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# The Wetland Bird Survey 1997-98 Wildfowl and Wader Counts

Peter Cranswick, Mark Pollitt, Andy Musgrove and Becky Hughes



## Published by

British Trust for Ornithology, The Wildfowl & Wetlands Trust, Royal Society for the Protection of Birds and Joint Nature Conservation Committee

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This report is provided free to all WeBS counters, none of whom receive financial reward for their invaluable work. Further feedback is provided to counters through the twice-yearly WeBS Newsletter. For further information please contact the WeBS Secretariat or relevant National Organiser.

#### **ACKNOWLEDGEMENTS**

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Grateful thanks to all and apologies to anyone who has inadvertently been missed.

#### **WETLAND BIRD SURVEY**

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For general enquiries, please contact the WeBS Secretariat. More detailed data than published in this report can be obtained from Becky Hughes (Core Counts) or Andy Musgrove (Low Tide Counts).

#### **PREFACE**

You will have already noticed at least one change to the report from previous years.

The key aim of the changes herein has been to make the report more useful, both as a reference, but also to show more clearly how the UK meets its obligations to various conservation agreements and legislation. Where possible, analyses and presentation have been standardised across all species, though further work is needed in future reports before this is consistent throughout.

Most importantly, following these changes, I would urge you to read the revised analysis, presentation and interpretation sections at the start of the report. Much remains as before, but the intention has been to provide every last explanation that anyone might want. Inevitably, this section has become longer, but hopefully it is organized logically for the casual reader to find the information they desire. There is more detail, but minutiae have been moved to appendices for the sake of simplicity.

Part of the above aim is that this report provides a 'one-stop-shop' reference for monitoring of non-breeding waterfowl in the UK. Thus, the format has been modified so that, as far as possible, each species account provides all relevant information in a single place, rather than

several sections as previously.

Thus, I would be grateful for comments and suggestions for further improvements, but also for instances where information is unclear or even missing, particularly any survey data that has been omitted.

Feedback on the usefulness of these changes would also be gratefully received. Change for the sake of it is not helpful and certainly time-consuming, and it is useful to know how far we should persist with this.

Which leads back to the most obvious change and the one which will probably provoke most comment.

Size, it is well known, is not everything, but the larger format was proving unwieldy and costly, particularly for postage. The report matches that of the Irish Wetland Bird Survey, perhaps the most important point of reference when considering change and standardisation, though it remains the content that is important, and something that both schemes continue to work closely upon together. For those that like to see successive volumes arranged neatly on their bookshelves, I hope this doesn't grate too much.

Peter Cranswick Head of WeBS Secretariat

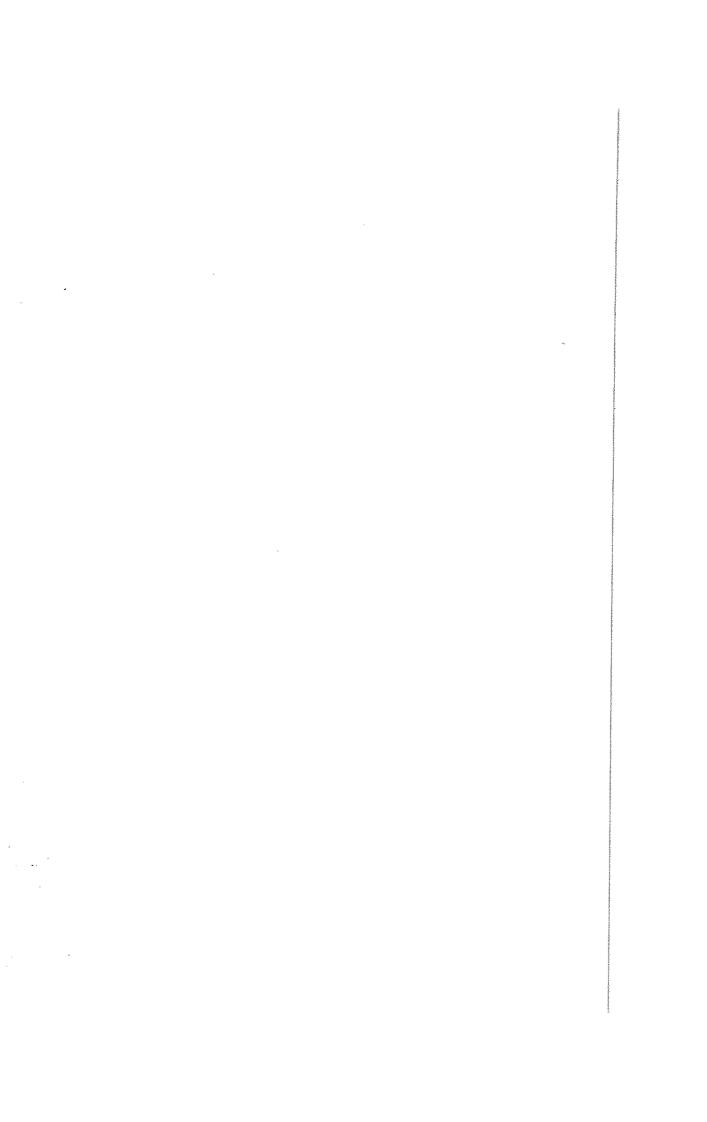
#### **ERRATA**

The quality of the Low Tide Count distribution maps in the 1996-97 report was well below the desired standard. This was due to differences in software compatability at WWT and BTO and, in

the rush to publish the report, lack of time to fully check the output. Our apologies to all concerned.

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#### **SUMMARY**

The Wetland Bird Survey and Wildfowl and Wader Counts

The Wetland Bird Survey (WeBS) is a joint scheme of the British Trust for Ornithology (BTO), The Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC) to monitor non-breeding waterfowl in the UK. The principal aims of the scheme are to identify population sizes, determine trends in numbers and distribution, and to identify important sites for waterfowl. WeBS Core Counts are made annually at around 2,000 wetland sites of all habitats; estuaries and large still waters predominate. Monthly co-ordinated counts are made mostly by volunteers, principally from September to March, with fewer observations during summer months. Data from other sources, e.g. roost counts of grey geese, are included in this report where relevant.

This report presents total numbers counted for all species in the most recent year in Great Britain and Northern Ireland. Annual indices, calculated using the 'Underhill' method, are provided for the more numerous species. For certain wildfowl species, monthly indices, showing relative abundance during the winter, are also provided.

Species accounts provide yearly maxima for all sites supporting internationally and nationally important numbers. Sites with changed status are highlighted and significant counts at a national or site level are discussed. Counts are placed in an international context where possible, and relevant research is summarised. Waterfowl totals are provided for all sites meeting criteria for international importance and species occurring in internationally important numbers on each are identified. Brief overviews of research initiated by WeBS or using WeBS data, and of conservation issues pertaining to UK waterfowl, are provided.

WeBS Low Tide Counts are made on selected estuaries to determine the distribution of birds during low tide and to identify important feeding areas that may not be recognised during Core Counts which are made mostly at high tide. A summary of results for these estuaries, and distribution maps for selected species, are provided.

Waterfowl totals recorded by the Irish Wetland Bird Survey, a similar scheme operating in the Republic of Ireland, are also included. Appendices list all UK sites identified under the Ramsar Convention and Special Protection Areas notified under the EC Directive on the Conservation of Wild Birds. Also, waterfowl count totals for the most recent year are provided separately for England, Scotland, Wales, the Isle of Man and the Channel Islands.

The 1997-98 year

This report summarises counts during 1997-98 and previous years (since 1960 for wildfowl, 1969 for waders and the early 1980s or 1990s for other species groups). Coverage remained at the same relatively high levels achieved throughout the 1990s, with around 1,500 sites covered during each winter month.

The winter was generally mild, in contrast to much colder weather in the previous two winters. Consequently, there were marked changes in numbers of several species which occur in the UK chiefly as winter visitors.

Numbers of divers and grebes were broadly similar to recent totals. Although British counted numbers of Great Crested Grebes were the lowest for 10 years, annual indices suggested more stable numbers. Counts of Cormorants in Britain were the lowest since, 1991-92 although annual indices in Northern Ireland were the highest since the late 1980s. Numbers of most heron species were around normal.

Mute Swans continued their increase since the ban of lead fishing weights, reaching record levels in 1997-98. Numbers of Bewick's and Whoopers were much lower, a result of poor breeding success and, for the former, birds remaining on the continent during the mild weather. All of the major migratory *Anser* and *Branta* goose populations returned in similar numbers to the previous winter, despite continued poor breeding success in some Brent populations. Numbers of Svalbard Barnacle Geese remained high following the recent large increase. Annual indices for Canada Geese fell 21%.

Wigeon numbers dropped sharply from 1996-97 as a result of the milder weather. Gadwall and Teal numbers continued to rise, reaching their highest levels to date. By contrast, Mallard annual indices fell for the tenth year in succession, with values and counted numbers reaching record low levels. Annual indices for Pochard were low, around half the level of 10 years ago in Northern Ireland where Tufted Duck

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indices showed a similar picture. Most sea-duck were recorded in average numbers, although Scaup counts were high in Britain but low in Northern Ireland. Goldeneye numbers also fell in Northern Ireland. Smew and Goosander numbers fell with the return to milder weather, though they remained higher than normal. Redbreasted Merganser annual indices in Britain and Northern Ireland reached near record highs. Ruddy Ducks continued to increase.

Rails were recorded in around average numbers, although Coot was somewhat less numerous.

Annual index values and most counts of Oystercatcher, Grey Plover, Know, Sanderling, Dunlin, Bar-tailed and, to a lesser extent, Blacktailed Godwits fell sharply in 1997-98. However, these species had shown elevated values in 1996-97 due to the severe winter and 1997-98 represented a return to average numbers. Counts of several species which favour mild weather also returned to more normal levels, although 1997-98 values represented increases over the previous winter, particularly for Avocet, lapwing, Golden Plover, Curlew and Redshank.

Many primarily non-estuarine coastal species exhibited continuing declines, reinforced from

preliminary results from a national survey of the UK's open coast in December and January, particularly Turnstone and Purple Sandpipers.

Counts of species which occur primarily as autumn passage migrants were generally lower than normal.

Counts of Black-headed, Common and Lesser Black-backed Gulls were higher than previous maxima. Other species were recorded in average numbers.

Peak counts of the more numerous tems were lower than usual, with the exception of Arctic Tern, with counts exceeding double the previous record.

The number of escaped waterfowl species and their counts continued the steady increase of recent years.

A summary of WeBS Low Tide data is presented for 18 estuaries counted in 1997-98: Alt, Belfast Lough, Blyth, Chichester Harbour, Cleddau, Dee (England/Wales): North Wirral Shore, Hamford Water, Mersey, Montrose Basin, North Norfolk Coast, Northwest Solent, Pagham Harbour, Portsmouth Harbour, Ribble, Southampton Water, Strangford Lough, Tamar complex and Ythan.

#### INTRODUCTION

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

The UK is signatory to a number of international conservation conventions and, as a member of the EU, 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 this is that regular monitoring is undertaken to identify and monitor such sites. These instruments also lay particular significance on the need to conserve migratory populations, and consequently most of the waterfowl populations in the UK. The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) of the 'Bonn' Convention on the Conservation of Migratory Species of Wild Animals, recently ratified by the UK and entereing into force in 1999, represents 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 waterfowl populations.

#### Aims and objectives of WeBS

The Wetland Bird Survey (WeBS) aims to monitor all non-breeding waterfowl 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 waterfowl populations in the UK;
- to assess trends in their numbers and distribution; and
- to assess the importance of individual sites for waterfowl.

A programme of research, to understand the ecology of waterfowl and investigate the effects of habitat change and anthropogenic impact, underpins and enhances these objectives.

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 waterfowl. 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 waterfowl monitoring at an international scale.

#### Structure and organization of WeBS

WeBS is partnership scheme of the British Trust for Omithology (BTO), The Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and the 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 had formed the mainstay of waterfowl monitoring in the UK 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 day-to-day running of the Core and Low Tide Count schemes is the responsibility of the National Organisers, with assistance from a number of other staff.

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

#### Aim of this report

This report presents syntheses of data collected in 1997-98 and previous years in line with the WeBS objectives. Data from other national and local waterfowl monitoring schemes are included where WeBS data alone are insufficient to fulfil this aim, so that the report provides a single, comprehensive source of information on waterfowl status and distribution in the UK. All nationally and internationally important sites for which data exist are listed, as are all sites designated under international law or Conventions (see Appendices 1 & 2).

We recommend that the National Organisers (see *Contacts*) are contacted in the first instance by anyone with queries regarding this report or requiring further information.

#### PROGRESS AND DEVELOPMENTS

#### New structure of WeBS

In 1998, the WeBS partnership took the decision to re-organise the day-to-day administration of WeBS, largely for the purposes of efficiency. Consequently, organisation of WeBS Core Counts is undertaken by the WeBS Secretariat, based at WWT, and that of Low Tide Counts by BTO. Contact details are given on page 3. The WeBS scheme, nevertheless, remains a four-way partnership between BTO, WWT, RSPB and JNCC, and the direction of the scheme remains the responsibility of a Steering Group consisting of members from all four partners. We are confident that this new structure will enable a more efficient and effective monitoring scheme, enabling WeBS to deliver greater benefits for the conservation of the UK's waterfowl populations.

#### Alert limits

Trends calculated using count data reveal fluctuations between years as a result of a number of factors, particularly weather and productivity. Even allowing for these factors in individual years, many populations routinely exhibit general increases or declines over relatively short periods. Consequently, it is difficult to deduce whether these variations are attributable to external factors, e.g. bad spring weather on the breeding grounds, or result from negative influences at important sites.

A system of 'alerts' is currently being developed in order to identify when declines in populations are of sufficient magnitude to give cause for concern, triggering relevant bodies to take appropriate action. Following a workshop in autumn 1998, these methods are being developed by BTO on behalf of a number of organisations for all bird species for which sufficient data exist. It is anticipated that a provisional system of alerts will be put in place in 1999 for a number of bird recording schemes. The large body of WeBS data allows many waterfowl species to be included in this process. It is planned that alert analyses will be undertaken routinely as part of the WeBS programme and, where appropriate, results will be included in future reports.

#### UK-WeBS/I-WeBS Protocol

A major development in cross-border collaboration was made in May 1998 when partners of the UK and Irish Wetland Bird Surveys signed a protocol formalising the international co-operative relationship between the two schemes.

The new agreement will ensure that collection and dissemination of waterfowl data form the two countries are undertaken in a complementary manner. Common standards are adopted by both schemes and special surveys, where possible, will be co-ordinated throughout Britain and Ireland. Analyses conducted at this level will improve our understanding of the movements and ecology of waterfowl within this biogeographic region.

#### **WEATHER IN 1997-98**

UK weather is summarised from the journals Weather and British Wildlife. Figures in brackets denote the WeBS priority count date in that month. European weather is summarised from Weather and arctic breeding conditions in western and central Russia, one of the main breeding grounds for birds wintering in the UK, are summarised from Tomkovich & Zharikov (1998).

#### United Kingdom

Spring began dry and mild in many areas. The first three weeks of April (6th) were almost exclusively dominated by high pressure. Rainfall was well below average in almost all parts of the UK, particularly in the east, with temperatures between 1-2°C above normal. A brief heat wave saw temperatures in early May (11th) rise as high as 27°C, though this soon gave way to much colder conditions bringing sharp night frosts to all parts and snow as far south as Derbyshire. An unsettled period mid month then gave way to warm, sunny weather over the final week. Mean temperatures were near normal and rainfall was above average in most areas outside southern and eastern England. The warm weather continued into June (22nd), though this gave way to unsettled weather mid month and to prolonged heavy rain in the latter part of the month; England and Wales received double the usual rainfall, making it the wettest June this century. July (20th) was warmer than average, temperatures 1-2°C above the long-term norm. Rainfall was very localised with thundery downpours. Heavy rain early in the month caused flooding in Moray and Nairn. Warm conditions continued throughout most of August (24th) which was the second hottest on record. Much of Scotland and Northern Ireland was exceptionally dry, though England and Wales recorded slightly above average rainfall.

September (21st) continued the run of warmer than average months and brought little in the way of rainfall to eastern and southeastern Britain. The first week was dominated by changeable westerly weather, then high pressure dominated between the 7th and 10th. Cooler northwesterlies followed backing southwesterly mid month, and high pressure then reasserted itself for the remainder of the month bringing warm settled conditions to most parts.

The long Indian summer continued during the first week of **October** (19th) before the arrival of more disturbed weather with frequent rain and occasional strong winds in the second week. A return to settled anticyclonic conditions brought warm days, much sunshine and cooler nights by mid month. This was followed by widespread, and sometimes severe, night-time frosts, affecting all areas for the remainder of the month.

By contrast, **November** (16th) was warm and wet. Southerly winds dominated throughout, with the only significant widespread frosts occurring mid month either side of the priority count date. Rain was widespread and often heavy with localised flooding in parts of Sussex, Cornwall, Aberdeenshire and parts of Northern Ireland.

**December** (14th) began cold, with several inches of snow falling in parts of southeast England in the first two days, but mostly dry, with patches of freezing fog, elsewhere. The return of southwesterlies from the 5th brought a period of changeable, windy and very mild weather until mid month, followed by a short easterly incursion during the third week. Mild southerly and southwesterly conditions dominated for the remainder of the month with an intense depression bringing severe gales to Wales and northwest England on Christmas Eve. Average temperatures were 1-2°C above normal.

Stormy weather continued in the first week of January (18th). A period of calmer, mild southerly winds between the 9th and 12th saw temperatures reach an exceptional 17°C in Prestatyn on the 10th. Unsettled conditions resumed until the 19th, with England and Wales remaining mild but Scotland and Northern Ireland colder with snow in the Highlands. High pressure dominated the rest of the month, with widespread frost and patchy fog across most of the country. Temperatures were around 2°C above the long-term mean, with most areas receiving above average rainfall.

The mild theme continued into February (15th) which equalled the warmest this century (in 1990). England and Wales were exceptionally dry with just 30% of the average precipitation, though parts of northern and western Scotland had two and a half times their normal amount. Sunny days and frosty nights characterised most areas during the first few days. High pressure then developed and remained over or near to southern England for most of the month, while westerly or southwesterly airflows dominated northern Britain giving spells of prolonged heavy rain in parts of western Scotland. On the last two

days, cold arctic air plunged southwards across much of the country bringing wintry showers to many areas and blizzards in the Highlands.

Once the cold arctic air of late February passed, the first two weeks of March (15th) saw a series of depressions and fronts track eastwards across the country, bringing frequent and often heavy rain to all areas. High pressure during the third week heralded a spell of more settled weather, finally giving way to a series of Atlantic depressions and heavy rain from the 24th. March was yet another warm month, and rainfall in western districts was well above average. In eastern areas of England, however, the long drought continued: since March 1995 there has been a 15% deficiency in rainfall. January 1997 was the last month in which the average temperature was significantly below the respective long term average.

Table i. The proportion of still water count units (lakes, reservoirs and gravel pits) in the UK with any ice and with three-quarters or more of their surface covered by ice during WeBS counts (England divided by a line drawn roughly between the Humber and the Mersey Estuaries).

Region	lce	S	0	N	D	J	F	М
Northern Ireland	>0% >74%	0	0 0	0 0	0 0	0 0	0 0	0
Scotland	>0% >74%	0	<1 0	0	2 <1	20 12	<1 0	<i 0</i 
N England	>0% >74%		0	0 0	2 0	<br 0	0 0	0 0
S England	>0% >74%	0	0 0	0	< I 0	<  <	0 0	0
Wales	>0% > <b>74</b> %	0	0 0	0	0 0	0 0	0 0	0

#### Northwest Europe

Winter 1997-98 was also mild on the continent. September saw cold and wet conditions in western Russia, though milder in parts of northern Scandinavia. October was the only notably cold month across most of continental Europe, with the Baltic countries, Poland and western Russia recording well below average temperatures. The Netherlands and northern France were notably wet, whilst Iceland was the only country to enjoy warmer than average conditions. November saw mild conditions continue in Iceland though elsewhere. temperatures were closer to normal. With the exception of northern France, several neighbouring countries received only half their usual rainfall. The mild theme continued into December, with only western Russia recording temperatures below the long-term mean. January and February were exceptionally warm throughout the whole of Europe with mean temperatures up to 5-6°C higher than normal in places. The latter month was notably dry in westernmost countries. Winter closed with a mild and wet March.

#### Arctic breeding conditions in Russian tundras

For the second year in succession, spring in the tundras of European Russian and northernmost Siberia was very late and prolonged, with poor conditions returning to some areas in late May. Summer 1997 was humid and cold in the west, but warm and dry on Taimyr.

Contrary to predictions, large numbers of lemmings were not widespread, and, although locally abundant, densities decreased as summer progressed in many areas. Arctic Foxes were generally numerous and bred successfully, though at no sites were large numbers of lemming-specializing avian predators found, e.g. Snowy Owl and Pomarine Skua.

Consequently, breeding success of waders was evaluated as low (to average for some species) in the west Russian Arctic and average on Taimyr and further east.

# WeBS Core Counts

#### **SURVEY METHODS**

The main source of data for this report is the WeBS scheme, providing regular monthly counts for most waterfowl 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 sea-ducks, and the results of other national and local schemes for these species are routinely included. 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 waterfowl survey, are included where the data collected are compatible with the presentation formats used in this report. The methods for these survey types are outlined below and more detail can be found in Gilbert et al. (1998). Although the precise methods for some of the additional count data presented within this report are unknown, it is safe to assume that they will follow closely the general methods presented here.

#### WeBS Core Counts

WeBS Core Counts are made using so-called "look-see" methodology (Bibby *et al.* 1992), 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 waterfowl 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 waterfowl 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, e.g. unidentified scoter species, where it is not possible to be confident of identification, e.g. 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, e.g. a large flock of roosting waders only partially counted before being flushed by a predator, or a distant flock of sea-duck in heavy swell. These counts may then be treated differently when calculating site totals (see *Analysis*).

Observers do not receive official training but most are experienced ornithologists and/or counters. 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.

Since many 'grey geese' spend daylight hours in agricultural landscapes, most are missed during counts at wetlands by WeBS. These species are usually best censused 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, 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 are made during daytime of birds in fields.

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

#### Sea-ducks

The accuracy of counts of waterfowl 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 moderate swell at all sites except those with high vantage points can hamper counts considerably. Many sites may be best covered using aerial surveys, though these are usually expensive and require experienced, professional counters. In many cases, birds can only be identified to genus, e.g. grebe species or scoter species.

Consequently, the best counts of most divers, grebes and sea-duck 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, e.g. within the Moray Firth, within North Cardigan Bay.

Open coast habitats are relatively poorly covered by WeBS and, consequently, the non-estuarine coastal waterfowl survey (NEWS) was undertaken in December 1997 and January 1998. This concentrated on those waders for which a large proportion of the population occur on the coast away from estuaries, notably Ringed Plover, Sanderling, Purple Sandpiper and Turnstone, thus repeating the Winter Shorebird Count of 1984.

Methods were broadly similar to WeBS, except that counts were usually made on the ebbing tide or at low water and observers walked along the intertidal habitat to ensure that birds amongst boulders and weed in particular were not overlooked.

#### Irish Wetland Bird Survey

The Irish Wetland Bird Survey (I-WeBS) monitors non-breeding waterfowl in the Republic of Ireland (Colhoun 1998). 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 Arts, Heritage, Gaeltacht and the Islands (Ireland), and WWT, supported by 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 waterfowl 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. However, genuine changes in population size will 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 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 Waterfowl Counts*).

#### National totals

Population estimates are revised once every three years, in keeping with internationally agreed timetables (Rose & Stroud 1994). UK waterfowl populations will next be revised in 2000, although a number have been revised recently (Appendix 2) for inclusion in the third edition of international *Waterfowl Population Estimates* for presentation to the Seventh Meeting of the Contracting Parties to the Ramsar Convention, in Costa Rica in May 1999.

Total numbers of waterfowl 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. Separate totals for England, Scotland, Wales, the Isle of Man and the Channel Islands are provided in Appendices 4-8. Numbers of waterfowl found on coastal (including estuarine) and inland habitats are provided separately in Appendix 9, particularly for comparison of numbers of waders with those in reports prior to 1994 when waders were not counted at inland sites.

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, e.g. 5,000 birds estimated on one sector and a count of seven individuals on another is presented as 5,007. It is safe to assume that any large count includes a proportion of estimated birds. However, reproducing the submitted counts in this way is deemed the most appropriate means of presentation.

The count nearest the 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.

Data from other national surveys are used instead of WeBS counts where the census total provides a better estimate of the total numbers. e.g. the national census of Pink-footed and Greylag Geese in October and November. Totals from different censuses are not combined to produce national totals due to lack of synchronisation (birds counted at roost by one method may be effectively double-counted during the WeBS count at a different site in that month), with the exception of a few goose populations where the risk of double-counting is minimal (see Appendix 2). Consequently, counts from site or regional-based surveys of sea-ducks, for example, are not included in national totals. Data from NEWS are not included in national totals

For some scarcer species, including many escaped or introduced species, an estimate of the total number recorded by WeBS throughout the country has been provided using summed site maxima, calculated by summing the highest count at each site, irrespective of the month in which it occurred. For some species, this is likely to result in double-counting where birds move between sites.

#### Annual indices

Because the same WeBS sites are not necessarily covered each year, changes in waterfowl 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.

The 'Underhill index' (Underhill 1989) was specifically developed for waterbird populations and is used in this report for most species. A full explanation of this indexing process is given in Prŷs-Jones *et al.* (1994), Underhill & Prŷs-Jones (1994) and Kirby *et al.* (1995), with additional information on its use in this report in Appendix 3.

In summary, where sites have not been visited, a count for each species is calculated 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.

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 censusing of substantially the whole of the British populations negates the need for an index to be calculated using the Underhill technique. 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 sea-duck 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, e.g. Lapwing and Golden Plover, and those that are difficult to count accurately using WeBS methods, e.g. Snipe and Jack Snipe. Waterfowl 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. However, values calculated for waders in Northern Ireland were 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).

#### Monthly indices

The abundance of different wildfowl species varies during the winter due to a number 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. However, due to differences in site coverage between months, 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 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 1997-98 winter, and the average value from the five preceding winters, 1992-93 to 1996-97. Non-migratory, scarce and irregularly counted species are omitted and only WeBS Core Counts have been used in the index.

Broad differences in the monthly values between species reflect their status in the UK. Resident species, or those with large UK breeding populations, e.g. 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

Tables in the *Species Accounts* rank the principal sites for each species according to average seasonal maxima for the last five seasons in line with recommendations of the Ramsar Convention (see Appendix 2 and *Presentation and notation*).

The count nearest the 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.

In accounts for divers, grebes, Cormorant, herons, wildfowl and Kingfisher, annual maxima are derived from any month, with the season running from July to June inclusive. Average maxima for sites listed in the wader accounts are calculated using data from only the winter period, November to March.

Data from other sources, often involving different methods, e.g. goose roost censuses, are used where these provide better, i.e. larger, counts for individual sites. NEWS data have only been presented for selected species (Ringed Plover, Sanderling, Purple Sandpiper, Bar-tailed Godwit and Turnstone) and only for sites previously noted as being of national importance.

In the first instance, average maxima were calculated using only complete counts but, if any incomplete counts exceeded this initial average, they were also incorporated and the averages recalculated. Averages enclosed by brackets are based solely on incomplete counts.

Counts at any site are considered to be incomplete whenever significant under-recording is thought to have occurred, due to part of the site not being counted or adverse counting conditions. When counts from individual count sectors are summed to give an overall species count for complex sites, these counts might have been done under very different conditions, particularly at very large sites and consequently may have quite different qualities assigned to accuracy of the count. Additionally a variable amount of the overall site may have been uncounted.

The importance of the contribution of each

count sector to the site total is based on its average contribution to the total at the time of year in question and on recent years (to allow for seasonal and long term trends). Further, consideration is given to the fact that a count sector which normally holds a significant proportion of a site total for species A may hold only a small proportion of the site total for species B. Consequently, if such a count sector is not completely counted, the site total will now be treated as complete for species B but incomplete for species A. These species-by-species qualities are assigned to waders, gulls, terns and herons.

In addition to the assessment of sites in *Species Accounts*, sites are identified for their importance in terms of overall waterfowl numbers in *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. Only WeBS Core Counts and national goose censuses (see Appendix 3) are included in totals. Additional counts made using different methodologies, such as those of sea-ducks on the Moray Firth, are not incorporated.

The locations of all sites named in this report are given in Appendix 10.

#### PRESENTATION AND NOTATION

Detail is provided here on the format of presentation and the notation used in *Species Accounts* in particular. The information provided in *Analysis* and *Interpretation of Waterfowl Counts* should mean that results presented in other sections are self-explanatory.

The main purpose of the Species Accounts is to list important sites for each species, subspecies or populations, as relevant. This is done using certain numerical criteria adopted widely for use in conservation legislation and guidelines for site designation (see Appendix 2), although a number of exceptions have been made in some cases. Where available, the international and national importance thresholds are listed at the start of each account, although, for some numerous species, no population estimates, and therefore no thresholds, are available. Less numerous species, for which thresholds are not likely to be produced, are classified as "scarce" whilst species are classified as a "vagrant" where the UK does not fall within its normal range of distribution. 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 reestablishment (species re-established in a area of former occurrence); or naturalised establishment (a species which occurs, but does not breed naturally, e.g. 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.

The maximum count in any month of 1997-98, and the month of occurrence, is given for Great Britain and Northern Ireland in each account except for species occurring in very small numbers. Where productivity data have been collected, the proportion of young and mean brood size, where available, are also listed at the start of the account for ease of reference.

Index values, where calculated, are graphed within each account. Annual indices are presented on a log scale, as is the scientific norm for population growth. 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 y-axes (vertical axes) for clarity. British indices 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.

Monthly indices, where calculated, are graphed within each account. Mean values for the previous five years (1992-93 to 1996-97) are shown using black columns and values for the most recent year using white columns.

Text in each account highlights significant points, e.g. coverage, changes in numbers or indices and at individual sites, and provides an overview of any recently published relevant research or surveys. The terms "recent average" and "previous average" refer to averages based on the winters 1992-93 to 1996-97, i.e. those presented in the previous WeBS report.

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 1997-98 peak and the mean of the maxima is given. Incomplete counts are bracketed and missing counts are denoted using a dash "-".

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 populations, and small national verv consequently very low 1% thresholds, an arbitrary, higher level has been chosen for the inclusion of sites and is highlighted in the text. Where no thresholds are given, e.g. 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 thresholds are highlighted in the text, whilst a blank line has been inserted in the table to separate sites that qualify as nationally important from those selected for the purposes of this report using lower thresholds, including 1% thresholds of less than 50 birds.

Where the importance of a site has changed as a result of the 1997-98 count, i.e. it has become nationally or internationally important but was not following the previous year, or it has changed from international to national importance or vice versa, this is indicated in the table. 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 1997-98 are listed under the heading "Sites no longer meeting table qualifying levels".

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.

All sites which, in 1997-98, held numbers exceeding the relevant national threshold (or adopted qualifying level), but with five year means below this value are listed under "Other sites surpassing table qualifying levels in 1997-98". This serves to highlight important sites worthy of continued close attention. For waders, this includes counts from any month of the year.

It should be noted that a site may appear to have been flagged erroneously as having elevated status if the most recent count was below the relevant threshold. However, a particularly low count six years previously will have depressed the mean in the previous report. 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 and with a peak count in the most recent year exceeding the national threshold.

For a number of wader species, different thresholds exist for passage periods. The list of "sites surpassing passage thresholds in 1997-98" includes all those with counts above the relevant number, even if already listed in the main part of the table by virtue of the winter mean surpassing the national threshold.

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 less than 50 birds, 50 is normally used as a minimum threshold for national importance
- \*\* a site regularly holding more than 20,000 waterfowl (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

In tables of important sites:

- no data available
- ( ) incomplete count
- † same meaning as when used for thresholds
- site was of a lower importance status in the previous year
- site was of a higher importance status in the previous year
- R count obtained using roost survey methodology
- 1, 2 count obtained using different survey methodology (cited at bottom of table)

## **INTERPRETATION OF WATERFOWL COUNTS**

Caution is always necessary in the interpretation and application of waterfowl 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 of site assessment purposes can be obtained from the appropriate National Organisers.

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 Consequently, calculations used to user. 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. 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 waterfowl are present in the UK in highest numbers. Data are collected during other months and have been presented where relevant. However, caution is urged regarding their interpretation both due to the relative sparsity of counts from this period and the different count effort for different sites.

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. However, those species dispersed widely over rivers, nonestuarine coast or small inland waters are likely to be considerably under-represented, as will secretive or cryptic species, such as snipes, or those which occur on non-wetlands, e.g. 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 are likely to be considerable underestimates of the number using the WeB\$ 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 is the use of summed site maxima to determine the total number of scarcer species. For species with mobile flocks in an area well covered by WeBS, e.g. Snow Goose in south-east England, it is likely that a degree of double-counting will occur, particularly if birds move between sites at different times of the year. These cases are

highlighted in the Species Accounts.

The publication of records of vagrants in this report does not imply acceptance by the *British Birds* Rarities Committee (e.g. Rogers and the Rarities Committee 1998).

#### Annual indices

For all species, the long-term trends in index values can be used with confidence to assess changes in overall wintering populations. Because short-term fluctuations provide a less rigorous indication of population changes, care should be taken in their interpretation.

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.

It should be borne in mind that the missing values used in the Underhill index are calculated anew each year. Because the index formula uses data from all years, each new year's counts will slightly alter the site, month and year factors. In turn, the missing counts may differ slightly and, as a result, the index values produced each year are likely to differ from those published in the previous Wildfowl and Wader Counts. The represent published here improvement on previous figures as the additional year's data allow calculation of the site, month and year factors with greater confidence.

The use of a log scale to present indices means that the graph describes the rate of change, irrespective of the population size. Thus, a line showing a change from 10 to 100 has the same slope as from 100 to 1,000 since both represent a 10-fold increase in numbers. This has the effect of reducing the apparent magnitude of changes in numbers at the top end of the scale since a straight line increase over time represents a logarithmic, rather than linear, growth in numbers. Index values are given in Appendix 3.

#### 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.

#### 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 Bureau 1998). Under criterion 3c, a wetland is considered internationally important if it regularly holds at least 1% of the individuals in a population of one species or subspecies of waterfowl, whilst any site regularly holding a total of 20,000 or more waterfowl also qualifies under criterion 3a. Similar criteria have been adopted for identification of SPAs under the EC Birds Directive in the UK legislation. A wetland in Britain is considered nationally important if it regularly holds 1% or more of the estimated British population of one species or subspecies of waterfowl, and in Northern Ireland, important in an all-Ireland context if it holds 1% or more of the estimated all-Ireland population. The relevant 1% thresholds are given in Appendix 2.

Sites are selected for presentation in this report using a strict interpretation of the 1% threshold. However, it should be noted 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 wintering populations of national or international importance 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 waterfowl. 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 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.

Nevertheless, sites which irregularly support nationally or internationally important numbers may be extremely important at certain times, e.g. 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 oncemonthly WeBS visits are necessary to assess more accurately the rapid turnover of waterfowl populations that occurs during migration or cold weather movements.

This list of potential sources of error in counting wetland birds, though not exhaustive, suggests that the net effect tends towards underrather 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 populations. Factors causing underestimation 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 recognised that, in presenting only 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 waterfowl, let alone other conservation interests. The national thresholds have been chosen 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 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, in addition to the conservation of networks of individual key 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 site structures. Additionally, some sites may have been omitted from tables previously due to oversight. It is likely that small changes will continue as part of the current site mapping project and as the database, developed initially for waders, is brought on line for wildfowl. Most changes are minor, but comment is made in the text where they are significant. Where a site has apparently changed status as a result of recalculations or omissions, comment is made in the text but it is not flagged in the tables in the Species Accounts.

Note that sites listed under "Sites no longer of national/all-Ireland importance" represent those that were listed in the 1996-97 report as of national importance but which, following the 1997-98 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.

Counts made using non-WeBS methodologies, such as those of sea-ducks on the Moray Firth, are not incorporated into the site totals presented in *Principal Sites*, with the exception of goose roost counts. Thus, it should be borne in mind that other sites that are important for certain waterfowl species are not included in the table, whilst the sites listed may be of 'greater importance' for the species listed if additional data were included.

Lastly, owing to possible boundary differences, totals given for WeBS 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.

#### **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 ii. WeBS Core Count priority count dates in 1997-98

6	April	19	October
П	May	16	Novembe
22	June	14	Decembe
20	July	18	January
24	August	15	February
21	September	15	March

Counts were received from 1,983 sites of all habitats for the period April 1997 to March 1998, comprising 3,238 count units (the sub-divisions of large sites for which separate counts are provided). The number of sites remains at the high level of recent years, whilst the increased number of count units continues the trend of greater detail being provided. Of the key waterfowl sites, 1997-98 counts for Chew Valley Lake were not received in time for inclusion in this report.

WeBS and I-WeBS coverage in 1997-98 is shown by 10 km squares in Figure 1. 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. In all, WeBS count units were visited in 1,091 different 10 km squares during 1997-98, around average for recent years. 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 Appendix 10. The county and grid reference of all sites mentioned by name in this report are given in Appendix 10.

#### Goose roost censuses

In 1997-98, as in previous years, national surveys

of Pink-footed and Icelandic Greylag Geese were undertaken in October and November (Hearn 1998), involving counts of birds arriving at or leaving roosts. Censuses of the native Scottish Grevlag population on the Uists were made in August and February (R. MacDonald in litt.), and a national census of all key areas was undertaken in late summer 1997 (Mitchell et al. in press). Full censuses of Greenland White-fronted Geese, including birds in Ireland, were undertaken in autumn 1997 and spring 1998 by the Greenland White-fronted Goose Study and Irish National Parks and Wildlife Service (Fox & Francis 1998). Greenland Barnacle Geese were counted regularly by SNH and others on Islay and main islands in Argyll (M. McKay in litt.) and the Svalbard population was counted frequently on the Solway Firth by WWT staff (WWT unpubl. data). 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 normal Core Counts.

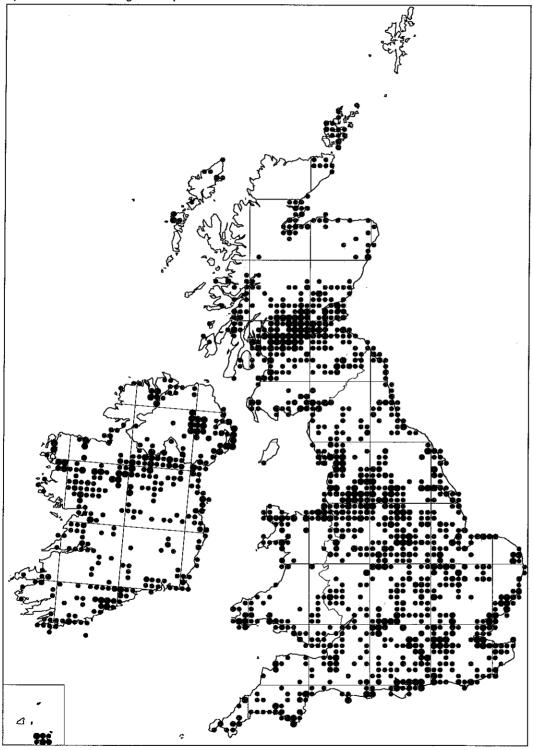
#### Sea-duck surveys

Data were received from the following regional or site-based surveys for counts of sea-duck, divers and grebes at coastal sites: counts in the Moray Firth between November and January (Stenning 1998); at least once monthly aerial and/or land-based counts of Common Scoter in Carmarthen Bay Between April and March (Cranswick et al. 1998); and regular counts of grebes and Red-breasted Merganser off Lafan Sands (M. Howe in litt.). However, no data were received for Cardigan Bay or parts of SE Scotland where dedicated counts have been made in recent years.

#### **NEWS**

All UK counties with coastal stretches were at least partly covered by the non-estuarine coastal waterfowl survey, primarily in December 1997 or January 1998. In total, 4,824 km (36%) of the non-estuarine coast was covered, divided as follows: 2,646 km in Scotland, 1,504 km in England, 518 km in Wales, 137 km in Northern Ireland, and 19 km in the Isle of Man.

**Figure 1.** 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 1997-98. Small dots represent 1-2 count units per 10-km square, medium dots represent 3-4 units and large dots represent five or more units.



#### **TOTAL NUMBERS**

The total numbers of waterfowl recorded by WeBS in 1997-98 are given in Tables 1 & 2 for Great Britain (including the Isle of Man, but excluding the Channel Islands) and Northern Ireland, respectively. Brief comment on these figures are provided below. In addition, counts of waterfowl in the Republic of Ireland by I-WeBS are provided in Table 3.

Site coverage for gulls and terms is given separately since counts of these species were optional.

With a change to generally mild weather in 1997-98, following cold winters in 1995-96 and 1996-97, many of the migrant species which occur in Britain and Ireland chiefly as winter visitors, having bred in Europe and Russia, were able to remain on the continent in larger numbers. Consequently, counts and index values for many of these species returned to more normal values in 1997-98 following high or even record levels.

Throughout the text below, differences in annual index values between 1996-97 and 1997-98 are given in brackets for all species where the change was 20% or more. Values for wildfowl and their allies are for Great Britain unless otherwise specified; those for waders are for the UK.

#### Divers, grebes, herons and Cormorant

Numbers of divers were similar to those recorded previously by WeBS. Although the peak of Great Northern Divers in Britain exceeded all WeBS counts to date, it was only one greater than the previous highest. Numbers of both Little and Great Crested Grebes were rather lower than normal. The former is perhaps a result of the two preceding cold winters, whilst the peak count of the latter was the lowest since 1988-89 following a steady decline over the last five years, although annual indices suggest more stable numbers; indeed, values for Northern Ireland show a marked increase (+47%). Amongst the rarer grebes, the British peak of Slavonian Grebes in 1997-98 represented the highest count by WeBS to date.

The peak count of Cormorants in Great Britain was the lowest since 1991-92, with annual indices showing a similar picture. In Northern Ireland, however, annual indices (+49%) reached their highest level since the late 1980s. Numbers of the more common herons were around normal, though Little Egret numbers were

slightly lower than the record highs of the previous two winters.

#### Wildfowl

Mute Swans numbers and annual indices reached record highs in 1997-98, continuing their steady growth since the ban of lead fishing weights. By contrast, Bewick's (-46% in Great Britain; -70% in Northern Ireland) and Whooper Swans (-34%) were much less numerous than in recent years. Poor breeding success on arctic breeding areas in both species, and a mild winter enabling Bewick's Swans to remain on the continent, will have been responsible.

All of the major *Anser* goose populations returned in numbers very similar to the previous winter, following moderate breeding success in 1997. Numbers of naturalised geese and most migratory *Branta* populations were also similar to those of previous years, despite continued poor breeding success in most Brent populations, although index values fell (-21%) for Canada Geese. Numbers of Svalbard Barnacle Geese remained high, following the dramatic rise, whilst Svalbard Light-bellied Brent Geese returned to more normal levels after the influx in 1996-97.

Notable changes in numbers and annual indices were observed for Wigeon, dropping sharply in Great Britain (-23%), although rising in Northern Ireland. Gadwall remained the fastest growing wildfowl population in the UK, passing 13,000 for the first time, although indices declined in Northern Ireland (-30%). Teal numbers and annual indices in Britain both reached new highs, though only marginally higher than for recent years. By contrast, the situation for Mallard worsened further, with the lowest numbers and index values on record, though to what extent the consistent decline over the last 10 years reflects the picture in the wild populations is unclear, given the large number released for hunting. There is a clear need for further investigation. Shoveler annual indices in Northern Ireland (-21%) fell to their lowest ever level.

Annual indices for Pochard were the second lowest for over 30 years in Britain and were around half the level of just 10 years ago in Northern Ireland. A similar picture was seen for Tufted Duck in the province, though British numbers were normal. Scaup numbers were high in Britain but low in Northern Ireland, whilst most other sea-duck were recorded in average numbers for recent years. Numbers of

Goldeneye fell in both Northern Ireland and Great Britain (-31%), to their lowest value on record in the former, though simply returning to normal levels from last year's high in the latter. Numbers of Smew and Goosander (-38%), as predicted, were lower than in the previous two years as a result of the mild weather, though they remained higher than expected. Numbers of Red-breasted Merganser were around normal, though indices increased in both Britain and Northern Ireland (+22%) to near record levels. Available data suggest that numbers of Ruddy Duck continued to increase.

Numbers of rails were around average, though Coot were somewhat less numerous than in recent years.

#### Waders

Annual index values and most counts of Oystercatcher, Grey Plover (-22%), Knot, Sanderling, Dunlin (-21%), Bar-tailed Godwit (-39%) and, to a lesser extent, Black-tailed Godwit, all dropped sharply in 1997-98, equal and opposite, however, to the large increases seen during the cold winter of 1996-97. Consequently, most were present in around average numbers for recent years.

The reverse was true for a number species favouring milder weather, with high counts of Avocet (+64%), Lapwing and Golden Plover. Curlew (+25%) and Redshank also fared well, perhaps similarly influenced by the weather. Numbers of primarily non-estuarine species, such as Turnstone (-36%) and Purple Sandpipers, showed continuing declines, a picture rereinforced by preliminary analyses of the 1997-98 NEWS data which showed declines of 27% in Ringed Plover and of 44% in Sanderling since the mid 1980s.

Numbers of species which occur primarily during autumn passage, e.g. stints and Wood Sandpiper, were generally low, following two years of high numbers. This is likely to result simply from the chances of appropriate weather conditions during autumn.

#### Gulls and terns

The peak counts of both Black-headed and Common Gulls were more than 20% higher than previous maxima. The peak count of Lesser Black-backed Gulls was almost 50% higher than previously, but almost wholly as a result of a large late summer count at just one site in which there is a large breeding colony. Otherwise, counts of

this species and the other common large gulls were around average.

Peak counts of all of the more numerous terns were lower than usual, with the exception of that for Arctic Tern which was more than double the previous record.

#### Introduced and escaped waterfowl

Many species of waterfowl occur in the UK as a result of introductions, particularly through escape from collections. Several have become established, such as Canada Goose and Ruddy Duck. The British Ornithologists' Union Records Committee recently established a category 'E' for "Species that have been recorded as introductions, transportees or escapees 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 becoming a potential threat to indigenous species" (Holmes *et al.* 1998).

The number of species recorded by WeBS in 1997-98 reached a new peak of 22, having grown more or less steadily from 16 five years previously (Figure 2), though this excludes species which occur in both category A and E, e.g. Pink-footed Geese, since separation of escaped from wild birds is not readily possible using WeBS methods. A total of 197 sites held at least one species from category E, whilst summed site maxima reached a new high of 746 birds.

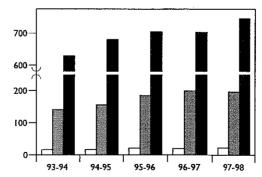


Figure 2. Number of species (white bars), number of sites at which birds were recorded (grey bars) and summed site maxima (black bars) for escaped waterfowl species.

Table 1. Total numbers of waterfowl counted by WeBS in Great Britain, 1997-98<sup>†</sup>.

		Apr	Мау	Jun	Jul	Aug
	Number of sites visited Numbers of count units visited	889 1,.454	820 1,237	747 1,116	781 1,154	792 1,251
RH BV	Red-throated Diver Black-throated Diver	323 16	63 14	4 0	140 0	27 3
ND	Great Northern Diver	34	20	2	2	1
PJ LG GG RX SZ	Pied-billed Grebe Little Grebe Great Crested Grebe Red-necked Grebe Slavonian Grebe	0 950 3,937 12 55	0 569 2,939 3 4	1 616 3,018 2 1	0 874 3,536 2!	0 1,711 5,237 70 3
BN	Black-necked Grebe	8	13	10	8	18
CA	Cormorant	5,976	4,248	3,428	4,333	7,296
BI LL ET HW H. OR NB	Bittern Little Bittern Little Egret Great White Egret Grey Heron White Stork Spoonbill	I 0 149 ! I,606 ! 0	0 0 23 0 1,188 1 2	0   50   0   1,520   1	1 0 194 0 2,038 1 4	0 0 414 0 2,681 1 2
FM FK FL	Chilean Flamingo Lesser Flamingo Greater Flamingo	1 0 1	0 0 1	   	0 0 0	0 ! !
ΥV	Fulvous Whistling Duck	0	0	0	0	0
MS AS TJ BS WS	Mute Swan Black Swan Trumpeter Swan Bewick's Swan Whooper Swan	8,316 11 0 20 405	6,443 6 0 0 13	8,105 13 0 2 10	9,662 10 0 3 9	11,218 14 0 0 5
HN BE PG EW NC GJ1 GJ3 HD SJ RJ EM	Swan Goose Bean Goose Pink-footed Goose White-fronted Goose European White-fronted Goose Greenland White-fronted Goose Lesser White-fronted Goose Greylag Goose (Iceland) Greylag Goose (NW Scotland) Greylag Goose (naturalised) Bar-headed Goose Snow Goose Ross's Goose Emperor Goose	0 4 19,318 0 233 189 0 5,471 52 4,662 5 27 2	0   644   0   0   0   316   4   3,342   4   10   1	11 15 10 0 0 1 938 7 6,395 5 24 1	13 1 19 0 1 0 1 1078 9 6,949 7 25 0	14 0 260 0 2 0 1 732 9,793 12,406 10 4 6
CG BYI BY2 BY3 BG DB BB PBI PB2 EB	Canada Goose Barnacle Goose (Greenland) Barnacle Goose (Svalbard) Barnacle Goose (naturalised) Brent Goose' Dark-bellied Brent Goose Black Brant Light-bellied Brent Goose (Svalbard) Light-bellied Brent Goose (Canada) Red-breasted Goose	10,985 0 3,599 83 0 16,673 0 6 4	9,128 0 7,513 43 0 2,012 0 0	19,383 0 1 31 0 41 0 0	19,518 0 1 98 0 26 0 0 0	27,945 3 2 147 0 41 0 0
EG ZL UO	Egyptian Goose Feral/hybrid Goose Unidentified Goose	27 33 79	17 42 0	29 54 0	93 63 0	373 44 0

Table I. continued

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	1,286	1,589	1,633	1,329	1,671	1,656	1,620
Count units	1,968	2,442	2,475	2,516	2,596	2,584	2,493
RH	240	238	395	571	43 l	501	362
BV	2	28	39	35	15	21	24
ND	16	20	24	73	43	35	44
PJ	0	0	0	0	0	0	0
LG	3,321	3,273	3,023	3,003	2,447	2,353	2,369
GG	7,254	7,991	7,978	7,701	6,899	7,300	7,419
RX	35	47	31	41	36	38	29
SZ	36	129	146	315	242	192	156
BN	25	24	32	47	48	14	28
CA	11,359	13,658	12,830	11,932	12,177	11,140	10,011
BI LL ET HW H. OR NB	0 0 389 0 3,559 I 2	8 0 430 0 3,684 3 5	7 0 277 0 3,123 3 5	14 0 289 0 3,294 3	12 0 278 2 2,956 3 8	10 0 272 0 2,929 2	7 0 324 1 2,827 2
FM	0	0	0	0	)	0	0
FK			1			0	1
FL			2			0	0
YV	2	0	0	0	0	0	ŀ
MS	13,842	16,683	18,170	17,364	16,763	15,413	14,368
AS	20	21	26	31	16	15	26
TJ	3	3	3	3	2	3	2
BS	0	127	373	5,441	4,110	4,900	104
WS	47	1,619	2,355	3,171	2,450	3,781	3,065
HN BE PG WG EW NW LC GJI GJ2 GJ3 HD SJ RJ EM	16 1 63,989 1 3 8 0 3,139 242 15,977 15 16 0	33 36 235,559 0 52 545 1 39,399 228 17,297 9 70 0	34 164 182,182 0 474 20,654 1 79,477 183 15,422 14 68 2 4	26 49 120,375 0 2,155 600 1 28,235 129 15,733 14 35 2	38 45 67,979 0 4,095 592 0 16,325 229 12,950 6 49 1	30 55 72,401 0 5,665 203 2 13,847 2,535 13,062 11 64 1	25 3 54,17! 0 664 19,756 0 13,012 293 10,068 16 69 1
CG BYI BY2 BY3 BG DB BB PBI PB2 EB	40,395 37 631 336 2 262 0 1,660	41,786 85 19,882 619 2 52,193 0 2,385 13	43,225 35,123 22,244 584 1 84,403 1 2,583 15	39,642 34 15,819 304 3 99,045 0 2,507 23	37,021 48 18,138 388 11 92,569 1 753 22 0	30,464 28 21,777 394 0 79,028 [ 431 35 0	22,980 33,841 23,863 435 I 52,082 0 30 26 I
EG	219	232	167	163	152	163	101
ZL	167	279	263	339	439	310	260
UO	0	0	9	0	0	0	0

Table 1. Great Britain, continued

		Apr	May	Jun	Jul	Aug
UD	Ruddy Shelduck	3	0	2	7	3
UE	Cape Shelduck	0	2	2	4	0
UB	Paradise Shelduck	0	0	1	0	0
SU	Shelduck	30,058	15,074	15,742	15,874	31,012
MY	Muscovy Duck	25	29	28	27	13
DC	Wood Duck	3	0	0	ŀ	1
MN	Mandarin	77	54	122	72	49
WN	Wigeon	11,286	434	211	1,105	1,018
AW	American Wigeon	0	0	0	0	0
HL	Chiloe Wigeon	0	0	0	ı	0
FT	Falcated Duck	0	0	0	0	2.024
ĢΑ	Gadwall	2,253	1,177 374	1,245 466	1,056 1,740	3,834 13,465
T. KQ	Teal Speckled Teal	14,977 0	3/4 	00+	1,740	13,403
MA	Mallard	25,568	20,003	30,421	37,820	69,925
QB	Chestnut Teal	25,500	0	0	0	0
PT	Pintail	733	16	13	67	162
PN	Bahama Pintail	0	0	0	0	0
QC	Cape Teal	0	0	0	0	0
GY	Garganey	12	26	6	19	37
SV	Shoveler	2,794	344	291	614	3,242
IΕ	Ringed Teal	0	0	0	0	I
RQ	Red-crested Pochard	0	2	3	1	8
PO	Pochard	1,211	514	885	2,035	6,636
NG	Ring-necked Duck	0	0	0	0	į.
FD	Ferruginous Duck	10.000	1	7.755	0	20.145
TU	Tufted Duck	19,238	6,804	7,755	17,157 10	29,145 37
SP AY	Scaup Lesser Scaup	1,737 I	25 0	5 0	0	0
	·	•		-	_	_
E.	Eider	20,057	14,221 0	15, <del>484</del> 0	16,227 0	21,577
KE	King Eider	0 1,186	22	0	Ü	0
LN CX	Long-tailed Duck Common Scoter	4,056	1,268	536	501	889
FS	Surf Scoter	3	0	0	0	007
VS	Velvet Scoter	576	172	101	18	84
UX	Unidentified scoter sp.	0	0	0	0	0
GN	Goldeneye	4,116	166	82	132	101
НО	Hooded Merganser	0	0	0	. 0	Ī
SY	Smew	6	2	0	0	0
RM	Red-breasted Merganser	2,340	704	871	701	1,032
GD	Goosander	519	455	431	986	1,031
RY	Ruddy Duck	1,326	628	552	645	1,332
ZF	Feral/hybrid Mallard type	91	135	138	116	144
ZD	Hybrid Aythya	I	0	0	0	0
UM	Unidentified duck	0	0	0	0	0
WA	Water Rail	97	47	44	48	72
AK	Spotted Crake	0	0	2	0	
MH	Moorhen	4,753	3,119	2,630	4,140	5,924
СО	Coot	20,188	11,820	17,827	25,732	46,076
AN	Crane	0	0	0	0	0
	TOTAL WILDFOWL <sup>2</sup>	250,807	107,539	138,047	173,360	314,243

Table I. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
UD	10	8	7	9	9	5	7
UE	0	ì	Ö	0	0	0	0
UB	Ō	i	0	0	i i	0	0
SU	33,766	57,960	63,139	74,352	66,534	65,819	51,716
MY	32	101	116	127	99	93	36
			_			_	•
DC	0	4	8	8	2	5	9
MN	156	180	315	266	235	173	181
WN	37,196	208,099	258,030	314,821	327,099	268,666	183,100
AW	0	Ó	. I	1	0	3	4
HL	0	3	4	I	3	4	4
FT	0	0	0	0	0	0	2
GA	7,013	8,524	13,073		10,956	10,856	6,896
T.	51,584	86,662	122,957	137,754	116,949	80,165	49,071
KQ	1	0	0	0	0	I	2
MA	101,036	123,070	140,213	134,675	122,955	88,168	54,683
QB	0	0	1	0	0	0	0
PT	7,221	14,497	17, <del>4</del> 72	24,517	14,834	15,762	7,996
PN	I	0	0	0	0	0	0
QC	0	I.	1	I	0	0	0
GY	17	4	4	0	_ 0	7710	. 5
SV	7,770	9,268	8,630	7,858	7,410	7,740	7,257
IE	0	0	0	0	0	0	0
RQ	16	46	94	71	85	41	46
PO	8,102	15,515	24,076	29,732	42,091	29,878	11,315
NG	2	0	I	I	1	2	3
FD	I	2	I	2	1	2	1
TU	37,757	38,789		52,004	50,537	45,558	40,115
SP	215	1,056	1, <del>4</del> 09	7,529	4,397	4,173	1,314
AY	0	0	0	0	0	0	0
E.	22,965	24,579	19,137	19,349	15,381	14,569	15,981
KE	Ī	1	0	0	0	0	0
LN	I	376	670	1,793	1,514	732	826
CX	3,433	3,871	5,240	8,565	5,488	3,417	2,271
FS	0	1	3	6	3	2	3
VS	61	311	744	792	390	454	528
UX	0	0	1	0	0	0	0
GN	241	3,455	8,235	16,355	14,518	15,062	13,141
НО	ı	0	0	0	. 0	0	0
YZ	0	3	15	149	300	236	72
RM	1,964	2,763	3,034	<del>4</del> ,168	4,016	3,897	4,270
GD	817	955	2,079	3,245	3,513	3,628	2,166
RY	2,187	2,503	2,787	3,585	2,992	3,105	2,656
ZF	168	170	165	158	181	132	131
ZD	1	0	1	1	0	1	2
UM	2	3	Ô	Ô	Ō	0	0
				246	256	267	239
WA	124	200	270 0	345 0	236	207	0
AK	9 970	10.710	11,801	11,114	10,819	11,843	10,888
MH	8,870 74,109	10,710 87,192	102,507	95,392	78,892	66,005	45,388
со	/ <del>1</del> ,107						
AN	0	0	6	4	6	6	0
WILDFOWL	570,163	1 <u>,</u> 155,453	1,396,917	1,336,452	1,199,996	1,026,681	782,034

Table 1. Great Britain, continued

		Apr	Мау	Jun	Jui	Aug
ос	Oystercatcher	80,588	41,199	34,719	62,780	171,902
ίΤ	Black-winged Stilt	0	0	0	0	ı
ΑV	Avocet	1,035	227	237	453	819
ΚW	Black-winged Pratincole	0	0	0	0	1
LP	Little Ringed Plover	194	288	249	140	52
RP	Ringed Plover	4,336	9,349	1,191	1,602	23,163
KP	Kentish Plover	I	0	0	0	0
DO	Dotterel	1	4	0	0	0
GP	Golden Plover	8,493	395	166	2,360	27,802
G۷	Grey Plover	33,955	16,808	1,034	4,856	27,375
Ų.	Unidentified wader	0	. 0	0	0	0
L.	Lapwing	9,698	3,930	13,112	54,629	68,769
KN	Kriot	71,325	8,292	3,106	12,753	70,555
SS	Sanderling	7,749	11,329	137	9,218	7,609
ER	Western Sandpiper	. 0	0	0	0	1
LX	Little Stint	I	12	5	8	28
PP	Pectoral Sandpiper	0	0	0	0	0
CV	Curlew Sandpiper	0	7	2	16	50
PS	Purple Sandpiper	707	22	0	12	40
DN	Dunlin	97,576	92,251	1,714	44,799	80,110
RU	Ruff	282	94	4	139	<del>4</del> 80
JS	Jack Snipe	13	!	0	0	0
SN	Snipe	934	138	48	140	948
DS	Great Snipe	0	0	0	0	1
LD	Long-billed Dowitcher	0	0	0	I	0
WK	Woodcock	2	2	1	0	I
₿W	Black-tailed Godwit	10,516	1,708	1,602	3,479	16,944
BA	Bar-tailed Godwit	4,271	1,306	1,312	8,984	17,227
WM	Whimbrel	117	1,735	223	712	600
CU	Curlew	32,515	5,124	11,623	<b>52,145</b>	73,421
DR	Spotted Redshank	72	23	14	166	221
RK	Redshank	40,774	3,585	4,081	18,830	51,756
GK	Greenshank	105	99	26	712	1,830
LY	Lesser Yellowlegs	0	0	0	0	0
GE	Green Sandpiper	55	6	, <b>37</b>	216	<del>4</del> 52
OD	Wood Sandpiper	3	3	I	12	46
C\$	Common Sandpiper	47	461	324	912	1,336
π	Turnstone	8,044	2,443	353	1,267	5,483
PL	Grey Phalarope	0	0	0	1	1
	TOTAL WADERS	413,409	200,841	<b>75,321</b>	281,342	649,024
	TOTAL WATERFOWL <sup>3</sup>	665,976	309,595	214,944	456,940	966,367

Table I. continued

,	Sep	Oct	Nov	Dec	Jan	Feb	Mar
ос	226,099	236,395	251,410	239,580	213,278	227,196	148,904
IT	0	0	ı	ı	1	i	1
AV	1,550	2,554	2,409	3,859	3,464	3,232	2, <del>4</del> 69
KW	0	0	0	0	0	0	0
LP	18	5	1	0	0	0	9
RP	12,580	9,367	9,658	8,549	7,371	7,340	4,781
KP	0	0	0	0	0	0	0
DO	0	0	0	I	0.	0	0
GP	36,613	70,650	164,677	175,445	138,161	146,928	44,235
GV	35,519	33,212	45,084	34,543	45,696	46,776	42,659
U.	0	0	0	0	0	1	0
L.	100,215	172,794	398,736	464,466	435,488	347,278	37,291
KN	136,101	184,547	294,025	257,397	179,217	225,010	131,131
SS	8,43 I	9,023	6,482	6,713	5,916	5,273	7,288
ER	0	0	0	0	0	0	0
LX	47	15	5	2	I	I	2
PP	3	0	0	0	0	0	0
CV	116	42	1	0	0	1	0
PS	55	228	545	1,003	1,061	658	622
DN	87,837	232,464	376,588	462,582	448,820	405,090	169,197
RU	587	215	183	263	384	424	3 <b>99</b>
JS	3	65	55	78	60	103	74
SN	1,529	4,827	6,026	7,404	4,621	5,038	3,541
DS	0	0	0	0	0	0	0
LD	0	2	1	0	0	.0	0
WK	ı	10	19	40	29	25	9
BW	16,712	15,048	13,948	13,199	12,247	12,522	15,461
BA	28,998	21,046	40,681	36,406	48,313	42,761	16,425
WM	296	44	12	3	3	5	9
CÚ	86,358	85,621	61,960	81,567	85,692	91,637	68,173
DR	205	147	179	98	55	142	60
RK	71, <del>4</del> 50	84,659	73,611	75,75 I	72,800	80,623	72,412
GK	1,785	713	262	192	527	158	180
LY	0	0	0	0	0	2	0
GE	245	157	161	132	78	100	88
OD	17	Ī	0	0	0	0	0
CS	302	43	29	19	20	44	41
тт	9,712	14,099	12,926	12,747	10,754	10,263	11,350
PL	I	3	0	0	2	0	0
WADERS	863,385	1,177,996	1,759,675	1,882,040	1,714,059	1,658,632	776,811
WATERFOWL	1,437,501	2,337,581	3,150,016	3,222,109	2,917,322	2,688,544	1,562,013

Table I. Great Britain, continued

		Apr	May	Jun	Jul	Aug
	Number of sites where gulls were counted <sup>4</sup>	312	315	300	219	222
MU	Mediterranean Guli	17	[]	13	30	30
LU	Little Gull	47	30	5	39	28
AB	Sabine's Gull	0	0	0	0	į
вн	Black-headed Gull	53,474	32,252	35,133	82,246	120,772
IN	Ring-billed Gull	· 1	0	I	0	0
CM	Common Gull	8,699	3,495	3,207	5,114	13,580
LB	Lesser Black-backed Gull	35,859	38,821	49,111	59,085	23,411
HG	Herring Gull	35,165	32,287	36, <del>4</del> 01	39,933	32,770
IG	Iceland Gull	2	2	0	0	0
GΖ	Glaucous Gull	4	0	0	0	0
GB	Great Black-backed Gull	1,711	1,655	1,806	2,804	5,235
ΚI	Kittiwake	1.297	1,077	403	1,106	4,151
υυ	Unidentified gull	19	310	53	305	3,742
	TOTAL GULLS	136,295	109,940	126,133	190,662	203,720
	Number of sites where terns were counted	671	555	485	489	522
TE	Sandwich Tern	386	2,221	876	3,857	5,718
RS	Roseate Tern	0	0	0	0	2
CN	Common Tern	224	2,092	2,494	<del>4</del> ,023	3,696
ΑE	Arctic Tern	7	249	385	1,007	1,337
AF	Little Tern	3	457	432	236	138
Вј	Black Tern	0	23	2	0	24
ŴΙ	White-winged Black Tern	0	0	0	0	2
UΤ	Unidentified tern	0	18	16	445	64
	TOTAL TERNS	620	5,060	4,205	9,567	10,981
KF	Kingfisher	63	66	81	123	153

See Appendix 3 for calculation of national totals for goose populations Indicates White-fronted and Brent Geese not identified to race

Total wildfowl and allies represents numbers of all divers, grebes, Cormorant, swans, geese, ducks and rails Total waterfowl represents numbers of all species except gulls and terns

Counting gulls and terns was optional, thus totals are incomplete at a national level 2

Table 1. continued

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	406	467	471	423	506	511	466
MŲ	19	50	35	15	73	65	48
LU	9	18	16	0	9	0	40
AB	3	0	0	ő	Ó	0	0
вн	140,922	138,029	251,574	253,921	232,467	190,033	
IN	Ĺ	2	1	3	232,107	5	154,322 4
CM	23,744	33,111	71,677	72,950	70,090	86,528	40,207
LB	14,901	12,470	21,928	8,501	6,231	20,569	36,966
HG	49.164	46,166	67,430	51,3 <del>94</del>	63,245	61,790	49,834
lG .	0	0	2	0	3	5	
GZ	2	ō	ĩ	ĭ	8	8	3 4
GB	6,499	6,342	13,850	9,048	9,506	4,456	
KI	894	894	237	198	183	16	2,805
UU	1,616	1,387	930	6,495	3,242	5,760	337 600
GULLS	237,774	238,469	427,681	402,526	385,059	369,235	285,131
Sites	839	1,116	1,142	1,130	1,174	1,129	1,085
TE	2,675	87	3	0	ı	0	6
RS	0	0	0	Ō	Ö	ő	0
CN	904	40	1	Ō	Ö	ŏ	ĭ
AE	78	8	2	0	ō	ő	Ó
AF	23	J	0	0	ō	ő	ő
BJ	6	!	0	0	Ō	ő	0
WJ	0	0	0	0	ō	ő	Ö
UT	20	0	0	0	0	Ŏ	ő
TERNS	3,706	137	6	0	I	0	7
KF	260	280	210	210	139	178	188

Table 2. Total numbers of waterfowl counted by WeBS in Northern Ireland, 1997-98<sup>t</sup>

		Apr	May	Jun	Jul	Aug
	Number of sites visited Number of count units visited	4 16	3 15	3 15	3 15	5 102
RH ND	Red-throated Diver Great Northern Diver	0 0	0 I	0 0	0 0	0 0
LG GG SZ BN	Little Grebe Great Crested Grebe Slavonian Grebe Black-necked Grebe	i 2 0 0	2 5 0 0	0 0 0 0	0 3 0 0	212 903 0 0
CA H.	Cormorant Grey Heron	80 16	104 35	59 2 <del>4</del>	123 48	1,117 260
MS BS WS	Mute Swan Bewick's Swan Whooper Swan	166 3 154	116 0 3	74 0 0	56 0 0	1,547 0 1
BE PG NW GJ	Bean Goose Pink-footed Goose Greenland White-fronted Goose Greylag Goose (Iceland)	0 0 36 88	0 0 0	0 0 0	0 0 0 0	0 0 0 0
CG BY DB PB	Canada Goose Barnacle Goose (naturalised) Dark-bellied Brent Goose Light-bellied Brent Goose (Canada)	0 2 0 198	0 0 0	0 0 0 0	0 0 0	0 0 0
su	Shelduck	264	148	80	69	34
MN	Mandarin	3	2	5	0	0
WN GA T. MA PT SV	Wigeon Gadwall Teal Mallard Pintail Shoveler	82 0 44 75 0	3 0 11 96 0 0	0 0 0 18 <del>4</del> 0 0	1 0 0 126 0 0	2 61 76 6,273 0 14
PO TU SP	Pochard Tufted Duck Scaup	0 0 0	0 2 0	0	0 0 0	359 2,911 0
E. LN CX VS GN	Eider Long-tailed Duck Common Scoter Velvet Scoter Goldeneye	19 0 0 0 25	58 0 0 0 0	23 0 0 0	125 0 0 0 0	162 0 0 2 21
SY RM GD	Smew Red-breasted Merganser Goosander	0 12 0	0 6 0	0 15 0	0 11 0	0 319 0
RY	Ruddy Duck	0	0	0	0	23
WA MH CO	Water Rail Moorhen Coot	0 I 0	0 3 0	0 2 0	0     	0 133 3,023
	TOTAL WILDFOWL	1,255	560	442	515	17,193

Table 2. continued

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites	13	24	2.5	30	32	24	28
Count units	132	143	174	191	195	187	150
RH	2	4	16	19	2!	0	42
ND	0	0	2	2	6	Ĭ	4
LG	495	377	529	512	315	273	169
GG	2,428	2,190	2,695	2,457	1,579	67 i	2,994
SZ	2	5	2	3	8	1	0
BN	0	l	0	0	0	0	0
CA	1,726	1,977	1,716	1,722	1,133.	1,201	943
H. MS	334 1,873	283	179	285	272	188	147
		1,966	2,133	2,050	1,749	1,948	!,841
BS VVS	0	0	47	46	133	<b>7</b> 5	46
BE	34 0	864 !	1,142 0	676	1,570	2,127	1,817
	_	-	U	0	0	0	0
PG NW	30	2	0	0	0	0	0
GJ	0 191	!	8 191	0	19	91	37
•				597	317	399	1,159
CG BY	41	73	6	57	23	456	118
DB	148 0	13 <del>4</del> 0	123 0	130	131	126	117
PB	12,805	14,910	9,303	0 5,675	6 3,323	66 3,72 <b>7</b>	0 2,580
SU	145	809	2,564	3,445	4,685	3,568	2,501
MN	0	0	2	0	0	0,500	2,301
WN	2,159	11,278	9,973				
GA	129	80	7,773 116	10,060 142	3,565 107	4,739 126	3,738
T.	765	2,070	2,417	4,823	3,797	3,718	154 2,343
MA	8,623	7,171	6,781	6,856	4,303	3,883	2,172
PT	10	29	26	318	119	358	106
SV	36	112	98	207	107	81	80
PO	294	1,702	9,256	19,309	18,921	8,296	2,014
TU	5,838	7,195	19,021	16,801	16,395	13,868	8,906
SP	1, <del>4</del> 27	12	1,330	882	3,816	3,748	2,250
E.	<b>421</b>	797	981	1,091	521	413	293
LN	0	0	10	20	8	11	18
CX	0	0	0	0	1	0	1
VS	0	0	4	I	0	0	1
GN	69	556	6,107	4,779	4,888	4,792	5,694
SY	0,	0	0	0	1	1	1
RM	484	606	501	609	425	259	577
GD	. 0	0	0	1	[	0	1
RY	24	. 8	7	23	0	28	14
WA	0	0	1	1	0	2	0
MH	233	212	266	189	169	258	264
СО	5,500	5,811	6,645	5,345	3,140	3,295	2,935
WILDFOWL	45,932	61,180	84,019	88,848	75,302	62,606	45,903

Table 2. Northern Ireland, continued.

		Apr	May	Jun	Jul	Aug
oc	Oystercatcher	1,192	925	583	2,220	3,887
RP	Ringed Plover	63	7	3	5	8
GP	Golden Plover	1,614	0	0	0	1
G۷	Grey Plover	2	0	0	0	2
L.	Lapwing	40	95	63	275	1,410
KN	Knot	0	0	0	0	2
SS	Sanderling	43	37	0	0	0 0
CV	Curlew Sandpiper	0	0	0	0	0
PS PS	Purple Sandpiper	45	55	16	50	115
ĎΝ	Dunlin					
RU	Ruff	0	0 0	0	I 0	0
JS	Jack Snipe	5	0	0	0	8
SN	Snipe Black-tailed Godwit	30	0	2	6	21
BW BA	Bar-tailed Godwit	3	4	ΙĪ	66	25
WM	Whimbrel	Ő	331	i	14	2
CU	Curlew	611	159	649	2,044	2,004
DR	Spotted Redshank	2	0	0	0	0
RK	Redshank	940	76	50	386	1,076
GK	Greenshank	4	0	5	27	35
GE	Green Sandpiper	0	0	0	0	0
CS	Common Sandpiper	0	2	ı	3	1
П	Turnstone	85	ı	0	0	74
	TOTAL WADERS	4,679	1,692	1,384	5,097	8,671
	TOTAL WATERFOWL <sup>2</sup>	5,950	2,287	1,850	5,660	26,124
	Number of sites where gulls were counted	2	I	1	0	1
LU	Little Gull	0	0	0	0	0
ВН	Black-headed Gull	149	110	375	1,518	4,923
IN	Ring-billed Gull	0	0	0	0	0
CM	Common Gull	81	119	109	469	1,570
LB	Lesser Black-backed Gull	44	4	1	30	717
HĢ	Herring Gull	96	230	210	287 0	463 0
IG	Iceland Gull	0	0	0	0	0
GZ	Glaucous Gull Great Black-backed Gull	110	482	114	126	211
GB KI	Kittiwake	0	0	0	0	76
KI	•		-	_	2.420	
	TOTAL GULLS	480	945	809	2,430	7,960
	Number of sites where terns were counted	2	I	1	1	1
TE	Sandwich Tern	26	69	130	296	606
CN	Common Tern	0	10	0	0	0
BJ	Black Tern	0	0	0	0	1
UT	Unidentified tern	0	0	0	43	7
	TOTAL TERNS	26	79	130	339	614
KF	Kingfisher	0	0	0	0	0

<sup>†</sup> See Table I for footnotes

Table 2. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
ос	12.975	15,319	15,617	17,628	17,799	11,256	8,476
RP	233	232	396	659	525	290	<del>4</del> 1
GP	820	4,125	11,242	14,380	14,093	11,995	7,684
GV	82	67	153	280	352	285	181
L.	2,569	5,878	13,476	28,936	28,263	15,191	106
	166	137	3,772	8,184	9,655	4,426	512
KN	55	0	15	41	7,033 I	46	0
SS	6	3	ő	Ö	ò	0	0
CV	0	10	44	76	70	20	29
PS DN	845	1,061	11,829	16,803	13,696	14,313	1,334
RU	2	1	0	0	0	0	0
	0	O	2	5	0	0	0
js sn	12	53	210	189	135	173	179
BW	386	374	219	293	404	236	396
BA	300	284	514	3,011	3,353	857	453
WM	5	0	0	0	0	0	0
CU	5,162	3,961	3,751	5,972	7,629	6,645	4,096
DR	5	2	2	2	2	0	I
RK	6,430	7,109	7,159	7,129	6,094	5,791	5,974
GK	91	93	57	93	65	57	62
GE	9	0	. 0	0	0	0	0
CS	1	0	. 0	0	0	0 -	0
TT	754	1,070	1,515	1,38 <del>4</del>	1,573	932	825
WADERS	30,908	39,779	69,973	105,065	103,709	72,513	30,8 <del>44</del>
WATERFOWL	77,147	101,242	154,171	194,198	179,283	135,307	76,921
Sites	1	4	4	5	6	5	6
LU	0	0	0	0	I	0	0
BH	10,329	8, <del>44</del> l	7,221	8,656	11,837	8,532	7,780
IN	0	I	0	0	I	0	0
CM	3,092	2,458	1,717	1,490	2,220	3,467	1,1 <del>79</del>
LB	1,024	599	275	37	175	80	202
HG	3,861	3,159	3,646	2,482	3,750	1,673	3,141
IG	0	0	0	0	4	0	2
GZ	0	0	0	0	6	0	1
GB	596	410	370	252	537	150	308
KI	0	0	I	0	3	0	0
GULLS	18,902	16,068	13,230	12,917	18,534	13,902	12,613
Sites	1	5	6	8	9	8	6
TE	537	13	0	0	0	0	0
CN	337	0	ŏ	ő	Ō	0	0
Bj	2	ĭ	ő	Ō	0	0	0
וס UT	0	ó	ŏ	Ŏ	0	0	0
TERNS	539	14	0	0	0	0	0
i ELINO							
KF	0	I	I	l	1	0	0

Table 3. Total numbers of waterfowl counted by I-WeBS in the Republic of Ireland, 1997-98.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Number of sites visited	130	132	173	156	258	176	169
Number of count units visited	231	213	242	238	558	254	261
,							
Red-throated Diver	41	62	31	128,	193	35	167
Black-throated Diver	0	0	8	1	8	0	13
Great Northern Diver	6	21 461	58 189	117 <del>4</del> 23	251 556	80 320	159 287
Little Grebe Great Crested Grebe	616 555	379	381	367	984	489	431
Red-necked Grebe	333	0	0	0	701	.07	13:
Slavonian Grebe	ő	ō	17	Ī	12	i	3
Black-necked Grebe	Ī	2	0	0	2	0	0
Cormorant	2,778	1,734	405	1,410	3,144	1,356	1,641
Grey Heron	596	382	174	357	633	268	339
Little Egret	41	21	0	22	30	33	31
Mute Swan	2,420	2,080	884	1,781	3,120	2,028	1,858
Bewick's Swan	0	0	6	214	520	154	9
Whooper Swan	21	320	1,208	1,508	4,208	1,707	1,757
Pink-footed Goose	0	2	0	7 0	36 7	6 7	12 2
European White-fronted G		0 2,0 <del>44</del>	928	8,195	10,938	9,728	10,175
Greenland White-fr. Goose	· 38 586	2,0 <del>44</del> 291	1,350	2,476	3,511	1,581	2,038
Greylag Goose Canada Goose	70	5	1,330	75	181	84	15
Barnacle Goose	4	Ĭ	303	4	1,920	. 601	259
Dark-bellied Brent Goose	Ö	i	0	Ô	0	0	0
Light-bellied Brent Goose	6Ĭ	1,266	1,422	5,366	8,545	6,748	6,521
Feral/hybrid Goose	. 47	50	0	51	73	88	40
Shelduck	123	1,382	328	3,297	8,121	4,149	4,607
Wigeon	3,580	19,898	12,699	17,974	41,547	22,302	8,700
American Wigeon	0	0	ļ	3	0	_ I	0
Gadwall	67	237	142	242	326	253	74
Teal	5,839	7,248	5,243	14,814	25,410	12,843	7,891
Mallard	13,488	10,940	4,651	7,620	11,951	5,104	3,412
Pintail	61	364	65 694	22 <del>4</del> 1,408	626 1,709	23 <del>4</del> 776	147 <del>44</del> 8
Shoveler Red-crested Pochard	258 0	730 0	074	1,408	1,709	2	1170
Pochard	2,314	12,156	538	1,867	7.857	4,959	256
Ring-necked Duck	2,317	0	0	0	1	0	0
Ferruginous Duck	ŏ	ŏ	ō	Ĭ	Ì	Ĩ	į
Tufted Duck	5,054	11,412	602	2,020	7,597	4,045	1,859
Scaup	I	355	1,178	54	1,374	214	45
Eider .	0	I	0	4	32	0	14
Long-tailed Duck	0	3	1	4	11	13	6
Common Scoter	811	55	42	1,899	4,035	2,658	4,045
Surf Scoter	0	0	0	0	1	1	0
Velvet Scoter	0	0	0	4	2	0	10
Goldeneye	2	59	188	562	1,976	1,015	584
Smew	0	0 470	0 459	534	10 1,167	3 287	11 910
Red-breasted Merganser	383 0	0	0	15	1,167	267	6
Goosander Ruddy Duck	ĭ	0	0	6	7	5	14
Hybrid/Feral Mallard type	5	4	0	ĭ	3	8	4
Water Rail	22	15	14	14	37	19	33
Moorhen	357	375	62	385	562	540	482
Coot	9,443	†4,929	1,328	2,734	4,184	2,483	1, <del>4</del> 21
Total wildfowl and allies	49,690	89,755	35,626	78,190	ł 57,435	87,231	60,739

Table 3. continued.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Oystercatcher	25,361	20,363	3,216	9,558	22,699	11,676	13,863
Ringed Plover	1,814	2,555	773	1,670	3,136	836	424
Golden Plover	1,252	46,374	21,419	50,045	79,206	53,838	23,414
Grey Plover	1,773	1,103	30	2,201	4,387	2,420	1,2 <del>49</del>
Lapwing	3,049	17,325	20,009	59,001	126,854	33,45 I	3,552
Knot	1,092	2,149	57	4,859	19,408	2,905	2,147
Sanderling	1,219	1,351	150	466	1,071	472	547
Little Stint	6	0	1	Ó	0	0	0
Curlew Sandpiper	19	7	1	0	0	I	0
Purple Sandpiper	52	0	0	80	157	101	279
Dunlin	6,399	8,323	9,907	27,105	69,793	22,786	I 1,297
Ruff	23	2	0	ļ	ı	4	0
lack Snipe	0	7	2	21	19	24	20
Snipe	137	5 <del>44</del>	267	862	1,315	777	394
Woodcock	0	0	I	3	!	_ I	0
Black-tailed Godwit	9,064	5,470	1,267	3,900	5,426	2,612	3,832
Bar-tailed Godwit	4,549	3,174	1,032	2,923	8,917	3,201	1,583
Whimbrel	5	2	0	2			2
Curlew	15,009	11,676	3,420	13,900	29,478	13,362	8,372 I 0
Spotted Redshank	8	16	0	16	10	12	6,886
Redshank	10,764	9,200	3,405	6,574	12,965	6,588 259	230
Greenshank	367	428	95	237	455	239	4
Green Sandpiper	4	6	0	I	3 0	0	0
Wood Sandpiper	<u>!</u>	0	0	0	5	i	4
Common Sandpiper		0	0	3	1,977	1,320	1,301
Turnstone	1,376	1,254	340	1,212 0	1,7/1	1,320	1,501
Grey Phalarope	i	0	0	Ų	U	U	-
Total waders	83,349	131,329	65,392	184,640	387,284	156,649	79,410
Mediterranean Gull	1	1	0	1	6	9	8
Little Gull	ò	0	Ö	Ô	25	4	21
Black-headed Gull	18,608	12.814	5.591	14,830	38,192	23,318	11,003
Ring-billed Gull	0	2	1		3	5	2
Common Gull	2,640	1.857	1,853	1,750	10,212	6,102	2,130
Lesser Black-backed Guil	7,045	9,679	536	1,618	2,458	1,3 <b>94</b>	<b>59</b> 3
Herring Gull	4,046	3,053	163	1,757	5,690	<del>4</del> ,538	2,933
Iceland Gull	0	0	0	0	0	0	1
Glaucous Gull	0	0	0	3	3	2	2
Great Black-backed Gull	1,801	991	84	1,1 <del>44</del>	2,234	1,518	942
Kittiwake	5,516	0	2	473	127	1,064	86
Total gulls	39,657	28,397	8,230	21,577	58,950	37,954	17,721
Sandadah Tara	638	0	3	0	0	0	6
Sandwich Tern Common Tern	23	i	0	Q.	0	0	2
Little Tern	3	0	0	0	0	0	0
Black Tern	ĭ	0	0	0	0	0	0
	-		2		0	0	8
Total terns	665	I	3	0	0	U	O
Kingfisher	17	9	. 1	11	14	3	3
TOTALWATERFOWL	173,378	249,491	109,252	284,418	603,683	281,837	157,881
							33

#### **RED-THROATED DIVER**

Gavia stellata

GB max: 571 Dec NI max: 42 Mar

International threshold: 750 Great Britain threshold: 50 All-ireland threshold: 10\* \* 50 is normally used as a minimum threshold

Unlike the previous two winters, there was no exceptionally high peak count of Red-throated Divers in 1997-98, and numbers in both Great Britain and Northern Ireland were within the normal range for recent years. Of particular note

was the July total of 140, including 104 birds on the Don and Ythan, greatly exceeding previous counts in summer months.

Determining trends for this species is not possible at a national level due to the small proportion of the population counted by WeBS and difficulties in detecting birds present even at those sites that are covered. Nevertheless, comparison of average counts for sites in the table below with those calculated at the end of the 1993-94 winter shows very similar figures for

most, perhaps suggesting little change overall.

A notable difference in the table to that in 1993-94 is the absence of Minsmere. Since counts of over 200 birds in the early 1990s, none have exceeded 50 at this site on WeBS dates. However, the continuing importance of the Suffolk coast for this species is illustrated by the large movements noted regularly by birdwatchers and an exceptional count of 1,500 off Minsmere in December 1997 (Rafe 1998).

The large number off the Aberdeenshire coast resulted in Don Mouth to Ythan Mouth attaining national importance. Durham Coast also attained this status following the high count in 1996-97, although this was not noted in the previous WeBS report.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain			•				
Cardigan Bay	¹ <b>74</b> 0	1252	900	528	¹536	Oct	591
Moray Firth	<sup>2</sup> 411	<sup>2</sup> 385	(72)	(52)	³284	Dec	360
Clyde Est.	- 11	50	126	195	136	Feb	104
Dengie Flats	89	143	41	96	001	Mar	94
Forth Est.	83	72	98	124	75	Nov	90
Don Mouth to Ythan Mouth	27	58	11	35	166	Sep	59 ▲
Durham Coast	. 9	63	81	103	24	Feb	56
North Norfolk Coast	67	26	71	47	43	Dec	51
Northern Ireland							
Lough Foyle	15	⁴40	83	18	4	Nov	28
Belfast Lough	20	28	10	11	41	Mar	22
Craigalea to Newcastle	-	-	13	-	-		13

Sites no longer meeting table qualifying levels

Minsmere Levels

Other sites surpassing table qualifying levels in 1997-98

Girvan to Turnberry

79 Nov

- Solway Estuary Nov
- Data from Friends of Cardigan Bay, e.g. Green & Elliott (1993)
- RSPB/BP studies, e.g. Stenning (1994)
- Stenning (1998) RSPB report to Talisman Energy
- unpubi. data

#### **BLACK-THROATED DIVER**

Gavia arctica

GB max: 39 NI max:

Nov

International threshold: 1.200 Great Britain threshold: All-Ireland threshold: \*

\* 50 is normally used as a minimum threshold

Monthly UK totals in 1997-98 were about average for recent years: British maxima have generally

fluctuated between 20 and 50 birds, whilst birds have only been recorded in Northern Ireland in three winters since counts of divers began in 1991-92. Their occurrence at little visited sites, particularly in western Scotland, means that counts are often sporadic, and even at regularly visited sites, counts can vary considerably: the highest in 1997-98 was at a site that had not previously featured in the table below.

Black-throated Divers were recorded at 37 sites in 1997-98, with concentrations in Essex, Northumberland, Glamorgan, Ayrshire to SE Argyll, SE Scotland and the Moray. Additional counts of divers in Bay of Sandoyne/Holm Sound, Orkney, recorded a peak of 23 Blackthroats in December (K. Hague in litt.).

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Moray Firth	<sup>1</sup> 53	'35	(5)	(5)	<sup>2</sup> 22	Dec	37
Loch Ewe: Aultbea	-	14	-	-	-		14
Forth Est.	9	9	19	7	8	Oct	10
Loch Indaal	0	31	11	I	I	several	9
Girvan to Turnberry	0	3	6	8	23	Nov	8 🛦
Northern Ireland							
Belfast Lough	0	I	2	2	0		I

Sites no longer meeting table qualifying levels

Other sites surpassing table qualifying levels in 1997-98

Traigh Luskentyre

Oct

North Norfolk Marshes

Nov

RSPB/BP studies, e.g. Stenning (1994)

Stenning (1998) RSPB report to Talisman Energy

# **GREAT NORTHERN DIVER**

Gavia immer

GB max: NI max:

Dec 73 Jan

International threshold: 50 Great Britain threshold: 30\*\* All-Ireland threshold:

\* 50 is normally used as a minimum threshold

Monthly totals in 1997-98 were around normal, although the December peak was the highest yet recorded by WeBS, just exceeding that of 72 in 1991-92. Counts in Northern Ireland were much lower than the usual peak of between 20 and 40. Birds were recorded at 71 sites widely spread around the UK, though with notable concentrations off Co Down, southwest England, Essex, southwest Scotland, especially around the Clyde, and particularly off the Hebrides and northern isles. No WeBS counts have exceeded

the threshold for British importance, though dedicated counts of key sites, particularly more remote Scottish coastlines, demonstrate the need for such monitoring: 54 were recorded in the Moray, with the outer Dornoch Firth being of particular importance (Stenning 1998); additional counts off Tankerness, Orkney, recorded up to 58 during winter, with remarkable concentrations during spring passage of 393 in 1997 and 330 in 1998 (K. Hague in litt., Corse et al. 1998).

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Moray Firth	'17	114	(2)	(8)	<sup>2</sup> 54	Dec	28
Traigh Luskentyre	-	3	12	39	8	Dec	16
Loch Indaal	13	16	14	11	16	Sep	14
Lo. Beg/Scridain	5	4	6	6	4	Mar	5
Northern Ireland							
Tyrella	-	-	12	-	-		12
Lough Foyle	3	³20	15	9	3	Jan	ľQ
Carlingford Lough	ŀ	12	26	1	2	jan	8
Kilkeel to Lee Stone Point	-	-	8	-	-		8
Craigalea to Newcastle	_	-	5	-	-		5

?†

#### Sites no longer meeting table qualifying levels

Arran

Dundrum Bay

#### Internationally or nationally important sites not counted in last five years

Sound of Taransay

#### Other sites surpassing table qualifying levels in 1997-98

Fal Complex

8 Dec

Poole Harbour

6 Jan

- † as no British site is of national importance for Great Northern Diver 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
- RSPB/BP studies (e.g. Stenning 1994)
- 2 Stenning (1998) RSPB report to Talisman Energy
- 3 unpublished data

#### PIED-BILLED GREBE

Podilymbus podiceps

Vagrant Native range: North America

One was recorded at Skelton Lake in June, an unusual date for this transatlantic vagrant.

#### LITTLE GREBE

Tachybaptus ruficollis

GB max: 3,321 Sep NI max: 529 Nov

Figure 3. Annual indices for Little Grebe in GB (circles, left axis) and NI (squares, right axis)

The peak count in Britain fell markedly for the second year in succession to a level lower than that of 1994-95, a picture mirrored closely by the annual indices. Since the previous winter was very cold, this may have resulted from increased mortality at the end of 1996-97, reflected in the lower monthly index values that year, whilst an extremely wet June in 1997 is likely to have resulted in nests being flooded and may have lowered breeding success. Similar reasons may be responsible for the decline in Northern Ireland, where the changes in annual index values correspond closely with those for Great Britain and the peak was the lowest since counts were first made in the mid 1980s (apart from the

International threshold:
Great Britain threshold:
All-Ireland threshold:

30\* ?<sup>†</sup>

7

\* 50 is normally used as a minimum threshold

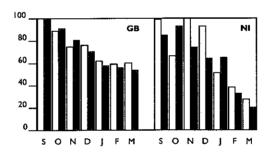


Figure 4. Monthly indices for Little Grebe in GB and NI (white bars 1997-98, black bars 1992-93 to 1996-97)

first two years, when coverage was much poorer). The relatively mild conditions in 1997-98, with correspondingly higher monthly indices in late winter at least in Britain, may allow numbers to recover.

Counts at several British sites show a five year pattern matching the national trend, with numbers increasing to a peak in 1995-96, followed by a steady decline. This is particularly evident on the Thames Estuary and the Wash, where the 1997-98 peak was less than half the five year mean, and also at Pitsford Reservoir and Hampton & Kempton Reservoirs, although numbers involved here are much lower. Only at Hogganfield Loch have numbers shown a

sustained increase over the period. In Northern Ireland, numbers at the two key sites have also shown marked decreases after highs in 1995-96,

though the 1997-98 peak is closer to the long term average in both cases.

	93-94	94-95	95-96	96-97	97-98	Mon	Меал
Great Britain							
Thames Estuary	160	328	477	255	124	Dec	269
Swale Estuary	77	202	195	213	244	Nov	186
Holme Pierrepont GP	127	105	162	80	100	Sep	115
Chew Valley Lake	75	106	122	152	-		114
Wash	92	120	146	53	29	Sep	88
Avon Valley (Mid)	67	81	86	68	77	Oct	76
North Norfolk Marshes	58	56	93	51	87	Sep	69
Deben Estuary	87	66	49	63	78	Dec	69
Cleddau Estuary	27	49	75	91	72	Nov	63
Chichester Harbour	35	50	100	52	72	Dec	62
Rutland Water	68	60	83	35	62	Oct	62
Eyebrook Reservoir	27	43	70	76	56	Oct	54 ▲
R. Test: Fullerton to Stockbridge	43	55	62	52	52	Mar	53
Cameron Reservoir	40	63	70	33	56	Sep	52 🛦
Sutton/Lound Gravel Pits	-	17	72	39	72	Aug	50 ▲
Middle Tame Valley GP	40	25	52	53	68	Sep	48
Tees Estuary	47	53	42	47	52	Sep	48
Blackwater Estuary	29	52	59	44	47	Sep	46
Medway Estuary	51	54	60	42	18	Dec	45 ▼
Lee Valley Gravel Pits	44	27	45	39	56	Oct	42
Kilconquhar Loch	20	36	52	42	49	Sep	<del>4</del> 0
Bewl Water	14	47	57	44	36	Sep	40
Hamford Water	52	28	72	18	26	Dec	39
Somerset Levels	14	34	37	55	<b>4</b> 7	Oct	37
Fleet/Wey	46	37	37	30	34	Dec	37
Southampton Water	42	26	37	42	(14)	Nov	37
Alde Complex	9	37	51	38	44	Feb	36
Orwell Estuary	26	37	36	45	34	Dec	36
Blagdon Lake	26	39	59	23	31	Aug	36
Kings Mill Reservoir	68	40	23	29	14	Sep	35
Pirton Pool	-	29	37	41	32	Aug	35
Hogganfield Loch	19	22	31	45	56	Sep	35 🛦
Cemlyn Bay	32	33	40	33	32	Jan	34
Portsmouth Harbour	32	36	36	30	35	Dec	34
Pitsford Reservoir	9	53	64	32	10	Oct	34
Hampton & Kempton Reservoirs	26	43	54	28	16	Feb	33 🛦
Rye Harbour/Pett Level	24	26	46	28	37	Sep	32 🛦
Morecambe Bay	46	- 32	27	31	22	lan	32
Barleycroft Gravel Pit	_	-	54	23	15	Sep	31
Wraysbury Gravel Pits	33	32	27	32	27	Jan	30
Northern Ireland <sup>†</sup>							
Lo. Neagh/Beg	399	535	626	376	330	Sep/Nov	
Strangford Lough	123	102	169	1 <del>4</del> 0	101	Dec	127
Upper Lough Erne	54	84	62	73	50	Feb	65
Lough Money	26	21	33	35	51	Dec	33 ▲

# Sites no longer meeting table qualifying levels

Fisherwick/Elford Gravel Pits

Hanningfield Reservoir

## Internationally or nationally important sites not counted in last five years

R. Soar: Leicester

Other sites surpassing table qualifying levels in 1997-98

Barton Gravel Pits	44	Sep	Hilfield Park Reservoir	34	Oct
Lower Derwent Valley	42	Oct/Mar	R. Clyde: Lamington	31	Nov
Kirkby-on-Bain Gravel Pits	40	Sep	King's Dyke Pits	31	Sep
Langstone Harbour	37	Nov	Hanningfield Reservoir	30	Sep
Duddon Estuary	35	Nov	•		

<sup>†</sup> as no all-Ireland threshold has been set for Little Grebe, a qualifying level of 30 has been chosen to select sites for presentation in this report

#### **GREAT CRESTED GREBE**

Podiceps cristatus

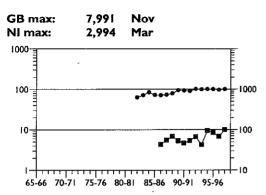


Figure 5. Annual indices for Great Crested Grebe in GB (circles, left axis) and NI (squares, right axis)

Maximum counts of Great Crested Grebes in Britain have declined fairly steadily from a peak of 9,580 in 1992-93; the most recent total was the lowest since 1988-89. Annual indices, however, suggest that numbers have been very stable over this period, and are around a third higher than during the 1980s. Despite the low peak, monthly totals in 1997-98 remained remarkably consistent, and monthly indices were higher than normal in mid and late winter.

Maxima in Northern Ireland have varied between 1,500 and 4,000 in recent years, with the 1997-98 peak about average, though, unusually, in March. Monthly indices show an upturn in numbers in late winter is normal, and, whilst that in 1997-98 was particularly pronounced, it should be noted that these figures exclude data from Belfast Lough which was not counted in all months. Consequently, the real March figure is undoubtedly much higher still. Annual indices for the province fluctuate considerably, but there appears to be a pattern of general increase since the mid 1980s, with the 1997-98 value the highest yet.

Counts at Loughs Neagh & Beg regularly decline from a late summer peak, and these birds are thought to move to Belfast Lough as winter progresses. With very low counts at the International threshold: 1,500
Great Britain threshold: 100
All-Ireland threshold: \*30

\* 50 is normally used as a minimum threshold

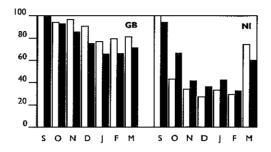


Figure 6. Monthly indices for Great Crested Grebe in GB and NI (white bars 1997-98; black bars 1992-93 to 1996-97)

former throughout 1997-98, it appears that a greater proportion of birds may have switched between the sites. However, there is some suggestion from summer breeding surveys that land-based WeBS counts at Loughs Neagh & Beg are missing some of the significant concentrations of waterfowl (Forster 1998). The higher numbers at Belfast Lough were sufficient to elevate it's status to that of international importance for Great Crested Grebe.

There were low counts at a number of key sites in 1997-98, notably Queen Mary Reservoir, Grafham Water, King George VI Reservoir and Lough Foyle. Low counts for the second year in succession at Wraysbury Reservoir are contrasted by higher counts on Wraysbury Gravel There is known movement of many waterfowl between these adjacent sites as a result of disturbance, though indications are that disturbance has been greatest on the gravel pit complex in recent years. Numbers were particularly low off the Thanet Coast, though, as with nearby Pegwell Bay, counts at such sites are likely to fluctuate as a result of conditions and perhaps local movements of birds. Notable high counts in 1997-98 were made on the Solway and Mersey Estuaries and on Upper Lough Erne.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International	75-74	74-75	75-70	70-77	71-70	rion	меан
Lo. Neagh/Beg	571	2,533	2,440	1,537	863	Aug	1.589
Belfast Lough	1,318	1,650	1,350	1,200	2,403	Nov	1,584 ▲
Great Britain							
Rutland Water	894	741	579	378	767	Nov	470
Chew Valley Lake	675	600	615	645		1404	672
Forth Est.	671	627	411	597	- 49 I	c	634 559
Lade Sands	580	-	1277	(7)	425	Sep	427
Queen Mary Reservoir	411	307	298	5 <b>9</b> 3	98	Jan Aug	341
Lavan Sands <sup>2</sup>	275	508	283	2 <del>44</del>	360	÷	334
Morecambe Bay	348	277	296	286	282	Sep Nov	298
Grafham Water	181	175	377	506	197	Nov	287
Stour Estuary	250	260	312	261	185	Oct	254
Cardigan Bay <sup>3</sup>	229	341	176	311	177	lan	247
Thanet Coast	250	504	-	166	177	Dec	234
Pitsford Reservoir	172	215	188	304	147	Dec	205
Wraysbury Gravel Pits	178	167	167	263	2 <del>4</del> 6	Nov	204
Cotswold WP West	214	233	189	181	175	Mar	198
Solway Estuary	96	113	36	205	430	Feb	176
Hanningfield Reservoir	298	185	124	59	123	Sep	158
Abberton Reservoir	55	59	238	2 <del>4</del> 8	149	Nov	150
Queen Elizabeth II Reservoir	88	105	258	811	168	Aug	147
Pegwell Bay	44	450	82	· 8	137	Feb	144
Loch Ryan	(42)	⁴258	⁴20 i	(15)	54	Sep	139
Lee Valley Gravel Pits	` 44	157	132	Ì7Ó	190	Oct	139
Attenborough Gravel Pits	134	137	120	155	135	Oct	136
Mersey Estuary	139	95	61	169	214	Dec	136
Dee Estuary (Eng/Wal)	140	147	110	205	73	Mar	135
Blithfield Reservoir	153	155	70	169	105	Oct/Nov	130
King George VI Reservoir	47	123	401	41	16	Jul	126
Blackwater Estuary	84	145	171	118	99	Mar	123
Alton Water	107	183	120	109	73	Jan	118
Wraysbury Reservoir	11 <del>4</del>	112	265	52	43	Oct	117
Ardleigh Reservoir	112	123	82	84	171	Feb	114
Eyebrook Reservoir	38	99	167	155	103	Nov	112
Blagdon Lake	62	87	67	270	73	Nov	112
Loch Leven	33	102	210	98	112	Sep	III 🛦
Southampton Water	60	68	169	94	117	Dec	102 🛦
Northern Ireland							
Carlingford Lough	101	2 <del>9</del> 5	143	364	201	Dec	22 I
Lough Foyle	80	⁵ <b>48</b> 0	488	116	86	Oct	195
Upper Lough Erne	164	111	90	276	304	Feb	189
Larne Lough	110	122	147	124	76	Oct	116
Strangford Lough	95	40	182	83	64	Dec	93
Craigalea to Newcastle	-	-	35	-	-		35

# Sites no longer meeting table qualifying levels Colne Estuary Medway Estuary Wash

Other sites surpassing table qualifying levels in 1997-98

Stile sites surpassing table qualifying levels in 1777-70											
Sth Muskham/Nth Newark GP	130	Nov	Clyde Estuary	109	an						
Swansea Bay	128	Dec	Holme Pierrepont Gravel Pits	100	Aug						
Colne Estuary	118	Feb	Minsmere Levels	100	Jan						
Rewl Water	111	Sen			•						

D. Walker (in litt.)
 data from CCW
 data from Friends of Cardigan Bay (e.g. Green & Elliott 1993)
 P. Collin (in litt.)
 unpublished data

#### **RED-NECKED GREBE**

Podiceps grisegena

GB max: 70 Aug NI max: 0 International threshold: 330
Great Britain threshold: 1\*
All-Ireland threshold: ?
\* 50 is normally used as a minimum threshold

The 1997-98 maximum was about average for the last five years, having varied between 50 and 100 birds during that time. Although the peak has occurred in August previously, the timing is curious given the absence of any local breeding populations, particularly since this largely comprises birds on the Forth Estuary, many hundreds of miles from the nearest breeding grounds. Whilst the Forth is clearly a traditional site for Red-necked Grebes, the variation in the timing of peak numbers, which has occurred in mid and even late winter in recent years, means our understanding of how and why birds use this

site is far from clear.

Red-necked Grebes were recorded at 35 sites in 1997-98 in addition to those in the table below, mostly off coasts in southwest England and in the southeast from Sussex to Norfolk. There was only one record in Wales, whilst, surprisingly, none was recorded in Scotland away from the Forth. The presence of six and 10 birds in January and March, respectively, at the very northerly location of Bay of Sandoyne/Holm Sound, Orkney, during additional counts of divers and grebes (K. Hague *in litt.*) is thus noteworthy.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
<b>Great Britain</b> <sup>†</sup> Forth Est.	44	89	¹ <b>52</b>	44	64	Aug	59
North Norfolk Marshes	0	4	19	2	17	Feb	8

Other sites surpassing table qualifying levels in 1997-98

Alde Complex

5 Dec

#### **SLAVONIAN GREBE**

Podiceps auritus

GB max: 315 Dec NI max: 8 Jan International threshold: 50
Great Britain threshold: 4\*
All-Ireland threshold: ?
\* 50 is normally used as a minimum threshold

The British peak in 1997-98 was some 20% greater than the previous highest WeBS total. following three years in which numbers had stabilised at around 250. Perhaps more impressive was that this occurred in mid winter, rather than, as is usual, late winter or early spring when passage birds gather at key sites. This was influenced by a particularly large count of 88 birds between the Dornoch and Loch Fleet, birds which were also recorded during dedicated surveys of the Moray Firth, though numbers in the months both immediately prior to and after this count were much lower (Stenning 1988). Notable counts in the table below are the continued high numbers in the Clyde Estuary. A

peak of 33 birds, in January, was recorded in Bay of Sandoyne/Holm Sound, Orkney (K. Hague *in litt.*).

Slavonian Grebes were recorded at 103 UK sites by WeBS in 1997-98. In December and January alone, the number of British sites supporting this species has risen more or less steadily from 36 in 1993-94 to 67 in 1997-98. Whilst this suggests a trend of either greater dispersal or improved coverage of the Slavonian Grebe site network by WeBS in recent years, the presence of average numbers at nearly all key sites in 1997-98 suggests that the increased British total results, presumably, from better detection of birds off the Domoch rather than a general influx.

<sup>†</sup> 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 I SNH funded surveys in SE Scotland, WWT unpubl. data

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International	1	1	(0)	(22)	<sup>2</sup> 163	Dec	94
Moray Firth	153	166	(8)	(22)	75	Nov	84
Forth Est.	53	78 17:	3108	107		jan	65
Lough Foyle	(3)	<b>⁴7</b> I	103	20	(6)	Jali	05
Great Britain				20	20	Dec	36
Pagham Harbour	14	75	23	29	39	Oct	25
Loch Indaal	22	37	20	13	32		23 22
North Norfolk Marshes	2	6	77	17	9	Feb	19
Loch of Harray	9	36	31	6	14	Nov	
Clyde Est.	I	8	25	32	25	Dec	18
Blackwater Estuary	8	13	22	14	18	Mar	15
Studland Bay	8	17	16	-	-		14
Traigh Luskentyre	_	9	24	13	8	Nov/De	
Poole Harbour	8	15	13	10	9	Mar	Щ
Chichester Harbour	5	10	3	13	8	Jan	8
North West Solent	6	5	13	12	2	Dec	8
Lindisfarne	4	3	15	2	12	Mar	7
	'n	<sup>5</sup> 6	519	0	11	Feb	7
Loch Ryan	ıi	5	6	2	- 11	an	7
Exe Estuary		4	8	10	5	Oct	6
Loch of Swannay	7	j	9	7	5	Dec	5
Tamar Complex	I F	ā	5	3	3	Dec	4 🛦
Langstone Harbour	5	7	,	•	_	-	

Internationally or nationally important sites not counted in last five years

Sound of Taransay

Other sites surpassing table qualifying levels in 1997-98

Dengie Flats Medway Estuary Beaulieu Estuary Cleddau Estuary	8 8 7 5	Mar	Fal Complex Ryde Pier to Puckpool Point St Andrews Bay	4 4 4	Dec Jan Mar
--	------------------	-----	--	-------------	-------------------

- RSPB/BP studies (e.g. Stenning 1994) Stenning (1998) RSPB report to Talisman Energy
- SNH funded surveys in SE Scotland (WWT, unpubl. data)
- unpublished data
- P. Collin (in litt.)

# **BLACK-NECKED GREBE**

Podiceps nigricollis

GB max:	48	Jan
NI max:	1	Oct

International threshold: 1,000 Great Britain threshold: All-Ireland threshold: ?

\* 50 is normally used as a minimum threshold

The peak British count closely matched those of recent years. One at Belfast Lough in October was the first to be recorded by WeBS in Northern Ireland, and compares with annual totals of 10 or less for the whole of Ireland (e.g. Milne & O'Sullivan 1998). Birds were recorded at 54 British sites during 1997-98, mostly along the south coast and in southeast England, but with marked concentrations in the east midlands and southeast Scotland also. The peak on the Fal in December was the highest at an individual site recorded by WeBS to date. In view of the size of counts at this site in recent years, earlier nil counts have now been regarded as incomplete and the Fal is elevated to the key UK site for Black-necked Grebes.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain <sup>†</sup> Fal Complex Langstone Harbour Studland Bay Poole Harbour	(0) 26 11 3	(0) 21 14 16	24 24 12 15	23 19 - 7	33 9 12	Dec Nov Jan	27 A 20 12

Other sites surpassing table qualifying levels in 1997-98 Swithland Reservoir 7 Sep/Oct

Tamar Complex

<sup>†</sup> as the British threshold for national importance is so small, a qualifying level of 10 has been chosen to select sites for presentation in this report

#### CORMORANT

Phalacrocorax carbo

Figure 7. Annual indices for Comorant in GB (circles, left axis) and NI (squares, right axis)

The peak British count of Cormorants in 1997-98 fell to its lowest level since 1991-92, markedly below the count of 16,266 two years previously. This is partly reflected in the annual indices which returned to early 1990s levels. By contrast, numbers in Northern Ireland reached their highest level since 1989-90. Annual index values suggest that numbers in the province in 1997-98 were the highest to date by a considerable margin, but the count total only just exceeded that of 1,900 in 1995-96 and was well below the peak of 2,300 in 1989-90. This will have resulted, in part, from the higher than normal monthly index values for Northern Ireland in nearly all months except the usual peak in September.

The low national total was matched by lower than normal peak counts at many key sites: sharp decreases were recorded at Abberton Reservoir, North Norfolk Marshes and the Ouse Washes; numbers at several sites returned to low levels following recent peaks, notably the Tees Estuary International threshold: 1,200
Great Britain threshold: 130
All-Ireland threshold: ?†

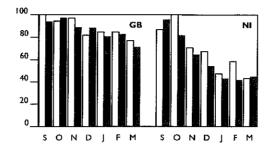


Figure 8. Monthly indices for Cormorant in GB and NI (white bars 1997-98; black bars 1992-93 to 1996-97)

and Wraysbury Gravel Pits; whilst counts show continuing declines on the Thames Estuary. Draycote Water, Colne Estuary, and especially the Inner Moray Firth, where counts have failed to exceed the national threshold in the two most recent years. Above average counts in 1997-98 were thus notable, particularly those on the Inner Clyde, Dungeness Gravel Pits and Sonning Gravel Pits, the last two comprising some of the five sites elevated to national importance for Cormorant in 1997-98. The largest count during the year, on Loughs Neagh & Beg, continues the growth at this site in recent years. A notable feature of the table below is the large number of waterbodies in the London area, e.g. Queen Mary, Queen Elizabeth II, Queen Mother, Wraysbury and King George VI Reservoirs, and the great variability in numbers at these sites between years. Fish stocking data may shed some light on these patterns.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Morecambe Bay	895	793	1,115	977	1,099	Oct	976
Abberton Reservoir	800	722	800	900	410	Mar	72.6
Forth Est.	622	57 <del>9</del>	806	· 657	632	Jan	659
Inner Moray Firth	1,945	624	388	118	99	Oct	635
Rutland Water	800	661	655	39 I	385	Oct	578
Solway Estuary	682	450	639	457	510	Aug	548
Queen Mary Reservoir	407	137	387	1050	(48)	Aug	495
Clyde Est.	377	459	464	404	610	Oct	463
Alt Estuary	455	447	285	514	397	Nov	<del>4</del> 20
Tees Estuary	181	396	676	471	320	Aug	409
North Norfolk Marshes	<sup>R</sup> 426	398	463	492	224	Sep	401
Loch Leven <sup>R</sup>	297	442	410	405	400	Dec	391
Poole Harbour	368	28 <del>4</del>	<b>47</b> 1	375	400	Oct	380
Dee Estuary (Eng/Wal)	431	354	460	253	374	Sep	374
Grafham Water	470	170	310	610	297	Nov	371

•	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Ranworth/Cockshoot Broads	259	462	295	254	405	Nov	335
Wash	297	3 <del>94</del>	348	337	295	Sep	334
Blackwater Estuary	501	269	249	3 <del>4</del> 8	273	Feb	328
Walthamstow Reservoirs	90	400	300	450	-		310
Rostherne Mere	369	273	2 <del>44</del>	229	270	Mar	277
Ouse Washes	335	2 <del>44</del>	285	391	125	Mar	276
Chichester Gravel Pits <sup>R</sup>	308	222	265	346	213	Nov	271
Hanningfield Reservoir	240	283	211	223	272	lan	246
Thames Estuary	399	2 <del>46</del>	205	164	150	Aug	233
Irvine to Saltcoats	190	197	250	230	-	Ū	217
Medway Estuary	212	212	310	154	179	an	213
Draycote Water	152	347	292	130	125	Nov	209
Chew Valley Lake	220	195	250	170	_		209
Queen Elizabeth II Reservoir	98	118	169	380	268	Sep	207
Colne Estuary	676	181	<del>4</del> 3	65	59	Mar	205
Dysynni Est.	245	141	248	214	173	Aug	204
Besthorpe/Girton Gravel Pits	79	176	255	262	236	Jun	202
Swale Estuary	236	208	174	200	187	lan	201
William Girling Reservoir	132	400	200	91	180	Aug	201
Pagham Harbour	199	158	204	246	183	Oct	198
Queen Mother Reservoir	45	180	105	600	46	Oct	195
Wraysbury Reservoir	69	43	241	142	479	Oct	195
Dungeness Gravel Pits	145	161	186	144	330	Jul	193 🛦
Lee Valley Gravel Pits	77	156	23.1	210	254	Nov	186
South Stoke <sup>R</sup>	-	118	105	332	187	Dec	186 🛦
Ribble Estuary	175	167	191	179	123	Feb	167
Sonning GP	_	130	72	150	312	lan	l66 ▲
Farmoor Reservoirs	183	97	225	185	120	Dec	162
Windermere	186	167	137	142	· -		158
Wraysbury Gravel Pits	70	217	206	169	105	Nov	153
Breydon Water & Berney Marshes	113	187	198	132	129	Aug.	152
Carmarthen Bay	237	249	60	129	77	Nov	150
Tay Estuary	96	95	245	212	98	Sep	149
Herne Bay <sup>R</sup>	150	140	-	-	-		145
Stour Estuary	93	169	157	153	137	Aug	142
Deeping St James	233	91	93	-	-		139
Blithfield Reservoir	97	90	88	323	77	Dec	135
Staines Reservoirs	226	6	194	32	216	Oct	135 🛦
Attenborough Gravel Pits	116	115	121	181	137	Feb	134 🛦
Rye Harbour/Pett Level	147	152	131	61	179	Sep	134 🛦
Coombe Pool	119	233	44	-	-		132
Northern Ireland <sup>†</sup>						_	••-
Lo. Neagh/Beg	718	631	951	927	1,184	Oct	882
Belfast Lough	483	401	536	352	514	Nov	457
Strangford Lough	259	165	180	167	164	Sep	187
Carlingford Lough	130	101	244	187	133	Dec	159
Outer Ards	100	177	147	152	158	Dec	147

#### Sites no longer meeting table qualifying levels

Dengie Flats Ayr to Troon Clwyd Estuary Exe Estuary Durham Coast Southampton Water Humber Estuary

#### Other sites surpassing table qualifying levels in 1997-98

King George VI Reservoir	272	Oct	Middle Tame Valley Gravel Pits	150	Jan
Dengie Flats	201	Mar	Eyebrook Reservoir	148	Nov
Marsh Lane Gravel Pits	R194	Dec			

<sup>†</sup> as no all-Ireland threshold has been set for Cormorant, a qualifying level of 130 has been chosen to select sites for presentation in this report

#### **BITTERN**

**Botaurus stellaris** 

GB max:

Dec

NI max:

Numbers returned to more normal levels in 1997-98, following the highs of the previous year. However, given the normal requirement to wait patiently for a considerable time in order to see this secretive species, it is perhaps surprising that any Bitterns are seen at all during WeBS counts. The larger numbers in mid winter presumably reflect both the arrival of birds from the continent

and also their greater visibility during cold weather.

International threshold:

Great Britain threshold:

All-Ireland threshold:

?

Birds were noted at 20 sites in total, all in England except for one each in the Channel Islands and Wales. Most, as usual, were in the south, but a handful of records from the north and northwest presumably relate to wandering birds from the native population there.

#### Sites with two or more birds in 1997-98

Leighton Moss	7	Dec
Walland Marsh	5	Oct
Middle Thame Valley GP	3	Feb
Fen Drayton Gravel Pit	2	Jan

Minsmere Middle Yare Valley	2	Mar Jan
Rostherne Mere	2	Nov
Marton Mere	2	Feb

# LITTLE BITTERN

**Ixobrychus** minutus

**Vagrant** Native range: Europe, Africa and S Asia

One was seen at Marton Mere in June.

# LITTLE EGRET

Egretta garzetta

GB max:

430

NI max:

n

Following the peak of 733 birds in 1995-96, the national total has declined in both subsequent years. Counts at key sites in 1997-98, however, were generally similar to peak counts in recent years and, with records from 68 sites in total, there is no reason to suspect that the increase in recent years will not continue. This seems all the more likely, given the successful breeding of Little Egrets at two sites in Britain in 1997, for the second successive year (Lock & Cook 1998): on Brownsea Island in Poole Harbour, one pair raised three young in 1996 and five pairs reared 12 young in 1997; and at the second site, in southwest Britain, one pair raised two young in 1996, and two pairs raised two young in 1997.

International threshold:	1,250
Great Britain threshold:	?†
All-Ireland threshold:	<b>?</b> †

Most birds arrive in late summer as part of the post-breeding dispersal from the continent, numbers falling slightly as the winter progresses, perhaps as birds disperse to smaller sites from the key arrival points on the south coast. Roost counts at the key sites normally reveal

markedly higher numbers than Core Counts, e.g. a peak of 137 birds at Chichester Harbour in August (Holloway 1998), whilst a pilot survey of key roosts in autumn 1997 estimated around 750 birds (WeBS unpubl. data). A full national survey, scheduled for 1999-2000, will provide a benchmark against which to measure, as most anticipate, the growth of this population in the UK.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain† Longueville Marsh Chichester Harbour Tamar Complex Poole Harbour	(0)	(90)	(82)	130	(98)	Nov	130
	(44)	55	99	74	90	Aug	80
	(48)	45	83	69	42	Aug	60
	24	42	58	57	60	Sep	48

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Camel Estuary	(2)	29	49	46	(33)	Sep	41
Kingsbridge Estuary	27	23	<del>4</del> 8	<del>4</del> 7	`45	Oct	38
North West Solent	9	16	86	16	(3)	Jan	32
Exe Estuary	(7)	11	38	34	37	Oct	30
Langstone Harbour	(10)	(14)	36	32	19	Nov	29
Fowey Estuary	13	14	30	35	27	Sep	24
Pagham Harbour	(6)	20	19	29	27	Oct	24
Newtown Estuary	6	16	(34)	21	34	Aug	22
Fal Complex	7	20	16	24	21	Aug	18
Taw/Torridge Estuary	(11)	9	22	23	19	Mar	18
Medway Estuary	(I)	(0)	(30)	(17)	8	Nov	18
Guernsey Shore	(10)	13	13	18	-		15
Burry Inlet	(7)	10	23	9	14	Oct	14
Cleddau Estuary	7	(11)	9	!4	21	Dec	13
Erme Estuary	9	8	17	13	13	Aug	- 12
Portsmouth Harbour	(0)	(0)	10	(0)	14	Mar	12
Fleet/Wey	(1)	ł	8	ÌŔ	(13)	Feb	01
Beaulieu Estuary	2	5	14	21	` ģ	Oct	10

Other sites surpassing table qualifying levels in 1997-98

Fowey Estuary	27	Sep
Teign Estuary	13	Sep
Avon Estuary	10	Aug.

<sup>†</sup> as no British threshold for national importance has been set, a qualifying level of 10 has been chosen to select sites for presentation in this report

#### **GREAT WHITE EGRET**

Ardea alba

Vagrant Native range: S Europe, Africa, Asia, North and C America

Singles were reported from River Avon: Britford in April, on the North Norfolk Marshes in January

and March, and from Earls Barton Gravel Pits, also in January.

#### **GREY HERON**

Ardea cinerea

GB max: 3,684 Oct NI max: 334 Sep

With the exception of the 4,000 birds recorded in 1995-96 and the slightly lower numbers in the early 1990s, when Grey Heron was first included in WeBS, numbers in both Great Britain and Northern Ireland have remained remarkably

consistent between years.

This consistency is reflected in counts at individual sites also. The most notable departures from long-term averages were recorded on the Ribble Estuary, where counts

International threshold: 4,500

Great Britain threshold:

All-Ireland threshold:

exceeded 90 for the second year in succession, and the Inner Clyde.

Given totals of over 10,000 nests in the early

1990s (Marquiss 1993), and the continuing increase in number recorded by the BTO's Heronry Census since that time (*BTO News* 216/217), it seems that the WeBS peak count represents at most one tenth of the post-breeding population in Great Britain.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain					•		
Walthamstow Reservoir	100	310	200	300	-	Aug	228
Somerset Levels	99	142	100	H 5.	119	Маг	115
Deeping St James GP	100	110	-	-	-		105
Thames Estuary	70	(95)	119	98	84	Sep	93
Taw/Torridge Estuary	(64)	68	78	125	94	Jul	91

71

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Tamar Complex	(91)	114	87	64	75	Sep	86
Morecambe Bay	` <b>4</b> 5	72	87	70	88	Oct	72
Coombe Pool	120	60	31	-	-		70
Dee Estuary (Eng/Wales)	86	<del>4</del> 2	73	58	76	Sep	67
Wash	63	84	55	(35)	(45)	Sep	67
Severn Estuary	47	41	121	54	59	Feb	64
Montrose Basin	44	86	(74)	71	42	Aug	63
Ribble Estuary	39	42	40	99	95	Oct	63
R. Avon: Britford	50	(68)	56	70	65	Jan	62
Ouse Washes	46	66	75	63	57	Feb	61
Burry Inlet	(33)	67	57	50	64	Sep	59
Clyde Est.	(26)	(58)	40	46	86	Oct	58 ▲
Tees Estuary	`7Í	70	(43)	38	38	Jul	54
Poole Harbour	62	57	55	34	47	Oct	51
Colne Valley Gravel Pits	58	136	18	12	27	Sер	50 ▲
Northern Ireland							
Lo. Neagh/Beg	200	123	207	198	217	Aug	189
Strangford Lough	<b>7</b> 3	69	87	79	87	Oct	79

Sites no longer meeting table qualifying levels

Tring Reservoir

Avon Valley (Mid)

Other sites suprassing table qualifying levels in 1997-98

Kentra Moss/Lower Loch Shiel 69 Jan Aldford Brook & Eaton Park 50 Jan
Timsbury Gravel Pits 65 Dec Alde Complex 50 Oct

Durham Coast 58 Sep

#### WHITE STORK

Ciconia ciconia

Vagrant and escape Native range: Europe, Africa and Asia

Up to three known escapes were seen at Harewood Park throughout the year.

**SPOONBILL** 

Platalea leucorodia

Scarce

Birds were reported from nine sites, mostly in the south, southwest and northwest. Many were

long-staying birds, and several involved multiple sightings.

Sites with two or more birds in 1997-98

Taw/Torridge Dee Estuary (Eng/Wales) 5 Dec 4 jan/Feb Ribble Estuary Tamar Estuary 2 May-Aug 2 Dec/Feb

#### **GREATER FLAMINGO**

Phoenicopterus ruber

Escape
Native range: S Europe, Africa and Central America

The long-staying bird remained on Thames Estuary throughout the year and it or another paid

a brief visit to Livermere in November.

<sup>†</sup> as no British threshold for national importance has been set, a qualifying level of 50 has been chosen to select sites for presentation in this report

#### **CHILEAN FLAMINGO**

Phoenicopterus chilensis

Escape Native range: South America

A single bird was seen on the Thames Estuary's Cliffe Pools twice during the summer, on both

occasions forming a mixed flock with a Greater Flamingo!

#### **LESSER FLAMINGO**

Phoenicopterus minor

Escape Native range: Africa and S Asia

The regular bird was seen in most winter months on the Mersey Estuary.

# **FULYOUS WHISTLING DUCK**

Dendrocygna bicolor

Escape Native range: C & S America, Africa and S Asia

Two were at Thrapston Gravel Pit in September and a single was seen in Poole Harbour in March.

## **MUTE SWAN**

Cygnus olor

GB max: 18,170 Nov NI max: 2,133 Nov

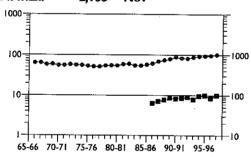


Figure 9. Annual indices for Mute Swan in GB (circles, left axis) and squares (right axis)

The rise in recorded totals in Great Britain continued in 1997-98, with numbers surpassing 18,000 for the first time. Annual indices were correspondingly at their highest level and are 75% higher than when the ban on the sale of lead shot

International threshold: 2,400
Great Britain threshold: 260
All-Ireland threshold: 55

for fishing was introduced in 1986. In Northern Ireland, peak counts were the lowest for three years, although annual index values, which equalled their highest ever figure, suggest that this may result from a reduction in site coverage rather than a true fall in numbers.

Loch of Harray rejoined the list of nationally important sites following an increase in 1997-98, though numbers remain much lower than in the late 1980s and early 1990s, when up to 1,200 birds exploited a flush of Canadian pondweed Elodea canadensis at the site (Meek 1993). Rutland Water recorded its highest ever count of Mute Swans; numbers on the site have grown steadily since it was created in the mid 1970s. In Northern Ireland, Loughs Neagh & Beg hold a large percentage of the population in all months of the year.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain				70-71	77-70	PIOI	riean
Fleet/Wey	1,196	1,227	1,151	1,185	1.313	Nov	1,214
Somerset Levels	511	687	608	731	734	lan	654
Tweed Estuary <sup>R</sup>	720	593	450	664	544	jul  ul	594
Ouse Washes	923	726	427	364	432	jan	574
Abberton Reservoir	572	624	538	480	428	Aug	528
Avon Valley (Mid)	327	438	476	368	350	lan	392
Rutland Water	3 <del>4</del> 2	280	295	396	485	Nov	360
Montrose Basin	2 <b>9</b> 1	297	299	356	315	Jul	312
Morecambe Bay	250	330	285	281	237	Feb	277
Loch of Harray	275	211	219	249	413	Nov	273

Northern Ireland								
Lo. Neagh/Beg	1,170	1,683	2,179	1,8 <del>44</del>	1,612	Nov	1,698	
Upper Lough Erne	413	456	456	590	377	Feb	458	
Strangford Lough	213	133	<del>9</del> 8	83	96	Sep	125	
Castlecaldwell Refuge Area		-	_	-	116	Dec	116	▲
Lough Foyle	80	102	104	130	110	Dec	105	
Upper Quoile	38	114	73	104	116	Oct	89	A
	175	26		78	66	Nov	86	
Broad Water Canal		80	59	67	76	Dec	85	
Dundrum Bay	145	φU	37	07	, ,		0.5	

Sites no longer meeting table qualifying levels

Loch of Skene

Internationally or nationally important sites not counted in last five years **Ballyroney Lake** 

Other sites surpassing table qualifying levels in 1997-98

Other sites an hassing capie	4	.9		202	
Tring Reservoirs	329	Nov	Severn Estuary	302	Feb
Stodmarsh	320	Aug	Fen Drayton Gravel Pit	264	Jul
Stour Estuary	307	Dec	Lough Aghery	67	Oct

#### **BLACK SWAN**

Cygnus atratus

Escape Native range: Australia

GB max: 31 Dec NI max:

Although the number of sites with this species fell from 44 in the previous winter to 37 in 1997-98, summed site maxima increased from 62 to 67. Birds were distributed widely, recorded at 20

sites in England, five in Scotland and two in Wales. This species has yet to be recorded by WeBS in Northern Ireland.

# Sites with three or more birds in 1997-98

Woburn Park Lakes	8	Nov
Deene Lake	6	Dec
Poole Harbour	4	Dec

Avon Valley (Mid) Lindisfarne

Sep/Man Mar

nla

# **BEWICK'S SWAN**

Cygnus columbianus

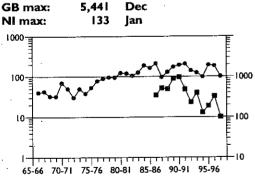


Figure 10, Annual indices for Bewick's Swan in GB (circles, left axis) and NI (squares, right axis)

Following high counts in the previous two winters, 1997-98 saw numbers in Great Britain fall

170 International threshold: Great Britain threshold: 70 25\* All-Ireland threshold: \* 50 is normally used as a minimum threshold

brood size: % young: 4.1-6.7 100 GB 80 60 40 20 SONDJFM SONDJEM

Figure 11. Monthly indices for Bewick's Swan in GB and NI (white bars 1997-98; black bars 1992-93 to 1996-97)

to their lowest levels for ten years. However, no count of the roosting birds on the Ouse Washes was possible in January. Adding December or February counts at this site to recorded January totals brings the peak national total to between 6,600 and 8,000 birds, around average for recent winters. Annual indices, however, also suggest a considerable fall since 1996-97 (-46%). Mild weather on the continent and exceptionally low productivity, with only 4.1% young birds in flocks at WWT Slimbridge, 6.7% at WWT Martin Mere and 5.2 at WWT Welney (WWT, unpubl. data) will have contributed to the decline.

In Northern Ireland, numbers were well below average in all months, with the peak count being the lowest since co-ordinated wildfowl counts commenced. Annual indices, whilst fluctuating, have shown a steady decline since the late 1980s, and it seems increasingly apparent that the relative importance of Northern Ireland has fallen in recent years. Undoubtedly the run of relatively mild winters will have been a major influence.

Declines in numbers of Bewick's at individual WWT Centres in recent years contrasts with increasing Whooper Swan numbers (Rees & Bowler 1997), although there is, as yet, no direct evidence to suggest that the two are linked.

Examination of site use by marked individuals suggests that the site fidelity exhibited during the winter also applies during migration (Rees & Bacon 1996). Paired birds, particularly those with families, showed the greatest tendency to use the same sites in successive years, presumably constrained by the greater food requirements of developing young or of females in preparation for the breeding season; single birds or young used a greater number of sites. As a result of this study, it might be speculated that declines in numbers at more northerly sites, including those in Northern Ireland, represent a decline in a subgroup of 'northern' birds or a tendency to winter further east.

The small number of juveniles and mild winter will have contributed to low counts at many sites, although the size of the decrease at some was particularly large, e.g. Somerset Levels (70% below average), Loughs Neagh & Beg (-67%), St Benets Levels (-44%), Breydon Water & Berney Marshes (-43%). The record count on the Nene Washes was thus all the more impressive, as was the addition of two haunts to the list of nationally important sites in Great Britain.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International					27.70		rican
Ouse Washes	4,172	3,920	4,830	4,977	4.257	Dec	4,431
Nene Washes	1,922	1,913	1,025	863	2,585	Jan	1,662
Martin Mere/Ribble Est.	'582	¹5 <b>48</b>	<sup>i</sup> 350	1669	368	Dec	503
Breydon Water & Berney N	1arshes 331	209	752	476	231	Feb	400
Severn Estuary	'313	253	¹370	555	1393	Feb	377
Walland Marsh	<sup>2</sup> 288	-	<sup>2</sup> 327	324	306	an	315
St Benet's Levels	179	404	39 I	286	161	Feb	284
Lo. Neagh/Beg	703	90	80	117	77	jan	213
Somerset Levels <sup>R</sup>	195	119	345	285	68	Dec	202
Great Britain							
Avon Valley (Mid)	90	81	118	137	91	Feb	103
Walmore Common	127	75	106	135	68	lan	103
Alde Complex	18	18	178	52	165	Dec	86 ▲
Arun Valley	59	68	133	68	98	Feb	85
Lower Derwent Valley	35	74	30	139	81	Feb	72 <b>▲</b>
Northern Ireland							
Lough Foyle	92	37	94	90	14	Jan	65
Canary Road	59	-	43	-	26	jan	43 ▼
R. Lagan: Flatfield	84	81	32	17	38	Nov	38
Strangford Lough	133	0	0	10	2	Jan	29

Other sites surpassing table qualifying levels in 1997-98
Dee Estuary (Eng/Wal) 79 Jan

from WWT annual swan reports (e.g. Bowler et al. 1994)

<sup>2</sup> D. Walker (in litt.)

#### TRUMPETER SWAN

Cygnus buccinator

Escape Native range: North America

The three regular birds were recorded at Tansor Gravel Pits during most winter months. These derive from a dozen which escaped from Apethorpe Hall, Northamptonshire, in late 1989. Three pinioned adults settled at Tansor, although one died and just two remained at the end of 1996-97. Three birds were again seen, however,

when a juvenile was observed in September 1997, the first wild breeding of this introduced species in Great Britain (Stroud 1998).

This highlights the problems posed by naturalised introductions, even of pinioned birds, and the need for more effective management of wildfowl collections.

# WHOOPER SWAN

Cygnus cygnus

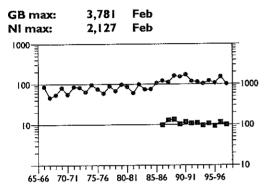


Figure 12. Annual indices for Whooper Swan in GB (circles, left axis) and NI (squares, right axis)

Because of their widespread distribution across northern Britain, WeBS records only 70-75% of Whooper Swan numbers in Great Britain, compared with a much higher proportion of Bewick's, found mainly in southeast England. The peak in 1997-98 was around average for recent years although, as for Bewick's Swan, the absence of data for the Ouse Washes in January significantly affected national totals in this month. Annual indices revealed a 34% fall in numbers, though such a drop is not unprecedented. Whilst a relatively poor breeding season in 1997, with only 13.8-16.5% young at WWT centres (WWT, unpubl. data), will have contributed to this, the decline is particularly dramatic for a population which winters wholly within Britain and Ireland. Mild and, especially, wet weather will have meant a larger proportion of birds used non WeBS sites, and perhaps enabled more birds to remain further north, where they are also less likely to have been detected by the WeBS network. Despite this drop, monthly indices (which, because they use data only from sites counted in all months from September to March, International threshold: Great Britain threshold: All-Ireland threshold:

160 55 100

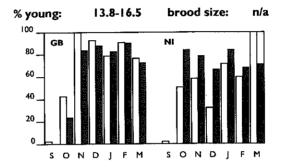


Figure 13. Monthly indices for Whooper Swan in GB and NI (white bars 1997-98; black bars 1992-93 to 1996-97)

exclude the Ouse Washes in 1997-98) show a similar pattern to previous years.

Numbers in Northern Ireland are relatively well monitored, with almost all of the key sites counted on a regular basis. Peak totals for 1997-98 were around 30% below the exceptionally high counts of the previous winter although, because of the large scale movements of birds through Northern Ireland, monthly counts, and hence yearly peaks, can fluctuate quite widely. Despite this variation, annual indices for Whooper Swans are more stable than for many other wildfowl species in Northern Ireland, varying by approximately  $\pm 15\%$  over the 12 years for which data are available.

The species' northerly distribution is amply reflected below, including only four sites outside Scotland and Northern Ireland. Numbers on two, the Ouse Washes and Martin Mere/Ribble Estuary, reached an all time high, having doubled at both sites over the last ten years or so. A detailed study at Black Cart Water collated additional data which shows this site to be of international importance (Rees & White 1998).

	93-94	94-95	95-96	96-97	<del>9</del> 7-98	Mon	Mean
International							
Ouse Washes	1986	¹1,1 <del>4</del> 2	1,288	1,211	1,299	Feb	1,185
Lo. Neagh/Beg	740	1,102	906	1,169	1,113	Mar	1,006
Upper Lough Erne	721	756	980	1,094	799	Feb	870
Lough Foyle	569	596	1,521	671	566	Mar	785
Martin Mere/Ribble Estuary	1650	<sup>1</sup> 738	¹7 <del>4</del> 0	'827	1,041	Dec	799
R. Foyle: Grange	297	-	266	380	150	<b>J</b> an	273
Solway Estuary	175	176	220	350	¹22 I	Oct	228
Loch of Strathbeg	302	75	221	158	310	Nov	213
Black Cart Water <sup>2</sup>	262	250	149	163	180	Oct	201
Great Britain							
Loch of Spiggie	-	84	180	-	-		132
Loch of Wester	187	49	-	98	114	Nov	112
Loch Insh & Spey Marshes	(0)	200	115	82	-		132
R Clyde: Carstairs Junction	_	-	-	60	157	Mar	109 🛦
Loch Eye/Cromarty Firth	72	191	89	120	52	Oct	105 ▼
R Tweed: Kelso to Coldstream	137	75	88	48	138	Jan	97
Loch Leven	99	96	94	97	98	Jan	97
R. Nith: Keltonbank to Nutholm		-	-	75	115	Nov	95 ▲
Rutherford	102	-	110	36	-		83
Wigtown Bay	75	98	72	59	75	Mar	76
Islesteps	74	-	-	-	-		74
Merryton Ponds	72	72	67	72	74	Dec	71
R. Tweed: Magdalenehall	-	70	-	-	-		70
Loch of Skaill	21	104	95	78	51	Nov	70
R. Frome: Wareham to Wool	0	137	-	_	-		69
Milldam & Balfour Mains Pools	60	57	46	87	76	Jan	65
Loch of Lintrathen	24	136	ı	67	77	Dec	61
Loch Heilen	17	110	-	15	99	Oct	60 ▲
Lower Derwent Valley	22	73	42	96	61	Feb	59
Loch of Skene	243	0	8	2	26	Oct	56 ▼

# Sites no longer meeting table qualifying levels

R. Teviot: Nisbet to Kalemouth

R. Lagan: Flatfield East Fortune Ponds

# Internationally or nationally important sites not counted in last five years

R. Teviot: Kalemouth to Roxburgh

Easterloch /Uyeasound

Other sites surpassing table qualifying levels in 1997-98

O C. 101 41-100 0 C. P HATTING					P 1
R. Lagan: Flatfield	152	Nov	Lindisfarne	58	Feb
Loch of Isbister	85	Oct	Ouse/Lairo Water	58	Feb
Threave Estate	85	Feb	Loch of Harray	56	Nov
Dornoch Firth	73	Oct	Bush River: Deepstown	114	Jan
Barons Haugh	64	Jan	Strangford Lough	100	Nov

from WWT annual swan reports (e.g. Bowler et al. 1994) or WWT unpubl. data

# SWAN GOOSE Anser cygnoides

Escape Native range: Eastern Asia

Although recorded at just four sites in 1997-98, compared with double that number in the previous winter, the peak count jumped from 26

to 38, with maxima of 16 birds at Etherow Country Park, 15 at Esthwaite Water and eight at Nafferton Mere.

<sup>2</sup> Rees & White (1998)

#### **BEAN GOOSE**

Anser fabalis

GB max: NI max: 164 Nov

Although never common, numbers of this regular visitor recorded by WeBS vary greatly, both monthly and annually, since significant numbers occur regularly at only two sites and birds may be dispersed over a wide area. Indeed, the Yare Valley flock was not detected during any of the WeBS Core Counts. There was a marked increase in the number of birds in the Slamannan area.

At the very edge of the species' distribution, only in cold winters with prolonged periods of easterly winds are numbers supplemented by

International threshold (fabalis): 800
Great Britain threshold: 4\*\*
All-Ireland threshold: +\*

\* 50 is normally used as a minimum threshold

arrivals from continental Europe, generally to east coast localities. With mild weather in 1997-98, counts away from the two regular wintering sites were considerably lower than in recent winters: only 12 sites recorded flocks of four or more birds (cf. 19 and 20 in the colder winters of 1995-96 and 1996-97 respectively). The most noteworthy count was of 28 birds at Holland Haven in December. A single bird in the Myroe area of Lough Foyle was the first WeBS record of this species in Northern Ireland.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain <sup>†</sup> Middle Yare Valley <sup>I</sup> Slamannan Plateau <sup>2</sup> Heigham Holmes	305 135 365	310 132 8	195 123 103	224 127 0	266 157 0	Dec Jan	260 135 95
North Warren/Thorpness Mere Ouse Washes	0 25	13 1	48 2	36 34	12 8	Feb Feb	22 14

Other sites surpassing table qualifying levels in 1997-98 Holland Haven 28 Dec

# **PINK-FOOTED GOOSE**

Anser brachyrhynchus

GB max: 235,559 Oct NI max: 30 Sep

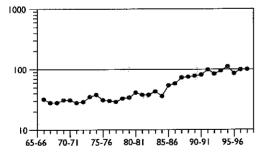


Figure 14. Annual indices for Pink-footed Goose in GB

The 38th national grey goose census in 1997 (Hearn 1998) recorded only a very modest increase in numbers of Pink-footed Geese compared with the previous winter, the

International threshold: 2,250
Great Britain threshold: 2,250
All-Ireland threshold:+

% young: 15.5 brood size: 2.3

population having remained at around the same level since the early 1990s. This accords reasonably with moderate breeding success in 1997.

A notable feature of 1997-98 was the relatively slow dispersal of birds from the main arrival area in east-central Scotland (Hearn 1998), perhaps a result of much spilled grain after the harvest. Counts at many sites fluctuate considerably between years, although this will be partly due to the rapid movement of birds through the region; consequently, the peak may be missed if the count is not made during the critical period which may last just two or three days. The slow departure in 1997-98 may have accounted for elevated totals at several sites in

as the British threshold for national importance is so small, a qualifying level of 10 has been chosen to select sites for presentation in this report

RSPB pers. comm. data from Bean Goose Working Group annual reports, e.g. Smith et al. (1994), Simpson & Maciver (1997)

the key arrival and early staging areas, e.g. at West Water Reservoir, Montrose Basin, Loch Tullybelton and Fala Flow. This corresponds with relatively low numbers in Lancashire in early winter.

By contrast, the increasing use of Norfolk by larger numbers earlier in the winter continued: the 1995-96 peak was of 54,760 birds on 12 January; in 1996-97, 55,500 were recorded on 20 December; and in 1997-98, 76,170 were present

by 1 December. Birds are also moving further east in the county, with remarkable counts of 5,500 at Breydon Water & Berney Marshes and 10,000 at nearby Heigham Holmes in February (P. Allard *in litt*.).

Low counts were notable on the Solway Estuary and on the Tay/Isla Valley, whilst the roost at Glenfarg appears now to have been abandoned.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International						_	
Lo. of Strathbeg	38,970	58,150	48,500	32,000	33,556	Oct	42,235
Dupplin Lo.	36,500	62,000	35,000	40,500	2 <del>9</del> ,850	Oct	40,770
Snettisham	45,925	31,038	39,130	35,930	40,350	Dec	38, <del>4</del> 75
West Water Rsr	40,000	26,500	31,500	25,500	38,700	Oct	32, <del>44</del> 0
SW Lancashire <sup>2</sup>	27,260	31,000	28,850	41,680	28,960	Dec	31,550
Montrose Basin	41,210	36,000	18,500	17,150	35,000	Nov	29,572
Holkham <sup>1</sup>	26,760	16,000	19,230	26,000	33.700	Dec	24,338
Slains Lo./Ythan Est.	23,880	21,400	25,000	17,400	12,200	Oct	19,976
Lo. Leven	18,870	16,154	17,900	18,150	14,740	Oct	17,163
Scolt Head <sup>1</sup>	16,860	13,150	15,635	17,900	15,890	Dec	15,887
Solway Est.	17, <del>4</del> 70	20,202	20,523	11,546	7,770	Mar	15,502
Hule Moss	14,100	8,100	15,200	19,400	19,675	Oct	15,295
Cameron Rsr	27,300	14,860	11,260	3, <del>46</del> 0	11,280	Oct	13,632
Carsebreck/Rhynd Lo.	7,120	14,500	13,500	12,000	13,560	Oct	12,136
Aberlady Bay	26,000	5,750	11,320	4,650	6,5 <del>4</del> 0	Nov	10,852
R Clyde: Carstairs Junction	-	_	-	-	(8,000)	Oct	(8,000)
Wigtown Bay	3,530	5,912	7,229	7,280	5,234	Mar	5,837
Tay Est.	(300)	1,938	6,117	8,897	3,765	Nov	5,179
Cowgill Rsr	5,400	3,820	4,560	6,060	6,000	Nov	5,168
Fala Flow	6,450	3,500	2,437	5,000	7,500	Oct	4,977
Alloa Inch	_	2,300	6,700	-	-		4,500
Gladhouse Rsr	2,500	4,550	3,290	6,200	5,000	Oct	4,308
Forth/Teith Valley	360	7,780	-	-	-		4,070
Morecambe Bay	2,229	687	5,503	8,671	3,000	Oct	4,018
Lo. Tullybelton	4,100	1,800	1,395	4,658	8,000	Nov	3,991
Lo. of Kinnordy	9,195	3,420	434	2,730	(84)	Nov	3, <b>94</b> 5
Lo. Eye/Cromarty Fth	2,797	5,816	7,150	1,500	465	Oct	3,5 <del>4</del> 6
Whitton Loch	_	3500	-	-	-		3,500
Drummond Pond	2,550	2,250	110	7,000	3,300	Oct	3,042
Crombie Rsr	3,000	_	-	-	-		3,000
Tay/Isla Valley	3,820	3,202	2,785	2,911	229	Oct	2,589
Glenfarg Rsr	3,800	9,080	0	0	0		2,576
Loch Mahaick	600	970	600	2,700	6,465	Oct	2,267 🛦

#### Sites no longer meeting table qualifying levels

Skinflats

Castle Loch (Lochmaben)

Other sites surpassing table qualifying levels in 1997-98

O Cite Stees carpacting		0			
Heigham Holmes	10,000	Feb	R. Clyde: Lamington	2,600	Oct
Breydon Wtr & Berney Marshes	5,500	Feb	Loch Spynie	2,300	Nov
Alt Estuary	5.001	Dec	Loch Mullion	3,000	Oct
Holburn Moss	4.500	Feb	Loch of Lintrathen	2,800	Nov
R, Nith: Kelton to Nutholm	3.140	Feb			
IC, 14(d). ICCICOTI CO 14ddionii	0,,,,				

l includes data from Paul Fisher (in litt.)

<sup>2</sup> includes data from Lancashire Goose Report (e.g. Forshaw 1998)

#### **EUROPEAN WHITE FRONTED GOOSE**

International threshold: 6.000 Anser albifrons albifrons Great Britain threshold: 60 All-Ireland threshold: 5,345 Feb

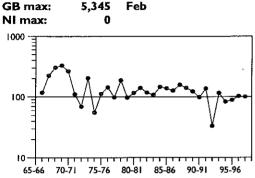


Figure 15. Annual indices for European White-fronted Goose in

Numbers in Great Britain represent only a small proportion of the European population which had risen dramatically from 60,000 birds in the 1960s to around 10 times that number in the late 1980s (Madsen 1991). In contrast, numbers wintering in the UK have fallen steadily during this period and, though the peak in 1997-98 was typical for recent years, national counts of double this figure were not uncommon thirty years ago (Owen et al. 1986). Breeding success, however, was relatively poor in 1997, with only 14.8% young observed in flocks at Slimbridge.

Depending on weather conditions, birds may continue to arrive in Great Britain through to February. Monthly counts and indices show that in 1997-98 most of the wintering birds had arrived by January, and, with predominant southwesterly winds in the first two weeks of March, few

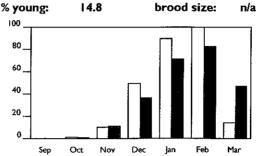


Figure 16. Monthly indices for European White-fronted Goose in GB (white bars 1997-98; black bars 1992-93 to 1996-97)

remained by the March count date.

Although only the WWT Slimbridge reserve on the Severn Estuary and Elmley Marshes on the Swale regularly support more than 1,000 birds, numbers have risen sharply at Heigham Holmes in recent years. With large counts of other species at this site as a result of sympathetic ESA management, this new 'goose mecca' is likely to become one of the key UK sites.

Decreases, such as that on the Alde and the Ouse Washes, were to be expected given the contrasting weather in the last three winters. The well above average counts for the second successive year at both Minsmere Levels (+168%) and Dungeness Gravel (+118%) were thus noteworthy, whilst the continuing use of the most northerly site, Lower Derwent Valley, by large numbers is particularly remarkable.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Severn Estuary	3,000	2,200	2,170	2,780	2,501	Feb	2,530
Swale Estuary	1,703	1,681	2,088	1,604	1,402	Feb	1,696
Heigham Holmes	163	185	1,043	640	475	Feb	501
North Norfolk Marshes	316	2 <del>4</del> 8	476	491	290	Feb	364
Walland Marsh	_	-	1300	328	198	Jan	275
North Warren/Thorpness Mere	120	47	450	302	220	Feb	228
Dungeness Gravel Pits	174	0	8	355	320	Feb	171
Alde Complex	19	0	427	317	60	Jan	165
Middle Yare Valley	<sup>2</sup> 265	189	180	47	107	Jan	158
Minsmere Levels	69	64	83	215	236	Jan	133
Wash	483	0	38	21	3	Jan	109
Lower Derwent Valley	7	Į	244	114	152	Feb	104
Thames Estuary	103	107	59	146	69	Feb	97
Breydon Water & Berney Marshe	es 80	88	64	69	90	Jan	78
Ouse Washes	106	16	88	76	18	Dec	61

Internationally or nationally important sites not counted in last five years Kessingland Levels

- D. Walker (in litt.)
- RSPB pers. comm.

#### **GREENLAND WHITE-FRONTED GOOSE**

Anser albifrons flavirostris

GB max: 20,654 Nov NI max: III Oct

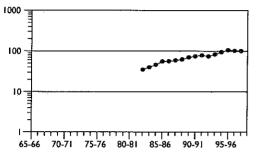


Figure 17. Annual indices for Greenland White-fronted Goose in GB

The peak count, obtained during the autumn national census by the Greenland White-fronted Goose Study (Fox & Francis 1998, AD Fox pers. comm.), represents the second consecutive, albeit small, annual decline in numbers for this population. This apparent stabilising of numbers is consistent with moderate breeding success in 1997, yet the rather low count on Islay during the census, compared with higher counts before and after, suggests that some birds may have been missed (13,400 birds were recorded on the census, cf. 14,900 and 15,100 either side of this; however, both of the higher totals were obtained

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

% young: 14.7 brood size:

3.3

during counts made over two days which are therefore deemed unsatisfactory due to the possibility of double-counting or missing birds).

Despite the relatively low national total, 1997-98 maxima at all but two of the internationally and three of the nationally important sites were higher than their respective means; the count at Appin/Eriska/Benderloch was sufficient to elevate its status to internationally important. The sudden increase on Tiree in 1995-96, of around 1,000 birds, was maintained in 1997-98 also. Clachan features in the table below for the first time, although it was inadvertently omitted from the previous report.

Preliminary results of research in western Greenland suggest that the rapid expansion of the Canada Goose's breeding range into the area (Fox et al. 1996) may be having a detrimental effect upon White-fronted Geese (Fox & Francis 1998). Moulting flocks tended to consist of just one species, and at those where both occurred, the more aggressive and larger Canadas dominated the best feeding areas. Whilst Canada Goose numbers have continued to increase in the area, White-front numbers have declined rapidly in the last three years.

International <sup>†</sup>	93-94	94-95	95-9 <u>6</u>	96-97	97-98	Mon	Mean
Islay <sup>1</sup>	11,368	12,350	14,495	12,964	13,414	Dec	12,918
Rhunahaorine	1,050	1,361	1,360	1,272	1,193	Nov	1,247
Machrihanish	1,103	1,044	1,339	1,629	931	Nov	1,209
Tiree	499	512	1,387	1,455	1,464	Mar	1,063
Coll	896	1,026	962	1,047	1,052	Mar	997
Stranraer Lochs	565	565	550	535	680	Dec	579
Danna/Keills	308	381	414	333	441	Mar	375.
Loch Ken	325	293	360	318	450	Mar	354
Appin/Eriska/Benderloch	323	336	376	217	318	Mar	314 ▲
Great Britain <sup>†</sup>							
Westfield Marshes	196	206	352	210	206	Nov	234
Lo. Lomond: Endrick Mouth	137	230	230	2 <b>4</b> 5	261	Nov	221
Bute	213	226	210	224	223	Mar	219
Lo. Heilen/Lo. Mey	180	196	258	199	217	Nov	210
Colonsay/Oronsay	150	185	206	169	288	Mar	1 <del>9</del> 7
Clachan	-	-	191	184	203	Mar	193
Jura	-	148	160	140	-		1 <del>49</del>
Dyfi Est.	160	155	147	125	110	Apr 98	139

Sites no longer meeting table qualifying levels Linnhe Mhuirich/Lo. na Cille

Other sites surpassing table qualifying levels in 1997-98 Loch Calder 160 |an

<sup>†</sup> counts based largely on data from GWGS reports (e.g. Fox & Francis 1998)

I data represent SNH 'adopted' counts: whole-island counts are made on two consecutive days and the average taken, unless one count is deemed inaccurate due to operational difficulties.

## LESSER WHITE-FRONTED GOOSE

Anser erythropus

Vagrant and escape Native range: SE Europe and Asia

Singles were recorded on the Severn Estuary in February and Alton Water in June, whilst one moved between Ogden, Holden Wood and Calf Hey Reservoirs from July to February.

#### **GREYLAG GOOSE**

Anser anser

#### **ICELANDIC POPULATION**

GB max: 79.477 Nov Dec NI max: 597

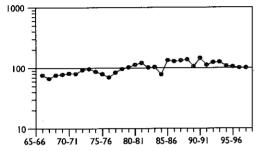


Figure 18. Annual indices for Icelandic Greylag Geese in GB

The census total in 1997-98 (Hearn 1998), although only fractionally below that of the previous winter, now becomes the lowest since 1978-79 (excluding that in 1984, known to be an undercount). This is in stark contrast to the other major goose populations wintering in the UK: both Pink-feet and Greenland White-fronts have tripled in number over the last 20 years whilst Dark-bellied Brents have increased by 50%. Although poorer than normal breeding success in 1997 will have contributed to the most recent low total, breeding success in this population has been virtually identical to the sympatric Pink-foot over the last 10 years. Using five year running means, the Greylag population has shown a sustained decline over this period, whereas Pinkfeet have continued to grow steadily. continued large bag of Greylag Geese in Iceland has prompted an education programme by the Iceland Institute of Natural History to discourage the hunting of Greylags on a voluntary basis (A. Sigfússon in litt.).

Peak counts in 1997-98 at a large number of sites were markedly different from their respective averages. One of the most notable was on Orkney, having risen from ninth position

International threshold: 1,000 Great Britain threshold: All-Ireland threshold:

50 is normally used as a minimum threshold 13.5

% young:

brood size:

in the table following the 1993-94 winter, and likely to usurp Loch Eve/Cromarty Firth as the third most important site in the near future if low counts continue at the latter site. Numbers dropped sharply at Haddo House Lakes, on the Tay/Isla Valley, Holborn Moss and the Eden Estuary, and remained low at both Stranraer Lochs and the Beauly Firth. The fall in numbers at Lower Bogrotten coincides with an expansion of reeds and other successional species at the site and it may be that this roost is soon lost. There were two very marked increases, at Loch of Lintrathen and on the Domoch Firth, suggesting a redistribution of birds in the Moray area in autumn 1997. It is notable that, following 1997-98, a further five sites are no longer of international importance.

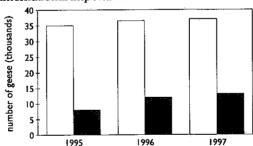


Figure 19. Numbers of Greylag (white bars) and Pink-footed Geese (white) shot in Iceland.

Sightings of darvic-ringed birds have shown a number in Ireland to belong to the Icelandic population (B. Swann pers. comm.). It is thought that perhaps 1,000 birds use sites here, but the picture is clouded by the presence of introduced birds. Special effort was made during the census in autumn 1998 to assess Greylags in Ireland in an attempt to clarify the situation.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International							- 10011
Dinnet Lo./R. Dee	27,173	33,119	36,525	26,185	24,346	Oct	29,470
Lo. of Skene	14,000	8,500	12,300	12,876	11,200	Nov	11,775
Lo. Eye/Cromarty Fth	14,842	11,714	8,550	4,433	5,416	Nov	8,991
Orkney	4,112	2,702	19,880	9,338	13,361	Nov	7,879
Caithness Lo.	5,433	5,563	12,376	5,378	7,200	Oct	7,190
Lo. Spynie	5,000	7,000	5,500	5,500	3,000	Nov	5,200
Haddo House Lo.	4,600	4,900	4,900	4,360	1,110	Nov	3,974
Lo. of Lintrathen	4,100	1,240	2,300	960	7,200	Nov	3,160
Bridge of Earn	-	_	3,000	_			3,000
Lower Bogrotten	5,620	5,180	3,000	850	0		2,858
Findhorn Bay	2,640	3,065	3,150	1,860	2,350	Nov	2,613
Killimster Loch	_	-	-	2,500			2,500
Drummond Pond	4,000	3,430	1,680	1,021	1,834	Nov	2,393
Tay/Isla Valley	3,877	3,064	1,661	2,096	857	lan	2,311
Bute	1,500	2,370	4,280	1,797	1,200	Dec	2,229
R. Eamont: Watersmeet				•	, .		-,
- Pooley Bridge	2,150	-	-	-	_		2,150
Beauly Firth	6,300	2,510	194	520	400	Oct	1,985
Dornoch Fth	692	1,975	1,937	1,132	3,211	Oct	1,789
Stranraer Lo.	2,500	2,500	760	, · .	645	Nov	1,601
Lindisfarne	2,000	2,600	750	000,1	900	Nov	1,450
R. Tay: Dunkeld	-	I,400	-	· -	-		1,400
Holburn Moss	1,500	2,000	2,000	1,200	200	Oct	1,380
Strathearn	_	-	2,665	0	_		1,333
Kilconguhar Loch	1,8 <del>44</del>	918	1,135	1,300	1,216	Feb	1,283 ▲
Lo. Garten/Mallachie	1,550	1,482	1,987	587	735	Nov	1,268
Lo. Fleet	1,500	1,300	960	1,200	843	Oct	1,161
Eden Est.	2,020	1,071	1,520	1,070	68	Nov	1,150
Upper Tay	534	2,030	746	97 i	1,333	Nov	I,123 ▲
R. Spey: Boat of Balliefirth	1,115	· <del>-</del>	_	_	-,		1,115
Corby Lo.	1,080	-	-	_	_		1,080

#### Internationally or nationally important sites not counted in last five years

Fincastle Loch

Sites no longer meeting table qualifying levels

Lo. of the Lowes R. Tay: Scone

Lo. Clunie

Other sites surpassing table qualifying levels in 1997-98

Oction sices out passing table	e quamyn	ig ieveis iii	1777-70		
Dowlaw Dam	1,600	Nov	Threave Estate	1,089	Dec
R. Forth: West Carse Farm			Lowbank Gravel Pit	1,075	Dec
to R. Teith Confluence	1,250	Mar	R. Eamont & Eden;	,	
Summerston	1,150	Oct	Honeypot to Edenhall	1.023	Mar

I Orkney Bird Report

# NORTHWEST SCOTTISH POPULATION

International threshold: 50
Great Britain threshold: 50

GB max:

9,793 Aug

% young:

n/a

brood size:

n/a

A full census of all known and suspected haunts of this population was undertaken in autumn 1997. Provisional results suggest a total population size of just under 10,000 birds (WWT unpubl. data), double the previous estimate. The traditional strongholds remained as before, with

the Outer Hebrides and Coll and Tiree supporting a high proportion of the total. In excess of 1,200 birds were also found in Sutherland and on the Orkney Islands, whilst small numbers were found at an additional 18 sites on the Inner Hebrides and along the west coast, particularly Wester Ross, and at two sites in the Shetland Islands, indicating range expansion. Consequently, the

population estimate and 1% threshold will be revised later this year.

International <sup>†</sup> Tiree North Uist	1,206 1,556	1,526 1,346	1,451 1,345	2,475 1,630	2,417 1,670	Feb Aug	1,815 1,509
South Uist	880	752	1,157	1,270	1,046	Aug	1,021
Coll	-	792	707	1,016	953	Mar	687
Benbecula	136	156	26 <del>4</del>	<del>44</del> 0	595	Aug	318

<sup>†</sup> Counts based largely on data from Mitchell (et al. 1995), R MacDonald in litt. and SNH. Note that birds occasionally move between adjacent islands, particularly between South Uist and Benbecula, and between Coll and Tiree

#### **NATURALISED POPULATION**

#### Naturalised re-establishment<sup>†</sup>

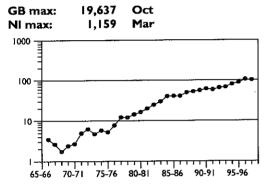


Figure 20. Annual indices for naturalised Greylag Geese in GB

Whilst the peak count of birds in Britain increased further, the annual index value dropped slightly. This is reflected in the table below, with counts at 14 sites noticeably higher than the long-term mean, around the same at seven, and noticeably lower at 12 (note that no sites are identified as having joined or fallen from the table in the most recent year, since this table was not included in the report previously). Many

of the increases, however, were particularly large, notably on the North Norfolk Marshes, Llyn Traffwll, Wynyard Lake and the Humber Estuary, whilst there has been an increase at Sutton/Lound Gravel Pits in each of the last four years. Notable, also, are counts in excess of 600 at three sites for which average maxima fall below 300.

In Northern Ireland, numbers were similar or slightly lower than during 1996-97, with the exception of a particularly large count in March. Although it is clear that both Iceland and naturalised birds occur in the province, separating the different populations is problematic. Nevertheless, this large peak, around one third higher than the previous maximum, perhaps indicates some sort of premigratory gathering of Icelandic birds. The large peak count on Lough Foyle in 1997-98 was notable, whilst counts at Loughs Neagh & Beg have also risen in each of the last four winters.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
North Norfolk Marshes	1,153	1,089	1,204	1,669	2,177	Nov	1,458
Lower Derwent Valley	840	658	1,304	1,200	1,063	Feb	1,013
Bolton-on-Swale GP	1,266	841	572	955	635	Aug/De	ec 854
Tophill Low Reservoirs	668	1,263	<del>4</del> 81	561	450	Dec	685
Swale Estuary	416	-65 I	673	456	589	Feb	557
Little Paxton Gravel Pits	36 <del>4</del>	500	644	518	655	Oct	536
Alton Water	259	356	815	514	6 <del>4</del> 7	Oct	518
Sutton/Lound Gravel Pits	-	356	458	570	650	Nov	509
Revesby Reservoir	479	-	602	273	571	Sep	<del>4</del> 81
Baston/Langtoft Gravel Pits	905	408	270	34 <del>9</del>	320	Mar	450
Wash	160	505	511	747	314	Sep	447
Heigham Holmes	430	465	373	538	410	Oct	443
Langtoft West End Gravel Pits	300	430	550	420	490	Jan	438
Martin Mere	424	430	458	420	419	Nov	430
Tattershall Pits	245	350	-	700	340	Jun	409
Castle Howard Lake	406	-	-	-	-		406

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Llyn Traffwll	245	264	466	349	646	Sep	394
Bough Beech Reservoir	464	64	650	-	-		393
Earls Barton Gravel Pits	250	392	486	542	284	Jul	3 <b>9</b> I
Thrapston Gravel Pit	340	343	305	417	520	Oct	385
Dungeness Gravel Pits	256	349	446	381	473	Aug	38 I
Ferry Meadows (Nene Park)	369	-	-	-	-		369
Hamford Water	182	559	576	358	168	Sep	36 <del>9</del>
Ouse Washes	145	324	305	<b>52</b> I	453	Dec	350
Wynyard Lake	14	530	241	22 <del>4</del>	710	Sep	3 <del>44</del>
Morecambe Bay	311	342	287	370	40 I	Feb	3 <del>4</del> 2
Humber Estuary	109	160	126	459	854	Sep	342
Livermere	_	400	335	330	300	Aug/Fel	
Hornsea Mere	428	488	-	-	92	Mar	336
Linford Gravel Pits	412	168	365	409	301	Sep	331
Thames Estuary	321	499	273	293	252	Feb	328
Medway Estuary	302	470	361	290	203	Feb	325
St Benet's Levels	350	330	336	268	268	Sep/Oc	
Clifford Hill Gravel Pits	485	352	216	378	92	Dec	305
Northern ireland				-			
Strangford Lough	461	591	173	351	379	Dec	391
Lo. Neagh/Beg	70	243	347	<del>44</del> 8	510	Mar	324
Temple Water	250	378	158	15	-		200
Lough Foyle	18 <del>4</del>	22	43	88	383	Mar	144
Belfast Lough	20	41	77	86	86	Dec	62 ▲
Other sites surpassing table	qualifyin	ig levels in 19	97-98				
Nosterfield Gravel Quarry	771	Feb	Bardney P			-	an 
Kirkby-on-Bain Gravel Pits	627	Nov	Grimstho	•			Feb
Emberton Gravel Pits	602	Sep	Deene La				Aug
Middle Yare Valley	<del>4</del> 81	Oct	Rutland V				Sep
Derwent Reservoir	<del>44</del> 2	Mar	Fillingham				Sep
Aldford Brook & Eaton Park	430	Nov	Severn Es	•			Sep
Didlington	392	Aug	Orwell Es				lan 💮
Lough Foyle	383	Mar	Ardleigh I				Aug
Leighton/Roundhill Reservoirs	370	Sep	Alaw Rese	ervoir		312	Aug
Eccup Reservoir	368	Dec					

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, respectively, for presentation in this report

# **BAR-HEADED GOOSE**

Anser indicus

Escape Native range: Southern Asia

This species was recorded at 35 sites in 1997-98, with a peak count of 16 in March, both figures slightly lower than during the previous winter. Summing site maxima suggests as many as 56

birds, though comparatively few sites held birds for extended periods and it is likely that this figure includes a degree of double-counting.

# Sites with three or more birds in 1997-98

Spade Oak Gravel Pit5DecPennington Flash5MarEmberton Gravel Pits3Sep

Westport Lake 3 several Chatsworth Park Lakes 3 Sep

#### **SNOW GOOSE**

Anser caerulescens

GB max: 70

Oct NI max:

There was a marked fall in the number of records in 1997-98, with birds noted at only 32 sites (cf. 42 in 1996-97 and a peak of 99 birds). There was a corresponding fall in numbers at most of the key sites. Summing site maxima suggests as many as

#### Sites with 10 or more birds in 1997-98

Eversley Cross/Yateley Gravel Pits	26	Jan
Stratfield Saye	21	Oct
Bramshill Park Lake	19	Jun/Jul

146 birds, probably all escapes.

Blenheim Park Lake

**Emberton Gravel Pits** 

# d

#### **ROSS'S GOOSE**

Anser rossii

Birds were noted at seven sites in 1997-98, although almost certainly the same birds were involved in two cases. All records involved

Escape Native range: North America

12

Escape and vagrant

several

Mar

Native range: North America

singles except for a count of three at St Mary's Island in August.

#### **EMPEROR GOOSE**

Anser canagicus

Occurring on widely separated sites, summing site maxima suggests 10 birds in Britain in 1997-98. All counts were of singles except for three

**Escape** Native range: Alaska and NE Siberia

birds at both Ramsbury Lake and Eccup Reservoir.

# CANADA GOOSE

43,225

Branta canadensis

GB max:

NI max: 456 Feb 1000 100 65-66 70-71 75-76 80-81 85-86 90-91

Nov

Figure 21. Annual indices for Canada Geese in GB

Following many years of rapid growth up to the late 1980s, annual indices suggest that the Canada Goose population has stabilised over the past ten years. The peak national total, however, surpassed 43,000 birds for the second consecutive year, some 35% higher than the figure recorded ten years previously. A partial explanation may be that population growth is

Naturalised introduction<sup>†</sup> Native range: North America

occurring primarily on sites only recently covered by WeBS, e.g. newly created gravel pits, which cannot be included in the index calculations until there is a sufficiently long run of data. In Northern Ireland, numbers returned to normal levels after the high counts in 1996-97.

Rutland Water is the only site with counts in excess of 1,000 birds in each of the past five years, with numbers apparently continuing to grow. The largest count, however, came from the Arun Valley where numbers were almost double those of the previous winter. Numbers on the Dyfi Estuary rose sharply, one of two new sites in the table below. That six sites no longer hold averages of 600 or more birds following 1997-98 counts is perhaps surprising in view of the national increase. To what extent licensed control measures have influenced counts at these sites is uncertain.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Rutland Water	1,025	1,137	1,282	1,266	1,395	Oct	1,221
Arun Valley	1,012	775	868	796	1, <del>4</del> 90	Nov	988
Fairburn Ings	580	922	953	1,030	1,340	un	965
Walthamstow Reservoirs	516	1,072	1,062	1,030	816	Jun	899
Lower Derwent Valley	919	732	831	841	1,170	Nov	899
Chew Valley Lake	805	625	855	740	_		756
Kedleston Park Lake	1,100	_	900	360	650	Nov	753
Holme Pierrepont GP	552	717	648	100,1	715	Aug	727
Stour Estuary	593	551	1,261	492	608	Feb	70 I
Dee Estuary (Eng/Wal)	553	<del>4</del> 21	645	877	875	jan	674 ▲
Dyfi Estuary	453	520	681	682	1,020	Dec	671 🛦
Blithfield Reservoir	484	688	342	916	850	Sep	656
Middle Tame Valley GP	666	649	769	441	750	Sep	655
Bewl Water	420	833	820	600	548	Nov/Dec	644
Northern Ireland							
Upper Lough Erne	211	242	19 <del>4</del>	451	168	Feb	253
Strangford Lough	153	297	185	257	183	Feb	215
Drumgay Lough	205	0	265	236	95	Feb	160
Woodford River	128	_	-	-			128
Castlecaldwell Refuge Area	-	-	-	-	10	Feb/Mar	10

#### Sites no longer meeting table qualifying levels

Abberton Reservoir

Stratfield Saye Livermere Alde Estuary

% young:

Dorchester Gravel Pits

Eversley Cross/Yateley Gravel Pits

Other sites surpassing table qualifying levels in 1997-98

Tundry Pond	8 <del>4</del> 0	Oct	Barton Pits	697	Aug
Arlington Reservoir	825	Aug	Kings Bromley Gravel Pits	641	Aug
Fleet Pond	800	Sep	Tring Reservoirs	618	Nov
Croxall Pits	793	Sen	Abberton Reservoir	608	Αιισ

as site designation does not occur and the 1% criterion is not applied, qualifying levels of 600 and 200 have been chosen to select sites in Great Britain and Northern Ireland, respectively, for presentation in this report

#### **BARNACLE GOOSE**

Branta leucopsis

#### **GREENLAND POPULATION**

GB max: 35,123 Nov NI max: 0

The peak British count of just over 35,000 birds comprises counts from the co-ordinated census of main locations in Argyll plus that from South Walls, Orkney, representing the majority of accessible sites used by this population. This figure exceeds the equivalent figure published in the 1996-97 report simply because only counts from Islay were used as a maximum national count previously. Peak counts at the two key sites, as shown in the table below, were in fact lower in 1997-98 than in recent years, with that on Islay representing the first fall in numbers since

International threshold: 320 Great Britain threshold: 270

brood size:

All-ireland threshold:

1990-91. The very low breeding success in 1997 will have contributed to this decline.

The remainder of the population is thinly spread across a relatively large number of small Hebridean islands. These are censused periodically, usually once every five years, along with sites in the Republic of Ireland, as part of a complete international census. An aerial survey of Barnacle Geese on some of these sites was undertaken in spring 1997 as part of an assessment of potential Special Protection Area for Scottish Natural Heritage (Mitchell *et al.* 1997).

1.95

The largest counts were made at the Sound of Harris (1,351), Monach Isles (760), North Uist machair and lochs (600) and the Treshnish Isles (270). The abandonment of these smaller sites, resulting in the population becoming more concentrated at the main haunts, particularly Islay, has been cause for concern in recent

decades (e.g. Delany & Ogilvie 1994), so it is encouraging to note that numbers recorded at many of these smaller sites in 1997 were higher than during the previous survey. Using estimates for areas not visited suggests a Scottish total of 37,000 birds in 1996-97, around 22% higher than during the previous full census in 1994.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International							
Islay <sup>1</sup>	27,791	28,298	31,099	35,013	32,812	jan	31,003
Sound of Harris <sup>2</sup>	(474)	1,664	-	1,351	-		1,508
Tiree <sup>3</sup>	684	1,145	1, <del>4</del> 65	1,479	1,158	Feb	1,186
South Walls (Orkney)4	890	1,208	1,138	1,170	1,180	Feb	1,117
Coll <sup>3</sup>	76 <del>4</del>	991	682	861	715	jan	803
North Sutherland <sup>2</sup>	630	465	-	7 <del>9</del> 2	-		629
North Uist <sup>2</sup>	-	543	-	600	-		572
Monach Isles <sup>2</sup>	485	374	-	760	-		540
Colonsay/Oronsay <sup>3</sup>	500	500	309	429	436	Nov	435
Danna/Keills/Eilan Mor <sup>3</sup>	450	400	120	341	469	Mar	356

- I SNH in litt.
- 2 Delany & Ogilvie (1994), SNH data and Mitchell et al. (1997)
- 3 data from the Argyll Bird Report and SNH
- 4 Orkney Bird Report and J. Plowman in litt.

#### **SVALBARD POPULATION**

GB max: 23,856 Mar

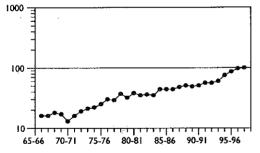


Figure 22. Annual indices for Svalbard Barnacle Goose in GB

Although the peak in 1997-98 was fractionally below that of the previous winter, it confirms the latest jump in population size to around 24,000

	93-94	94-95
International		
Solway Estuary <sup>1</sup>	13,700	17,900
Lo. of Strathbeg	41	150

WWT data

International	threshold:	120
Great Britain	threshold:	120

% young: 16.8 brood size: 1.76

birds. The exact pattern of this increase remains unclear, although the simple mathematics of explaining population growth as a function of recruitment and mortality dictate that the rise cannot have been as dramatic as the table below suggests; some birds must have been overlooked in earlier censuses.

Svalbard Barnacle Geese have been the subject of one of the most intensive studies of a population anywhere in the world, with a high proportion of birds marked individually, and a considerable run of data for both counts and life history parameters. It is worth noting that, even with this considerable effort, the natural world continues to confound our best predictions.

95-96	96-97	97-98	Mon	Mean
17,450	24,360 165	23,754 353	Mar	19,433 249

GB max:

619 Oct 148 Sep

The peak count of naturalised birds is somewhat below the 925 recorded during the 1991 national survey of introduced geese in Great Britain (Delany 1994), but that survey included 421 freeflying birds in private collections, e.g. at WWT Slimbridge on the Severn Estuary. Given that

these sites were not covered in 1997-98 or, as

shown by the table, numbers there are much reduced, the WeBS count of over 600 birds points to an increase during the last decade. A high proportion of this total are located at just a handful of sites, and there has been a marked increase at most in recent years.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
Great Britain							
Hornsea Mere	169	185	(0)	-	-		177
Eversley Cross/Yateley GP	62	100	218	311	184	Nov	175
Stratfield Saye	75	8 <del>4</del>	34	141	142	Oct	95
Severn Estuary	27	129	96	46	33	Dec	66
Northern Ireland							
Strangford Lough	83	97	89	129	148	Sep	109
Sites surpassing table qual	ifying leve	s in 1997-98					
Bramshill Park Lake	132	Sep	Middle Ya	re Valley		56	Oct
Benacre Broad	80	Nov		-			

<sup>†</sup> 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

GB max: 99,045 Dec NI max: 66 Feb

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

With the majority occurring on a small number of well-watched estuarine sites in southern and eastern England, Dark-bellied Brents are probably one of the best monitored species by WeBS. Given suitable weather conditions, national totals are thought to represent 100% of the numbers in Great Britain. The peak of just under 100,000 birds is typical for recent winters, and indices suggest that, with the exception of two or three years in the late 1980s and early 1990s, numbers have remained remarkably steady for the past 15

International threshold: 3,000
Great Britain threshold: 1,000
All-Ireland threshold: +

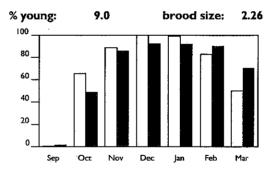


Figure 24. Monthly indices for Dark-bellied Brent Goose in GB (white bars 1997-98; black bars 1992-93 to 1996-97)

years. With just 9% young present in scanned flocks, reproductive success was again relatively low

The table of important sites remains unchanged with no additions or losses following the 1997-98 counts. Numbers on the North Norfolk Marshes returned to high levels following two years of well below average counts, though peaks at several other sites dropped sharply, e.g. Pagham Harbour (62% below the five year mean), Orwell Estuary (59%) and Hamford Water

(48%). Small flocks (totalling 66 birds) on three sections of the Outer Ards peninsula in February were unusually large counts for Northern Ireland.

In the summer of 1997, Syroechkovski *et al.* (1998) visited a number of breeding colonies of Brent Geese in northwest Yakutia, East Siberia. At all sites both the nominate *bernicla* and the American wintering *nigricans* were present. Six American colour rings and one Dutch ring collected from local hunters revealed the

presence of two flyways and two populations mixing in the Olenyok-western Lena delta region. In addition, there were mixed pairs and individuals of intermediate plumage observed in one of the colonies. Of 22 Geese ringed on the trip, one *bernicla* ringed on an island in the western Lena Delta was controlled on Vlieland in The Netherlands and had therefore travelled more than 5,500 km, the longest distance known for migrating Dark-bellied Brent Geese.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International							
Wash	<b>24,446</b>	19,108	21,023	23,001	23,797	Dec	22,275
Thames Estuary	18,733	16,399	10,714	15,393	17,014	Oct	15,651
North Norfolk Marshes	15,061	13,364	8,110	8,793	14,088	Nov	11,883
Blackwater Estuary	12,208	12,763	8,525	10,641	10,290	Dec	10,885
Chichester Harbour	12,647	9,567	10,769	8,997	8,427	Feb	10,081
Hamford Water	8,154	4,395	14,466	9,286	4,194	Dec	8,099
Langstone Harbour	7,776	6,814	6,215	5,520	6,344	Jan	6,534
Crouch/Roach Estuary	5,012	5,022	3,820	4,703	5,644	Jan	4,840
Colne Estuary	4,920	2,929	3,529	3,493	4,263	Dec	3,827
Medway Estuary	5,104	3,121	2,733	2,526	2,725	Feb	3,242
Fleet/Wey	3,983	2,962	2,630	3,529	3,048	Nov	3,230
Great Britain							
Portsmouth Harbour	3,583	2,284	2,773	2,785	2,429	Nov	2,771
Deben Estuary	3,282	2,206	2,536	3,306	2,094	Feb	2,685
Pagham Harbour	2,638	2,611	3,016	2,879	1,071	Feb	2, <del>44</del> 3
North West Solent	2,650	2,046	2,643	2,279	( <del>44</del> 0)	Nov	2,405
Swale Estuary	2,823	1,650	1,903	3,141	1,803	Dec	2,264
Dengie Flats	2,780	1,650	2, <del>44</del> 0	2,000	2,290	Feb	2,232
Humber Estuary	1,795	3,243	2,078	2,366	1,532	Feb	2,203
Southampton Water	2,420	1, <del>4</del> 75	3,007	1,821	1,191	Mar	1,983
Stour Estuary	1,7 <del>4</del> 2	2,293	1,801	1,757	2,173	Mar	1,953
Exe Estuary	2,049	2,056	1,587	1,832	1,768	Oct	1,858
Beaulieu Estuary	1,272	1, <del>4</del> 17	1,360	2, <del>4</del> 80	2,283	Feb	1,762
Newtown Estuary	1,708	1,559	1, <del>4</del> 75	1,676	1, <del>4</del> 72	Jan	1,578
Poole Harbour	1,486	1,529	1, <del>46</del> 0	1,644	1,449	Feb	1,514
Orwell Estuary	1,565	1,981	1,2 <del>9</del> 0	961	567	jan	1,273

% young:

Other sites surpassing table qualifying levels in 1997-98

**Burry Inlet** 

1.165 Feb

#### LIGHT-BELLIED BRENT GOOSE

Branta bernicla hrota

#### **CANADIAN POPULATION**

GB max: 26 Feb/Mar NI max: 14, 910 Oct

The arrival of birds in Northern Ireland from the breeding grounds was early in 1997-98, with monthly indices and counts suggesting that 85% of the peak numbers were already present by the September count date. Many of these birds move

on to winter in the Republic of Ireland and small

numbers continue on to Wales, the Channel

International threshold: 200
Great Britain threshold: +<sup>†</sup>
All-Ireland threshold: 200

1.5 brood size: 2

Islands and the north French coast. The peak count was around average for recent years though below that of the previous two winters. Annual indices, however, increased by 14% despite poor reproductive success for the fourth consecutive year: October flocks held just 1.5% young birds.

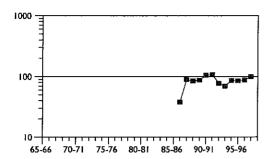


Figure 25. Annual indices for Light-bellied Brent Goose in NI

The second all-Ireland co-ordinated census of the population was carried out in October 1997 and January 1998 (Colhoun *et al.* 1998). The highest total, of 17,180 birds, occurred in October when over 90% of the birds counted were on just two sites, Strangford Lough and Lough Foyle.

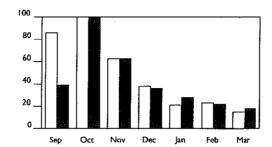


Figure 26. Monthly indices for Light-bellied Brent Goose in NI (white bars 1997-98; black bars 1992-93 to 1996-97)

The midwinter census, when the population is more widely distributed, recorded less than 60% of this figure (9,921 birds), probably as a result of the dispersal of smaller flocks to more remote western areas and perhaps the use of non-wetland sites also.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International							
Strangford Lough	12,795	8,519	11,337	11,614	11,184	Oct	11,090
Lough Foyle	1,934	4,007	5,550	4,757	3,820	Sep	4,014
Carlingford Lough	596	301	189	242	317	Mar	329
Tyrella	-	-	290	-	-		290
Killough Harbour	-	356	122	254	-		244
Larne Lough	290	206	209	177	232	jan	223
Outer Ards	230	256	196	326	54	Feb	212
Great Britain <sup>†</sup>							
Inland Sea	23	32	36	63	17	Jan	34

% young:

Other sites surpassing table qualifying levels in 1997-98<sup>†</sup> Jersey Shore 29 Dec

#### **SVALBARD POPULATION**

International threshold: 50
Great Britain threshold: 25\*
\* 50 is normally used as a minimum threshold
9.7 brood size: n/a

GB max: 2,583 Nov

Following the exceptional count in January 1997, when virtually the whole of the Svalbard population was present in Great Britain, numbers of Light-bellied Brent returned to more normal levels in 1997-98, with around 2,500 birds present between October and December. Mild weather in January saw this number drop to only 700. Breeding success was reasonable, much below the 1996 level but higher than in the two preceding years.

Although previously included within the Canada population (e.g. Hjort 1995, Scott & Rose 1997), the affiliations of a small population

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International							
Lindisfarne	I,440	2,150	2,470	4,092	2,567	Nov	2,5 <del>44</del>

breeding in northeast Greenland were unclear. Satellite telemetry in 1997 confirmed that these birds wintered within the range of the Svalbard population (Clausen & Bustnes 1998).

Percival et al. (1998) showed that recent total winter counts of both Light-bellied Brent Geese and Wigeon at Lindisfarne NNR were both only 40% of the maximum that the food supply at the site could support. This suggests that numbers were held down by some factor other than food supply, possibly hunting disturbance, indicated by the birds preference for feeding as far down the shore as possible.

<sup>†</sup> as no British threshold has been set, a qualifying level of 25 has been chosen to select sites for presentation in this report

#### **RED-BREASTED GOOSE**

Branta ruficollis

Vagrant and escape Native range: SE Europe and Asia

A single was at Harewood Lake in March.

#### **EGYPTIAN GOOSE**

Alopochen aegyptiacus

Naturalised introduction<sup>†</sup> Native range: Africa

GB max:

373 Aug

NI max:

0

The timing of the peak count was typical for this species, one of the few wildfowl for which summer counts are generally higher than during winter. The 1997-98 peak was over 50% greater than the previous highest recorded by WeBS (in 1991-92), totals boosted by improved summer

coverage in the species' East Anglian stronghold. Numbers on the North Norfolk Marshes reached their highest ever levels and represent the largest WeBS count to date at an individual site. Counts at Rutland Water, the only site outside East Anglia to hold significant numbers, continued to rise.

5	93-94	94-95	95-96	96-97	97-98	Mon	Mean	
Great Britain								
North Norfolk Marshes	113	179	97	F13	198	Aug	140	
St Benet's Levels	28	0	58	85	56	Dec	45	
Lynford Gravel Pit	-	-	-	0	76	Aug	38	lack
Rutland Water	13	18	31	35	46	Sep/Oct	29	
Didlington	-	-	28	4	41	Aug	24	
Nunnery Lakes	15	16	24	- 11	19	Jul	17	
Blickling Lake	16	-	-	-	-	•	16	
Middle Yare Valley	6	9	6	4	52	Sep	15	lack
Ranworth/Cockshoot Broads	3.3	6	6	16	4	Sep/Dec	13	
Gunton Park Lake	12	-	-	-	-	•	12	
R Wensum: Fakenham - Gt Ryburg	th 14	10	-	-	-		12	
Livermere	_	4	12	13	14	Jul	- 11	lack
Trinity Broads	_	_	8	-	13	Dec	- 11	•

Internationally or nationally important sites not counted in last five years

Sennowe Park Lake

Pentney Gravel Pits

Other sites surpassing table qualifying levels in 1997-98

Stanford Training Area 15 Sep Wash 13 Sep Etherow Country Park 10 Jan

#### **RUDDY SHELDUCK**

## Tadorna ferruginea

# Escape Native range: Asia, N Africa and S Europe

Although the monthly peak was of just 10 birds in September, summed site maxima suggest as many as 40 at the 24 English and one Welsh sites which held this species in 1997-98.

#### Sites with two or more birds in 1997-98

Bewl Water	6	Sep	Ramsbury Lake	2	several
Severn Estuary	4	Jan	Dee Estuary (Eng/Wales)	2	Oct
· Staines Reservoirs	2	Apr	Swale Estuary	2	Nov/Dec
R. Avon: West Amesbury	2	Jun/Jul	North Norfolk Marshes	2	Mar
Ouse Washes	2	Jul			

<sup>†</sup> as site designation does not occur and the 1% criterion is not applied, a qualifying level of 10 has been chosen to select sites for presentation in this report

#### **CAPE SHELDUCK**

Tadorna cana

Escape
Native range: S Africa

Four were at Knight & Bessborough Reservoirs in July and one was at Thorpe Water Park in October.

#### **PARADISE SHELDUCK**

Tadorna variegata

Singles were recorded at Croxall Pits, King George VI Reservoir and Alvecote Pools.

Escape
Native range: New Zealand

# SHELDUCK

Tadorna tadorna

GB max: 74,352 Dec
NI max: 4,685 Jan

Figure 27. Annual indices for Shelduck in GB (circles, left axis) and NI (squares, right axis)

The peak British count was in the lower range of those recorded in recent winters. Annual indices show wintering numbers have remained relatively stable over the past 35 years, particularly since the mid 1970s, with minor peaks often associated with harsh winters (Ridgill & Fox 1990). An unusually high proportion of birds were present in the early part of the winter, particularly in October, a pattern noted for several other species with high concentrations on estuaries (Dark-bellied Brent Geese, Wigeon). In Northern Ireland, the peak was below that of the previous winter, though above the average of Counts at Strangford Lough recent years. dominate the Northern Irish totals and examination of WeBS Low Tide Count data show that Core Counts may underestimate the numbers of birds on the site by as many as 1,500 birds; this may account for much of the variability in national totals in the province.

Two northwest estuaries, the Mersey and the Dee, recorded exceptional numbers. The count

International threshold: 3,000
Great Britain threshold: 750
All-Ireland threshold: 70

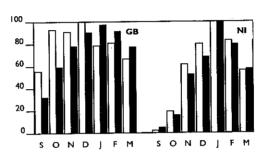


Figure 28. Monthly indices for Shelduck in GB and NI (white bars 1997-98; black bars 1992-93 to 1996-97)

at the former was the highest at any site in the country for five years and, significantly, occurred in August.

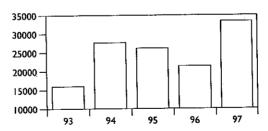


Figure 29. Numbers of Shelduck in late summer in the UK (annual totals calculated by summing the greater of the July and August counts at individual sites).

WeBS counts in recent years have shown a large number of Shelduck to be present in the UK in late summer, and although birds at a number of these, e.g. the Severn Estuary, are known to moult here, most were thought to depart to the

Wadden Sea to moult with the majority of the NW European population. The arrival of birds to the Wadden Sea begins in late June; adults and families from Britain arrive slightly later and most birds are in primary moult, and therefore flightless, during July or August (Meltofte *et al.* 1994). Assuming birds remaining in the UK are also flightless at this time, almost 33,400 Shelduck remained to moult here in 1997 (fig. 29).

Using average maxima from just July and August of the last five years, nine estuaries

surpass the 1% British threshold at this time: Mersey (7,099), Humber (2,901), the Wash (2,859), Forth Estuary (2,849), Morecambe Bay (1,755), Ribble (1,630), Severn (1,455), Solway (1,164) and Dee (England/Wales) (933). Whilst a number are already known to be moult sites, it would be useful to collect evidence of moult at the others, given their apparently increasing importance at this time of year and, as a result, their heightened conservation significance.

	93-94	94-95	95-96	96-97	97-98	Mon	Mean
International						_	
Wash	14,242	12,873	14,238	10,352	12,368	Dec	12,815
Dee Estuary (Eng/Wal)	6,229	8,742	5,786	8,047	10,418	Oct	7,84 <del>4</del>
Morecambe Bay	5,734	8,524	6,098	5,632	8,426	Oct	6,883
Mersey Estuary	3,746	4,584	4,507	7,025	14,516	Aug	6,876
Medway Estuary	6,046	4,463	3,853	5,461	4,160	Jan	4,797
Forth Est.	1, <u>5</u> 60	5,337	5,077	5,065	5,507	Aug	4,509
Humber Estuary	4,481	3,383	5,240	3,900	4,843	Dec	4,369
Ribble Estuary	5,230	3,278	4,523	3,788	4,106	Dec	4,185
Strangford Lough <sup>1</sup>	4,144	2,189	4,673	3,493	4,142	Dec	3,728
Severn Estuary	2,627	4,466	3,508	4,117	2,371	Nov	3,418
Poole Harbour	2,982	3,177	3,575	4,650	2,662	Feb	3,409
Blackwater Estuary	2,749	2,570	4,356	4,129	2,123	Feb	3,185
Solway Estuary	3,020	2,527	3,293	3,450	3,370	Nov	3,132 ▲
Great Britain							
Swale Estuary	2,587	2,234	2,782	2,760	3,027	Jan	2,678
Thames Estuary	2,923	2,539	2,472	3,094	1,917	Feb	2,589
Stour Estuary	2,967	1,963	2,297	2,044	2,029	Jan	2,260
Hamford Water	1,710	1,508	2,146	3,006	2,781	Jan	2,230
Colne Estuary	1,122	1,533	2,017	1,338	977	Jan	1,3 <del>9</del> 7
Chichester Harbour	1,404	1,275	1,980	1,140	1,05 <b>4</b>	<b>J</b> an	1,371
Orwell Estuary	1,320	1,221	1,989	1,039	78 <del>9</del>	jan	1,272
Alde Complex	1,202	832	1,074	765	1,935	Feb	1,162
Duddon Estuary	1,362	1,567	974	<b>85</b> 3	900	Nov	1,131
North Norfolk Marshes	1,042	1,185	710.	1,335	1,379	Dec	1,130
Tees Estuary	1, <del>49</del> 6	1,089	1,267	893	837	Jan	1,116
Cleddau Estuary	877	1,178	1,008	1,023	939	Jan	1,005
Eden Estuary	1.031	952	930	942	1,088	Oct	988
Deben Estuary	1,297	925	950	824	875	Mar	974
Lindisfarne	820	930	855	1,295	927	Jan	965
Langstone Harbour	661	698	1,477	889	826	Feb	910
Burry Inlet	1,062	608	695	1,282	883	Mar	906
Montrose Basin	701	818	1039	596	1100	Nov	850
Nationally Important No	orthern Irelan	d Sites					
Strangford Lough	2,187	2,189	2,464	3,195	2,978	Jan	2,603
Belfast Lough	509	621	1,062	715	497	Jan	681
Larne Lough	247	373	37 I	440	505	Feb	387
Lough Foyle	7 <del>4</del>	215	508	527	439	Jan	373
Carlingford Lough	193	29 <del>4</del>	172	165	198	Feb	204
Lo. Neagh/Beg	121	236	146	188	240	Mar	186
Dundrum Bay	121	65	76	126	64	Jan	90

Sites no longer meeting table qualifying levels

Crouch/Roach Estuary

Tamar Complex

Other sites surpassing table qualifying levels in 1997-98

Blyth Estuary (Suffolk)

757 Dec

I Includes Low Tide Count data