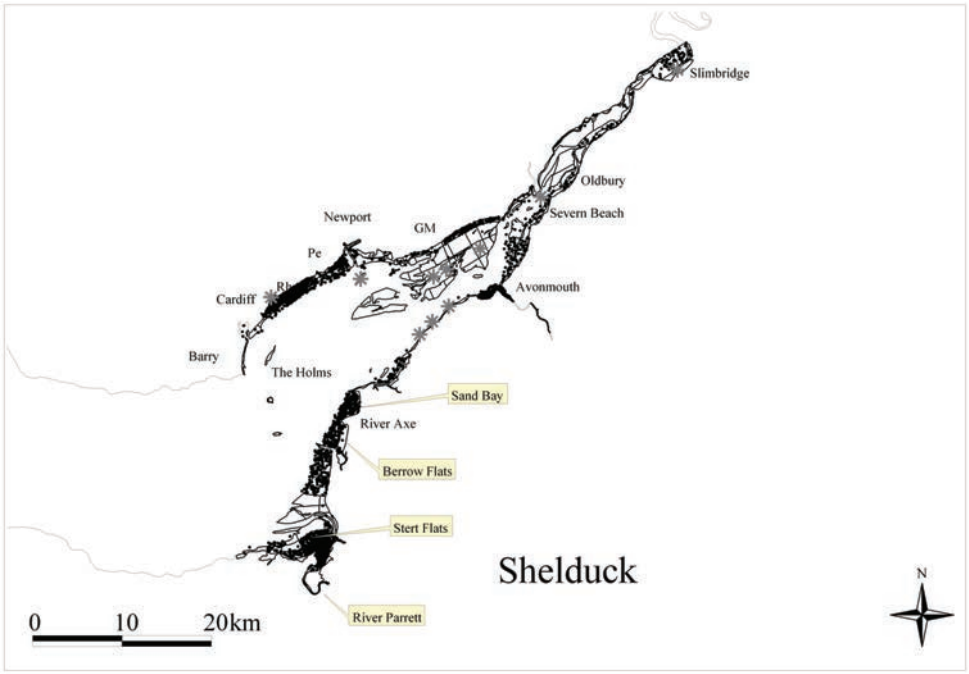
The River Severn is the longest in Britain and drains a large area of Wales and the Midlands. The huge tidal range (the second largest in the world) means that much of the intertidal sediment is mobile. The estuarine mudflats in Cardiff Bay were lost when the Cardiff Bay Barrage became operational during winter 1999/00. As compensation for the loss of intertidal habitat, a series of freshwater lagoons were created on Goldcliff Marsh. Stert Flats and Berrow Flats comprise extensive mudflats within the larger area of Bridgwater Bay. Industrial development is widespread, particularly around Avonmouth, where there are major port facilities and chemical works. There are also port facilities at Barry, Cardiff and Newport. The estuary suffers from pollution, with the discharge of heavy metals a particular problem. The upper reaches of the estuary are more rural in character. The level of low tide coverage achieved was very high because the islands and sandbars in the middle of the estuary were counted by boat (Davidson 1996c, N Clark pers comm).

Bird distribution 2002/03

Cormorant were mostly located within the inner zones apart from groups on the Holms and in Cardiff Bay. Little Egret peaked at 31 individuals in February, with the majority of records from either Goldcliff or Stert. More than 100 Grey Heron were noted in November, mostly within the inner half the estuary and around Stert Flats. Many of the Mute Swan were also found along the River Parrett at Stert, whilst Bewick's Swans were, as usual, confined to the inner areas around Slimbridge. European White-fronted Geese were only recorded during January, when 990 were around Slimbridge. The greatest concentrations of Shelduck were seen from Sand Bay to the River Axe, along with the Stert Flats on the southern side and between Rhymney and Peterstone on the northern side. Peak counts of 3,500 birds were recorded in February. Both Wigeon and Teal were concentrated along the upper shores, especially around Goldcliff and Stert. Nationally important numbers of Gadwall were found at Goldcliff and Avonmouth. Mallard were widely distributed along the northern shore, although along the southern shore they were generally seen east of Avonmouth. Pintail counts were much lower than recent Core Counts and they frequented the flats off Slimbridge and the shoreline between Rhymney and Peterstone. Shoveler also favoured the coast between Rhymney and Peterstone and the peak count of 368 occurred in November. Pochard, Tufted Duck and Goldeneye mostly occurred between Newport and Goldcliff.

Oystercatcher were widely distributed, whereas small numbers of Avocet were confined to the River Parrett near Stert. The highest Golden Plover count was recorded at the start of the winter, declining thereafter. Golden Plover frequented the upper sections and the marshes around the River Parrett in the south. Over 550 Grey Plover in January exceeded the threshold of national importance, however, numbers were much lower during the other months. Lapwing showed a peak of over 12,000 birds in December, after which time numbers declined. They were generally located around the River Parrett at Stert and in the upper reaches, north of the second crossing. Stert Flats were the most important area for Knot, whilst Sanderling were concentrated on the Berrow Flats. Dunlin peaked at over 41,000 birds in February, considerably higher than recent Core Counts, and they were distributed throughout most of the area. The main areas for Snipe were Stert Point and around Newport. The highest count of Bar-tailed Godwit was recorded in November, whilst the peak count of Black-tailed Godwit occurred in February. Curlew exceeded the threshold of international importance in November and February and they were generally located on Stert Flats and the inner Severn from Oldbury northwards. The southern shoreline between Avonmouth and Severn Beach and Goldcliff on the north shore were the two most important areas for Turnstone, which peaked in December.

Of the seven species of gull recorded, Black-headed was by far the most abundant followed by Herring and Lesser Black-backed Gull.



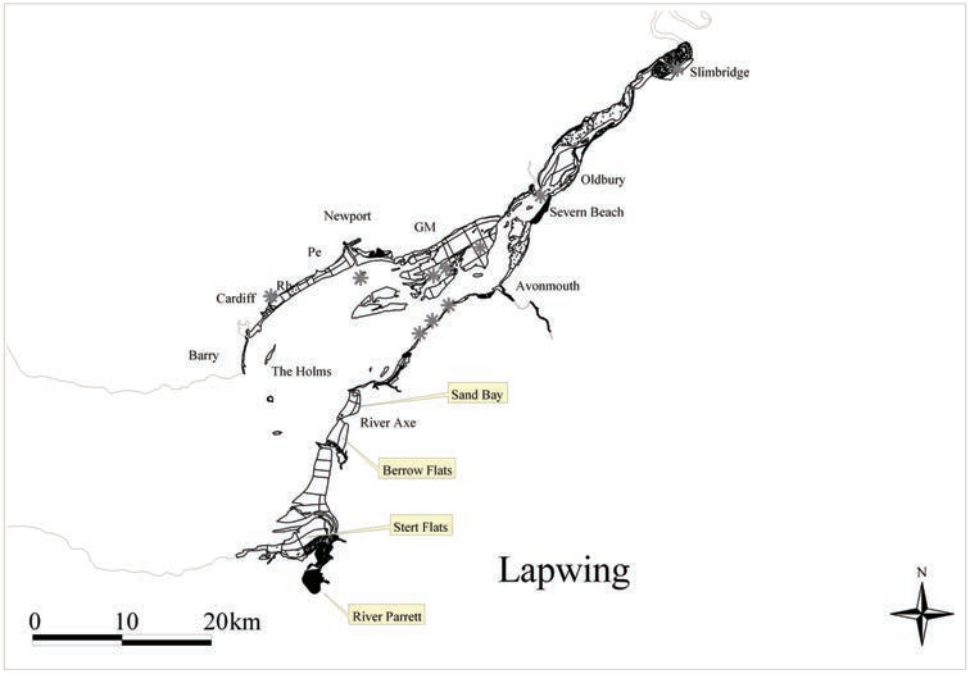


Figure 96. WeBS Low Tide Count distributions of Shelduck and Lapwing at Severn Estuary, winter 2002/03. (GM=Goldcliff Marsh, Pe=Peterstone, Rh=Rhymney)

TAMAR COMPLEX

Devon, Cornwall

Internationally important: None

Nationally important: Little Egret, Avocet, Black-tailed Godwit

Site description

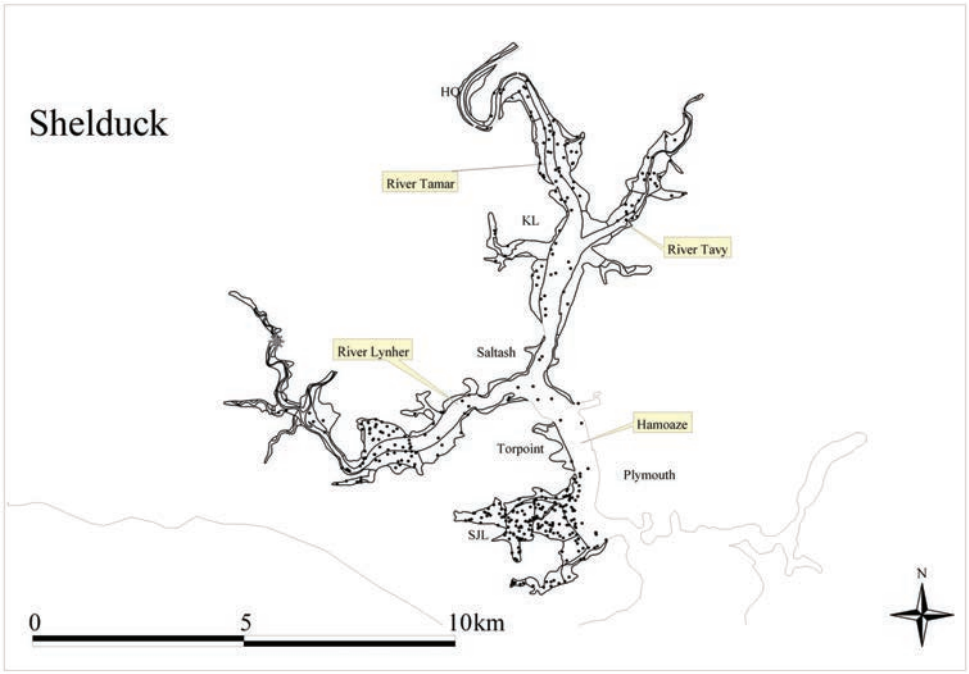
The Tamar Complex is the name given to the group of river estuaries (with the exception of the Plym) that reach the sea through Plymouth Sound. The Complex was formed by the drowned river valleys of the Tamar, Lynher, and Tavy, which collectively drain a large area of Cornwall and Devon. The complex is characterised by a high diversity of habitats, including sand banks and sandy mud, rocky reef and well developed salt meadow. To the south of Torpoint, there is an extensive area of intertidal flats known as St. John's Lake, which is also included in the site. The east shore of the lower zones is adjacent to Plymouth. Most of the western and northern areas are, however, relatively rural, apart from around Torpoint and Saltash. Small patches of saltmarsh occur throughout, including around the upper reaches of the rivers, whilst stretches of rocky reef are also found unusually far inland. Industrial activity is centred on Plymouth, with extensive dockyards and the naval base. There is fish netting throughout, whilst cockling and mussel collecting are undertaken on the Tamar. Wildfowling occurs at St John's Lake and in parts of the Tamar and Lynher. Leisure activities include sailing and boating; there are various moorings and marinas in the complex, with several proposals for new marinas in the future. There is a leisure barrage at Millbrooke (Buck 1997, Musgrove *et al* 2003).

Bird distribution 2002/03

Little Grebe peaked at 26 individuals in December, whilst up to six Black-necked Grebe frequented the lower reaches of the Complex. A peak of 120 Little Egret occurred in November, widely distributed along the three rivers. The highest number of Grey Heron was also recorded in November, when more than 50 were present. Mute Swan were mostly distributed along the Tamar, Hamoaze and St Johns Lake, whilst Canada Geese were mainly found in the upper reaches. Shelduck generally avoided the middle sections, preferring peripheral areas such as St John's Lake and the middle mudflats of the River Lynher. Wigeon were concentrated along the River Lynher, the flats of and around Kingsmill Lake and the lower reaches of the Tavy, although in generally low numbers of less than 350 birds. Conversely, the greatest concentration of Teal was recorded from the upper reaches of the Tamar, particularly around Halton Quay. Smaller numbers also occurred around Kingsmill Lake, along the middle reaches of the Lynher and in St John's Lake. More than 300 Mallard were present during November and they were widely distributed, apart from the Hamoaze. A few Red-breasted Merganser were mainly recorded from the lower reaches of the Tavy and Tamar

. Oystercatcher were mostly located around St John's Lake, with additional small numbers scattered along the three rivers. The peak count of Avocet (317 birds in January) was greater than the Core Count peak for the same winter. Grey Plover counts steadily increased to 147 individuals in February, most of which were located in St John's Lake, with a few also in the upper reaches of the Tamar. A few Ringed Plover also frequented St John's Lake, whilst the majority of Lapwing were found in the upper reaches of the Tamar, in the vicinity of Halton Quay. St John's Lake was the most important area for Dunlin, with a scattering of birds further up the Tamar and on the central mudflats of the River Lynher. A peak count of over 1,700 Dunlin was recorded in December (greater than the peak Core Count figure). Of the two species of godwit present, Black-tailed was marginally the more abundant. All of the Bar-tailed Godwit were found in St John's Lake, whilst the Black-tailed Godwit frequented the mudflats north of the Tamar Bridge. Both Curlew and Redshank were widely distributed, with the highest numbers of the former present in January and the latter in December. Up to 8 Spotted Redshank and 31 Greenshank over-wintered within the Complex. Small totals of Turnstone were recorded from both St John's Lake and the outer reaches of the River Tavy.

Black-headed Gull was the commonest of the six species recorded, with Herring and Common Gull the next most abundant respectively. Lesser and Greater Black-backed were also present, along with up to 10 Mediterranean Gulls in February.



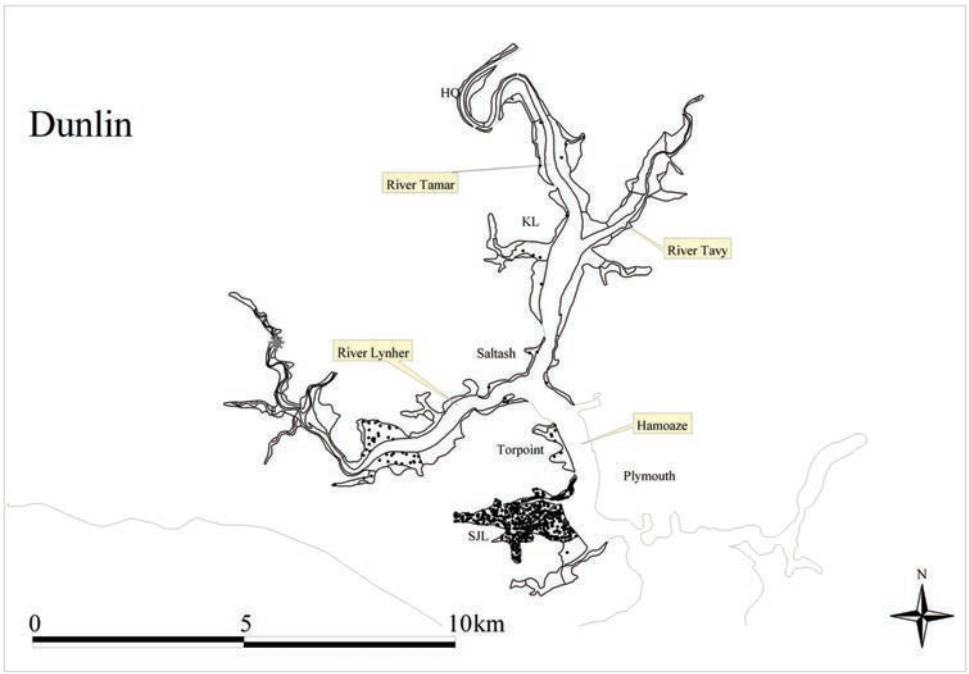


Figure 97. WeBS Low Tide Count distributions of Shelduck and Dunlin at Tamar Complex, winter 2002/03. (HQ=Halton Quay, KL=Kingsmill Lake, SJL=St. John's Lake)

THAMES ESTUARY

Kent, Essex, Greater London

Internationally important:	Dark-bellied Brent goose, Shelduck, Gadwall, Teal, Shoveler, Oystercatcher, Avocet, Ringed Plover, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Redshank
Nationally important:	Little Grebe, Cormorant, Little Egret, European White-fronted Goose, Wigeon, Pintail, Pochard, Golden Plover, Sanderling, Curlew, Turnstone

Site description

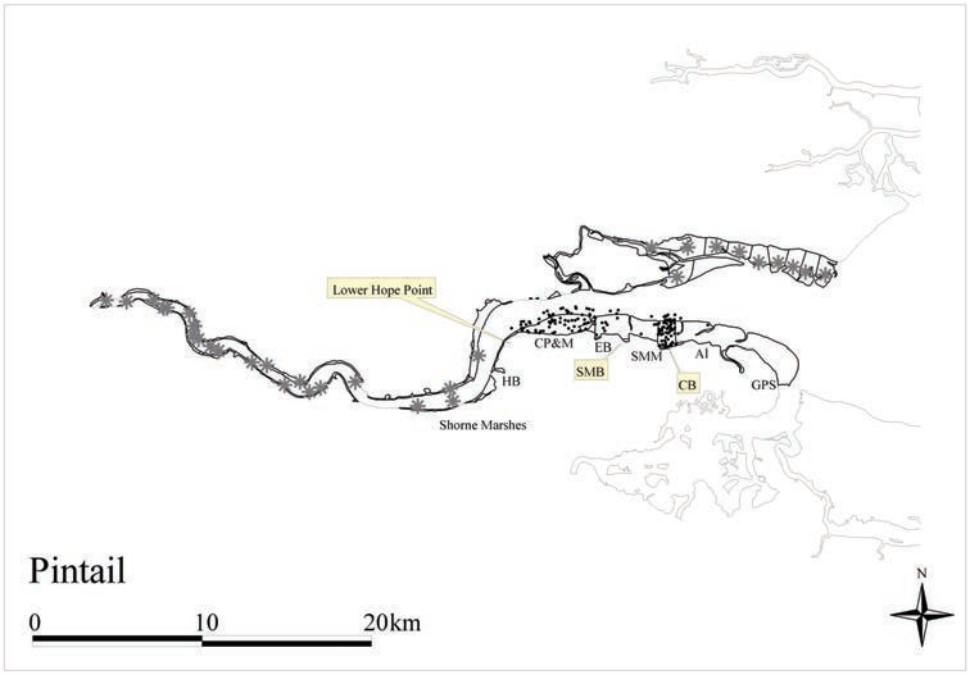
The Thames Estuary, for the purposes of WeBS, is usually taken to include the coast between the Rivers Medway and Crouch. The coverage achieved during counts in 2002/03 was partial and concentrated on the southern shoreline between Shorne Marshes (Gravesend) and the Isle of Grain power station. No counts were made along the northern shore of the Thames, nor within the inner part of the estuary. Most of the intertidal habitat is muddy in character, with extensive areas of saltmarsh around Canvey Island. The narrow strip of saltmarsh along the north Kent coast was once more extensive, but was embanked to create coastal wet grassland. Much of the area is surrounded by sea walls, due to the relatively low-lying adjoining land coupled with rising sea levels. Land claim has removed about 12% of the Thames Estuary, mostly before the 19th century. Much of the site is heavily industrialised with major ports, chemical works and extensive areas of housing, apart from the north Kent coastline, which is more rural. Particular issues of conservation concern include port developments and proposals for a new airport at Cliffe Marshes (Davidson 1998).

Bird distribution 2002/03

Cormorant were generally distributed within the main channel, whilst most of Little Egret were recorded from Cliffe Pools. Relatively small numbers of Dark-bellied Brent Geese occurred between Lower Hope Point and Allhallows. The greatest densities of Shelduck were noted between Lower Hope Point and Egypt Bay, with smaller numbers along the coast to Grain. The peak count of over 600 Shelduck was made in February. Wigeon numbers peaked at more than 7,000 birds in January and were mostly found between Lower Hope Point and Allhallows, with a small concentration also present at Higham Bight. Most of the Gadwall recorded also favoured the area around Higham Bight, whilst over 500 Teal were concentrated between Lower Hope Point and the Bight. Mallard were widely scattered along the shoreline, whilst Pintail exceeded the threshold for national importance in both November and January. There is likely to be some interchange of many species, including Pintail, between adjacent estuaries such as the Medway and Swale. Pintail were concentrated off Coombe Bay and between Egypt Bay and Lower Hope Point further to the west.

Most Oystercatcher were found towards the mouth of the estuary, particularly around the Isle of Grain, between Allhallows and Grain. Ringed Plover were scattered along all of the shoreline covered, whilst Golden Plover were mostly concentrated around Cliffe Pools. Conversely, the greatest concentration of Grey Plover occurred in Egypt and St Mary's Bays, with the highest count of 1,222 birds in December. The counts of Lapwing showed marked fluctuations during the winter, the majority distributed from Allhallows westwards. The maximum count of over 11,000 Knot occurred on the shoreline between Egypt Bay to Grain in February. Dunlin were ubiquitous throughout, albeit in lower densities between Lower Hope Point and Cliffe Pools. The peak count of 28,880 occurred in February, and this figure represented just over half of the Core Count peak for the whole estuary. Of the two species of godwit recorded, Bar-tailed Godwit was the scarcer, with a maximum count of 161 individuals. In contrast, Black-tailed Godwit peaked at 953 birds in November. The majority of the Black-tailed Godwit were found on the flats from Egypt Bay to St Mary's Marshes. Both Curlew and Redshank were widely distributed, including within the Cliffe Pools complex. A single Spotted Redshank was recorded in February. Small numbers of Turnstone were mostly confined to the shore between Allhallows and Grain.

A total of nine species of gull were noted, with Black-headed Gull the most abundant, peaking at over 4,100 individuals in December. Great Back-backed Gull (peak of 1,236 individuals) and Herring Gull (peak of 808 individuals) were the next most numerous species. Common and Lesser Black-backed Gulls were also present in good numbers.



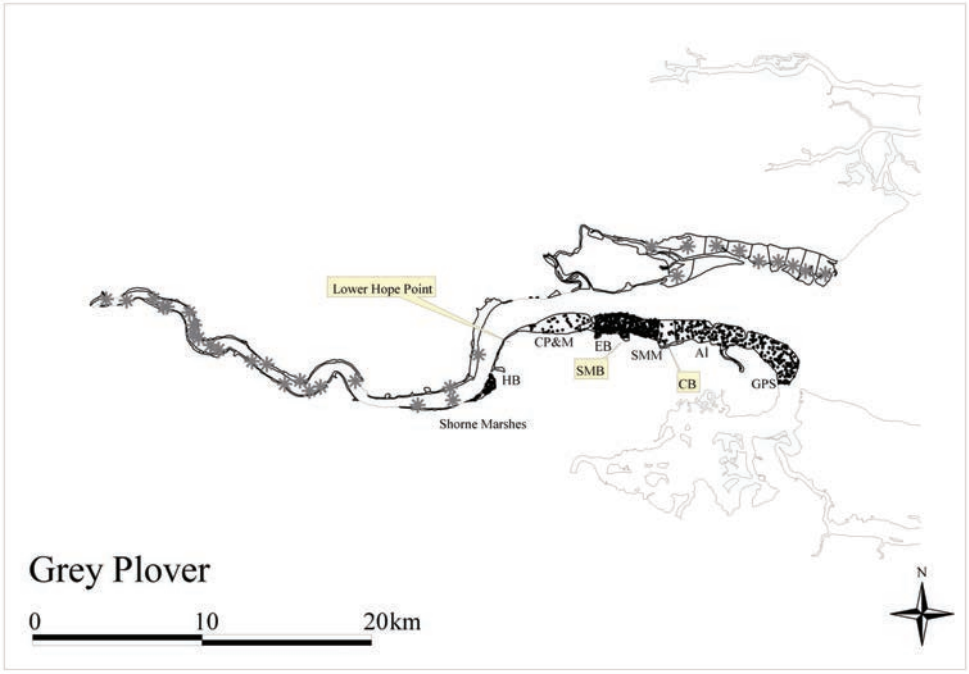


Figure 98. WeBS Low Tide Count distributions of Pintail and Grey Plover at Thames Estuary, winter 2002/03. (AI=Allhallows, CB=Coombe Bay, CP&M=Cliffe Pools & Marshes, EB=Egypt Bay, GPS=Grain Power Station, HB=Higham Bight, SMB=St Mary's Bay, SMM=St Mary's Marshes)

TRAETH LAFAN (LAVAN SANDS)

Gwynedd

Internationally important: Redshank

Nationally important: Red-throated Diver, Great Crested Grebe, Red-breasted Merganser, Oystercatcher, Curlew

Site description

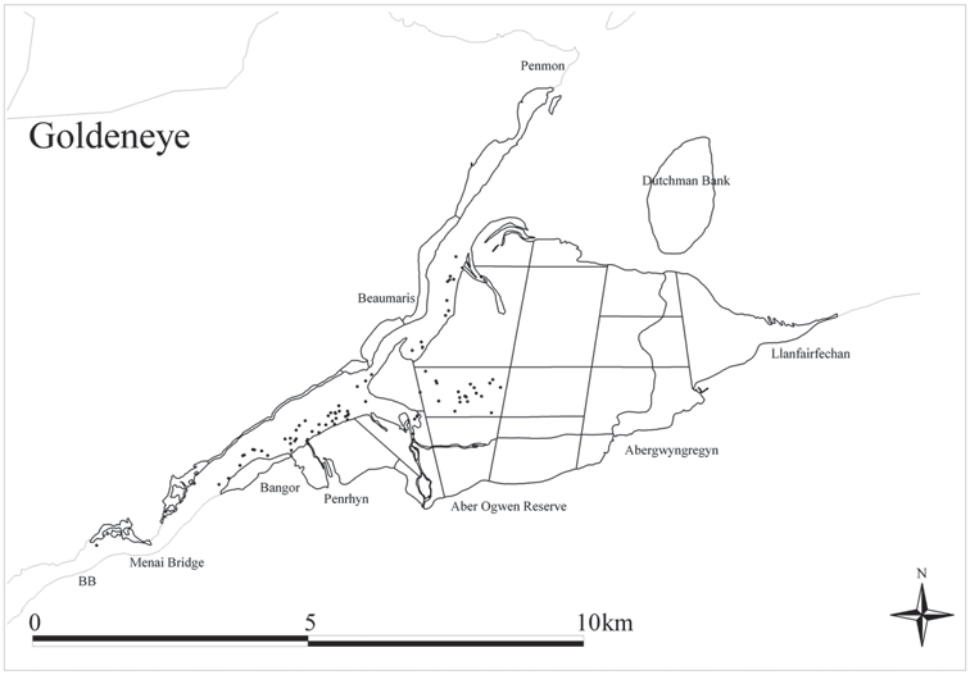
Traeth Lafan is an extensive intertidal area situated at the northern end of the Menai Strait, between Bangor and Llanfairfechan. Three freshwater streams flow across the flats at low tide. There are a variety of habitats including both exposed and sheltered areas of sand, mudflats with an area of shingle, and mussel beds near Bangor. Some relatively small areas of saltmarsh have developed along the shore, particularly at the mouth of the Rhaeadr-fawr and south-west of Llanfairfechan. The intertidal flats support an abundance of invertebrate fauna, which in turn attract large numbers of waterbirds. Industrial activity is limited, however, recreational and leisure use occurs. For example, boating, sailing and windsurfing take place in the channel, whilst walkers and dogs can cause some disturbance to high tide roosts along the mainland coastline. Wildfowling, along with commercial and small-scale cockle gathering is another feature of the estuary.

Bird distribution 2002/03

Great Crested Grebe counts peaked at 97 birds in January, which was substantially lower than the maximum Core Count total of 308 recorded in March 2003. Cormorant mainly occurred around Dutchman Bank, at the eastern end of the sands. Small numbers of Little Egret were confined to the south-western area, along with up to 63 Greylag Geese, particularly off Penrhyn Castle. Conversely, all the Canada Geese frequented the Menai Strait between the Britannia and Menai Bridges. Brent Geese, in small numbers were recorded on the Anglesey coastline between Beaumaris and Penmon. The small groups comprised up to eight Light-bellied and a single Dark-bellied. The densest numbers of Shelduck occurred off Bangor, with more than 500 birds present in December. Wigeon distribution was very similar to Shelduck, with the shingle outcrop off Penrhyn especially favoured. Teal were recorded in low numbers from December onwards, with the majority of the birds between the two bridges over the Strait and a few west of Llanfairfechan. Mallard were widely distributed, although they were largely absent from the Anglesey side of the estuary, with the exception of the Menai Strait. Up to 77 Pintail were confined to the central area of the sands off Abergwyngregyn. There was an increase in Goldeneye from December onwards, with a January peak of 134 individuals. Most of the Goldeneye were found within the inner zones, particularly on the main channel off Bangor. The peak count of Red-breasted Merganser (59 birds) was much lower than the five-year mean peak Core Count figure of 217. The mergansers mostly occurred off Llanfairfechan.

Peak numbers of Oystercatcher occurred in December, when 7,000, concentrated in three main areas. These were the Bangor Flats, the sands off the Aber-Ogwen Reserve, and the flats off Llanfairfechan. Smaller numbers were also scattered along the Anglesey shoreline and on the northernmost part of Traeth Lafan. During December and January, the highest numbers of Ringed Plover were present, at around 60 individuals. The birds were confined to the shoreline north of Beaumaris on Anglesey and the shingle spit off Penrhyn. The flats close to Abergwyngregyn were the most important for Lapwing, with most of the Knot occurring off Llanfairfechan, a little further to the west. The greatest densities of Dunlin were present off the Aber-Ogwen Reserve and along the shore north of Beaumaris. Similarly to Lapwing, all the Snipe recorded were on the flats off Abergwyngregyn. Curlew were found throughout, with the odd Bar-tailed Godwit. Most Redshank were concentrated on the Bangor Flats and the peak count of 1,525 birds in February exceeded the threshold of national importance. Greenshank were present in small numbers and the peak of 8 individuals in January was typical for the area. Turnstone were mostly found along the Anglesey coastline between Beaumaris and Penmon, with a few birds on the southern side of the Menai Strait off Upper Bangor.

Five species of gull were recorded, of which Black-headed and Herring were most common, with Common, Lesser and Greater Black-backed also present.



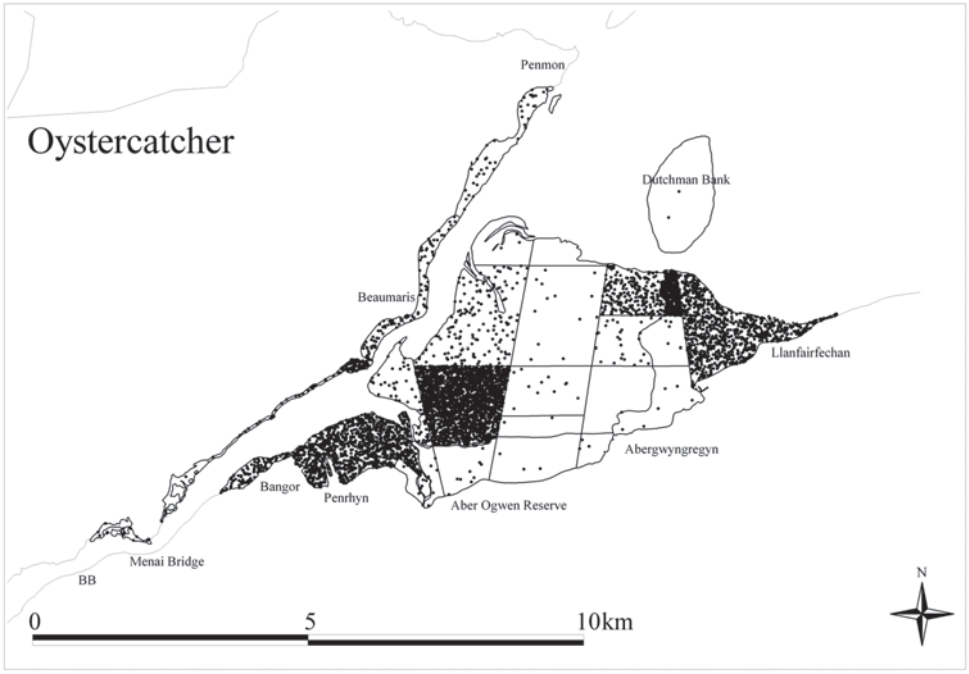


Figure 99. WeBS Low Tide Count distributions of Goldeneye and Oystercatcher at Traeth Lafan, winter 2002/03. (BB=Britannia Bridge)

BELFAST LOUGH

Co. Down

Internationally important: Black-tailed Godwit, Redshank

Nationally important: Great Crested Grebe, Cormorant, Shelduck, Scaup, Eider, Goldeneye, Red-breasted Merganser, Oystercatcher, Ringed Plover, Knot, Dunlin, Turnstone

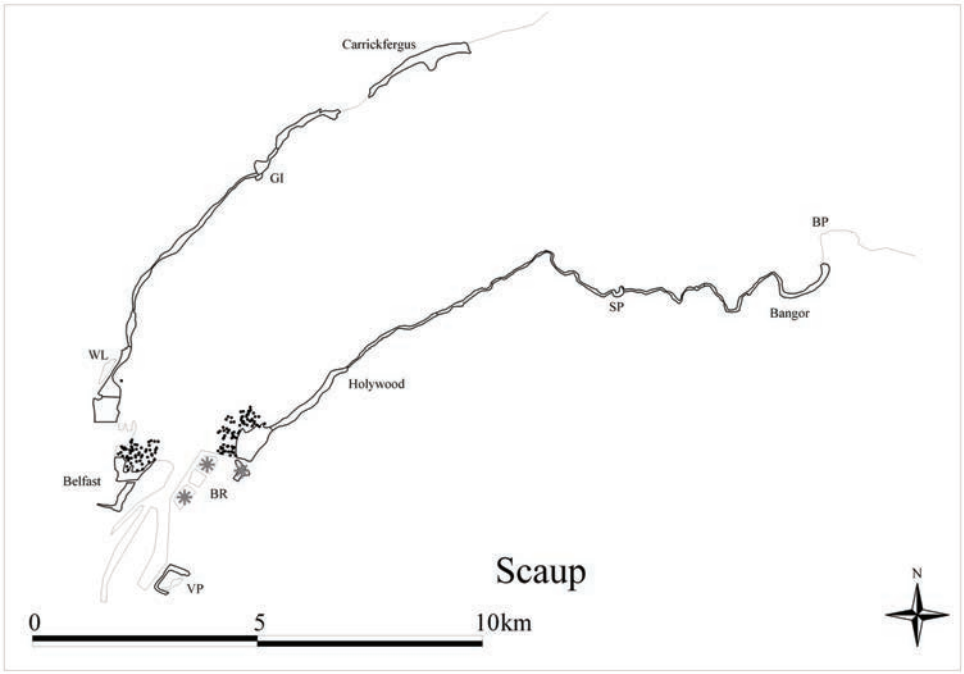
Site description

Belfast Lough is a large sea lough in the north-east of Ireland, with the city of Belfast at its head. The area surveyed comprised the coast from Carrickfergus on the north shore around to the eastern end of Bangor on the south shore. The outer parts of the Lough's shore are generally rocky with some sandy bays, although more extensive areas of intertidal mud are found 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 important Belfast Harbour Pools, has been given a degree of protection. There are also problems of refuse disposal, pollution and general disturbance.

Bird distribution 2001/02

The following account is based on two counts only; December 2001 and January 2002. By January, Great Crested Grebes had increased to more than 1,600 individuals, exceeding the last two peak Core Counts. The greatest concentration of birds was just north of Whitehouse Lake, although compared to recent winters, more grebes also used the coastline between the RSPB Reserve and Swinely Point on the southern shore. Cormorant were fairly evenly scattered along both the northern and southern shorelines, with fewest birds in Bangor Bay. As in previous winters, both Mute Swan and Greylag Geese were virtually confined to Victoria Park. Only three Light-bellied Brent Geese were recorded in December, a decline over recent years. There was a considerable increase in the numbers of Shelduck present in the second winter period, with the birds concentrated around Belfast Docks. Both Wigeon and Teal were mostly confined to the RSPB Belfast Lough Reserve where only relatively low numbers were counted. The highest numbers of Mallard were counted in December, when 282 were present. They were quite widely distributed at the south-western end of the Lough, particularly on Whitehouse Lake, Victoria Park and the RSPB Belfast Lough Reserve. Small numbers of Pochard and Tufted Duck also favoured Victoria Park, with scattered individuals additionally located in Belfast Harbour. Counts of Scaup decreased from a peak of 323 during winter 2000/01 to 155 individuals. Once again, these flocks were found off Holywood and to the west of Belfast Docks. Similarly to Scaup, after the impressive counts of Eider recorded during winter 2000/01, numbers more than halved to a peak of 837 ducks in January 2002. Compared to the previous winter, greater numbers of Eider were found off Bangor and the western shoreline between Green Island and Whitehouse Lake. Long-tailed Duck, Goldeneye and Red-breasted Merganser were scattered between Carrickfergus and Whitehouse Lake with the latter two species also present along the southern shoreline of the Lough.

The western half of the Lough supported the greatest densities of Oystercatcher, with more than 4,200 birds recorded in the first half of the winter. Ringed Plover were to be found in five distinct and widely separated areas on the estuary. These were around Bangor, Carrickfergus and Holywood, to the west of the docks entrance and at Victoria Park. Lapwing generally frequented only the south-western end of the Lough, where the greatest numbers were seen at the RSPB Reserve and Whitehouse Lake. January saw the only record of Knot, when a mere 80 individuals were present. Similarly, the Core Counts have revealed a steady decline in Knot numbers since winter 1998/99. Dunlin distribution was virtually identical to that of previous winters, with the greatest concentrations around Whitehouse Lake and west of Belfast Harbour. As usual, the numbers of Black-tailed Godwit were far greater than those of Bar-tailed Godwit, with the former concentrated at the south-western of the Lough and the latter scattered along the northern shoreline. Curlew were widely distributed apart from the coastline between Swinely and Ballymacormick Points. In January, peak numbers of over 1,700 Redshank occurred. They were mostly concentrated in the south-western corner, whilst Turnstone were more likely to be found along the southern shoreline.



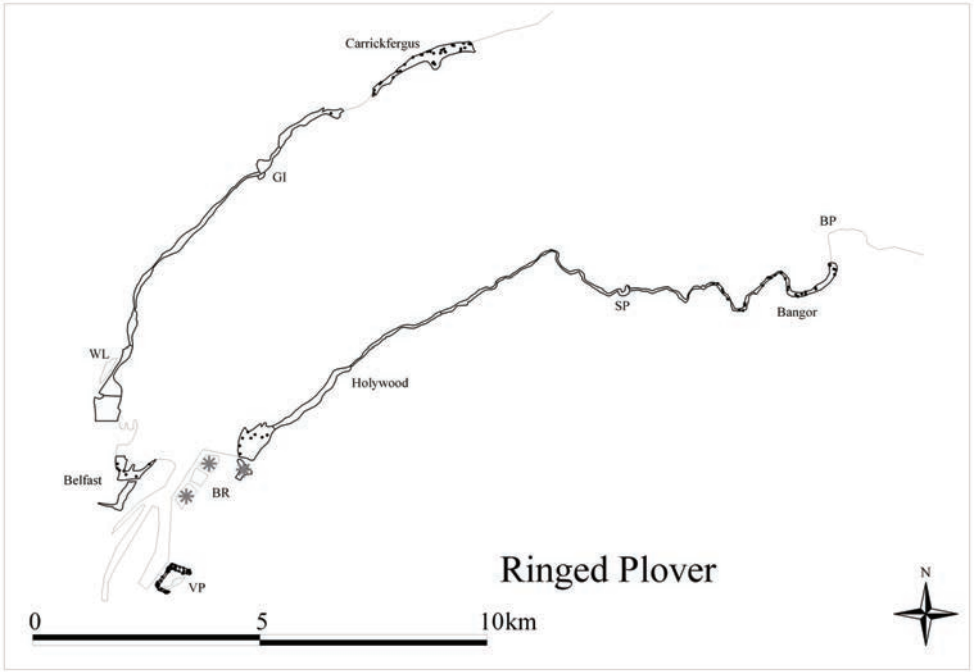


Figure 100. WeBS Low Tide Count distributions of Scaup and Ringed Plover at Belfast Lough, winter 2001/02. (BP=Ballymacormick Points, BR=RSPB Belfast Lough Reserve, GI=Green Island, SP=Swinely Point, VP=Victoria Park, WL=Whitehouse Lake)

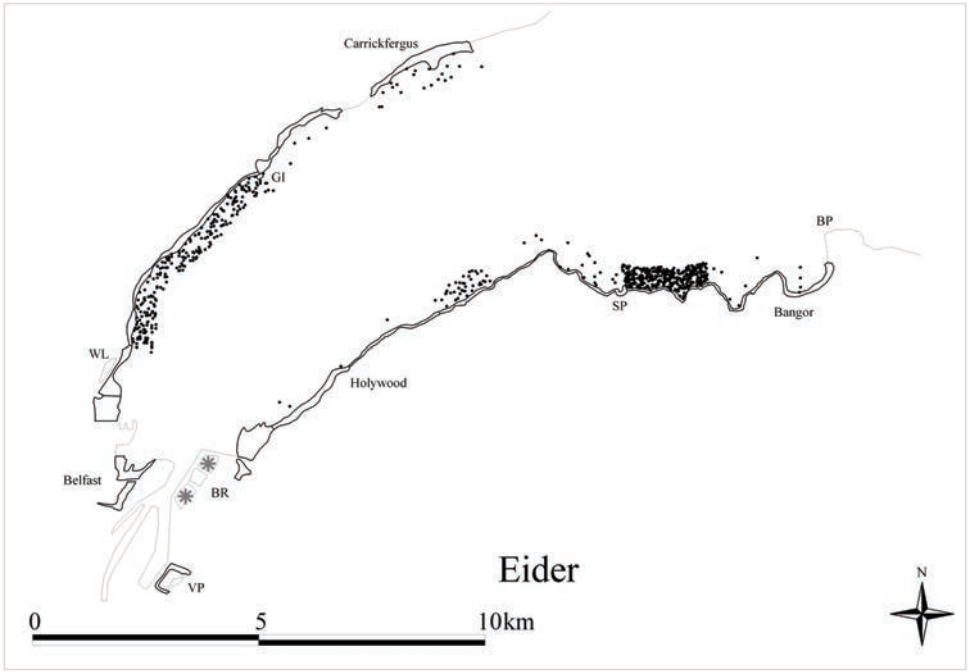
Six species of gull were counted in January, when Black-headed were marginally the most abundant at 8,986 birds. Herring Gull came close behind with 8,622 individuals. More than 2,100 Common Gulls were present, along with lower numbers of Lesser and Greater Black-backed Gulls.

Bird distribution 2002/03

The following account is based on two counts only; December 2002 and February 2003. Numbers of Great Crested Grebes were low in comparison with recent years, peaking at 461 birds in February. These birds were distributed fairly evenly along both northern and southern shorelines, with higher densities between Whitehouse Lake and the western edge of Carrickfergus, and also at Holywood. High densities of Cormorants were also recorded at Holywood, with further concentrations at Bangor and Carrickfergus where Shag were also recorded in reasonable numbers. Mute Swan and Greylag Goose were found exclusively in Victoria Park, following the trend of past winters. Seventeen Light-bellied Brent Geese were recorded in December, a low Figure consistent with recent years. Belfast Docks again harboured all Shelduck counted, where numbers remained consistent between counts. Both Wigeon and Teal were mostly confined to the RSPB Belfast Lough Reserve. The peak Low Tide count of 316 Teal exceeded the 5 year mean peak Core Count Figure. Mallard were concentrated at the south western end of the Lough, particularly on self-contained water bodies such as Whitehouse Lake, Victoria Park and the RSPB Belfast Lough Reserve. Small numbers of Pochard and Tufted Duck also favoured Victoria Park, as did Coot and Moorhen. Numbers of Scaup returned to levels resembling the winter of 2000/01 following a drop in 2001/02, although birds were restricted to the Dock area. Eiders were distributed in very similar areas to the previous winter, with most ducks seen off Bangor and off the western shoreline between Green Island and Whitehouse Lake. The southwest corner of the Lough supported the greatest concentrations of Goldeneye and Red-breasted Merganser, especially the Holywood area.

Oystercatcher were distributed throughout the Lough, with notable concentrations in Belfast Docks. Peak counts for December were higher than during the past two winters, reaching 5542 individuals. Ringed Plover were largely confined to Whitehouse Lake and Holywood. Lapwing were distributed mostly through the south-western end of the Lough, with the greatest numbers at the RSPB Reserve and Whitehouse Lake. The distribution of Dunlin was similar to that of previous winters, with the greatest concentrations around Whitehouse Lake and west of Belfast Harbour, although more birds were found at Holywood than in 2001/02. Black-tailed Godwit were almost four times more prevalent than Bar-tailed Godwit and they were concentrated to the south-western areas of the Lough. Bar-tailed Godwit were mainly located in the Whitehouse Lake area, with a few low density groups also scattered along the northern shoreline. Curlew showed a similar distribution to Black-tailed Godwit, although Curlew exploited more of the northern shore and the Holywood area. Redshank were scattered along both shores, as were Turnstone, with largest concentrations in the southwest. Numbers of Redshank, a species of international importance for Belfast Lough, were markedly lower than in previous years, with about 200-300 birds fewer. As different months were used for the later count, it is possible that this is a contributory element to the relatively low Redshank count.

Lower numbers of gulls were recorded than in the previous winter, although this could be an effect of different count months. However, the five species observed were apparent in similar proportions to the previous year's count: 5,503 Black-headed Gulls were seen in comparison to 2,926 Herring Gulls, 1,148 Common Gulls and lesser numbers of Great and Lesser Black-backed Gulls.



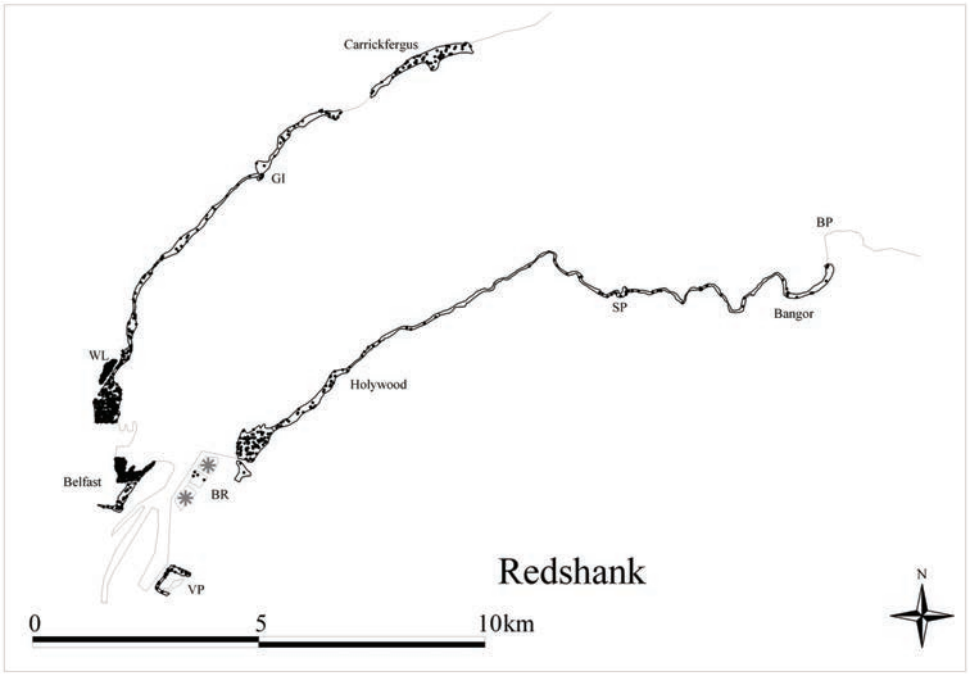


Figure 101. WeBS Low Tide Count distributions of Eider and Redshank at Belfast Lough, winter 2002/03. (BP=Ballymacormick Points, BR=RSPB Belfast Lough Reserve, GI=Green Island, SP=Swinely Point, VP=Victoria Park, WL=Whitehouse Lake)

DYFI ESTUARY
Dyfed

Internationally important: None

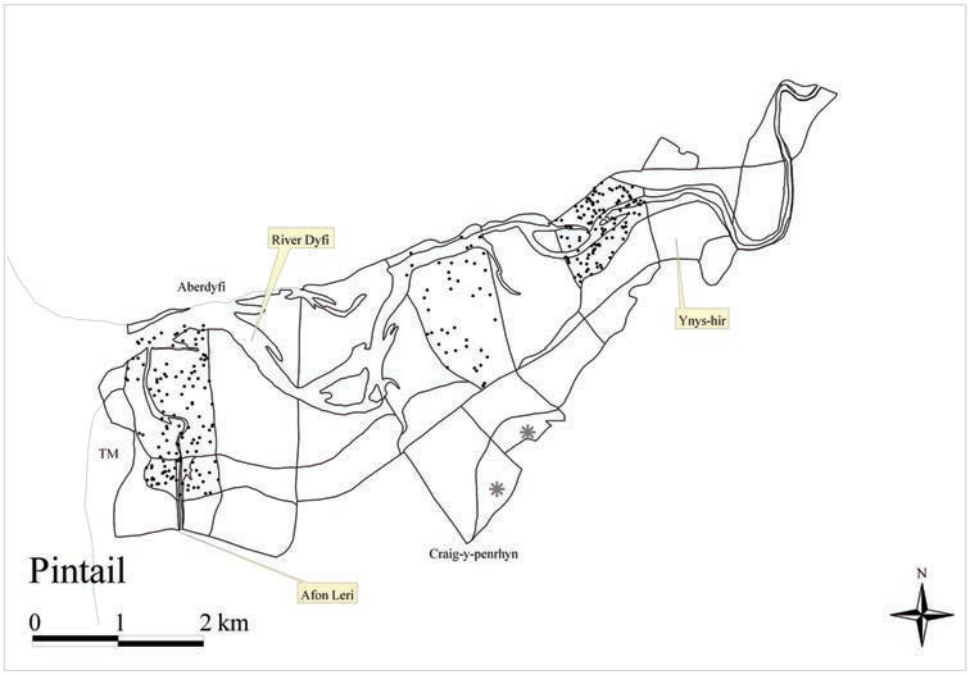
Nationally important: None

Site description

The Dyfi is the largest estuary flowing into Cardigan Bay, situated approximately 12 km north of Aberystwyth. The estuary is predominantly sandy in nature, with fringing saltmarsh along the southern edge. Introduced *Spartina* has now become the dominant species within the original saltmarsh. By the 1970s, the existing cockle and mussel beds had been inundated by *Spartina* and soon disappeared. The mouth of the estuary is narrowed by the northward growth of a sand-covered shingle spit, the Twyni Mawr. There has been considerable land-claim of parts of the estuary. Aberdyfi, situated on the north shore at the estuary mouth represents the only large settlement around the area. Industrial development is absent and tourism provides the main focus for local employment. Leisure water-based activities such as sailing, water-skiing, wind-surfing and jet-skiing impact on the estuary.

Bird distribution 2001/02

Over 2,100 Canada Geese were recorded in January, when the majority were found on the flats within the inner part of the estuary, although they occurred in greatest densities on the saltmarsh adjacent to the Afon Leri. The Dyfi holds one of the largest populations of this species in the UK and the Low Tide counts are consistent with an increase in Core Counts recorded over the last five years. Feral Barnacle Geese were also located on the flats and saltmarsh in the inner part of the estuary, with 158 present in December. Greenland White-fronted Geese peaked at 168 birds in January and they frequented the central flats and saltmarsh, along with saltings/grassland on the northern side of the estuary. This flock represents the most southerly population of Greenland White-fronted Geese in Britain. Both Shelduck and Wigeon were widely distributed, mostly on the middle flats. For the latter species, however, concentrations also occurred around the estuary mouth. Wigeon numbers decreased between the peak of 1,900 in November and January, a pattern that was repeated for Teal. The saltmarsh below Ynys-hir was the favourite feeding area for many Teal. The few birds recorded away from this area were virtually all found in the peripheral saltings along the southern edge. Mallard were also concentrated within the inner part of the estuary. They also occurred on the sandy central flats and around the Afon Leri freshwater flow where it crosses the flats at the estuary mouth. Over 300 Pintail were present in January, which is an increase over recent Core Count totals and exceeded the threshold of national importance. Pintail distribution is concentrated in three specific areas: the freshwater Afon Leri flow at the estuary mouth, the upper reaches where the River Dyfi starts to expand and on the central sandy flats. Generally low numbers of Goldeneye and Red-breasted Merganser were confined to the River Dyfi channel, the former frequenting the upper reaches and the latter the more central part of the estuary. Oystercatcher were widely distributed around the non-saltmarsh areas, with the exception of the flats towards the estuary mouth. Small numbers of Ringed Plover were confined to a small area at the end of the Twyni Mawr spit. Up to 800 Golden Plover were found on the saltmarsh around the Afon Leri inflow and in the middle of the estuary on sandy substrate adjacent to the river channel. Lapwing peaked at 1,105 birds in January and were located in a similar central area of the estuary to Golden Plover. However, Lapwing also occurred on the saltings and damp fields adjacent to the canalised freshwater inflow from Craig-y-penrhyn. Only 26 Grey Plover were counted in January when the birds were very widely scattered. Dunlin distribution was similar to that of Lapwing, in that most were found on the flats around the channel in the central part of the estuary, along with the area adjacent to the Craig-y-penrhyn inflow. However, the densest concentrations of Dunlin occurred at the end of the Twyni Mawr spit. Both species of godwit only occurred in low numbers. Up to 20 Bar-tailed Godwit frequented the central sandy sections, whilst Black-tailed Godwit were located on the saltings and meadows around the inflow channel from Craig-y-penrhyn. Curlew were widely distributed, using both saltmarsh and the open flats. Numbers increased throughout the winter, to a peak of 615 birds in January.



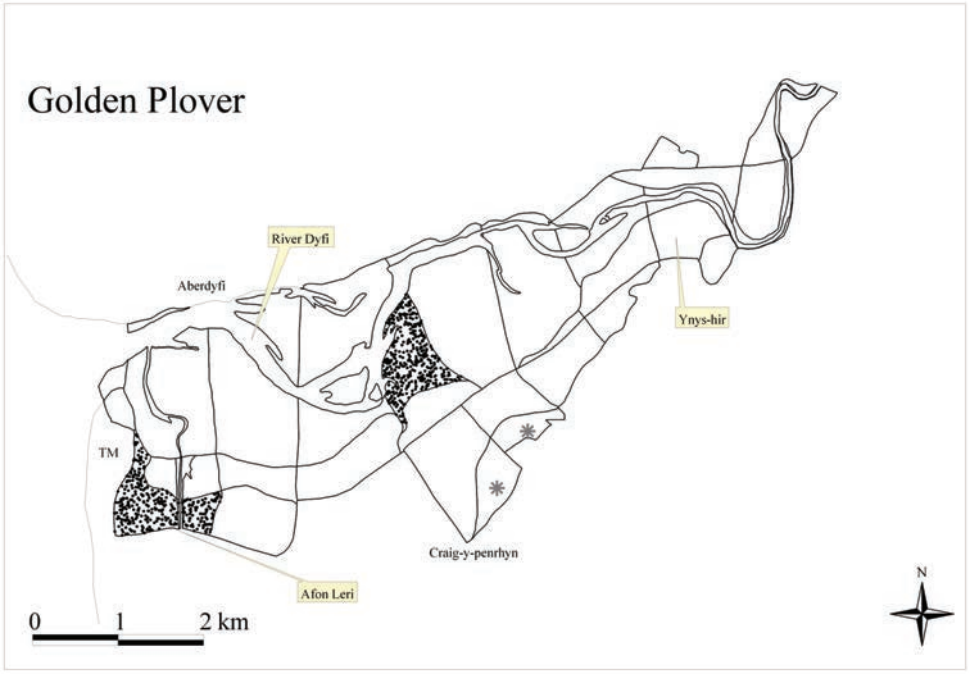


Figure 102. WeBS Low Tide Count distributions of Pintail and Golden Plover at Dyfi Estuary, winter 2001/02. (TM=Twyni Mawr)

Redshank also peaked in the second half of the winter period, with a maximum count of 142 individuals in January. Most of the Redshank fed within the saltmarsh, particularly in the vicinity of the Craig-y-penrhyn inflow channel.

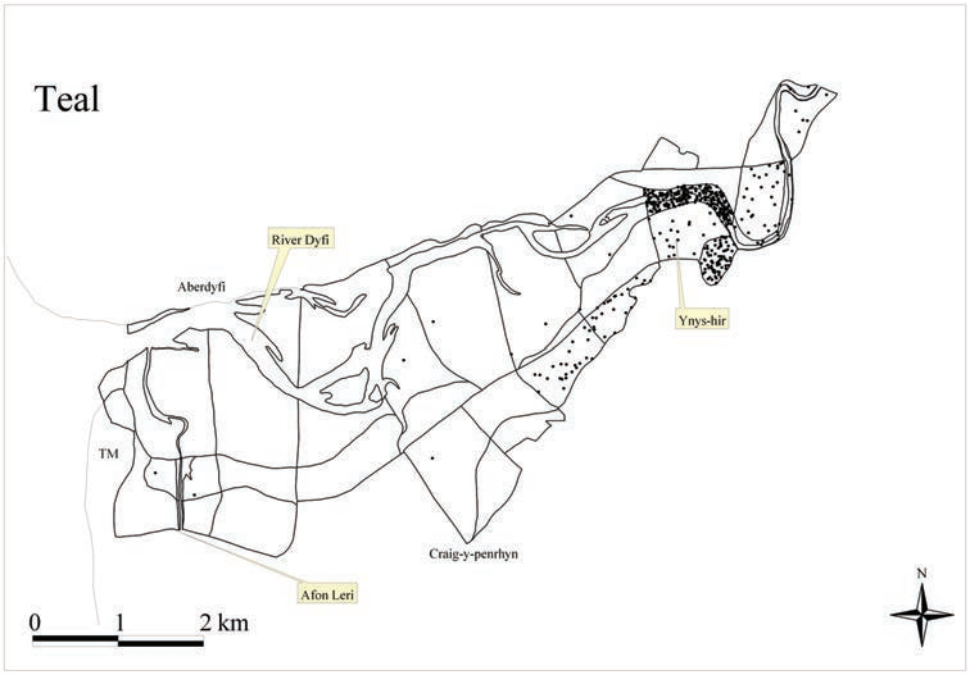
Of the five species of gulls recorded, all were present in very low numbers. Black-headed Gull was the most abundant, with a peak count of six individuals!

Bird distribution 2002/03

The maximum Low Tide count of Greenland White-fronted Goose (212 birds in February) was higher than the 2002/03 Core Count peak and exceeded the national importance threshold during that month. As noted during the previous winter, the geese frequented the central flats and saltmarsh, along with saltings/grassland on the northern side of the estuary at the point where the River Dyfi expands into the estuary. Canada Geese were mostly located within the inner zones, particularly on the saltings along the southern side and they occurred in the highest numbers during February when 1,900 were present. Feral Barnacle and Greylag Geese were also found on the flats and saltmarsh in the inner part of the estuary, with numbers of the former remaining fairly constant throughout at around 90 individuals, fewer than the previous winter. The latter was found in smaller numbers, at a peak of 17 birds. A single Dark-bellied Brent Goose was more unusual in January. Both Shelduck and Wigeon were widely scattered within the estuary, although the latter species avoided the mudflats towards the mouth. Wigeon were concentrated towards the estuary mouth, with overall numbers similar to the previous winter. The greatest concentrations of Teal, which peaked in November, were found on the River Dyfi, close to where it expands into the estuary itself, with a few also scattered along southern saltings. Most of the Mallard were present on the saltings in the inner half of the estuary, whilst most of the Pintail were recorded from the inner mudflats. Pintail numbers were substantially lower than the previous winter. A peak of 196 birds was present in November, after which numbers decreased dramatically and none were recorded in February. Small numbers of Goldeneye were widely scattered in channels at the mouth and in the inner reaches of the estuary. Red-breasted Merganser were also recorded within the channels towards the estuary mouth. In contrast, the few Goosander present were confined to the River Dyfi in the inner reaches of the estuary.

Oystercatcher were widely distributed in a similar pattern to the previous winter, although they were rarely recorded on the flats around the estuary mouth. In contrast, the small numbers of Ringed Plover present were virtually confined to the estuary mouth. The peak count of Golden Plover (1,250 birds in December), was higher than that of winter 2001/02, with the birds concentrated around the Craig-y-penrhyn burn and saltings to the east. This distribution is different to that of the previous winter when the greatest concentrations were noted around the Afon Leri inflow and the sandy substrate adjacent to the river channel in the middle of the estuary. The distribution of Lapwing was very similar to that of Golden Plover, with the birds again located around the Craig-y-penrhyn burn and saltings to the east. Small numbers of Lapwing were also recorded from the mouth of the estuary. The peak count of Lapwing was also higher than that of the previous winter. Small numbers of Grey Plover were mostly confined to the central mudflats, whilst Snipe were generally found within the saltmarsh along the southern side of the estuary. Dunlin numbers gradually increased during the course of the winter and they frequented the central mudflats and also the saltings to the east of the Craig-y-penrhyn burn. The peak count of Curlew (825 individuals in February) was considerably higher than the peak of the previous winter. Conversely, the peak count of Redshank (52 birds in January) was considerably lower than the peak of 142 birds of January 2002. Most of the Redshank occurred in the southern saltmarsh.

Few gulls were recorded, but of the four species noted, Black-headed was the most abundant.



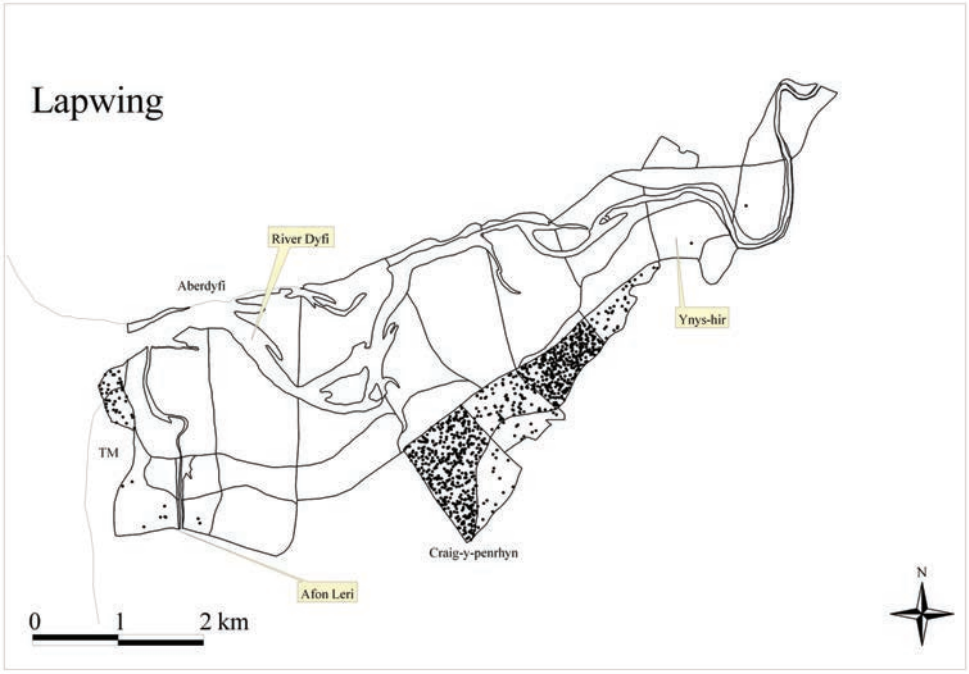


Figure 103. WeBS Low Tide Count distributions of Teal and Lapwing at Dyfi Estuary, winter 2002/03. (TM=Twyni Mawr)

LINDISFARNE
Northumberland

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

Nationally important: Shelduck, Greylag Goose, Wigeon, Eider, Common Scoter, Golden Plover, Grey Plover, Knot, Dunlin, Curlew, Redshank

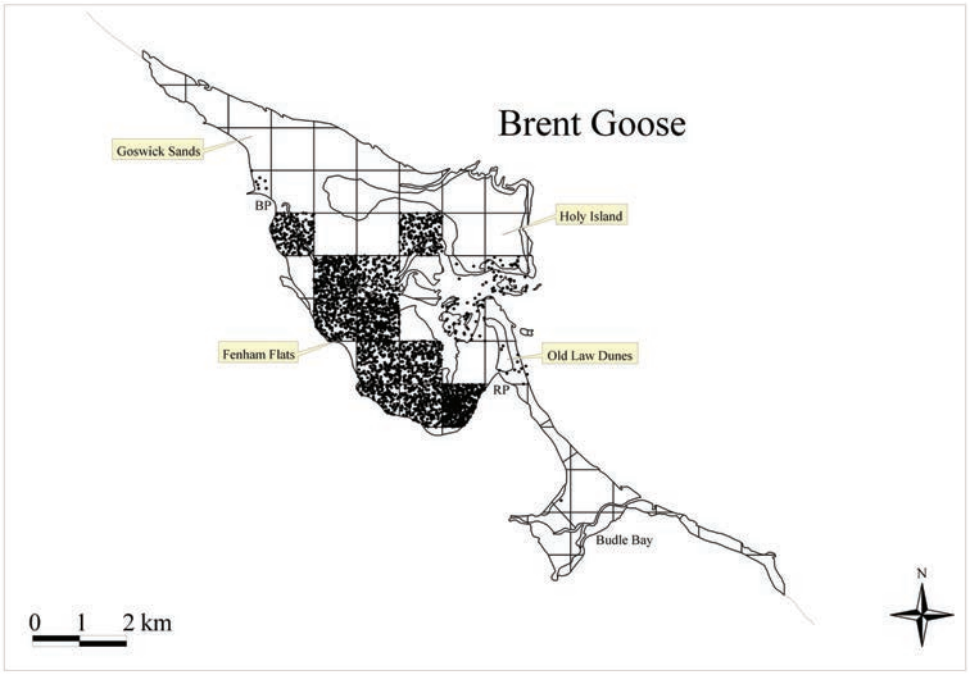
Site description

Lindisfarne, along with Budle Bay, forms one of the largest intertidal areas in north-east England. This estuary, as one of only two barrier beach systems within the UK, is an unusual structure. Lindisfarne is one of the most important estuary systems in the UK, with three species present in internationally important numbers and a further ten species reaching levels of national importance. Within the British Isles, the Svalbard population of Light-bellied Brent Goose only winters on Lindisfarne. The majority of the site is sandy, although there are increasing amounts of silt in parts of Budle Bay and Fenham Flats. Several freshwater creeks traverse the flats at low tide. There are several areas of saltmarsh between Goswick to Fenham, especially around the causeway to Holy Island and along the south-western 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 shoreline of Holy Island is mainly rocky, with a few patches of shingle.

Bird distribution 2001/02

The following account is based on a single December count, undertaken as a part of the Northumberland Bird Atlas project. The count of 14 Greylags was considerably lower than the 176 birds noted the previous year. A small flock of Barnacle Geese frequented the flats off Beal Point, whilst up to 65 Dark-bellied Brent Geese were confined to the grass sward on the eastern side of Holy Island and the northern end of Holy Island Sands. Conversely, the majority of the Light-bellied Brent Geese occurred on the Fenham Flats between Ross Point and Fenham, off Beal Point and on Holy Island Sands. This distribution was similar to that of winter 2000/01, apart from a small number that also frequented the southern tip of Lindisfarne. The count of 3,159 Light-bellied Brents exceeded the 1,937 of the previous year. Similarly, Shelduck numbers showed an increase over the previous year, with the greatest concentrations in the western and southern parts of Budle Bay and on the Fenham Flats. Budle Bay was the most important area for Wigeon. Both Teal and Mallard showed a similar overall distribution to that of Wigeon. However, greater numbers of Teal occurred on Holy Island than either of the other two species. Pintail numbers were close to reaching the threshold of national importance and they were located on Fenham Flats off Fenham Mill. Generally, Eider were concentrated around the south-eastern corner and within the channels running across Fenham Flats. The count of 1,521 Eider was around 300 birds less than the previous December. The mouth of Budle Bay was an important area for Long-tailed Duck and Common Scoter. A few of the former species were also found off Ross Point and around Holy Island. Other areas used by small groups of Common Scoter included the channel west of Old Law Dunes, off Goswick Sands and around Holy Island. More than 800 Common Scoter were counted, which was substantially higher than the two previous winters.

The greatest densities of Oystercatcher were found along the shore around the eastern half of Holy Island and off Guile Point. The small numbers of Ringed Plover present were confined to Budle Bay and the north-east corner of Holy Island. Golden Plover (1,800 birds) and Lapwing (1,700 individuals) were both distributed mainly within Budle Bay, on Fenham Flats and on the southern part of Holy Island. Additionally, dense concentrations of Lapwing frequented Goswick Sands. Conversely, Grey Plover were more restricted, favouring Fenham Flats and Budle Bay. Grey Plover are potentially missed by Low Tide counts, feeding in deep creeks and gullies. This may explain why the recent Core Count numbers are higher than the 572 recorded at low tide. The 2,260 Knot recorded also frequented Budle Bay and Fenham Flats. Sanderling numbers exceeded the level of national importance during the count, with the birds concentrated in Budle Bay and around Ross Point/Old Law Dunes. Virtually all the Dunlin utilised the silty substrates of Fenham Flats and Budle Bay. Both Bar-tailed Godwit and Curlew were widely distributed, although the former avoided Goswick Sands and much of Holy Island Sands. The count of 1,769 Bar-tailed Godwit was well below recent internationally important Core Count totals.



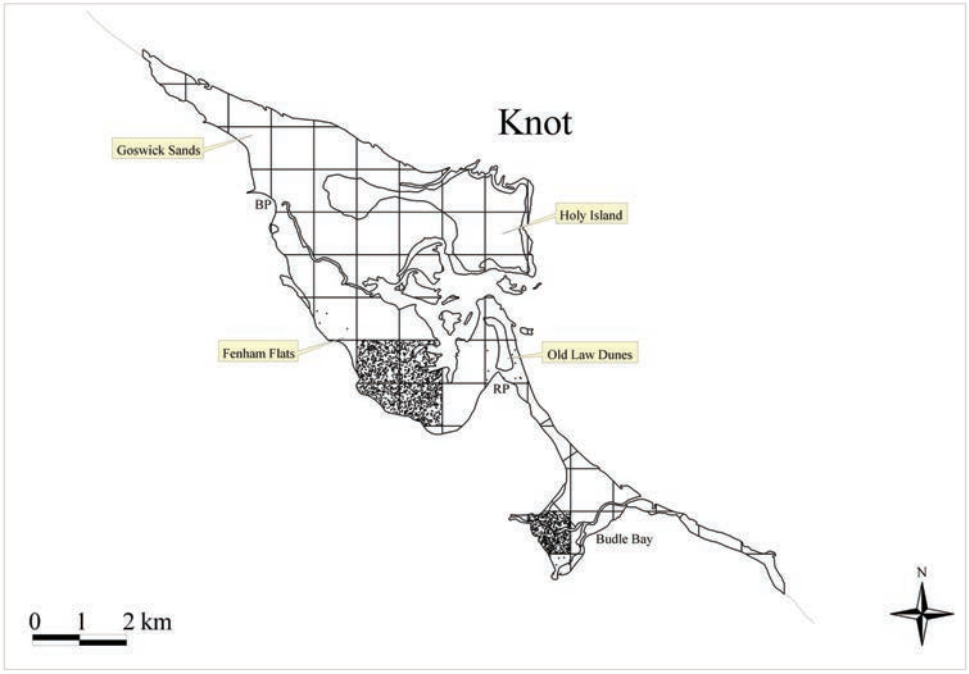


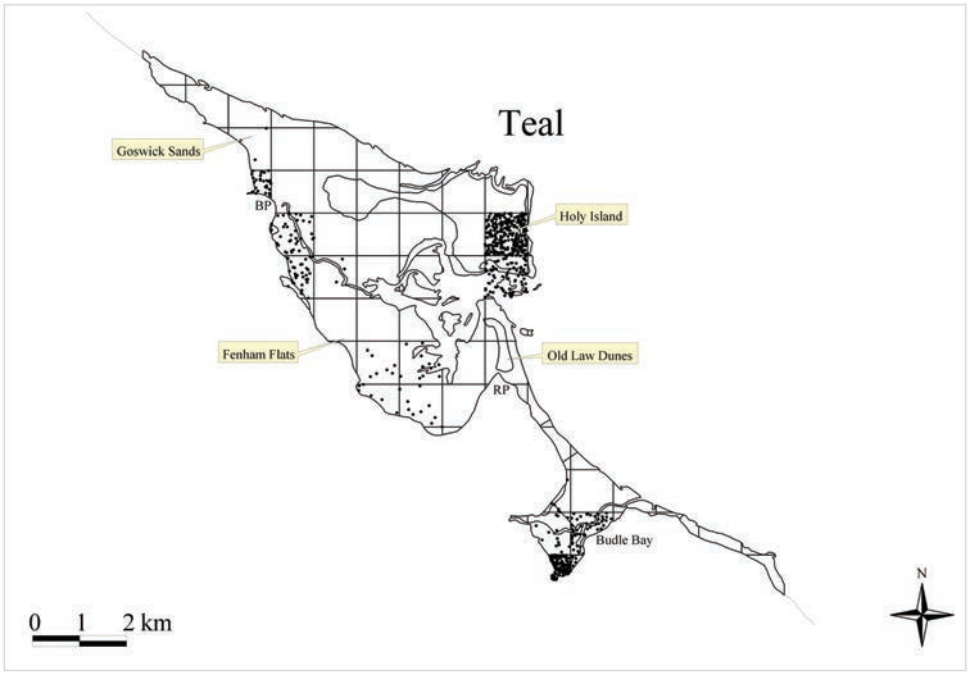
Figure 104. WeBS Low Tide Count distributions of Light-bellied Brent Goose and Knot at Lindisfarne, winter 2001/02. (BP=Beal Point , RP=Ross Point)

More than 1,800 Curlew were recorded, exceeding the recent peak Core Count totals. Redshank were widely distributed and, as in previous years, the greatest concentrations occurred on Holy Island Sands. Small numbers of Turnstone favoured Budle Bay, the flats adjacent to Ross Point and some coastline around Holy Island.

Bird distribution 2002/03

Counts were undertaken in December and February as part of the ongoing Northumberland Bird Atlas project. Slavonian Grebes were recorded in good numbers in December, when 23 individuals were noted. In February, over 280 Pink-footed Geese were located in Budle Bay and Fenham Flats and around 450 Greylag Geese were present in Budle Bay. The majority of the Light-bellied Brent Geese were widely scattered, mostly on Fenham Sands and in the south-west corner of Budle Bay. Small numbers of Dark-bellied Brent Geese were recorded around the western end of Lindisfarne. Both Shelduck and Wigeon occurred on Fenham Flats and in Budle Bay, with the latter site holding most of the Wigeon. Teal peaked in December, when 870 were present and they mostly frequented the south-eastern corner of Budle Bay and close to the south-eastern corner of Lindisfarne. Smaller numbers of Teal were also recorded on Fenham Flats and Goswick Sands. Mallard and up to 220 Pintail favoured Fenham Flats with the former additionally occurring in the eastern part of Budle Bay. Eider numbers continued their downward trend of the last few years, peaking at 1,368 birds in February. The greatest concentrations were noted in the harbour off the southern end of Lindisfarne and in the channel along the north side of the island. Long-tailed Duck also frequented the same channel, with a few in Burrow's Hole and at the mouth of Budle Bay. Common Scoter were present in good numbers, peaking at 450 in February. The mouth of Budle Bay and Goswick Sands were the two most important areas for this species. Small numbers of Goldeneye frequented the channels along the north side of Holy Island, whilst most of the Red-breasted Merganser were found around the Harbour area.

Oystercatcher were mostly distributed off the south-western shore of Holy Island, around Guile Point and Budle Bay. Low numbers of Ringed Plover were confined to Budle Bay and parts of the northern and southern shoreline of Holy Island. The distribution of Golden Plover and Lapwing was broadly similar, with the greatest densities recorded in Budle Bay, Fenham Flats and the southern half of Holy Island. Peak numbers of Golden Plover occurred in December (3,100 birds), whilst the two Lapwing counts were virtually identical. Grey Plover were distributed more widely, although in lower numbers than the previous winter, with Holy Island Sands holding the greatest densities. Knot exceeded the threshold of national importance when more than 3,800 birds were noted in February, when they were recorded in the greatest densities on Holy Island and Fenham Sands. Sanderling peaked in February when 283 individuals were present. They were mainly located on Goswick Sands, north of Beal Point, with lesser numbers along the north east coast of Holy Island and scattered within Budle Baylthough Dunlin were widely distributed, the majority frequented Holy Island Sands and Fenham Flats. Whilst both Bar-tailed Godwit and Curlew were also found throughout, the majority of the former were concentrated on the sands along the southern shores of Holy Island and most of the latter were recorded from fields at the southern end of Holy Island. Apart from the central mudflats between Holy Island Sands and Fenham Flats, Redshank were widely distributed. Small numbers of Turnstone were present at Ross Point and along the southern shore of Holy Island.



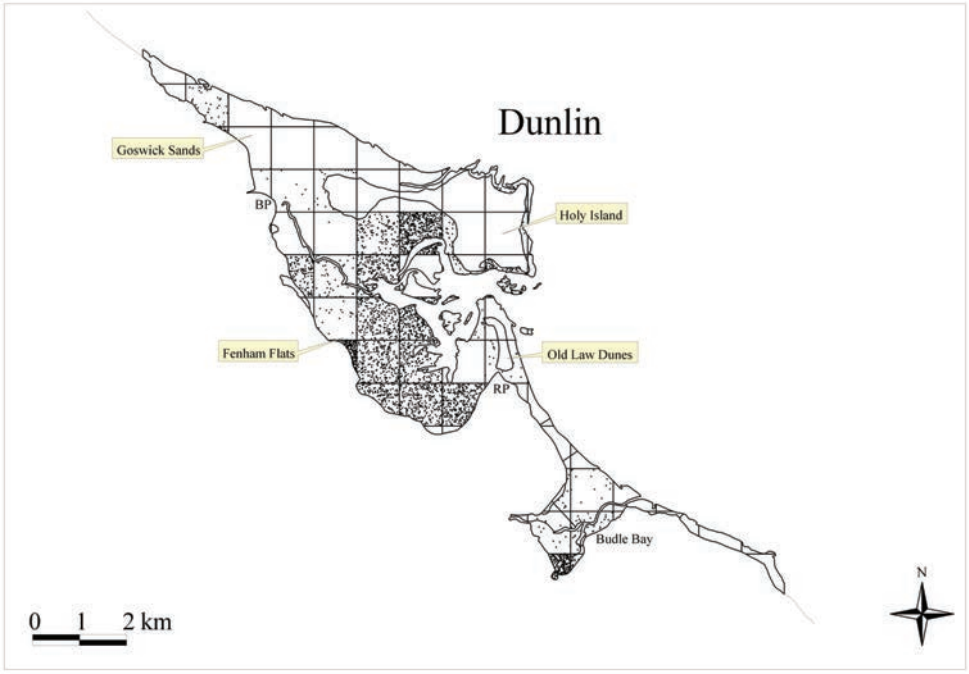


Figure 105. WeBS Low Tide Count distributions of Teal and Dunlin at Lindisfarne, winter 2002/03. (BP=Beal Point , RP=Ross Point)

ORWELL ESTUARY
Suffolk

Internationally important: Black-tailed Godwit, Redshank

Nationally important: Gadwall, Dark-bellied Brent Goose, Grey Plover

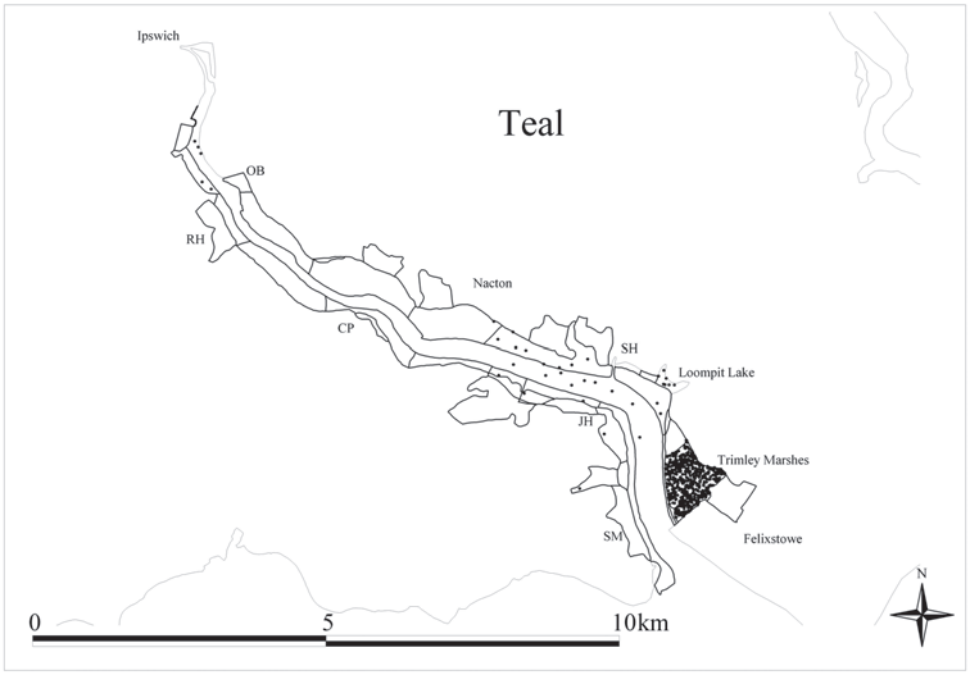
Site description

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, although it becomes sandier towards the mouth. In the past, the main conservation issues concerned 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. Trimley Marshes nature reserve, established in 1989 and managed by the Suffolk Wildlife Trust, was established as legal mitigation for the loss of important intertidal habitat occurring as a result of dockland developments. 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 are pollution and disturbance from sailing and other leisure activities (Beecroft 1990, Buck 1997, Pritchard *et al* 1992, MWright pers comm).

Bird distribution 2001/02

Great Crested Grebes were recorded throughout and were generally distributed along most of the river. The feral Greylag population peaked at more than 600 birds in January, with the majority concentrated on the Trimley and Shotley Marshes, along with Loompit Lake. The distribution of Canada and Dark-bellied Brent Goose was very similar to that of Greylag, with the birds favouring the southern part of the estuary. The flats off Stratton Hall were used more often by Dark-bellied Brent Geese than during the previous winter. Shelduck peaked at 754 birds in January when they were generally distributed throughout, albeit in lower concentrations towards the mouth. The greatest densities of Wigeon were found off Jill's Hole and on Trimley Marshes. Wigeon counts have shown a gradual increase over recent years, culminating in a peak count of nearly 2,600 birds in February. Trimley Marshes and Loompit Lake were important areas for Gadwall, Mallard, Pintail and Shoveler. The peak count of 160 Gadwall, counted in December, represented the second highest ever Low Tide count. Pintail exceeded the threshold of national importance in November, when 473 birds were counted. However, this was a temporary occurrence as Pintail counts decreased over the rest of the winter. Trimley Marshes were particularly important for Teal, holding the majority of the Orwell population. Pochard, Tufted Duck and Ruddy Duck were concentrated on Loompit Lake and Trimley Marshes, whilst Goldeneye and Red-breasted Merganser were more generally scattered along the river channel.

Oystercatcher counts peaked at 1,679 in February, which was the highest ever Low Tide count for this species. The majority were found between Orwell Bridge and Stratton Hall on the northern shore and Redgate Hard and Cathouse Point on the southern shore. Ringed and Grey Plover were scattered throughout, whilst Golden Plover were concentrated on the flats off Nacton. During much of the winter, Golden Plover were largely absent. However, in December, there was a short-lived influx when 558 birds were recorded. The densest concentrations of Lapwing were found off Redgate Hard in the upper reaches, with lesser concentrations on the flats in the lower third, including Trimley Marshes. Unusually, Knot were unrecorded during November. An influx of 1,601 individuals occurred in December, before a marked decline ensued for the remainder of the winter. Dunlin abundance on the Orwell has shown quite marked fluctuations over recent years, with the overall trend being one of decline. It is possible that ongoing capital dredging operations may be implicated. There was an increase in the Black-tailed Godwit counts, which peaked at 260 birds in December. This compares with a maximum count of only 73 godwit during winter 2000/01. The godwits frequented the upper half of the Orwell and Trimley Marshes. Record numbers of Curlew were recorded in February, when 1,045 birds were present. This count may have been inflated by early passage birds beginning to head back to breeding grounds. Although widely distributed, most Curlew occurred on the flats within the upper half of the estuary. Redshank peaked at 2,279 individuals in January, higher than the Core Count five-year mean peak. They were distributed throughout, with the greatest concentrations between the Orwell Bridge and Stratton Hall.



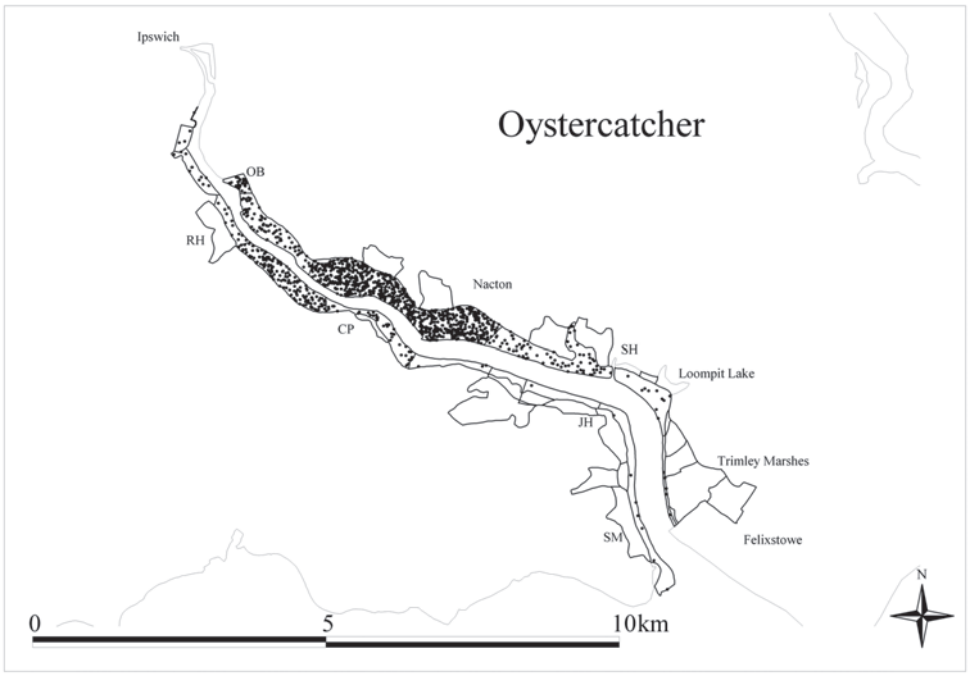


Figure 106. WeBS Low Tide Count distributions of Teal and Oystercatcher at Orwell Estuary, winter 2001/02. (CP=Cathouse Point, JH=Jill's Hole, OB=Orwell Bridge, RH=Redgate Hard, SH=Stratton Hall, SM=Shotley Marshes)

Turnstone counts remained remarkably constant throughout the winter, ranging between 120 and 131 individuals. There was a decline in numbers from the previous winter peak of 170 birds, although the long-term trend for Turnstone numbers on the Orwell is increasing.

Of the five species of gull recorded, Black-headed were the most abundant, with more 3,000 counted during December. Although distributed throughout, the greatest concentrations were to be found in the upper parts of the Orwell, around and beyond the bridge. Common Gull were the next most abundant, peaking at 336 in December and then Herring Gull. Both Lesser and Greater Black-backed Gulls were only noted in low numbers.

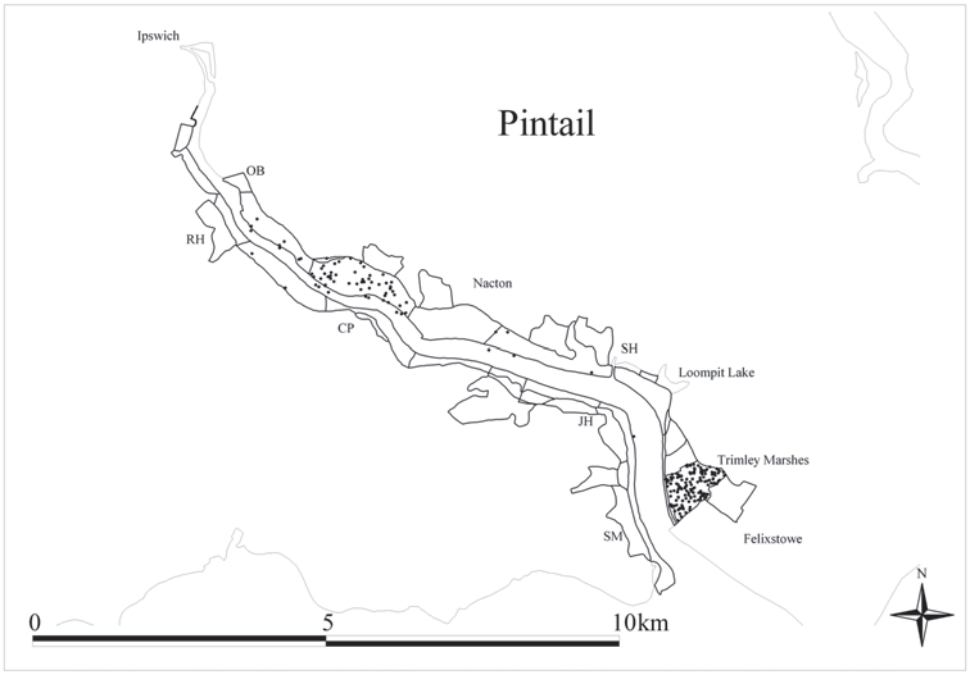
Bird distribution 2002/03

Generally, Little Grebe frequented the upper zones, whilst Great Crested Grebe and Cormorant were more widely scattered along the entire river. Up to six Little Egret were present during the middle part of the winter, mostly towards the mouth of the river. Most Mute Swan were either found at Trimley Marshes or on the Orwell on the outskirts of Ipswich. The peak count of 587 Greylag Geese was similar to the peak count of 600 birds made the previous winter. Most of the Canada Geese were also seen at Trimley. Dark-bellied Brent Geese, however, were located at Trimley Marshes, Shotley Marshes and the flats off Stratton Hall on the western side of the Orwell. More than 1,500 individuals of this sub-species were present in January. Unusually, 22 European White-fronted Geese occurred on Trimley Marshes in February. As noted during previous winters, although widely distributed within the estuary, Shelduck were more concentrated within the inner half of the Orwell. Wigeon numbers continued their recent increase and exceeded the threshold of national importance in January, with the densest congregations on Trimley Marshes, which also held most Teal. The peak count of 465 Gadwall, located almost exclusively on Loompit Lake, exceeded the threshold of national importance and was higher than recent Core Counts. Mallard also occurred in high densities on Loompit Lake as well as the inner zones. Pintail counts were lower than the previous winter, peaking at 372 birds in December. They were concentrated on Trimley Marshes. Shoveler numbers approached the level of national importance, with Loompit Lake and Trimley Marshes again the most frequented areas; a distribution pattern mirrored for both Pochard and Tufted Duck. Goldeneye and Red-breasted Merganser were thinly scattered along the main channel, along with the odd Ruddy Duck, with most of the latter seen at Trimley Marshes.

The Low Tide peak count of Oystercatcher continued to increase, with more than 1,800 noted in December. As in previous years, the majority were found between the Orwell Bridge and Stratton Hall on the northern shore and Redgate Hard and Cathouse Point on the southern shore. Ringed Plover were evenly scattered along the shoreline of the estuary, whilst low numbers of Golden Plover were confined to Trimley Marshes. Most Grey Plover occurred along the northern shore of the estuary, whilst Lapwing were concentrated off Redgate Hard, with smaller concentrations in the marshes around the outer zones. Unlike the previous season, Knot were recorded throughout the winter period and peaked at over 3,100 individuals in January, substantially higher than winter 2001/02. A January peak of over 5,500 Dunlin was the highest count recorded for several years. Predictably, most Snipe were located in the marshes around the mouth of the estuary. Black-tailed Godwit continued their recent increase. Over 400 were present in December, considerably higher than the peak of 260 individuals noted the previous winter. Most of the Godwit were in the upper reaches of the estuary, particularly on the Black Ooze Flats. In contrast to previous winters, very few Black-tailed Godwit were recorded from Trimley Marshes. Curlew and Redshank were both present in lower numbers than the previous winter. However, counts of both species, especially Redshank, have shown considerable fluctuations during the last few years. Turnstone counts continued their recent upward trend and, in particular, showed a substantial increase over those from the previous winter, reaching a peak of 210 individuals in December.

Six species of gull were recorded, with Black-headed the most abundant. Two Mediterranean Gulls were noted in December.

The Orwell Estuary was counted by the Suffolk Wildlife Trust under contract to the Harwich Haven Authority. These data are generously made available to the Wetland Bird Survey.



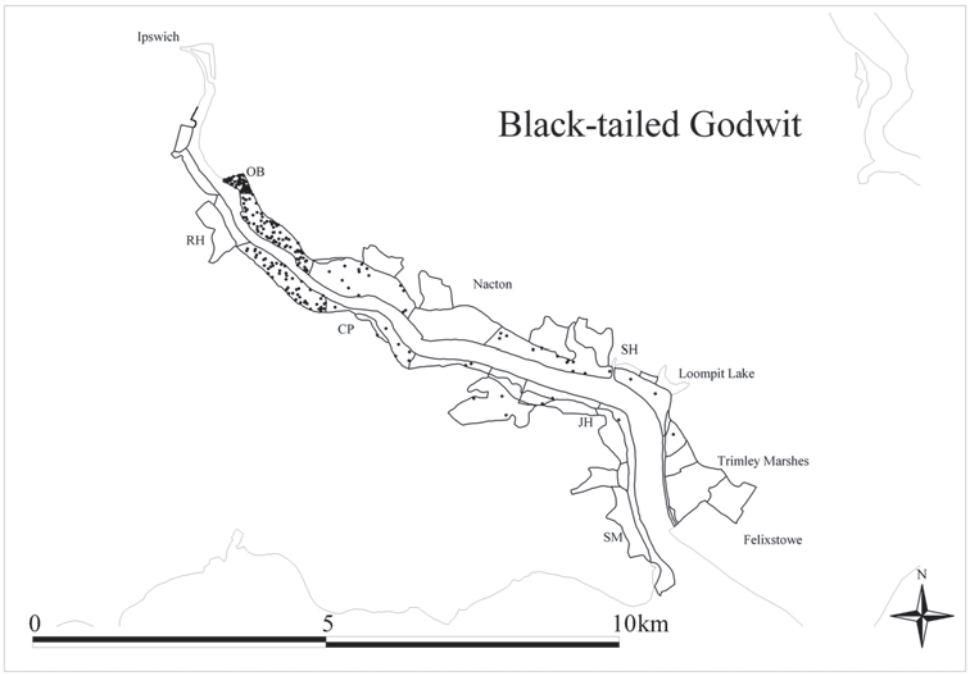


Figure 107. WeBS Low Tide Count distributions of Pintail and Black-tailed Godwit at Orwell Estuary, winter 2002/03. (CP=Cathouse Point, JH=Jill's Hole, OB=Orwell Bridge, RH=Redgate Hard, SH=Stratton Hall, SM=Shotley Marshes)