



Waterbirds in the UK 2012/13

The annual report of the Wetland Bird Survey



WATERBIRDS IN THE UK 2012/13

This is the 32nd annual report of the Wetland Bird Survey (WeBS), produced in conjunction with an online report at www.bto.org/webs-reporting. WeBS is the principal scheme for monitoring the UK's wintering waterbird populations, providing an important indicator of their status and the health of wetlands.

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THE WeBS PARTNERSHIP

The Wetland Bird Survey (WeBS) is run by the British Trust for Ornithology (BTO). It is a partnership funded by the BTO, the Royal Society for the Protection of Birds (RSPB) and the Joint Nature Conservation Committee (JNCC) (the last on behalf of the statutory nature conservation agencies: Natural England, Natural Resources Wales and Scottish Natural Heritage and the Department of the Environment Northern Ireland), in association with the Wildfowl & Wetlands Trust (WWT).

The members of the WeBS Steering Committee in 2012/13 were Chas Holt (BTO), Andy Musgrove (BTO), David Stroud (JNCC), Simon Wotton (RSPB) and Richard Hearn (WWT).

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Other national waterbird surveys - details of (and contacts for) other waterbird surveys can be obtained via the websites of the WeBS partner organisations.

ACKNOWLEDGEMENTS

We are indebted to the efforts of all WeBS Counters and grateful to the following for providing technical assistance, supplementary information, additional data, or particularly invaluable help in 2012/13:

Carl Barimore, Bob Blogg, Niall Burton, Lee Cadwell, Mark Collier, Aonghais Cook, Olivia Crowe, Iain Downie, Norman Elkins, Simon Gillings, Colette Hall, Paul Harvey, Martin Heubeck, Mark Holling, Menno Hornman, Andrew Joys, Maria Knight, John Marchant, Veronica Mendez, Carl Mitchell, Nick Moran, Deborah Procter, Warren Read, John Shillitoe, William Skellom, SOTEAG, Rick Vonk, Colin Wells, Chris Waltho and Karen Wright. Grateful thanks to all and apologies to anyone who has been inadvertently missed.

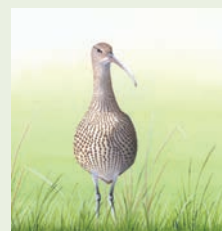
Members of the WeBS Local Organiser Advisory Committee (WeBS LOAC) in 2012/13 were: John Armitage, Neil Bielby, Gladys Grant, Andrew King, Ian Lees, Nick Mason, Dave Shackleton and Shane Wolsey. See the back cover of this report for a list of all WeBS Local Organisers, to whom we send our hearty thanks.

We are very grateful to the JNCC for funding the development of the online interface produced in conjunction with this paper report. The BTO IS Team continue to develop and provide support for the *WeBS Online* data submission system.

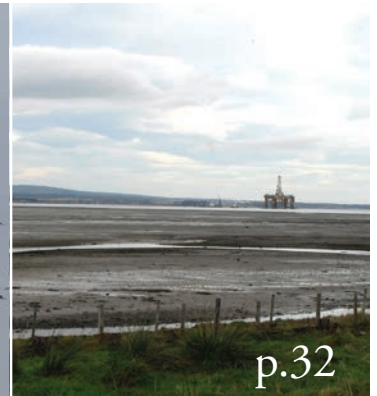
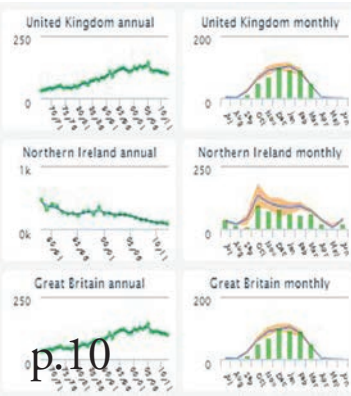
The painting used as the cover of *Waterbirds in the UK 2012/13* is by Chris Lodge. More of Chris's artwork can be seen at www.chrislodgeart.com.

Report content and production was by Chas Holt and Neil Calbrade, with article contributions from Menno Hornman (waterbird monitoring in The Netherlands, page 25) and Richard Hearn (Pink-footed Geese, page 28).

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Online Resources

More information, including site tables and trends for all regular WeBS species, is available online at www.bto.org/webs-reporting.



This paper report can be downloaded from the WeBS website at www.bto.org/webs-publications.

The online and paper outputs in conjunction constitute the report *Waterbirds in the UK 2012/13*.

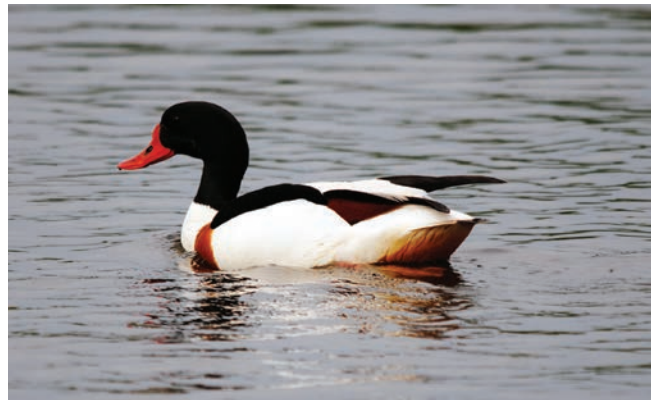
HEADLINE STORIES

Waterbird headlines from the WeBS-year

Just a small selection of notable stories from 2012/13.

See all the numbers and trends at www.bto.org/webs-reporting

In a year when non-breeding populations of many of the UK's wintering waterbirds continued to show signs of decline (see pages 10-11), perhaps one of the most alarming is **SHELDUCK**. In 2012/13, the WeBS index for Shelduck dropped to its lowest level for nearly 40 years. Results from monitoring schemes in The Netherlands and other countries bordering the North Sea suggest that the decline is not restricted to the UK, highlighting the need for research into the factors responsible. In contrast, a positive feature of 2012/13 was the autumn aggregation of **GARGANEY** recorded at the Ouse Washes, where an August count of 127 birds represents the most ever recorded by WeBS, by some considerable margin.



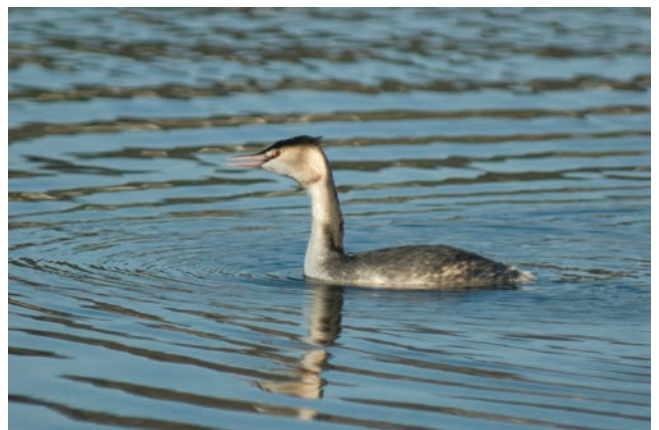
AMY LEWIS



DAVE KING

Numbers of **REDSHANK** in the UK have declined steadily since 2000/01 and have now reached their lowest point for 30 years. The recent drop has been particularly marked in Northern Ireland, but numbers have decreased at many of the UK's estuaries. Dee Estuary and Morecambe Bay tend to be the two most important sites for Redshank and both supported peaks in September 2012 of nearly 10,000 birds; a combination of UK breeders and migrants from Iceland. In contrast to Redshank, the UK's winter population of Icelandic-breeding **BLACK-TAILED GODWITS** has been a major success story in recent decades. Following a rapid and consistent increase in numbers up to 2004/05, the rate of increase in the population has slowed down since but still continues to rise.

WeBS Counts show that the UK's winter population of **GREAT CRESTED GREBE** has declined by 25% in ten years. Reasons are unclear, although care is advisable when interpreting the WeBS trend because of the species' use of poorly monitored offshore waters as well as inland wetlands. However, Great Crested Grebe maxima have fallen at a number of key WeBS sites, including Loughs Neagh & Beg, Rutland Water and Chew Valley Lake. Intriguingly, **LITTLE GREBE** has also shown a marked short-term decline across the UK. Both are species that make use of gravel pits; on page 16–21 we review the status of some others, including **GADWALL** whose population in contrast to the grebes, has tripled in 25 years.



NEIL CALBRADE

FIND OUT MUCH MORE...

For the online report, see www.bto.org/webs-reporting



The **Numbers & Trends** section features **species trends** (for the UK and Constituent Countries) and **site tables for all species** (with facility to filter by country, county and habitat), alongside sections on **Low Tide Counts** and **WeBS Alerts**. There is also a **Help** section containing tutorials, to help you make the most of the resource.

SITES...

- The reporting interface is the place to find tables for all sites, from the largest sites supporting tens of thousands of birds like Forth Estuary, to smaller wetlands such as Thetford Nunnery Lakes.
- The interface gives the user a much more interactive experience, such as the ability to scroll back through the years to compare counts and the option of showing supplementary counts.
- Species in the tables can be sorted taxonomically or alphabetically, and also by the annual peak or five year average.

SPECIES...

- Every waterbird species ever recorded by WeBS is featured on its own page, listing every site the species has been recorded at.
- Sites in the tables can be sorted alphabetically, by the annual peak, or by five year average.
- Species can be filtered by country, county and/or by habitat.
- Annual and monthly trends for the UK and Constituent Countries are shown (where applicable).
- Links to other sources of web-based information are also included.

COVERAGE

3,100
registered
WeBS
volunteers

2012/13: WeBS Core Count coverage continues to grow

WeBS CORE COUNTS

During the period July 2012 to June 2013, WeBS Core Counts were carried out at 2,631 sites. This is a higher total than the previous WeBS-year. Geographical coverage in 2012/13 is shown on page 7.

Core Count dates in 2012/13

22 July 2012
19 August 2012
16 September 2012
14 October 2012
18 November 2012
16 December 2012
13 January 2013
10 February 2013
10 March 2013
14 April 2013
12 May 2013
23 June 2013



TONI CROSS

WeBS LOW TIDE COUNTS

WeBS Low Tide Counts were carried out on 18 estuaries in 2012/13. This included coverage of some extensive sites such as the Ribble

Estuary (Lancashire), Mersey Estuary (Merseyside), Firth of Tay (Fife) and Tees Estuary (Cleveland).

A review of the WeBS Low Tide Counts scheme in 2012/13 can be found on pages 32–36.

GOOSE CENSUSES

Many populations of wintering geese were censused using other surveys. Counts of Taiga Bean Geese were provided by the Bean Goose Action Group (Slamannan Plateau) and RSPB (Middle Yare Marshes). Surveys of Pink-footed and Icelandic Greylag Geese were undertaken at, primarily, roost sites in October to December 2012 as part of the Icelandic-breeding Goose Census. British Greylag Geese at key sites in Scotland were censused by a number of local management groups, including the Uist Greylag Goose Management Committee. Greenland White-fronted Geese were

monitored by the Greenland White-fronted Goose Study. Greenland Barnacle Geese were counted by SNH on Islay and other key locations, while WWT counted Svalbard Barnacle Geese on the Solway. Data were also provided by the International Canadian Light-bellied Brent Goose census.

For progress reports on goose censuses in the UK, see *GooseNews*, WWT's annual newsletter of the Goose & Swan Monitoring Programme. Further goose and swan information is available via <http://monitoring.wwt.org.uk>.

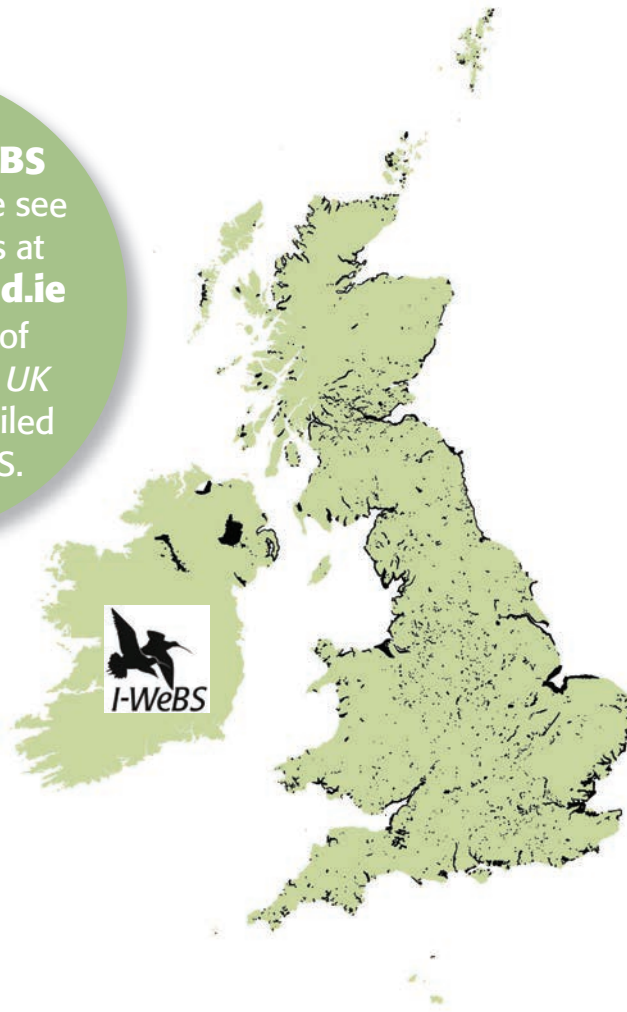


NEIL CALBRADE

▲ An international census of Greenland Barnacle Geese was undertaken in spring 2013.

For sites covered by **I-WeBS in Ireland**, please see the I-WeBS pages at birdwatchireland.ie

Also check p.27 of *Waterbirds in the UK 2011/12* for a detailed review of I-WeBS.



WeBS coverage in 2012/13

Counts were carried out at **2,631 wetlands across the UK in 2012/13**. Areas shown in black were counted at least once - providing a picture of the excellent geographical coverage achieved.

FOCUS ON... WALES

274 count sectors at 158 WeBS sites in Wales were covered in 2012/13 (shown in black), involving a total of 2,146 visits.

30 WeBS sites in Wales support on average >1,000 waterbirds in winter. These include the cross-border estuaries of the Severn and Dee.

Traeth Crugan (Caernarvonshire) is the only one of the 30 sites that is not currently being counted for WeBS. If you can help, either there or at any other site, please contact the WeBS office at webs@bto.org



DAVE KING

◀ **Caernarfon Bay in Wales is very important for Great Northern Divers. A peak count of 53 birds was recorded in 2012/13.**



WEATHER & BREEDING PRODUCTIVITY

2012/13: an average winter followed by a very late spring

The majority of the 2012/13 winter proved to be relatively mild, interrupted by a cold spell in January. Below average temperatures returned in March, resulting in a very delayed spring. The following 2012/13 summary is collated from the Meteorological Office website at www.metoffice.gov.uk.

July 2012 saw a mixture of cool, unsettled weather, with some heavy rain in places. Mean temperatures were lower than average, it being the coldest July since 2000.

August 2012 was predominantly unsettled, being influenced by low pressure over or to the west of the UK. Mean temperatures and rainfall were both generally slightly above average in most regions.

The first half of September 2012 was fine and warm but conditions progressively became more unsettled, eventually rendering it the coolest September since 1994.

October 2012 was another relatively

cool month; Northern Scotland for example had its fifth coldest October since 1910. Rainfall and sunshine levels were close to average across much of the UK.

November 2012 began showery and cool, and some areas experienced twice their normal rainfall. An exceptionally wet week from 19th saw widespread flooding. Temperatures were close to average across the UK as a whole.

December 2012 brought unsettled conditions with some snow to start the month before Atlantic weather systems during the second half yielded persistent rain and associated flooding. Temperatures were average but it was the wettest December since 1999.

January 2013 was drier than average for the UK as a whole. There was a period of widespread snowfall in most areas during the second half of the month as frontal systems hit colder air. As a consequence, monthly temperatures were below average.

February 2013 began unsettled,

followed by dry conditions during the second half of the month arising from high pressure domination. Temperatures were slightly below average, and some light snow fell.

March 2013 was dominated by easterly winds, with temperatures well below average. It was the coldest March since 1962 and the equal second-coldest in the series from 1910. The UK mean temperature was 2.2°C (which is 3.3°C below the 30-year average) and hence the coldest month of the "winter". The month was drier than normal.

April 2013 saw further cold and dry conditions, before a period of more typically unsettled weather mid month. The UK's mean temperature was 1.1°C below the 1981–2010 average.

The cool spring continued into May 2013, with it being the coldest May since 1996. It was also a wetter May than average.

June 2013 was rather uneventful, with both the month's temperatures and rainfall slightly below average.

THE ARCTIC BREEDING SEASON

Arctic breeding conditions for birds that winter in the UK are summarised from the International Breeding Conditions Survey on Arctic Birds, available from www.arcticbirds.net.

Summer temperatures varied across the Arctic, but generally figures were well above average, continuing the recent trend. This was particularly the case across most of arctic Russia, Siberia, Greenland and arctic Canada. In contrast, the temperatures across northern Scandinavia were below normal throughout the summer.

Rodent abundance was considered to be low or average across the majority of arctic regions where monitoring was undertaken in 2012. Despite this, bird breeding success was considered to be average or even good across many regions, although the situation was unclear at many monitoring stations. Typically however, poor breeding success was also reported from some sites.

In the UK, WeBS counts of Curlew Sandpiper and Little Stint can be a useful barometer of the breeding season for arctic-nesting species. Low numbers of both were reported in September 2012.



▲ The autumn passage of Little Stints in the UK during 2012 was one of the poorest on record.

GENERAL BACKGROUND



WeBS objectives, aims and methods

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

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

These results also form the basis for informed decision-making by conservation bodies, planners and developers, and contribute to the sustainable use and management of wetlands and their dependent waterbirds. The data and this annual WeBS report also fulfil some of the objectives of the international wetland-related Conventions and Directives to which the UK is a signatory. WeBS also provides data to Wetlands International to assist their function of coordinating and reporting upon waterbird status at an international flyway scale.

WeBS continues the traditions of two, long-running count schemes which formed the mainstay of UK waterbird monitoring since 1947. WeBS Core Counts are carried out

at a wide variety of wetlands. Coordinated, synchronous counts are advocated to prevent double-counting or birds being missed. Priority dates are recommended nationally, but due to differences in tidal regimes around the UK counts take place at some estuaries on other dates in order to match the most suitable conditions. Weather and counter availability also sometimes result in counts being undertaken on alternative dates.

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 from data collected during Core Counts which are normally conducted at or close to high tide.

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

Full details of WeBS field and analytical methodologies are available via the WeBS website: www.bto.org/webs

This annual WeBS report presents a synthesis of data collected between July 2012 and June 2013, thereby updating data presented in previous years, in line with the WeBS objectives. It forms a dual publication in conjunction with the online report available at www.bto.org/webs.

Within the dual publication, data from other national and local waterbird monitoring schemes, notably the WWT/JNCC/SNH Goose & Swan Monitoring Programme, are included where WeBS data alone are insufficient to fulfil specified aims. The annual WeBS report therefore provides a single, comprehensive source of information on waterbird status and distribution in the UK.



POPULATION TRENDS

National trends

A concise summary of how the UK's most familiar waterbirds fared in 2012/13

GEESE & SWANS

Bewick's Swan numbers remained at the low level of the previous winter, while the index for Whooper Swan fell to its lowest point for five years. The Pink-footed Goose population stabilised after two relatively poor years (see pages 28–29), and both the Svalbard and Canadian populations of Light-bellied Brent Goose fell slightly compared to 2011/12. Svalbard and Greenland Barnacle Geese, and both Egyptian Goose and naturalised Barnacle Goose, all attained high index values. European White-fronted Goose numbers dropped to their lowest ever level (after the atypical rise recorded in 2011/12). Numbers of Greenland White-fronted Goose also fell, accelerating the downward trend of that population. Canada Goose and Greylag Goose (both the Icelandic and British populations) were both present in typically high numbers, although the index for Canada Goose dropped slightly after the high of 2011/12.

DUCKS

Dabbling duck trends were largely consistent with recent years. Pintail numbers remained at the same low level reached in 2011/12, following a marked decrease since 2005/06 (see pages 26–27). Wigeon, Teal and

Shoveler remain relatively stable, while a continuation of the long-term decline of Mallard saw the species reach its lowest ever level. Gadwall numbers were consistent with the long-term increase. Shelduck showed a further drop; numbers have fallen by over one third in 15 years. Record numbers of Garganey were recorded by WeBS in the autumn. Among the diving ducks, Pochard, Goldeneye and Red-breasted Merganser continued downward trends, whereas Tufted Duck and Goosander have been relatively stable in recent years. Monitoring of seaducks through WeBS is difficult, but with Eider, Long-tailed Duck and Velvet Scoter all showing signs of decline, evidence continues to mount that targeted surveys of favoured sites are required.

WADERS

2012/13 was a poor year for waders. Dunlin numbers reached a record low, and Turnstone and Ringed Plover remained close to the all-time lows of recent winters. Redshank fell to their lowest point for 30 years, Curlew for 25 years, while Oystercatcher, Grey Plover, Sanderling also showed evidence of decline. Numbers of Knot, Bar-tailed Godwit and Purple Sandpiper appear to be stable, at least in the short-term. The number

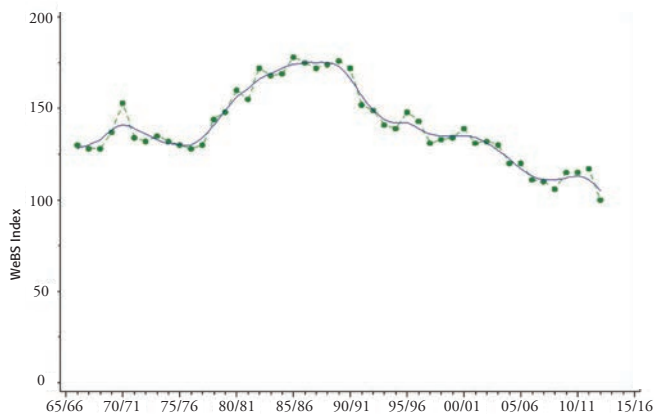
of Snipe counted rose after two poor winters, while Golden Plover (see page 30) and Lapwing, whose numbers tend to fluctuate more than other waders, have both declined in recent years. Numbers of Black-tailed Godwit and Avocet (see page 31) continue to increase, and both reached record WeBS highs in 2012/13.

GREBES, HERONS & RAILS

Great Crested Grebes decreased, the WeBS index now having fallen by a quarter since 2003/04. Little Grebe numbers have declined in the last three years. Little Egret continue to expand north and westward in England, but the UK trend across all WeBS sites is stable. Trends for Grey Heron, Coot and Moorhen show varying degrees of decline in recent years, while the once scarce Great White Egret and Spoonbill continue to increase.

GULLS

Regular wintering gulls (Herring, Great Black-backed, Common and Black-headed) all declined in 2012/13, continuing recent downward WeBS-based trends. Mediterranean Gull numbers remained high but short of the peak reached in 2010/11. The mild winter resulted in few records of Iceland or Glaucous Gulls.



▲ WeBS trend for Mallard in UK.

Green dots = annual index value; blue line = smoothed trend.



69%
of native
waterbirds
in Table 1
declined since
2001

Table 1 Population trends of non-breeding waterbirds in the UK

Species/population	25-year trend (1986/87– 2011/12)	10-year trend (2001/02 –2011/12)	Species/population	25-year trend (1986/87– 2011/12)	10-year trend (2001/02 –2011/12)
Mute Swan	88	-3	Eider	2	-11
Bewick's Swan	-47	-35	Goldeneye	-36	-34
Whooper Swan	69	37	Red-breasted Merganser	-12	-20
Pink-footed Goose	113	18	Goosander	34	6
European White-fronted Goose	-59	-26	Ruddy Duck	-97	-99
Greenland White-fronted Goose	-1	-42	Little Grebe	n/a	-8
Icelandic Greylag Goose	-7	15	Great Crested Grebe	26	-25
British Greylag Goose	425	50	Cormorant	n/a	0
Canada Goose	67	9	Coot	17	-12
Greenland Barnacle Goose	165	47	Oystercatcher	-14	-15
Svalbard Barnacle Goose	211	36	Avocet	>1,000	57
Dark-bellied Brent Goose	0	21	Ringed Plover	-52	-39
Canadian Light-bellied Brent Goose	60	56	Golden Plover	153	-32
Svalbard Light-bellied Brent Goose	146	23	Grey Plover	4	-21
Shelduck	-13	-19	Lapwing	55	-34
Wigeon	35	-15	Knot	-3	-7
Gadwall	260	30	Sanderling	31	3
Teal	76	-6	Purple Sandpiper	-50	-15
Mallard	-37	-17	Dunlin	-23	-23
Pintail	-33	-34	Black-tailed Godwit	388	48
Shoveler	62	-5	Bar-tailed Godwit	-8	-10
Pochard	-55	-43	Curlew	3	-17
Tufted Duck	18	-2	Redshank	-16	-26
Scaup	-26	-44	Turnstone	-41	-11

- Trends are % changes, for the most abundant wildfowl and waders.
- The longer term smoothed trend refers to the 25 year period 1986/87 to 2011/12. It is customary to calculate trends to an end-point of year (n-1) (where n = 2012/13).
- The shorter term smoothed trend refers to the 10 year period 2001/02 to 2011/12. It is customary to calculate trends to an end-point of year (n-1) (where n = 2012/13).
- Eider trends exclude birds on Shetland (of *faeroeensis* race).
- Insufficient data series to calculate 25-year trend for Little & Great Crested Grebe.
- All trends are based on WeBS data except for Pink-footed Goose, Greenland White-fronted Goose, Icelandic Greylag Goose, Greenland Barnacle Goose, Svalbard Barnacle Goose and Canadian Light-bellied Brent Goose, for which dedicated censuses are undertaken (see page 6).



For all trend graphs see
the online report ...

www.bto.org/webs-reporting



JOHN HARDING



▲ Dunlin: down 23% since 2001/02

PRINCIPAL SITES

Largest waterbird aggregations

Millions of waterbirds are dependent on the UK's wetlands each winter.

This section of *Waterbirds in the UK* summarises the sites that support the largest aggregations of waterbirds each year. Understanding precisely how many individual birds use a site is clearly very difficult to ascertain from counts alone, as many sites are used by migrants on passage and consequently there can be high turnover rates. Research through the use of colour-ringing studies and remote tracking of birds is on-going in order to improve knowledge of turnover rates.

Table 2 lists the Principal Sites for non-breeding waterbirds in the UK as monitored by WeBS. The totals are the summed maxima for each species during the course of the WeBS year. Sites with a five-year average of 20,000+ waterbirds are listed. Naturalised species (e.g. Canada Goose and Ruddy Duck) have been excluded from the totals. Gulls and terns are also excluded since the recording of them during WeBS Counts is optional and thus they are inconsistently included in totals.

Over 20,000 waterbirds were counted at a total of 52 WeBS sites in 2012/13. Typically, there are few changes between years to the top sites listed in the Principal Sites table, and the order of the most important sites tends to remain largely unchanged between years. However, several sites across the UK experienced changes of greater than 10% between 2011/12 and 2012/13, which were probably attributable to variation in weather conditions between the two winters affecting use of some sites more than others.

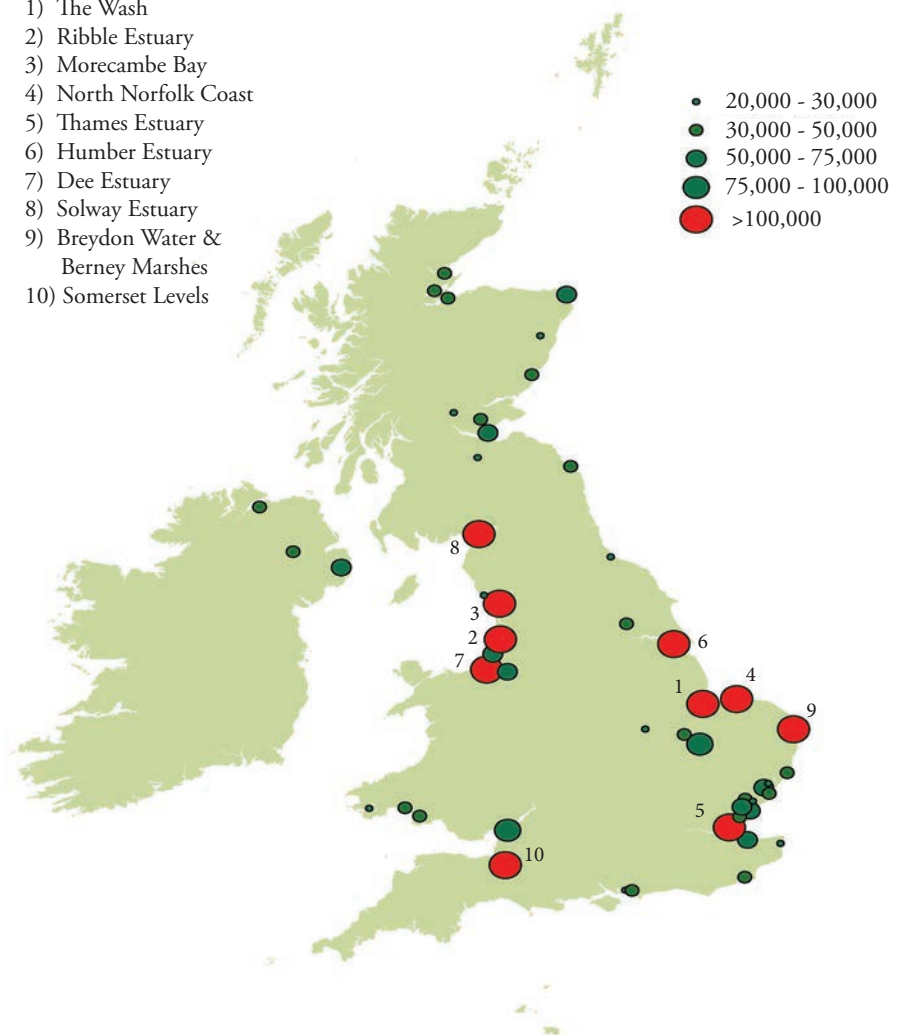
SITE FOCUS

In terms of total numbers, The Wash is the key site for wintering waterbirds in the UK. In 2012/13, the 352,500 birds there was a little below the average of the previous five years, but was a

marked improvement on the total recorded in 2011/12. The 436,500 birds counted on The Wash in 2009/10 represents the highest site total in WeBS history. Numbers at the other top ten sites in 2012/13 (all of which have five-year averages of more than 100,000 birds) were generally close to recent averages, although the totals at both the Thames and Dee estuaries were the highest for several years. The

peaks at the two main inland sites, Somerset Levels and Ouse Washes, were similar to 2011/12, but well down on 2010/11 when large influxes of waterbirds were noted at these wetlands in association with the coldest winter across most of northwest Europe for 35 years. Away from the top ten sites, 2012/13 was also notable for a marked increase in the number of birds counted at Hamford Water.

- 1) The Wash
- 2) Ribble Estuary
- 3) Morecambe Bay
- 4) North Norfolk Coast
- 5) Thames Estuary
- 6) Humber Estuary
- 7) Dee Estuary
- 8) Solway Estuary
- 9) Breydon Water & Berney Marshes
- 10) Somerset Levels



▲ Largest waterbird aggregations in the UK.

Sites are those listed in Table 2, with top ten sites labelled on the map.

Table 2 Principal Sites for non-breeding waterbirds in the UK

Site	2008/09	2009/10	2010/11	2011/12	2012/13	5-year mean
The Wash	346,750	436,500	361,374	299,379	352,500	359,301
Ribble Estuary	275,301	211,207	205,656	261,014	163,364	223,308
Morecambe Bay	221,377	237,543	241,146	204,243	170,346	214,931
North Norfolk Coast	211,214	205,374	209,189	155,974	147,377	185,826
Thames Estuary	155,747	141,876	154,925	153,798	181,641	157,597
Humber Estuary	127,766	154,508	123,628	132,545	118,490	131,387
Dee Estuary	98,473	103,525	118,651	141,099	157,857	123,921
Solway Estuary	109,559	112,868	139,167	90,999	116,234	113,765
Breydon Water and Berney Marshes	129,479	92,750	94,062	91,420	110,446	103,631
Somerset Levels	104,551	74,584	181,292	76,946	80,220	103,519
Severn Estuary	84,713	68,379	76,485	84,849	76,208	78,127
Forth Estuary	95,863	70,588	77,409	71,005	70,072	76,987
Ouse Washes	80,818	67,333	105,915	66,342	62,559	76,593
Strangford Lough	78,620	72,857	74,453	80,192	61,698	73,564
Blackwater Estuary	87,238	67,695	65,839	69,241	67,573	71,517
Alt Estuary	49,349	60,286	107,810	64,046	67,873	69,873
Swale Estuary	67,296	88,267	77,585	48,967	58,672	68,157
Mersey Estuary	39,284	60,742	56,242	93,353	65,948	63,114
Dengie Flats	57,610	64,267	61,807	49,721	45,021	55,685
Stour Estuary	54,590	56,515	52,359	50,490	44,988	51,788
Loch of Strathbeg	61,923	67,612	46,460	40,535	39,789	51,264
Loch Leven	44,288	83,672	34,786	51,792	38,998	50,707
Carmarthen Bay	52,401	74,022	61,852	34,302	26,791	49,874
Chichester Harbour	55,975	48,519	53,055	47,537	41,627	49,343
Montrose Basin	55,643	23,029	72,637	76,815	14,190	48,463
Loughs Neagh and Beg	46,612	47,749	41,423	50,017	45,020	46,164
Hamford Water	43,586	36,345	42,497	42,724	64,416	45,914
Lindisfarne	46,277	36,830	45,583	48,735	51,791	45,843
Inner Moray and Inverness Firth	40,649	53,365	41,981	46,589	39,376	44,392
Dornoch Firth	43,194	29,315	44,065	50,663	24,446	38,337
Lower Derwent Ings	27,529	41,233	42,980	41,191	33,022	37,191
Burry Inlet	42,752	29,069	28,680	38,588	46,796	37,177
Cromarty Firth	26,447	35,816	34,324	50,042	30,465	35,419
Abberton Reservoir	25,837	37,958	31,117	48,132	26,743	33,957
Alde Estuary	31,791	33,268	36,138	33,908	31,854	33,392
Dungeness and Rye Bay	28,339	35,496	37,134	31,812	30,542	32,665
Nene Washes	31,302	47,191	43,310	12,549	24,709	31,812
Crouch-Roach Estuary	32,352	34,254	32,644	33,599	26,060	31,782
Lough Foyle	39,179	29,936	21,907	28,056	33,797	30,575
Langstone Harbour	22,056	28,716	26,791	36,893	30,031	28,897
Pegwell Bay	19,733	26,218	23,314	30,822	44,112	28,840
Medway Estuary	41,036	18,847	35,986	30,387	15,487	28,349
Rutland Water	27,932	32,039	27,504	35,299	18,105	28,176
WWT Martin Mere	28,591	30,089	26,027	31,690	23,762	28,032
West Water Reservoir	47,852	26,449	16,658	18,768	22,786	26,503
Colne Estuary	23,801	21,061	15,947	32,458	30,613	24,776
Duddon Estuary	35,576	28,475	19,626	21,590	18,247	24,703
Orwell Estuary	25,239	23,174	25,975	22,665	24,358	24,282
Carsebreck and Rhynd Lochs	20,717	24,271	21,310	26,964	24,133	23,479
Loch of Skene	22,374	20,155	30,283	22,988	14,815	22,123
Cleddau Estuary	21,707	18,979	22,754	26,576	18,008	21,605

- Totals are the sum of species maxima during the WeBS-year at each site, using data from all months. This summary does not account for missed visits or reduced coverage.
- Some totals may differ slightly from those published in previous annual WeBS reports.
- Naturalised species (such as Canada Goose and Ruddy Duck), gulls and terns are excluded.
- A more comprehensive table showing all sites supporting more than 10,000 waterbirds is available online via www.bto.org/webs.

NON-NATIVES

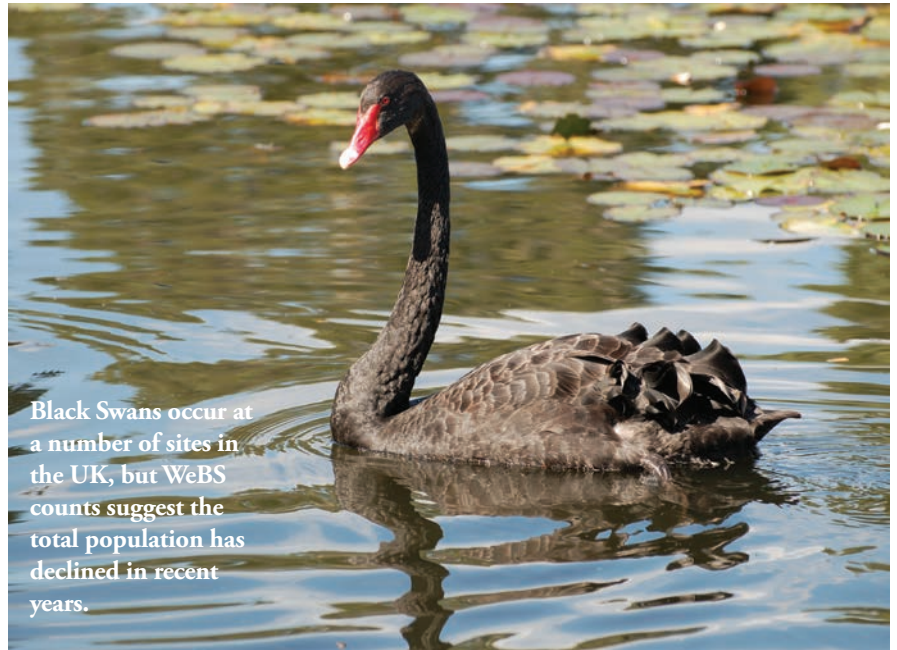
Non-native waterbirds in the UK

A look at the non-breeding status of introduced and escaped waterbirds, focusing on Black Swan

Many species of waterbird occur in the UK as a result of introductions, particularly through escapes from collections. Several species such as Canada Goose have become established and are now a widespread feature of the UK's wetland habitats. Other species are present in lesser numbers, but may well establish themselves in the future too.

The records committee of the British Ornithologists' Union (BOU) www.bou.org.uk categorises each species occurring in Britain according to its likely origin. Species that have been recorded as 'introductions, human-assisted transportees or escapes from captivity, and whose breeding populations (if any) are not thought to be self-sustaining' are included in the BOU's Category E. It is important to assess the status of these species and monitor changes in numbers. Indeed, it is a key requirement given the need, under the African-Eurasian Waterbird Agreement '...to prevent the unintentional release of such species...' and once introduced, the need '...to prevent these species from becoming a threat to indigenous species'.

A total of 22 Category E species were recorded by WeBS in 2012/13, at 180 sites. The summed site maximum of 395 birds is similar to that registered in recent years. Typically, most of the total was made up of Black Swans and Muscovy Ducks. These were followed in abundance by species that included Bar-headed Goose, Ruddy Shelduck, Chinese Goose, Emperor Goose, Cackling Goose and Wood Duck, all of which were recorded in at least double figures.

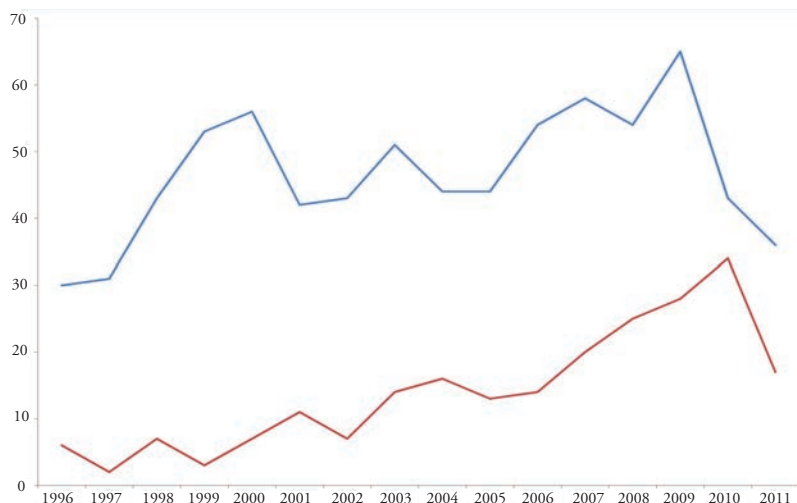


MARK MAINWARING

BLACK SWAN

During 2012/13, Black Swans were recorded at 78 sites. This represents a continuation of an apparent decline that began in 2011, which may have been linked to the freezing winter of 2010/11. It is pertinent that a similar decline was also recorded by the Rare Breeding Birds Panel (RBBP); see Holling *et al.* (2013).

Interpretation following *Bird Atlas 2007-11* concluded that assessing change in range by the Black Swan was difficult due to the likely under-recording of the species by previous atlases. However, considering the widespread distribution of the species evident in the Atlas map, WeBS may be relatively poor at assessing the status of the species.

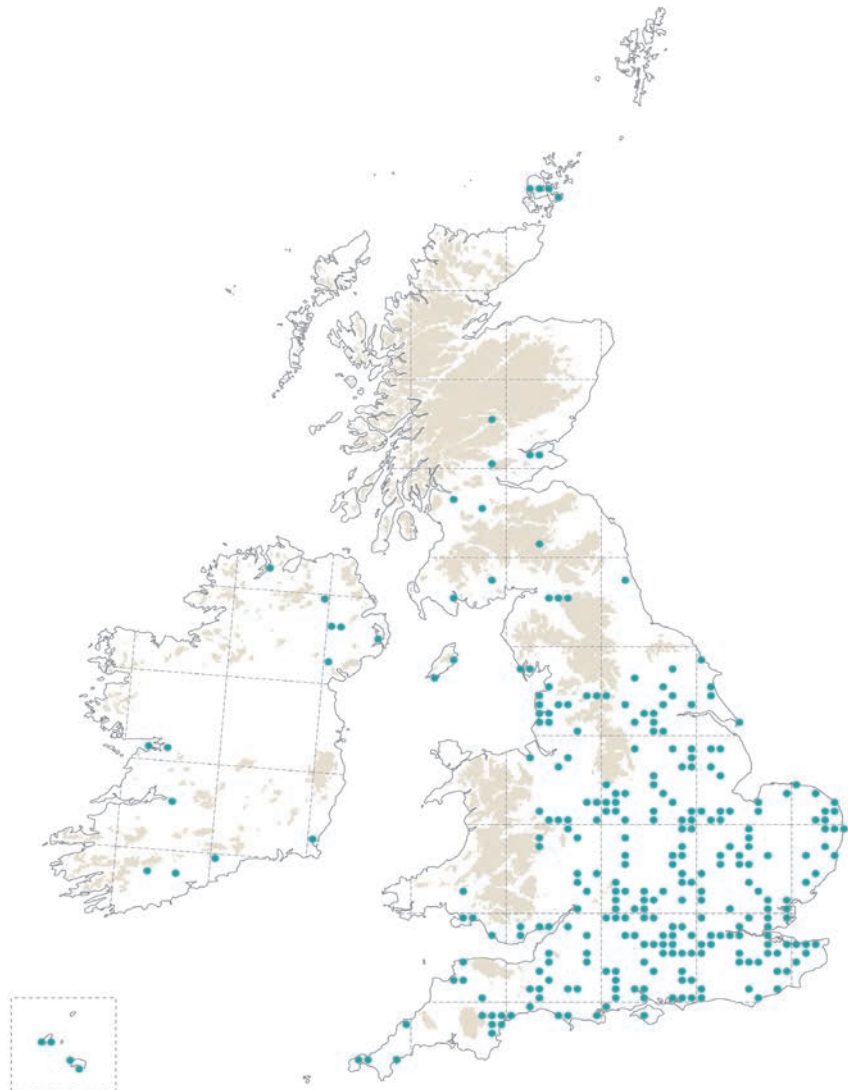


▲ WeBS and RBBP data for Black Swan in UK (from Holling *et al.* 2013)
Blue = max. monthly count (WeBS); red = confirmed/probable pairs (RBBP).

NON-NATIVES

**Black Swans
were seen
at 78 WeBS
sites in
2012/13**

In particular, WeBS would benefit from improved coverage of park lakes as well as the Broads in east Norfolk where there is known to be an established breeding population of Black Swans. In order to more effectively assess the status of some species' populations, it is often necessary to undertake targeted surveys. This is particularly relevant when a non-native species is in the process of establishing a self-sustaining population, as it is important to be able to monitor population change accurately. A substantial breeding population of Black Swans has become established across the North Sea in The Netherlands, and breeding also occurs elsewhere in Europe. Although potential impacts of a self-sustaining population of Black Swans in the UK have not been studied in detail, a 'risk assessment' in The Netherlands concluded that ecological, economic and social impacts of the population there are likely to be negligible (Bleemster & Klop 2013).



▲ Winter distribution of Black Swan in UK (and Ireland). From Balmer *et al.* (2013).

FIND OUT MORE...

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. 2013. *Bird Atlas 2007–11: the breeding and wintering birds of Britain and Ireland*. British Trust for Ornithology, BTO Books, Thetford.

Bleemster, N. & Klop, E. 2013. *Risk assessment of the Black Swan in the Netherlands. A&W-report 1978*. Altenburg & Wymenga ecologisch onderzoek, Feanwalden.

Holling, M. and the Rare Breeding Birds Panel. 2013. Non-native breeding birds in the UK, 2009–11. *British Birds* **107**: 122–141.

USEFUL LINK...

For a good source of information on non-native species across a range of taxa, see the online pages of the Great Britain Non-Native Species Secretariat:
www.nonnativespecies.org

HABITAT FOCUS... GRAVEL PITS

The changing nature of gravel pits

A look at the status and trends of species strongly associated with gravel pits in the UK

In this latest review of a particular wetland habitat, we explore the importance of gravel pits to wintering wildfowl in the UK. Gravel pits are bodies of open water, typically originally created by the excavation of sand, gravel or clay for the aggregates industry. They can potentially provide a valuable wetland habitat which may include not only extensive areas of open water, but also stands of emergent vegetation and, sometimes, marginal fen and carr. Although a man-made habitat, to some extent gravel pits have replaced natural wetlands of floodplains that have been removed or modified over the years.

As gravel pits are new wetlands with developing plant communities, the waterbird assemblages associated with them can change rapidly over the course of just a few years. In the early stages after excavation, sites will be used during the breeding season by waders such as Little Ringed Plover and Oystercatcher, and in subsequent months will prove attractive to passage waders such as Common and Green Sandpipers. In the winter, shallow waters will be favoured by dabbling wildfowl such as Teal and Shoveler. As gravel pits age and plant communities mature, the importance of them for the diving duck assemblage tends to increase, although the response by different species to habitat maturation will vary depending on particular foraging requirements.

Many gravel pit complexes support internationally or nationally important numbers of waterbirds in winter. These sites therefore represent priorities for conservation, often being designated as Special Protection Areas (SPAs) (see *WeBS Alerts* on the online WeBS reporting

interface). Also remember that the annual reporting tab on the online interface allows you to filter all tables by habitat type. Selecting the 'gravel pit' category for a range of ducks and grebes will reveal the importance of the habitat for species such as Great Crested Grebe, Goldeneye, Tufted Duck, Smew, Gadwall, Coot and Little Ringed Plover. Here, we review the status and ecology of three of these species with a strong association with gravel pits in winter.

SMEW

Most British wintering Smew originate from Scandinavia where they breed along tree-lined rivers and pools. Compared to the core of the wintering range further east in the Baltic Sea and southwards to The Netherlands, the UK supports a small winter population of Smew, typically numbering about 200 birds. Cold spells of weather on the continent, such as that experienced in 2010/11 (the coldest winter across northwest Europe for 35 years), will see an influx of Smew into the UK as birds flee harsh conditions. However recent years have seen a

gradual reduction in the number of Smew wintering in the UK. This has probably been in response to a trend for generally milder winters, during which period several species of diving duck have extended their wintering distributions in a north-easterly direction in response to ice-free areas within the Baltic Sea (Lehikoinen *et al.* 2013). For example, in Sweden, wintering Smew increased from 400 birds in 1971 to 3,800 in 2004 (Nilsson 2008).

Subtle changes have taken place in the selection of UK sites by Smew. Twenty years ago, the gravel pit complexes at Dungeness & Rye Bay, Wraysbury and Lee Valley tended to be the strongly favoured locations. Nowadays those sites still attract the species each winter, but others such as Cotswold Water Park and the network of Cambridgeshire gravel pits at Fen Drayton, Ouse Fen and Little Paxton have become equally important. The mild winter of 2012/13 was an unremarkable one for Smew, with peaks of 19 at Dungeness & Rye Bay, 17 at Wraysbury and 15 at Ouse Fen.

Table 3 Important UK sites for Smew

Site	2012/13 peak	Month	5-year mean
Ouse Fen and Pits	15	Feb	22
Rutland Water	11	Jan	19
Dungeness & Rye Bay	19	Mar	17
Cotswold Water Park (West)	9	Feb	14
Little Paxton Gravel Pits	7	Mar	12
Wraysbury Gravel Pits	17	Jan	10
Aston on Trent Gravel Pits	7	Feb	9
Eyebrook Reservoir	11	Feb	9
Minsmere	10	Mar	9
Fen Drayton Gravel Pits	0		8
Lee Valley Gravel Pits	9	Jan	8
Pitsford Reservoir	9	Feb	8
Abberton Reservoir	6	Feb	7

• 2012/13 peak and month when recorded are shown. Five-year mean is for period 2008/09 to 2012/13.
 • WeBS sites with five-year mean of 7+ Smew are listed.



The drake Smew (or 'white nun' as it is also known) is a stunning bird. The majority of the UK's small wintering population are found on gravel pits.

HABITAT FOCUS... GRAVEL PITS

GADWALL

Monitoring schemes across northwest and central Europe have shown marked increases in numbers of Gadwall in recent decades. Following a sustained rise over the past thirty years, the rate of increase in the numbers wintering in Britain now appears to be slowing slightly.

Based on five-year means, seven WeBS sites in the UK continue to be surpass the threshold of international importance for Gadwalls. Three of these internationally important sites are gravel pit complexes: Lee Valley Gravel Pits, Dungeness & Rye Bay and River Avon (Fordingbridge to Ringwood). The latter includes Blashford Lakes. Although the seven internationally important WeBS sites are the same as the previous year, 2011/12, there were contrasts in how individual sites fared in terms of Gadwall maxima. Whereas the peaks at Rutland Water, the Ouse Washes and Abberton Reservoir were all considerably lower than recent years, the highest counts during 2012/13 at River Avon (Fordingbridge to

Ringwood), Dungeness & Rye Bay and Thames Estuary were all records for those locations. The decline at Rutland Water is especially notable as it quickly follows the all-time highest ever WeBS count of Gadwall, 2,823 birds in November 2011.

A further 25 sites counted for WeBS now surpass the threshold of national importance for Gadwall, including a selection of gravel pit sites some of which now surpass the threshold for the first time. For example, the five-year means at the gravel pit complexes at Colne Valley (Essex), Ditchford (Northamptonshire) and Ouse Fen (Cambridgeshire) all rose above the current threshold of 250 birds. Other unusually high counts of Gadwall were made at Minsmere (Suffolk) and Burghfield Gravel Pits (Berkshire).

In general, the monthly indices for Gadwall during very cold winters (such as that experienced in 2010/11) tend to infer that the UK does not receive pronounced influxes of Gadwall in response to frozen

conditions on the continent. Birds are likely to redistribute and cluster at key sites within the UK however. Although some immigrant birds will swell the winter population, the increasing Gadwall trend in recent decades is probably equally attributable to a rising UK breeding population (Holling *et al.* 2011). Pertinently, this increase has resulted in Gadwall being removed from the list of species that are assessed by the *Rare Breeding Birds Panel*.

In 2012/13, the relatively small population of Gadwall in Northern Ireland, most of which use Loughs Neagh & Beg and Strangford Lough, was slightly greater than recent years. This has led to a rise in the associated index that had shown a slight dip in the mid to late 2000s. The country-specific trends for England, Wales and Scotland are all largely consistent with the overall increase which has taken place for this species across the UK as a whole since the 1960s.

COOT

The Coot is the wetland bird that perhaps characterises mature gravel pits more than any other. Coot wintering in the UK comprise resident and immigrant birds from other regions of northwest Europe, part of an overall population that includes an estimated 180,000 in Britain. Although there is recent evidence from WeBS of a shallow decline in the winter population of Coot in the UK, the drop in numbers in 2012/13 was particularly marked. Given a steep decrease in Northern Ireland since 2000/01, there is therefore an increasing suggestion of an overall population decline. Many of the most important UK sites for Coot, including Abberton Reservoir and Rutland Water, held peaks in 2012/13 that were quite significantly below average. It remains to be seen whether the wintering population will stabilise in the years ahead. In contrast, a small number of wetlands held peaks in excess of average; particularly worthy of mention are all-time site maxima recorded at Colne Valley Gravel Pits (Essex) and Aqualate Mere (Shropshire).



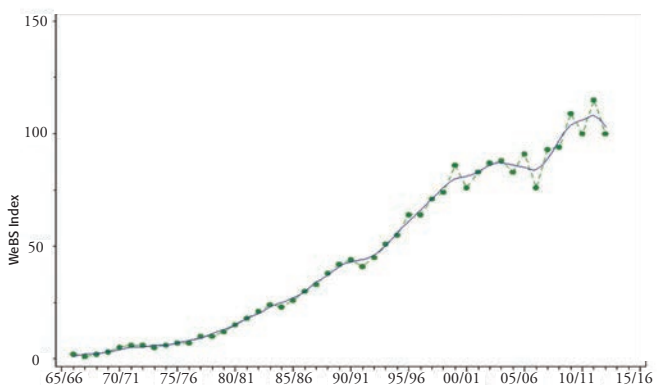
JILL PAKENHAM

▲ Gravel pits across the UK are used by waterbirds throughout the year. Many support breeding concentrations of species such as Coot and Tufted Duck.

Table 4 Important gravel pits for Gadwall

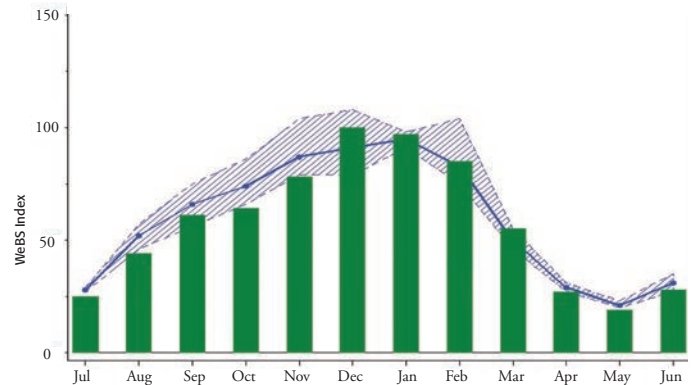
Site	2008/09	2009/10	2010/11	2011/12	2012/13	Peak Month	5-year mean
Avon Valley, Ringwood	653	854	1,149	771	1,262	Dec	938
Dungeness & Rye Bay	417	1,014	715	848	1,055	Dec	810
Lee Valley Gravel Pits	706	657	765	882	825	Jan	767
Wraysbury Gravel Pits	204	523	1,005	173	352	Jan	451
Cotswold Water Park (West)	625	420	427	551	209	Jan	446
Sutton & Lound Gravel Pits	282	539	399	470			423
Whitlingham Country Park	230	547	720	302	153	Dec	390
Fen Drayton Gravel Pits	442	361	303	456	369	Oct	386
Burghfield Gravel Pits	290	257	231	315	511	Feb	321
Middle Tame Valley Gravel Pits	275	303	221	373	213	Oct	277
Colne Valley Gravel Pits	239	281	150	480	177	Dec	265
Ditchford Gravel Pits	243	176	143	414	351	Dec	263
Little Paxton Gravel Pits	280	307	173	341	194	Dec	259
Ouse Fen and Pits	317	293	219	141	311	Mar	256
Theale Gravel Pits	181	281	150	480	177	Dec	254
Sonning Eye & Henley Road Pits	108	241	551	137	171	Feb	242
Meadow Lane Gravel Pits	(2)	306	(43)	406			238
Eversley Cross & Yateley Pits	243	170	170	256	282	Dec	224
Buckden & Stirtloe Pits	187	214	286	178			216
Watermead Country Park	95	186	275	280	94	Nov	186
Whisby Nature Park	87	256	245	195	125	Nov	182

- Annual peaks and month in 2012/13 when recorded are shown. Brackets indicate coverage known to be incomplete. Five-year mean is for period 2008/09 to 2012/13.
- Gravel pit sites with five-year mean of >160 Gadwall are listed. Threshold for international importance = 600; threshold for national importance = 250 (GB), 20 (Ireland).



▲ WeBS trend for Gadwall in UK.

Green dots = annual population index; blue line = smoothed trend.



▲ Monthly indices for Gadwall in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.



HABITAT FOCUS... GRAVEL PITS

PARASITISM ON GRAVEL PITS

One of the many fascinating aspects of wetland bird assemblages is the behaviour that sometimes occurs between Gadwall and Coot. In the UK, given the importance of gravel pits for the two species, this association is played out most regularly on that habitat. Coots normally bring their food items to the water surface to eat them there, and this behaviour allows other waterfowl species to kleptoparasitise them. By doing this, species that typically forage in shallow water are able to obtain food that is otherwise inaccessible to them. Gadwall have frequently been observed in many countries exhibiting this sort of behaviour around Coots.

Among a selection of papers and reports that provide anecdotal evidence of this association between Coots and other species of waterfowl, Amat & Sorigeur (1984) carried out the most detailed study at a site in southern Spain. Among their results, they showed that female Gadwalls parasitised Coots more frequently than did male Gadwalls, and that there was no apparent advantage in terms of food intake resulting for parasitic Gadwalls relative to birds feeding conventionally that did not associate with Coots.

Next time you are counting the Coots and Gadwalls at your WeBS site, remember to watch out for kleptoparasitism!

FIND OUT MORE...

Amat, J.A. & Sorigeur, R.C. 1984. Kleptoparasitism of Coots by Gadwalls. *Ornis Scandinavica* **15**: 188–194.

Holling, M. and the Rare Birds Breeding Panel. 2011. Rare breeding birds in the United Kingdom in 2009. *British Birds* **104**: 476–537.

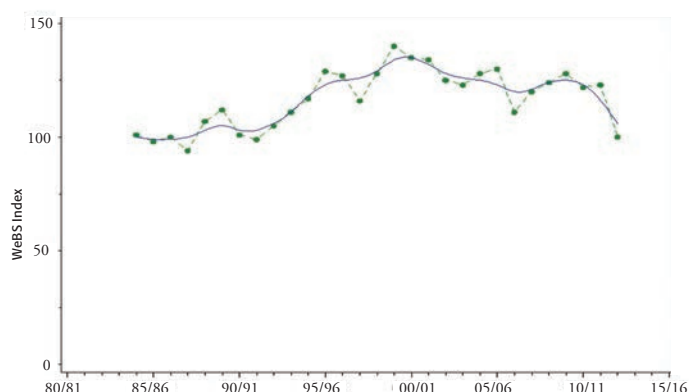
Lehikoinen, A. et al. (13 co-authors). 2013. Rapid climate driven shifts in wintering distributions of three common waterbird species. *Global Change Biology* **19**: 2071–2081.

Nilsson, L. 2008. Changes in number and distribution of wintering waterfowl in Sweden. *Ornis Svecica* **18**: 135–226.

Table 5 Important gravel pits for Coot

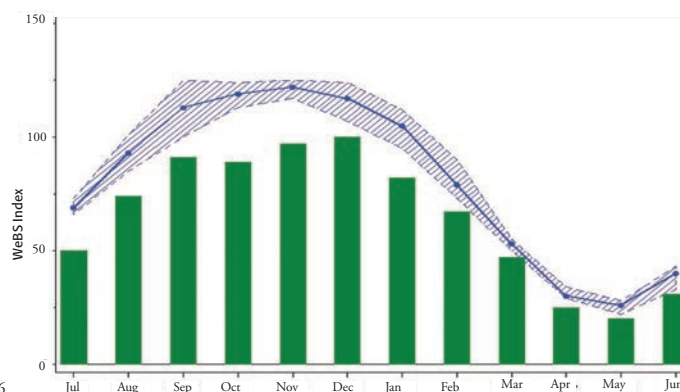
Site	2008/09	2009/10	2010/11	2011/12	2012/13	Month	5-year mean
Cotswold Water Park (West)	5,208	5,330	5,074	4,029	2,488	Oct	4,462
Lee Valley Gravel Pits	3,336	3,250	3,368	3,232	2,775	Jan	3,192
Cotswold Water Park (East)	2,248	2,050	1,820	1,760	1,317	Dec	1,839
Sutton & Lound Gravel Pits	1,865	1,796	1,503	1,666	1,514	Oct	1,669
Chichester Gravel Pits	624	1,288	2,177	2,183	1,964	Dec	1,647
River Avon, Ringwood	1,453	1,757	2,051	1,989	857	Dec	1,621
Fen Drayton Gravel Pits	1,772	1,870	1,557	1,810	1,054	Oct	1,613
Colne Valley Gravel Pits	1,312	1,703	1,319	1,318	2,124	Dec	1,555
Theale Gravel Pits	1,000	1,056	1,092	1,174	1,363	Dec	1,137
Lower Windrush Valley GPs	366	1,802	794	1,282	1,369	Dec	1,123
Wraysbury Gravel Pits	447	895	1,592	639	641	Dec	843
Chilham & Chartham GPs	(872)	765	940	-	731	Jan	827
Little Paxton Gravel Pits	499	872	995	1,070	638	Nov	815
Middle Tame Valley GPs	677	1,025	528	1,264	542	Oct	807

- Annual peaks and month in 2012/13 when recorded are shown. Brackets indicate incomplete coverage. Five-year mean is for period 2008/09 to 2012/13.
- Gravel pit sites with 5-year mean of >800 Coot are listed. Threshold for international importance = 17,500; threshold for national importance = 1800 (GB), 220 (Ireland).



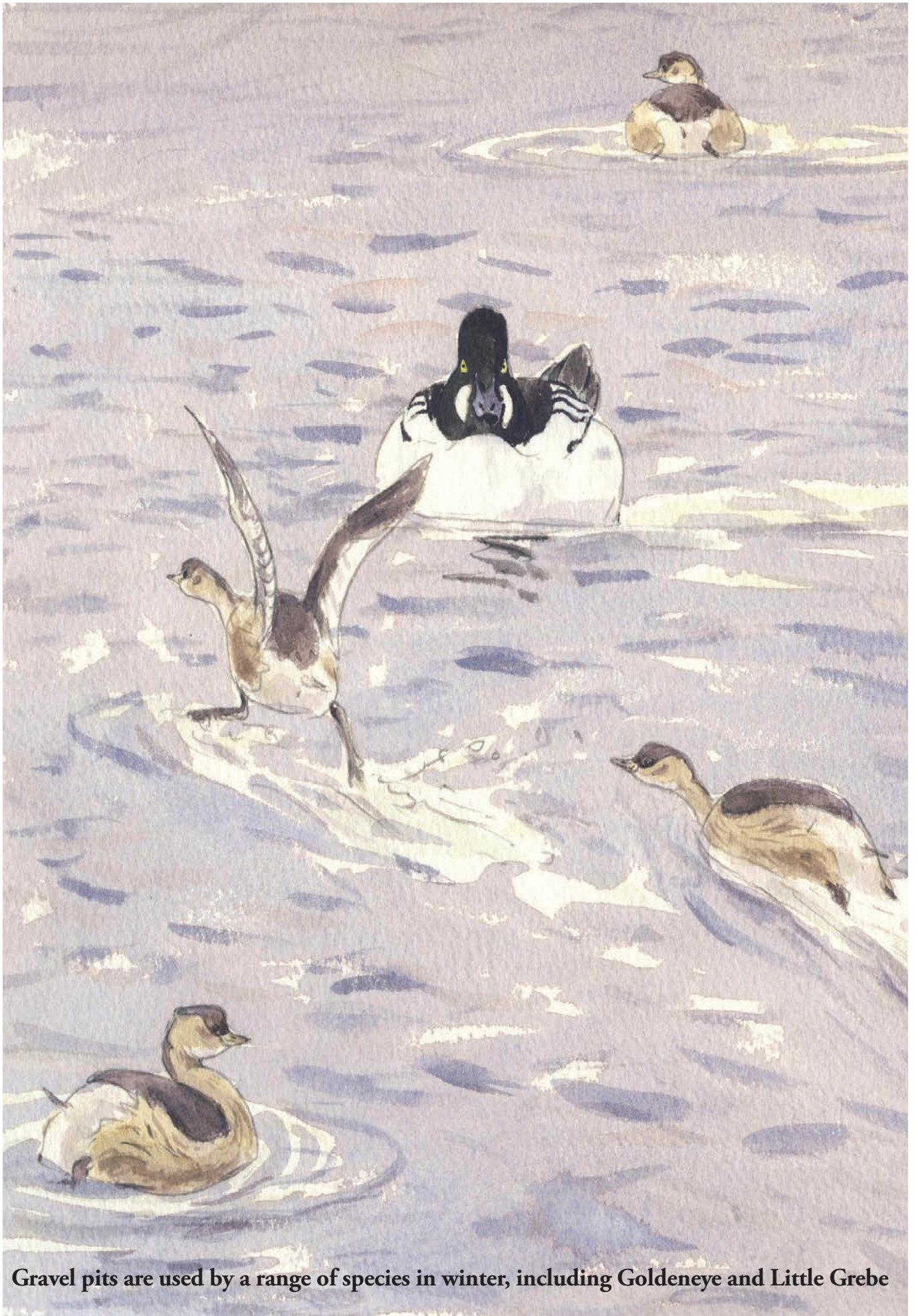
▲ WeBS trend for Coot in UK.

Green dots = annual population index; blue line = smoothed trend.



▲ Monthly indices for Coot in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.



JAMES MCCALLUM

Gravel pits are used by a range of species in winter, including Goldeneye and Little Grebe

RESEARCH IN THE FLYWAY

Understanding Purple Sandpipers

Long-term studies into breeding origin and population dynamics of Purple Sandpipers

Declines in the winter populations of several waders in the UK have been linked to change in climate and other environmental factors, but the mechanism behind the declines has so far received little attention from researchers.

Based on WeBS information, the UK's wintering population of Purple Sandpipers has approximately halved in the last 25 years. New research by Summers *et al.* (2013) has examined the dynamics of the decline as observed in the Moray Firth on the east coast of Scotland, where numbers have fallen in keeping with the UK trend. The study investigated whether the decline has been due to poorer apparent survival (return rate) or poorer recruitment of young birds. Changes in survival and recruitment of the Moray Firth population were examined at three main roost sites on the estuary over a 20 year period. All of these sites were used to catch Purple Sandpipers for ringing. Bill size, when measured on captured individuals, can be used to ascertain sex and breeding origin of Purple Sandpipers, and long-term ringing studies have shown that the population of Purple

Sandpipers wintering on the east coast of Scotland originates primarily from Norway and potentially part of Canada. In contrast, the Icelandic population is considered to be largely resident (Hallgrímsson *et al.* 2012).

Analysis of data collected on the Moray Firth showed there were no significant changes between winters in survival rates, nor were there differences between the survival rates of age groups (first-year and adult) or bill-size groups. Annual survival across the Moray Firth was approximately 75%, which equates to three out of four birds returning from one winter to the next. It seems likely that the decline in numbers at the site has been largely due to poor recruitment. The reasons for this require further study, both on the Moray Firth and at other sites in the UK used by Purple Sandpipers. Possible explanations include (i) a decline in productivity in Norway and Canada, (ii) a response to changes in local sewage treatment systems on the Moray, and (iii) a general reduction in the number of birds choosing to winter on the Scottish coast.



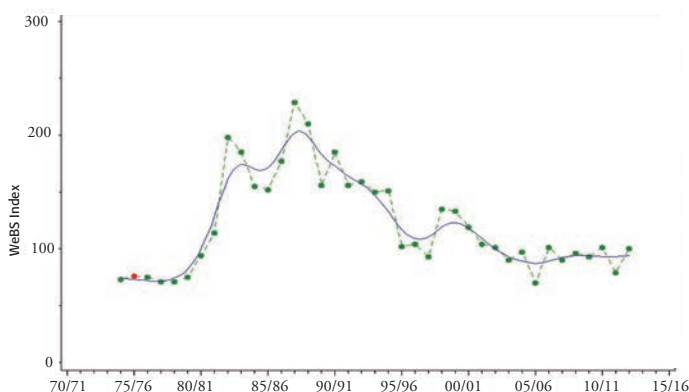
DAVE KING

FIND OUT MORE...

Hallgrímsson, G.T., Summers, R.W., Etheridge, B. & Swann, R.L. 2012.

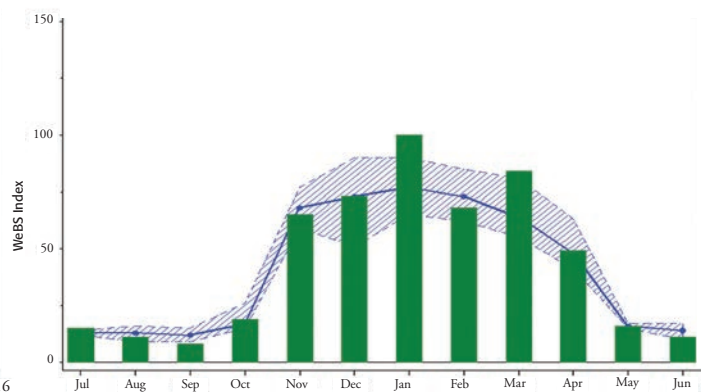
The winter range of Nearctic Purple Sandpipers *Calidris maritima* on the East Atlantic Flyway. *Ardea* **100**: 13–18.

Summers, R.W., Foster, S., Swann, B. & Etheridge, B. 2013. Local and global influences on population declines of coastal waders: Purple Sandpiper *Calidris maritima* in the Moray Firth, Scotland. *Estuarine, Coastal and Shelf Science* **102-103**: 126–132.



▲ WeBS trend for Purple Sandpiper in UK.

Green dots = annual population index; blue line = smoothed trend.



▲ Monthly indices for Purple Sandpiper in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.

RESEARCH IN THE FLYWAY

Climate change and conservation

How resilient to predicted climate change is Europe's network of protected areas?

There has been much discussion about the continued efficiency of protected areas as the climate changes. Recent work by Johnston *et al.* (2013) published in *Nature Climate Change* suggests that the existing network of protected areas will remain viable during the next 70 years. The study focused on two internationally important European bird assemblages: breeding seabirds and wintering waterbirds. Both groups have been pivotal to the legal classification of Special Protection Areas (SPAs) in Europe, established under the EU Birds Directive. As well as using WeBS data, the study incorporated information from Ireland, France and The Netherlands, thereby providing a robust assessment of the situation across northwest Europe.

Bird abundance data for individual sites from 1996 to 2006 were used to construct abundance-climate relationships for 17 seabird and 45 waterbird species. These comprised most of the 23 seabird and 51 waterbird species that were used to classify UK SPAs (Stroud *et al.* 2001). Future species projections were made using climate projections for an emissions scenario which

equates to an increase in global mean temperature of 2.8 and 4.4°C, by 2050 and 2080, respectively. Projected future abundance was assessed against current SPA qualifying thresholds for each species, and examined for each SPA as to whether it was projected to continue to support populations of sufficient size to merit classification. The results indicate that currently classified sites will continue to protect large numbers of breeding seabirds and wintering waterbirds. In order to maximise the resilience of protected area networks to future climate change, there is the need to maintain the current multi-species and multi-habitat network of protected areas to allow future distributional change to occur. Using flexible criteria, such as identifying sites that support a threshold proportion of a regional or global population, will further increase the legal resilience of sites to future change.

There are, of course, additional questions linked to the conservation of wintering waterbird populations across northwest Europe. Johnston *et al.* (2013) used bio-climatic models to show that currently

protected, high quality, sites will remain important in a changing climate. However, there are also likely to be shifts in the core range of waterbird species taking place 'in the background'. For example, as described in *Waterbirds in the UK 2011/12*, Lehtikoinen *et al.* (2013) demonstrated that a redistribution of diving ducks across northwest Europe has occurred in response to increasing winter temperatures.

FIND OUT MORE...

Johnston, A. *et al.* (24 co-authors).

2013. Observed and predicted effects of climate change on species abundance in protected areas. *Nature Climate Change* - published online doi:10.1038/NCLIMATE2035.

Lehtikoinen, A. *et al.* (13 co-authors).

2013. Rapid climate driven shifts in wintering distributions of three common waterbird species. *Global Change Biology* **19**: 2071–2081.

Stroud, D. *et al.* (9 co-authors). 2001.

The UK SPA Network: its scope and content. JNCC, Peterborough, UK.



RICHARD JOHNSON

The UK's SPA network will remain important for waterbirds such as Shoveler

RESEARCH IN THE FLYWAY

Dark-bellied Brent Geese

An update on the status of the flyway population of Dark-bellied Brent Goose

A detailed review by Ebbinge *et al.* (2013a) of the status of the Dark-bellied population of Brent Goose has shown a recent drop in numbers. Being large, flocking birds, that are relatively straightforward to count and faithful to favoured estuaries, it is feasible to aim for close to a total 'head count' of the population of Dark-bellied Brent Geese each winter.

After a decline in the population to a low point of just 16,500 geese in 1958, numbers recovered during the 1970s and 1980s to a peak of approximately 330,000 individuals between 1992 and 1994. Since 1994, the population has declined again, to 200,000–250,000 birds. This trend is in keeping with the UK trend. The recent decline has been attributed to poor breeding productivity in the Arctic, associated with faltering cycles of lemmings particularly on the Taimyr Peninsula, where lemmings are a main food resource for potential predators of goslings (Nolet *et al.* 2013).

Breeding success also has affected the distribution of moulting geese prior to southward migration to wintering sites in northwest Europe (Ebbinge *et al.* 2013b).

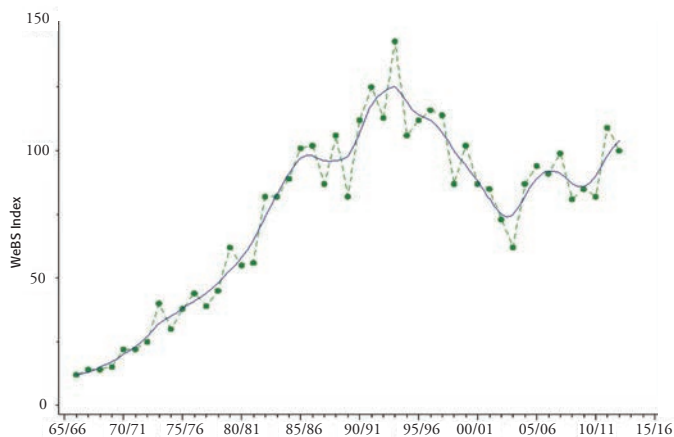
The midwinter distribution of the Dark-bellied Brent Goose population has shifted towards France in the last decade. France currently supports 50% of the population in January, Britain 35–40%, The Netherlands 15–20%, and Germany and Denmark 2%. This shift has largely involved geese moving from the UK to France, potentially due to birds' preference to feed on eelgrass *Zostera* spp. in autumn and winter, a plant species that is more abundant along the French coast. Interestingly, even as far south as Morocco, small numbers of Dark-bellied Brent Geese have been recorded feeding on Dwarf Eelgrass *Zostera noltii* in recent winters. In spring, almost the entire population gathers in the Wadden Sea, leaving only 4% of the population on British estuaries and virtually none in France.

FIND OUT MORE...

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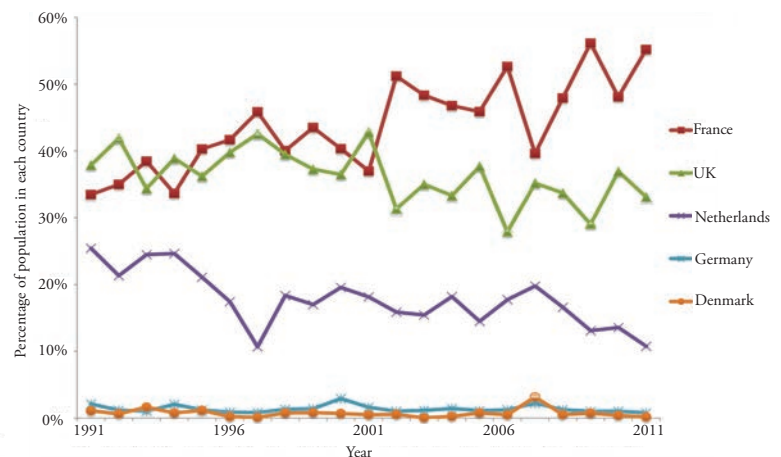
Ebbinge, B.S., Prokosch, P., Spaans, B., Muskens, G.J.D.M., Bom, R., Kokorev, Y.I. & Syroechkovskiy, E.E. 2013b. Flexibility in faithfulness of Dark-bellied Brent Geese *Branta b. bernicla* to moulting sites. *Wildfowl Special Issue 3*: 116–134.

Nolet, B.A., Bauer, S., Feige, N., Kokorev, Y.I., Popov, I.Y. & Ebbinge, B.S. 2013. Faltering lemming cycles reduce productivity and population size of a migratory Arctic goose species. *Journal of Animal Ecology 82*: 804–813.



▲ WeBS trend for Dark-bellied Brent Goose in UK.

Green dots = annual population index; blue line = smoothed trend.



▲ Mid-winter distribution of Dark-bellied Brent Goose on East Atlantic Flyway, 1991-2011. From Ebbinge *et al.* (2013a). Individual countries are indicated in legend.

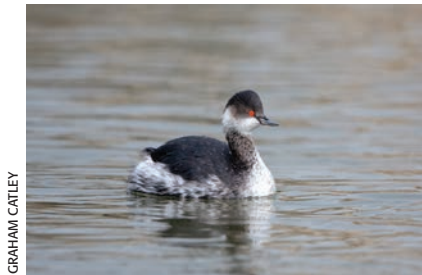
INTERNATIONAL 2012/13 - A NATIONAL SCHEME

Waterbird counts in The Netherlands

Menno Hornman (SOVON) coordinates the Dutch waterbird monitoring scheme

Despite its small size, The Netherlands support large numbers of waterbirds and is an important staging area along migration routes within Europe. Large wetlands and a highly productive agricultural landscape attract up to five million waterbirds, 40% of which are geese. For several species (*e.g.* Bewick's Swan, Pink-footed Goose, European White-fronted Goose, Barnacle Goose, Gadwall, Knot and Bar-tailed Godwit) this represents a major part of the flyway population. The Dutch Waterbird Census, involving many volunteer observers, has a long history in The Netherlands and has been organised by Sovon Dutch Center of Field Ornithology since 1992. The main census consists of monthly counts at the key sites, augmented by a midwinter count covering many of the remaining wetlands and farmland.

Numbers of waterbirds in The Netherlands have doubled in the past 30 years, with the largest increases in the 1990s and around 2000. Several goose species, Mute Swan and Cormorant have increased markedly, whereas ducks only slightly increased and waders fluctuated without a clear common trend. During the past decade, 31% of the species were still increasing, whereas 25% declined and the remainder were stable. Among the species with the most rapid increases are Canada Goose, Egyptian Goose, Barnacle Goose, Gadwall, Red-crested Pochard, and Great White Egret. Steepest declines have been shown by Taiga Bean Goose, Common Eider, Common Scoter, Bewick's Swan, Ruff and Kentish Plover. Drivers of the observed population changes are diverse. For a number of species, changes in The Netherlands suggests an impact of



GRAHAM CATLEY

▲ Winter numbers of Black-necked Grebe have increased in The Netherlands in the last 20 years, whereas Eider is among several shellfish feeders to have declined.

warming, winter climate (declines in *e.g.* Mallard, Pochard, Scaup, Smew, Goosander; increases in *e.g.* Shoveler and Grey Plover). For other species, *e.g.* Bewick's Swan and Dark-bellied Brent Goose, breeding success in arctic breeding areas decreased leading to lower numbers. Breeding success in Tundra Bean Goose and European White-fronted Goose also declined in the past decade, but so far this has not resulted in lower numbers in The Netherlands. Particularly in geese, numbers observed in The Netherlands also rely on conditions elsewhere in the flyway as they easily switch between wintering and stop-over sites in NW-Europe, as has been observed in Pink-footed Goose (recent increase in Denmark and decline in The Netherlands) and Tundra Bean Goose (influx in The Netherlands during cold winters).

By far the most important wetland in The Netherlands is the Wadden Sea, which is shared with Germany and Denmark. It is one of the most important staging sites along the East Atlantic Flyway. The shallow waters, mudflats and adjacent saltmarshes attract a peak of about 6 million non-breeding waterbirds and approximately 12 million considering turn-over. The Wadden Sea is very important for a host of species including Spoonbill,



JILL PAKENHAM

Barnacle Goose, Dark-bellied Brent Goose, Shelduck, Pintail, Eider, Oystercatcher, Avocet, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Curlew and Herring Gull. However, during the early 1990s, intertidal mussel beds largely disappeared (due to overfishing and possibly winter storms) and cockles were heavily exploited by commercial fisheries. This caused declines of species that are largely dependent on bivalves, such as Eider, Oystercatcher, Knot and Herring Gull. In contrast, worm-eating birds such as Avocet, Ringed Plover, Grey Plover, Sanderling, Dunlin and Bar-tailed Godwit have generally increased. Although various theories have been proposed for this shift, underlying reasons are as yet unclear. A variety of policy measures have since been initiated, and recently there appears to have been a slight recovery of the shellfish feeders.

FIND OUT MORE...

Hornman, M., Hustings, F., Koffijberg, K., Klaassen, O., Kleefstra, R., van Winden, E., SOVON Ganzen- en Zwanenwerkgroep & Soldaat, L. 2013. *Watervogels in Nederland in 2011/12*. Sovon rapport 2013/66, RWS-rapport BM 13.27. Sovon Vogelonderzoek Nijmegen, Nederland.

FOCUS ON... PINTAIL

What is happening to the UK's wintering Pintails?

The population of this elegant dabbling duck has halved in less than a decade. Declines have occurred across Britain, but have been most marked in England and Wales.

The Pintail is a familiar species to WeBS counters fortunate enough to count an estuary or major washlands. At smaller inland sites, Pintails tend to be rarely encountered. The UK is very important for the species in the international context, supporting up to half the northwest European wintering population of an estimated 60,000 birds.

Compared to other wildfowl species, the annual WeBS index for Pintail tends to be characterised by relatively large inter-year fluctuations. This reflects the aggregated nature of this species' occurrence on a relatively small selection of sites, coupled with its high mobility and tendency to exploit temporarily flooded areas. Exploitation of flooded sites is opportunistic and therefore may not necessarily always be picked up by WeBS counts. This high degree of variation means that caution is advisable when interpreting annual indices and the associated trend. However, one cannot ignore the marked decline that has taken place since 2005/06. Although the rate of the decline slowed between 2011/12 and 2012/13, in a seven year period the numbers of Pintail in the UK have more than halved. A less marked decline of approximately 20% occurred historically between the mid 1980s and mid 1990s, rendering the rate of the recent drop particularly concerning. Reasons for the sharp contemporary decline are unclear, but there will inevitably be concern over the species' conservation status. The Pintail is the UK's fastest declining dabbling duck and, with the UK decline now registering a 50% drop in the last 25 years, it is possible that the species could be Red-listed when the next *Birds of Conservation Concern* (BoCC) lists (e.g. Eaton *et al.* (2009)) are published.

The fluctuating nature of the WeBS trend for Pintail is further borne out through scrutiny of the latest *WeBS Alerts* (Cook *et al.* 2013). Long-term (25-year) declines of more than 50% have occurred at just three of the UK's 32 Special Protection Areas classified for Pintail; Mersey Estuary SPA, Dee Estuary SPA and The Wash SPA. At a number of other sites there have been short-term declines, including Burry Inlet SPA where there has been a 67% decline in the most recent five-year period analysed. In 2012/13, the peak WeBS count of Pintails was 4,550 on the Dee Estuary, the most recorded there since 2006/07. The same site boasts the all-time WeBS high, an exceptional

10,001 birds in 1991/92. Monthly maxima at most other sites in 2012/13 were generally slightly below average.

Research by Dalby *et al.* (2013) into the long-term winter distributions of dabbling ducks across Europe showed no strong relationships between centroids of distribution and winter temperature. Their results did suggest, however, that Pintail disperse mainly along an east-west gradient in winter, thereby responding geographically to midwinter temperature rather than simply occupying overwintering sites with less variation in winter conditions. It remains to be seen whether this helps to explain the recent drop in the WeBS index, although the concurrent increase noted in The Netherlands would tend to imply a slight shift in core wintering range in an easterly direction. However, in contrast to the WeBS trends for England, Wales, and the UK as a whole, the situation for the relatively small population in Northern Ireland is stable and annual maxima at the main site, Strangford Lough, have slowly risen in recent years. This apparent stability at the extreme western edge of the species' range would seem to contradict a 'range shift'/short-stopping hypothesis - rendering the 50% decline in Pintail numbers across the UK in just a few years all the more intriguing. However, it is perfectly possible that many of the Pintails wintering in Northern Ireland originate from the Icelandic breeding population and are therefore less likely to short stop.

FIND OUT MORE...

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2013. *Wetland Bird Survey Alerts 2009/10: Changes in numbers of wintering waterbirds in the UK, SPAs and SSSIs*. BTO Research Report 641. <http://blx1.bto.org/webs-reporting/>

Dalby, L., Fox, A.D., Petersen, I.K., Delany, S. & Svenning, J-C. 2013.

Temperature does not dictate the wintering distributions of European dabbling duck species. *Ibis* **155**: 80–88.

Eaton, M.A., Brown, A.F., Noble, D.G., Musgrove, A.J., Hearn, R., Aebischer, N.J., Gibbons, D.W., Evans, A. & Gregory, R.D. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* **102**: 296–341.

FOCUS ON... PINTAIL

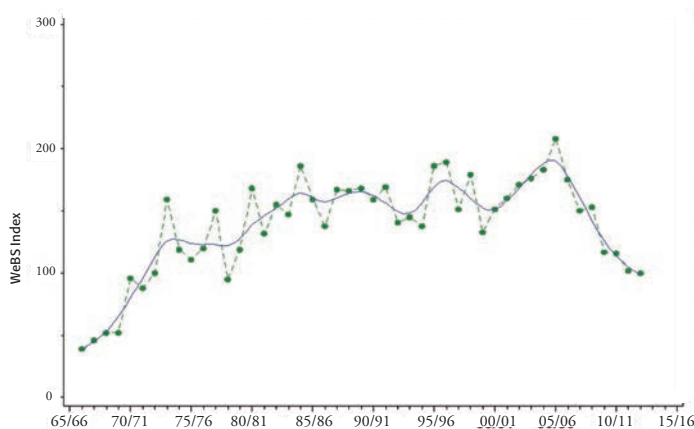


DAVE KING

Table 7 Important WeBS sites for Pintail

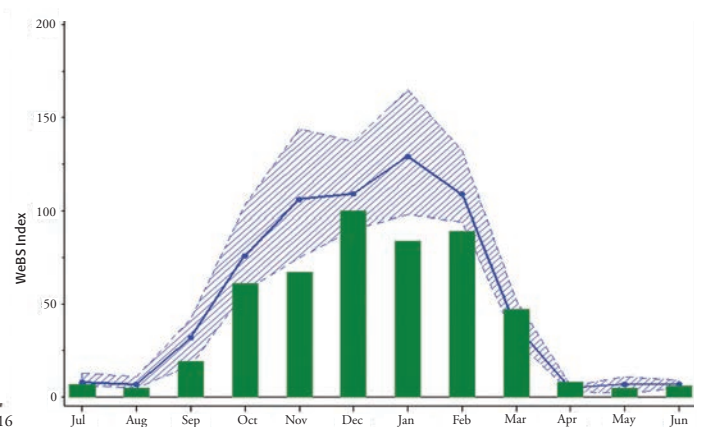
Site	2008/09	2009/10	2010/11	2011/12	2012/13	Month	5-year mean
Dee Estuary	3,392	2,960	3,669	2,588	4,550	Dec	3,540
Morecambe Bay	2,593	3,186	2,830	(2,402)	1,032	Dec	2,410
Solway Estuary	888	(977)	4,262	1,278	1,648	Dec	2,019
Ribble Estuary	2,178	(2,124)	2,074	(752)	590	Dec	1,742
Burry Inlet	2,209	1,382	1,350	2,029	1,144	Feb	1,623
Nene Washes	1,951	2,400	1,237	20	575	Mar	1,237
Duddon Estuary	2,481	629	1,209	700	166	Dec	1,037
Loch Leven	1,527	1,396	676	(436)	452	Sep	1,013
Ouse Washes	(1,697)	462	1,187	827	556	Mar	946
Blackwater Estuary	488	(203)	(353)	597	839	Feb	641
Dee Flood Meadows	196	227	1,060	758	955	Feb	639
Mersehead RSPB Reserve		1,690	479	102	252	Nov	631
Medway Estuary	(351)	(353)	314	759	(239)	Oct	537
Severn Estuary	560	494	456	673	355	Mar	508
Somerset Levels	682	534	332	118	(749)	Feb	483
The Wash	560	294	104	430	857	Dec	449
WWT Martin Mere	380	550	294	578	340	Jan	428
Stour Estuary	486	393	449	336	461	Feb	425

- Sites with five-year means of 425+ Pintail are listed. Threshold for international importance = 600; threshold for national importance = 290 (GB), 20 (Ireland).
- Annual peaks and month in 2012/13 when recorded are shown. Brackets indicate incomplete coverage.
- Five-year mean refers to period 2008/09 to 2012/13.



▲ WeBS trend for Pintail in UK.

Green dots = annual index value; blue line = smoothed trend.



▲ Monthly indices for Pintail in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.

FOCUS ON... PINK-FOOTED GOOSE

Pinkfeet: have numbers stopped increasing?

Conditions on the breeding grounds in central Iceland can affect the numbers of Pink-footed Geese counted in the UK during an annual winter census of the population.



CHAS HOIT

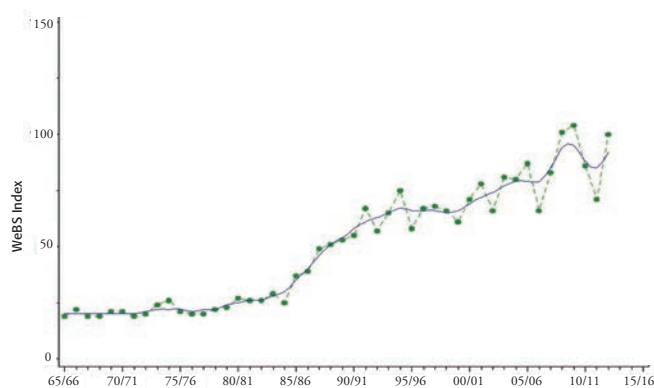
The Pink-footed Goose is the most numerous and one of the most familiar geese in the UK, although within Europe as a whole it is relatively localised. There are two populations and sightings of marked birds show that these are almost completely discrete. The population wintering in Britain is the largest with currently around 350,000 individuals. These birds breed in the remote highlands of central Iceland, some of the northern Icelandic lowlands, and in eastern Greenland. They winter predominantly in eastern and southern Scotland, Lancashire and Norfolk. The other population, numbering around 80,000 birds, breeds in the Svalbard archipelago of northern Norway and winters predominantly in Denmark, the Netherlands and Belgium.

The size of the Greenland/Iceland population is monitored through the Icelandic-breeding Goose Census (IGC), which has been conducted annually since 1960 as part of the Goose & Swan Monitoring Programme (GSMP) (*e.g.* Mitchell 2013). Most IGC counts are conducted at roost sites as the birds depart at dawn for their feeding areas. Two coordinated counts are conducted, in October and November, soon after their arrival from Iceland and Greenland, and these data, which are used to derive a population index and associated trend, show that the size of the Pink-footed Goose population has increased rapidly over recent decades, particularly since the mid 1980s. These data also show that in some years the number of Pinkfeet

apparently decreases considerably (*e.g.* 1995, 2002 and 2006). However, in most cases it is likely that the main factor influencing these apparent decreases is a late arrival from Iceland, meaning that a lower proportion of the population is detected during the IGC counts (*i.e.* more birds than usual remain uncounted in Iceland). In the most recent of these low counts, in 2011, data on breeding success suggest a decline of some magnitude did occur, but unfavourable weather conditions for migration in autumn 2011 also played a part by causing birds to delay their migration.

Annual breeding success is also monitored through the GSMP, measured by counts of the age ratio in autumn flocks and the size of individual families. This has remained remarkably constant throughout this period, suggesting that the increase in numbers has been largely driven by an increase in average annual survival (though unfortunately, there is no long-term monitoring of annual survival carried out).

As most counts of Pink-footed Geese are carried out at roost sites, our knowledge of their feeding distribution is less complete and mainly comes from counts of flocks undertaken when ring-reading and collecting productivity data (Mitchell 2012). These data show that most Pinkfeet feed within 20 km of their roost site, and that particularly favoured areas can attract large numbers year after year. They tend to select stubbles in the autumn and cereals and grass in mid winter and spring. This and increasing numbers can lead to conflict with agricultural interests and whilst conflict with Pinkfeet in the UK is relatively uncommon, focused management of other goose populations is becoming increasingly commonplace in Europe. As a result of conflict in spring staging areas, Svalbard Pink-footed Geese have become the first European goose population to be managed through a focused adaptive management plan, which sets out to minimise conflict with agriculture and maintain the population in a favourable conservation status. With many goose populations in the UK continuing to increase, it is possible that we may see more focused management implemented here in the future.



▲ Population trend for Pink-footed Goose in UK.

Green dots = annual index value; blue line = smoothed trend.

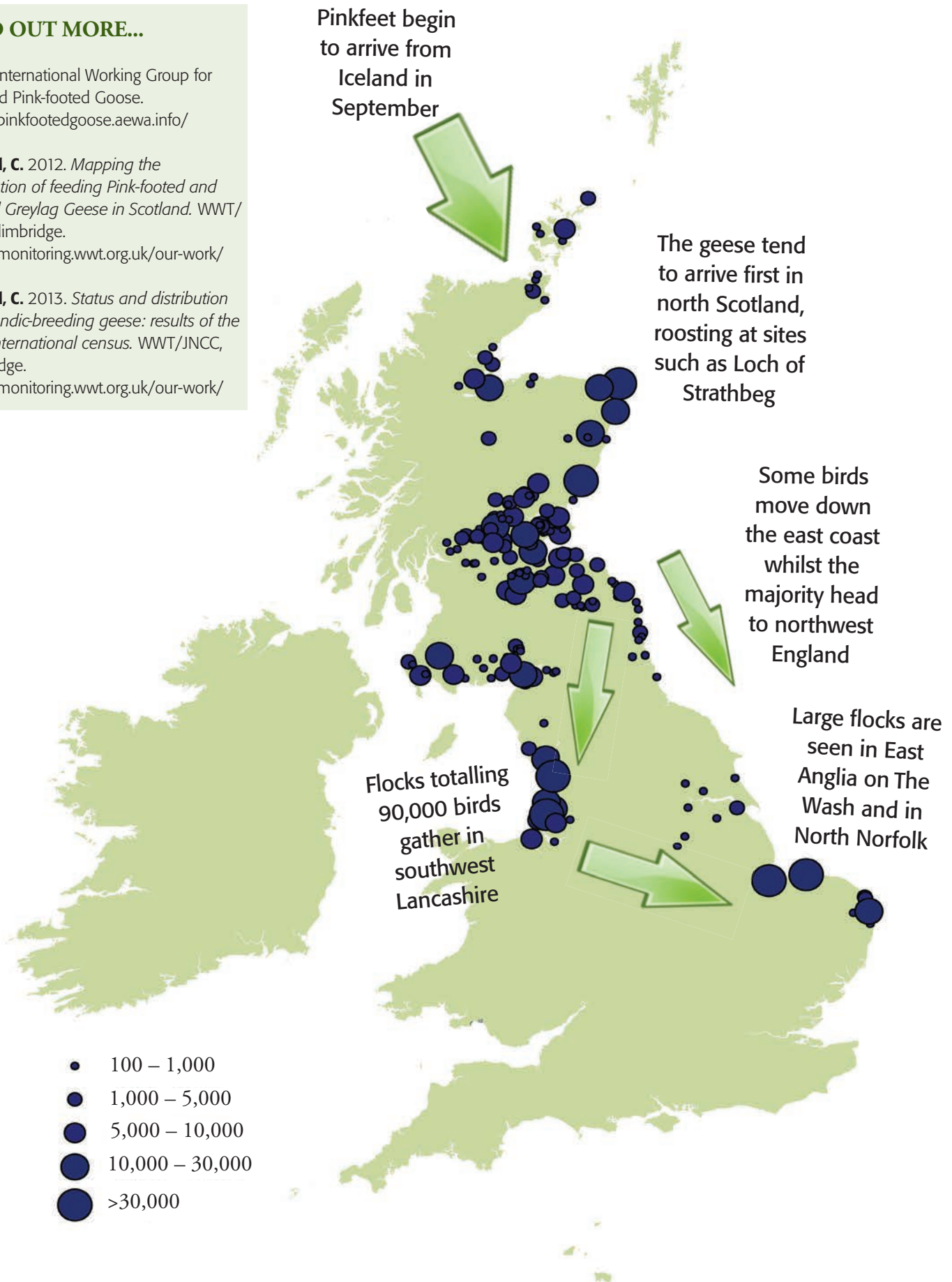
FOCUS ON... PINK-FOOTED GOOSE

FIND OUT MORE...

AEWA International Working Group for Svalbard Pink-footed Goose.
<http://pinkfootedgoose.aewa.info/>

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<http://monitoring.wwt.org.uk/our-work/>

Mitchell, C. 2013. *Status and distribution of Icelandic-breeding geese: results of the 2012 international census*. WWT/JNCC, Slimbridge.
<http://monitoring.wwt.org.uk/our-work/>



▲ Aggregations (>100 birds) of Pink-footed Goose in the UK during 2012/13, based on GSMP and WeBS. Arrows denote general movement of birds in the autumn and early winter period.

FOCUS ON... GOLDEN PLOVER



JOHN HARDING

The winter population of Golden Plovers in the UK is comprised of birds that breed in Iceland and smaller numbers from the resident population. Having reached a notable WeBS peak in 2005/06, the population appears to have undergone a marked decline since, of around 50%. However, caution needs to be applied when interpreting numbers of Golden Plovers counted during WeBS Core Counts. Golden Plovers, as well as Lapwings, regularly use agricultural fields and are therefore not as reliant on wetland habitats as most other waders. Subtle changes in use of sites can therefore introduce significant variation into WeBS-derived trends as a consequence (Gillings *et al.* 2006). All else being equal though, the national WeBS index in 2012/13 was at a similarly low level to the previous three years. The counted monthly maximum of 109,323 birds in October 2012 was similar to the equivalent total

in 2011/12 - but considerably lower than the 2005/06 peak.

In common with those for Lapwing, the monthly indices merit close scrutiny when evaluating a winter for Golden Plovers. In keeping with the mild weather experienced in winter 2012/13 (page 8), there were no marked weather-related influxes of Golden Plovers into the UK. In mild winters, it is likely that a relatively large proportion of northwest Europe's wintering population of Golden Plovers uses sites in The Netherlands. The Dutch trend shows a fluctuating pattern, similar to that in the UK but without the drop in the last decade.

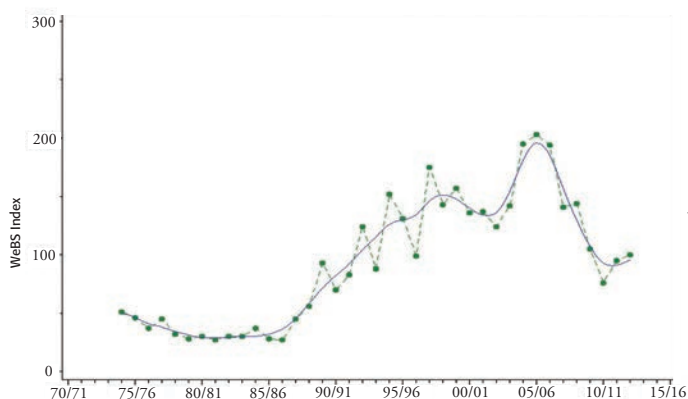
In order to be in a position to more accurately assess the overall population status of Golden Plover, a periodic census is undertaken across northwest Europe. The most recent of these took place in 2006/07, the results from which

showed that there are approximately 400,000 and 170,000 in Britain and Ireland, respectively (*e.g.* Gillings & Fuller 2009). The next international Golden Plover census will take place on 11th-12th October 2014 (details available at www.bto.org/webs).

FIND OUT MORE...

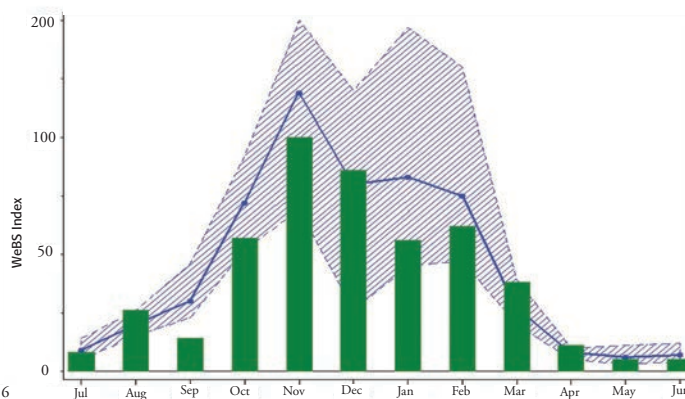
Gillings, S., Austin, G.E., Fuller, R.J. & Sutherland, W.J. 2006. Distribution shifts of wintering Golden Plovers *Pluvialis apricaria* and Northern Lapwings *Vanellus vanellus* in Britain. *Bird Study* **53**: 274–284.

Gillings, S. & Fuller, R.J. 2009. How many Eurasian Golden Plovers *Pluvialis apricaria* and Northern Lapwings *Vanellus vanellus* winter in Great Britain? Results from a large-scale survey in 2006/07. *Wader Study Group Bulletin* **116**: 21–28.



▲ WeBS trend for Golden Plover in UK.

Green dots = annual index; blue line = smoothed trend.



▲ Monthly indices for Golden Plover in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.

FOCUS ON... AVOCET

JONATHAN TYLER



The wintering population of Avocets in Britain comprises an increasing proportion of resident breeders with additional birds from the nearby Low Countries. The WeBS trend continues to illustrate an increasing population, and the index value for 2012/13 equalled the high point reached two years previously. The British winter population was estimated to number approximately 7,500 birds by Musgrove *et al.* (2011). Hence, a counted monthly maximum of 7,733 in 2012/13 provides good evidence of a population that has continued to increase. In 2012/13, Avocets were recorded at 62 WeBS sites. These were all in England, including the Dee and Severn estuaries bordering England and Wales, with the exception of two birds at one other Welsh site.

Peaks at the seven WeBS sites in the UK which surpass the threshold for international importance for Avocet were typical of recent years. The

highest count however, from the Alde Complex (Suffolk) where 2,039 Avocets were present in March 2013, represented the highest monthly count ever submitted through WeBS. Notably, Hamford Water (Essex) now surpasses the threshold for international importance for the first time.

An additional 18 WeBS sites support nationally important numbers of Avocet in winter. Most of these locations are in East Anglia, with the exception of Exe Estuary, Tamar Complex, Dungeness & Rye Bay, WWT Martin Mere and Ribble Estuary. At the latter two sites in northwest England, Avocet has become an annual feature since the early 2000s; a strong illustration of the steady expansion in range undergone by this species in the last decade. However, this expansion does not yet include Scotland, where there have only ever been ten WeBS records of Avocet, most recently in 2007/08.

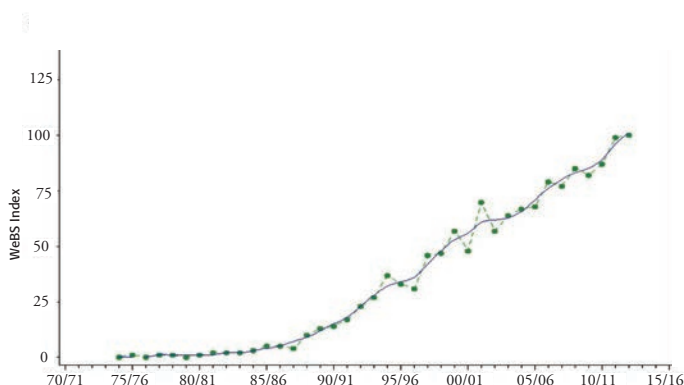
The range change measured through WeBS is in line with the Atlas-based expansion in the breeding population (Balmer *et al.* 2013), now numbering over 1,700 pairs at more than 100 sites (Holling *et al.* 2013).

FIND OUT MORE...

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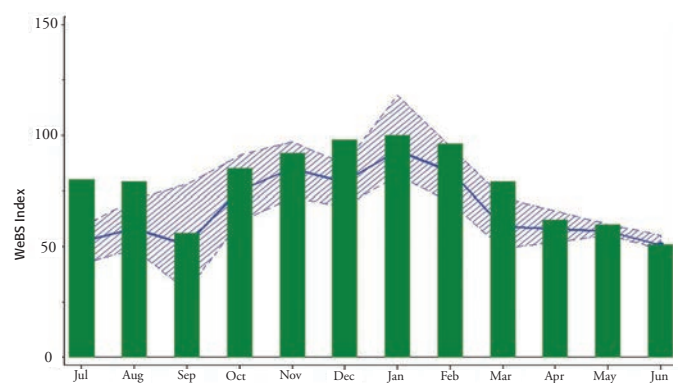
Holling, M. and the Rare Breeding Birds Panel 2013. Rare Breeding Birds in the United Kingdom in 2011. *British Birds* **106**: 496–554.

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▲ WeBS trend for Avocet in UK.

Green dots = annual index; blue line = smoothed trend.



▲ Monthly indices for Avocet in UK.

Green bars = 2012/13; blue line/hatched area = previous 5-year mean/range.

LOW TIDE COUNTS - REVIEW

UK Low Tide Counts 2012/13

Eighteen UK estuaries were counted at low tide generating important data about feeding areas



The WeBS Low Tide Count Scheme facilitates the collection of information about use of the UK's estuaries by waterbirds at low tide. The scheme has flourished since its inception in the winter of 1992/93, with all the major estuaries in the UK having been counted at least once. The scheme aims to monitor, assess and regularly update information on the relative importance of inter-tidal feeding areas of UK estuaries for wintering waterbirds, and in doing so complements information gathered through the WeBS Core Counts.

Information collected at low tide represent an important contribution to the conservation of waterbirds, by providing supporting information for the management of UK Ramsar Sites and Special Protection Areas, other site designations, and whole estuary conservation plans.

On most estuaries, numbers of

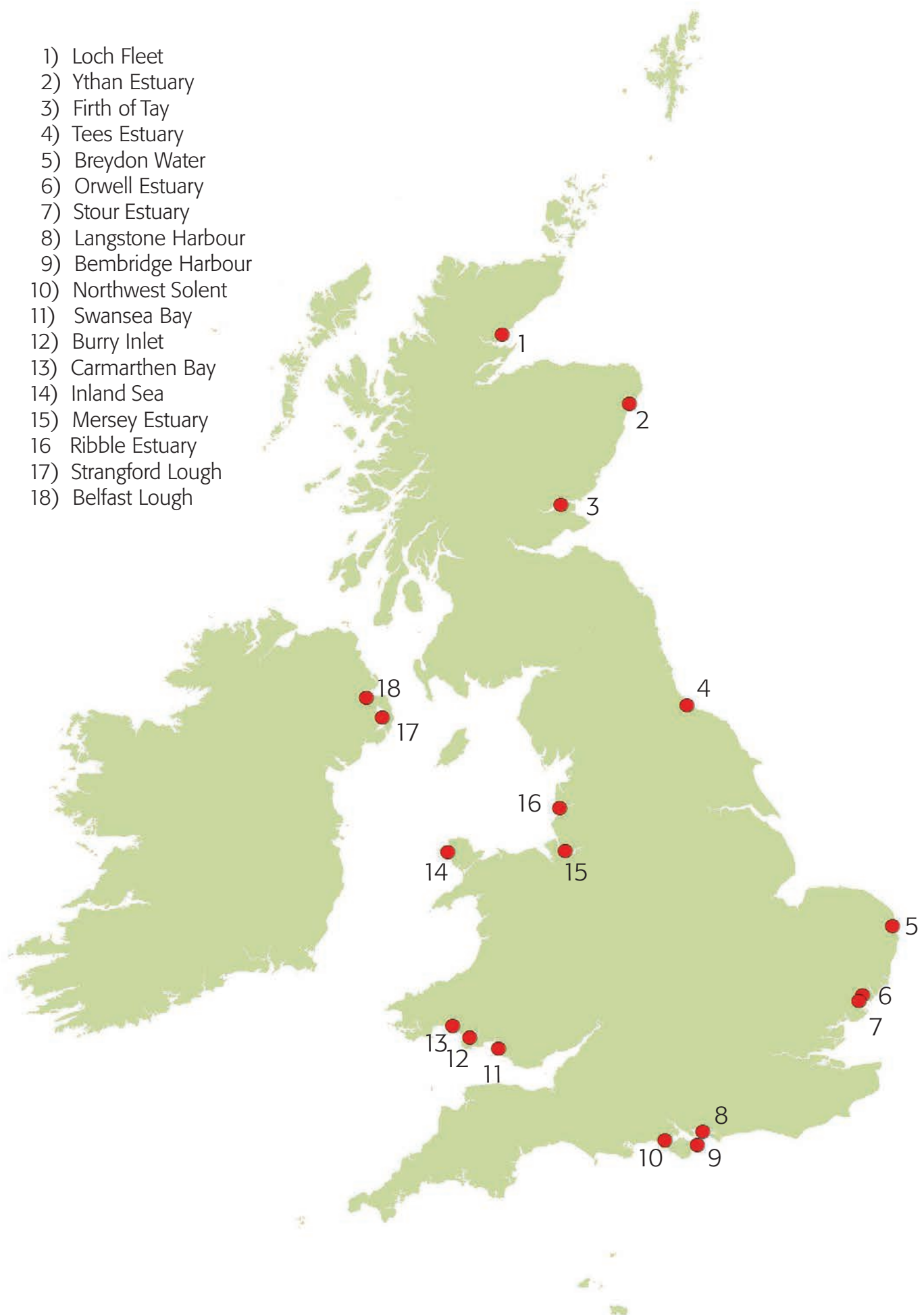
waterbirds feeding on predefined sectors of inter-tidal habitat are counted. Most individual estuaries are counted at low tide once every six years, although on some sites more frequent counts are undertaken. Coordinated counts of waterbirds are made each month from November to February inclusive, in the two-hour period either side of low tide. Each counted sector is divided into a maximum of three distinct habitat components: inter-tidal, sub-tidal, and non-tidal. Species data are divided among these habitats depending on the habitat preferences of the species concerned.

Presentation of WeBS low tide information typically takes two forms: (i) tabulated statistics of peak numbers and mean densities, and (ii) dot density maps to give a visual representation of species' foraging densities across a site. Dots do not

represent the precise positions of birds; they are assigned to habitat components proportionally and placed randomly within those areas. No information about distribution of birds at a finer scale than the count sector level should be inferred. For all maps presented, one dot is equivalent to one bird.

During 2012/13, WeBS Low Tide Counts were carried out at 18 estuaries. These included the Ribble, Mersey and Tees Estuaries; counted for the first time since 1997/98, 2005/06 and 2006/07, respectively. Results from the counts in Liverpool Bay and Stour/Orwell Estuaries are presented on pages 34-36 of this report. Further information about WeBS Low Tide Counts, including data summaries and distribution maps for different estuaries and species, are available online via www.bto.org/webs-reporting-lowtide.





LOW TIDE COUNTS 2012/13 - SITE FOCUS

Suffolk estuaries at low tide

Some sites, including the Stour and Orwell, are counted annually enabling comparison of data between years.

The Stour is a long and straight estuary, which forms the eastern end of the border between Suffolk and Essex. The estuary's mouth converges with that of the Orwell, which extends from Ipswich to Felixstowe, as the two rivers enter the North Sea. The outer Stour is sandy and substrates become progressively muddier further upstream. There are seven shallow bays along the estuary and sharply rising land or cliffs, covered with ancient coastal woodland and agricultural land, leaving little room for saltmarsh development, border much of its length. Much of the intertidal substrate of the Orwell is fairly muddy. Long stretches of farmland and wet meadow are situated along the mid-estuary, the latter providing roost sites for waterbirds. Nature conservation in the area includes the Stour & Orwell Estuaries Ramsar Site and SPA, with management by RSPB, Woodland

Trust, Essex Wildlife Trust and Suffolk Wildlife Trust. Some sailing and shooting occurs, though the major concern remains continued expansion of dock operations, channel dredging and subsequent land claim of important feeding areas. The estuaries are here considered together as one functional unit to reflect the extent of the SPA classification.

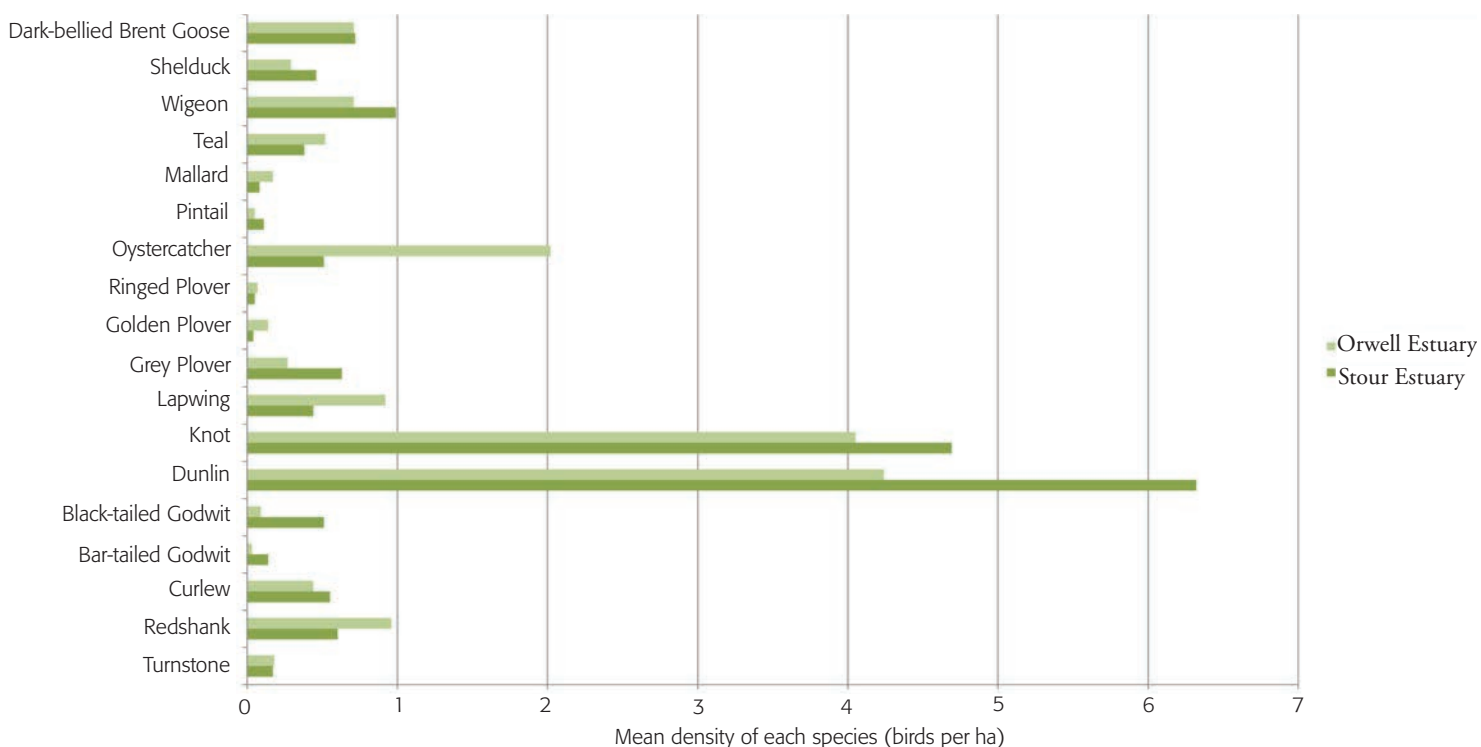
The distribution of two species are shown opposite. For Dark-bellied Brent Goose and Black-tailed Godwit, distributions based on WeBS Low Tide Counts undertaken in 2002/03 are displayed for comparison with respective distributions ten years later in 2012/13. Dark-bellied Brent Geese are present in nationally important numbers on both the Stour and Orwell Estuaries. In keeping with the UK trend, numbers have increased slightly in the past ten years.

This is shown by a comparison of the mean winter counts for the two winters; 2,966 (1.43 birds per ha) in 2012/13, compared to 1,874 (0.94 birds per ha) in 2002/03. Despite a long-term increase in the UK's winter population of Black-tailed Godwit, numbers on the Stour and Orwell Estuaries have declined in recent years. This is reflected by Low Tide Counts where the mean count for the winter of 2012/13 was 934 birds (0.6 birds per ha), compared to 1,438 (0.95 birds per ha) in 2002/03.

GENERAL STATISTICS FOR STOUR / ORWELL

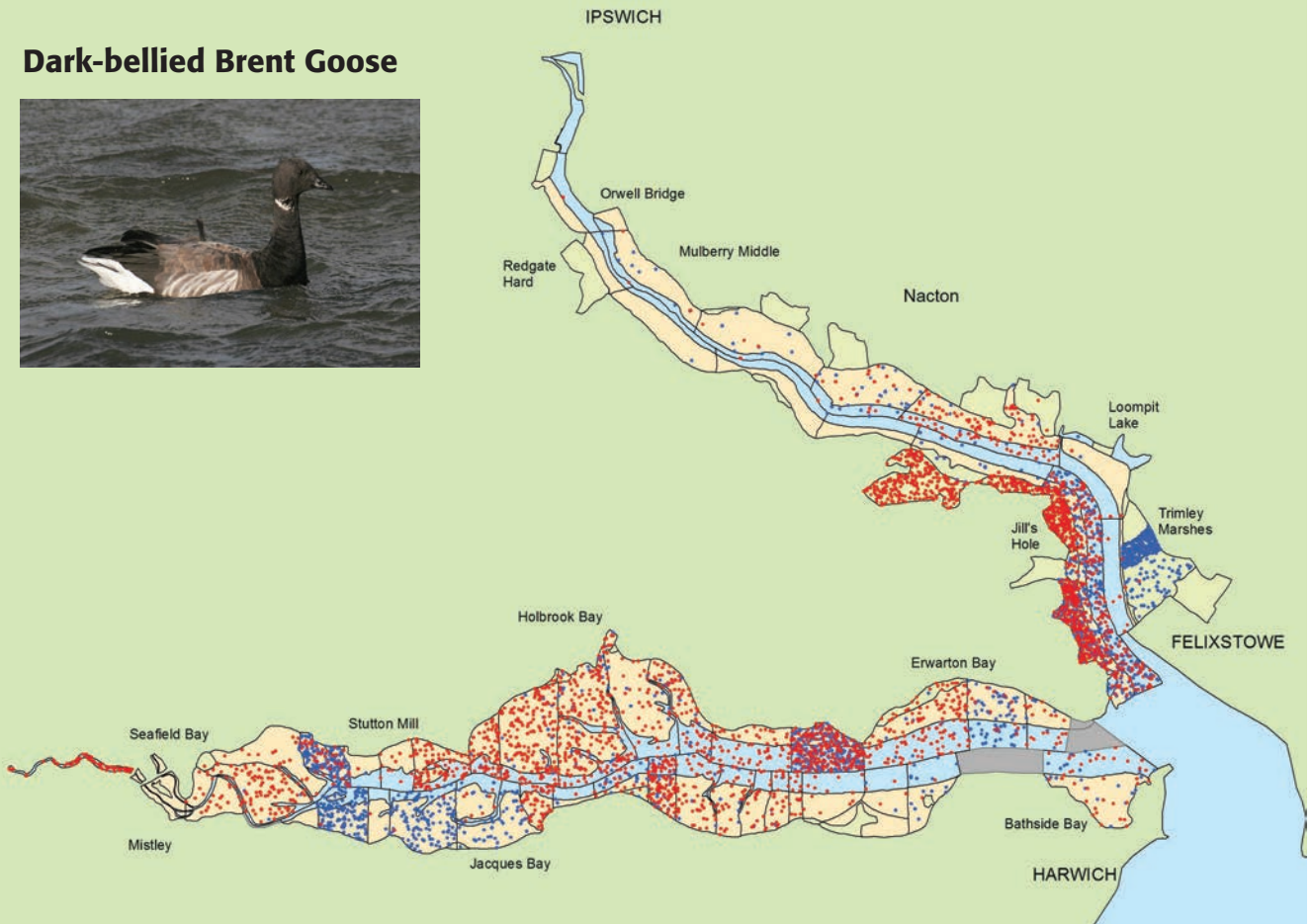
Area covered: 2,441 ha / 1,686 ha
 Mean total birds: 30,749 / 15,721
 Mean bird density: 12.60 / 9.32 birds per ha

Collection of WeBS low tide data is funded by Harwich Port Authority.

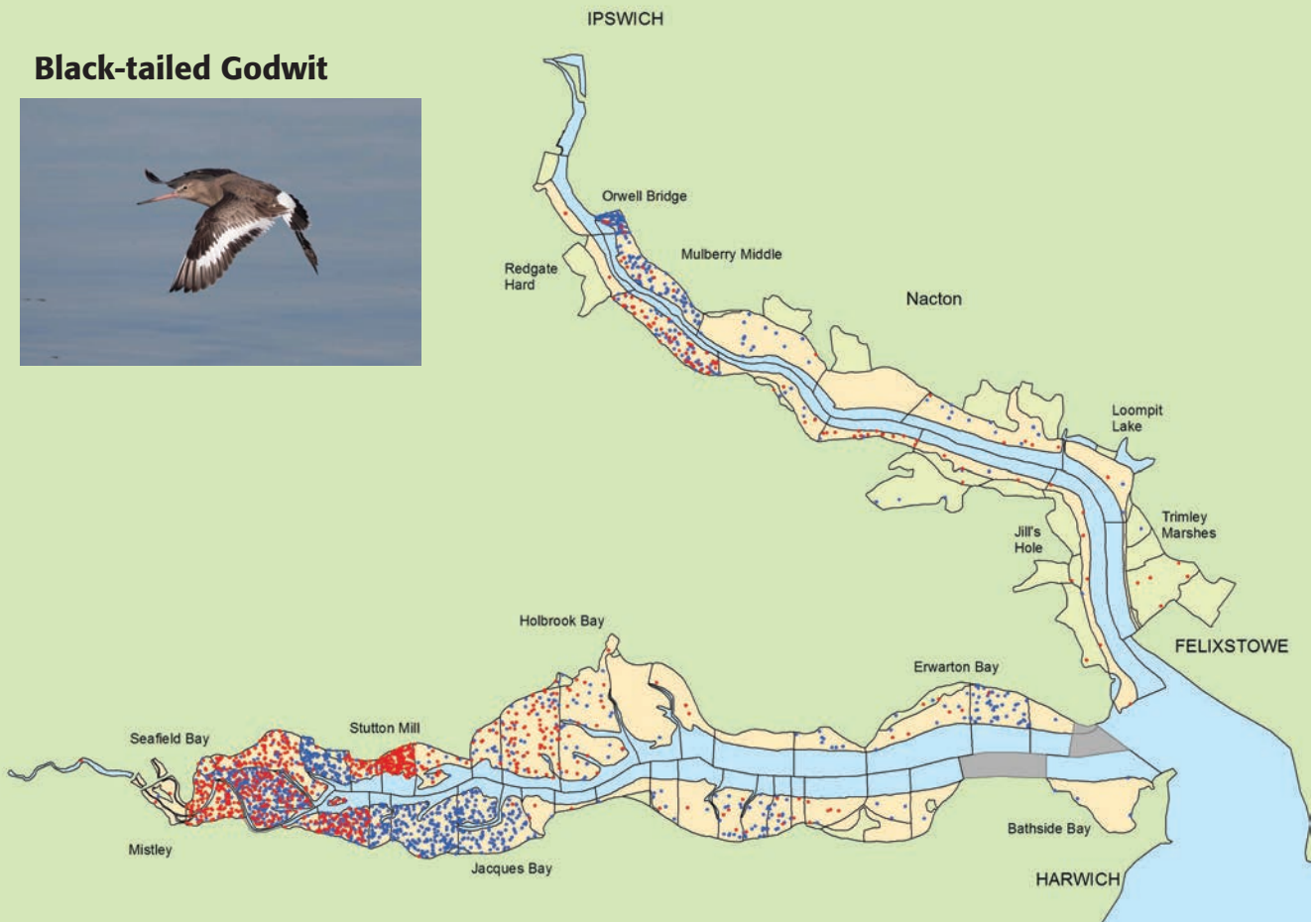
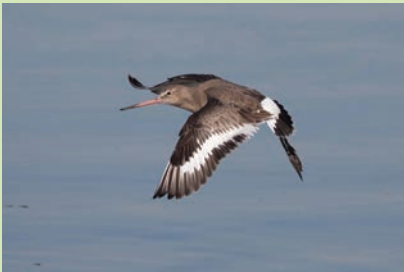


▲ Mean densities of waterbirds at low tide on the Stour and Orwell Estuaries in 2012/13

Dark-bellied Brent Goose



Black-tailed Godwit



BLACK-TAILED GODWIT BY LIZ CUTTING; DARK-BELLIED BRENT GOOSE BY JILL PAKENHAM

▲ Low tide distribution of Dark-bellied Brent Goose (1 dot = 1 bird) (above), and Black-tailed Godwit (1 dot = 1 bird) (below) on the Stour and Orwell Estuaries, for the winters of 2012/13 (red) and 2002/02 (blue).

LOW TIDE COUNTS 2012/13 - SITE FOCUS

WeBS Low Tide Counts in Liverpool Bay

2012/13 saw data collected at low tide on the Ribble and Mersey estuaries. The information was used in a review of waterbird distribution within the wider Liverpool Bay.

The rivers Ribble, Alt, Mersey and Dee form major waterways and estuaries draining into Liverpool Bay. The Ribble and Alt Estuaries, Mersey Estuary and the Dee Estuary are sites of national and international importance for their wader and wildfowl populations. For example, the Liverpool Bay area contains internationally important numbers of Knot, Sanderling, Dunlin, Black-tailed Godwit and Bar-tailed Godwit, in addition to nationally important aggregations of Shelduck, Wigeon, Teal, Pintail, Common Scoter, Cormorant, Oystercatcher, Grey Plover, Ringed Plover and Curlew. The entire Liverpool Bay area is important for bird life, and has therefore received various levels of protection. Several sites in particular are designated as Special Protection Areas (SPAs) including the Ribble and Alt Estuaries SPA, the Mersey Estuary SPA and the recently classified Mersey Narrows & North Wirral Foreshore SPA.

Natural England recently commissioned a study to identify current waterbird roosting and feeding sites in the Liverpool Bay area, describe the relationships between these sites, and seek to identify which sites are of most importance and are under the greatest threat (Still *et al.* 2014). WeBS counters on the four estuaries within the study area were consulted in order to pinpoint the locations of roosts within existing WeBS count sections and also to make use of their local knowledge regarding disturbance and potential threats in these areas. Low Tide Counts were carried out on the Ribble and Mersey Estuaries in 2012/13, and on the Alt Estuary and North Wirral Foreshore in 2008/09. Through the use of dot density maps the feeding distributions of designated species were mapped, highlighting some important feeding areas for waterbirds within Liverpool Bay. For example, the North Wirral Foreshore holds internationally important numbers of Knot and nationally important numbers of Oystercatcher, Grey Plover, Ringed Plover, Sanderling and Dunlin, whilst Bar-tailed Godwits and Knot, which roost on the Alt Estuary, tend to fly across the bay to feed on the rich mudflats. At low tide, the Mersey Estuary was found to hold the highest density of Black-tailed Godwits within the Liverpool Bay area and also large numbers of Dunlin and Teal. Almost the entire population of Wigeon in the Liverpool Bay used the Ribble Estuary at low tide, feeding on the extensive saltmarshes there. The study highlighted



▲ A comparison of the main high tide roosting areas (blue dots) and low tide feeding distributions (red dots) of Dunlin in the Liverpool Bay area (Blackpool to the North Wirral Foreshore).

how different species use different areas for roosting and feeding. Some species, such as Curlew and Dunlin, used the same areas for both feeding and roosting, while others travelled significant distance between locations. This is important when designating SPAs, which are often assessed by their roosting assemblage yet may be just as important to other species for feeding.

FIND OUT MORE...

Still, D.A., Calbrade, N.A. & Holt, C.A. 2014. *Review and analysis of changes in waterbird use of the Mersey Estuary SPA, Mersey Narrows & North Wirral Foreshore SPA and Ribble & Alt Estuaries SPA*. BTO Research Report 648. BTO, Thetford.



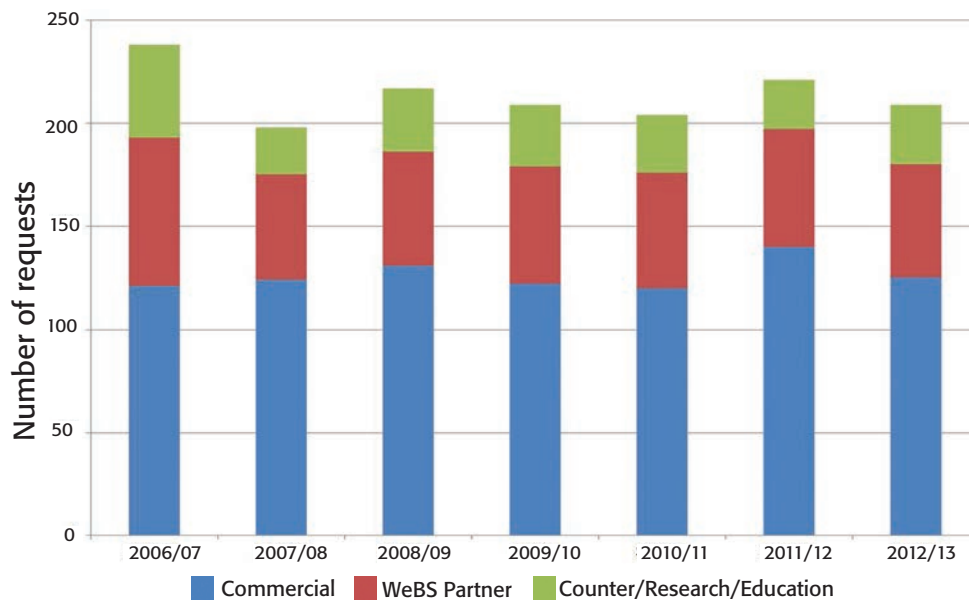
Internationally important numbers of Bar-tailed Godwit, Black-tailed Godwit and Knot use the estuaries within Liverpool Bay

Uses of WeBS data 2012/13

With the UK host to internationally important numbers of over-wintering waterbirds, one of the principal aims of WeBS is to provide data to facilitate their conservation. Indeed, there have been many high-profile examples over the years in which WeBS data have proved to be fundamental in securing the protection of important wetland sites.

A summary of site-based WeBS information is presented on the online interface, but finer level data (both spatial and temporal) are available in a user-friendly format through a bespoke WeBS Data Request. Any WeBS-based information that is to be incorporated into site evaluation work, such as Environmental Impact Assessments (EIAs), should be sourced through a WeBS Data Request.

The graph shows the number of Data Requests processed by the WeBS office each year since 2006/07. These are from a range of stakeholder groups, including country conservation agencies, environmental consultancies, academic researchers and bird clubs. Summarised WeBS data are also provided to several online environmental data portals. January WeBS data are supplied to Wetlands



▲ WeBS Data Requests 2006/07 to 2012/13

International for use inclusion in the International Waterbird Census (IWC), and summaries are used in outputs such as National Totals lists, Waterbird Population Estimates, and the AEWA Conservation Status Report.

The WeBS Partnership is keen to encourage WeBS data use within environmental research. A number of scientific papers and reports that have used WeBS data in recent years are referenced within the pages of this annual report, and there is of course

an extensive suite of other research questions relating to waterbird ecology and wider wetland management issues to which WeBS data would lend themselves, at both national and international scales. Academic researchers, prospective students and potential collaborators can email the WeBS office at webs@bto.org.

WeBS DATA REQUESTS

More information about the WeBS Data Request Service is available from www.bto.org/webs-data where you can see coverage by WeBS of different sites, check data request charges, and view examples of the data that can be provided.

WeBS Local Organisers in 2012/13

Continued from back page

WALES

Anglesey	Ian Sims
Breconshire	Andrew King
Burry Inlet	Alastair Flannagan (now Lyndon Jeffery)
Caernarfonshire	Rhion Pritchard
Caernarfonshire (Foryd Bay)	Simon Hugheston-Roberts
Cardigan (incl Dyfi Estuary)	Dick Squires (now Russell Jones)
Cardiganshire	Terry Wells
Clwyd (coastal)	VACANT
Clwyd (inland)	Vacant (now Duncan Halpin)
East Glamorgan	Daniel Jenkins-Jones
Gwent (excl Severn Estuary)	Al Venables
Merioneth (estuaries)	Jim Dustow
Merioneth (other sites)	Trefor Owen
Montgomeryshire	Jane Kelsall
Pembrokeshire	Annie Haycock
Radnorshire	Peter Jennings
Severn Estuary (Wales)	Al Venables
West Glamorgan	Alastair Flannagan (now Lyndon Jeffery)

NORTHERN IRELAND

Antrim (Larne Lough)	Doreen Hilditch
Antrim (other sites)	Vacant (now Adam McClure)
Armagh (excl Loughs Neagh and Beg)	Vacant (now Stephen Hewitt)
Belfast Lough	Shane Wolsey
Down (Carlingford Lough)	Vacant (now Shane Wolsey)
Down (Dundrum Bay)	Malachy Martin (now Patrick Lynch)
Down (other sites)	Vacant (now Shane Wolsey)
Down (Outer Ards)	NIEA
Down (South Down Coast)	Vacant (now Shane Wolsey)
Down (Strangford Lough)	Kerry Mackie
Fermanagh	Vacant (now Michael Stinson)
Londonderry (Bann Estuary)	Hill Dick
Londonderry (Lough Foyle)	Matthew Tickner
Londonderry (other sites)	Vacant (now Shane Wolsey)
Loughs Neagh and Beg	NIEA
Tyrone (excl Loughs Neagh and Beg)	Vacant (now Michael Stinson)

CHANNEL ISLANDS

Alderney	Alderney Wildlife Trust Ecologist
Channel Islands (inland)	Glyn Young
Guernsey Coast	Mary Simmons
Jersey Coast	Roger Noel

ISLE OF MAN

Isle of Man	Pat Cullen
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We would be grateful for help organising WeBS in areas currently without a Local Organiser (marked **VACANT**). If you live in one of these areas and would be interested in taking on the role, please let us know. Email: webs@bto.org

In 2012/13, the WeBS Local Organiser Advisory Committee (WeBS LOAC) was comprised of John Armitage, Neil Bielby, Gladys Grant, Andrew King, Ian Lees, Nick Mason, Dave Shackleton and Shane Wolsey. Thanks to them for representing the wider LO network. Information about the WeBS LOAC can be found at www.bto.org/webs/loac

WeBS ONLINE REPORT

Further information, including site tables and trends for all the regular WeBS species, is available in the online report at www.bto.org/webs-reporting.



Selected further reading

Recent studies that have used WeBS data and are not referenced elsewhere in this report

Austin, G.E., Read, W.J., Calbrade, N.A., Mellan, H.J., Skellorn, W., Hearn, R.D., Stroud, D.A., Wotton, S.R., Musgrove, A.J. & Holt, C.A. 2014. *Waterbirds in the UK 2011/12: The Wetland Bird Survey*. BTO/RSPB/JNCC. BTO, Thetford.

Baillie, S.R., Marchant, J.H., Leech, D.I., Massimino, D., Eglinton, S.M., Johnston, A., Noble, D.G., Barimore, C., Kew, A.J., Downie, I.S., Risely, K. & Robinson, R.A. 2014. *BirdTrends 2013: trends in numbers, breeding success and survival for UK breeding birds*. BTO Research Report 652. BTO, Thetford. (www.bto.org/birdtrends).

Chamberlain, D.E., Austin, G.E., Green, R.E., Hulme, M.F. & Burton, N.H.K. 2013. Improved estimates of population trends of Cormorant *Phalacrocorax carbo* in England and Wales for effective management of a protected species at the centre of a human-wildlife conflict. *Bird Study* **60**: 335–344.

Chamberlain, D.E., Austin, G.E., Newson, S.E., Johnston, A.J. & Burton, N.H.K. 2013. Licensed control does not reduce local Cormorant *Phalacrocorax carbo* population size in winter. *Journal of Ornithology* **154**: 739–750.



JOHN HARDING

Cook, A.S.C.P., Barimore, C., Holt, C.A., Read, W.J. & Austin, G.E. 2013. *Wetland Bird Survey Alerts 2009/10: Changes in numbers of wintering waterbirds in the UK, SPAs and SSSIs*. BTO Research Report 641. <http://blx1.bto.org/webs-reporting-alerts>

Crowe, O. & Holt, C. 2013. Estimates of waterbird numbers wintering in Ireland, 2006/07-2010/11. *Irish Birds* **9**: 545–552.

Eaton, M.A., Balmer, D.E., Bright, J., Cuthbert, R., Grice, P.V., Hall, C., Hayhow, D.B., Hearn, R.D., Holt, C.A., Knipe, A., Mavor, R., Noble, D.G., Opper, S., Risely, K., Stroud, D.A. & Wotton, S. 2013. *The state of the UK's birds 2013*. RSPB, BTO, WWF, NRW, JNCC, NE, NIEA and SNH, Sandy, Bedfordshire. (www.bto.org/SUKB).

Harvey, P.V. & Heubeck, M. 2012. Changes in the wintering population and distribution of Slavonian Grebes in Shetland. *British Birds* **105**: 704–715.

Holt, C. 2013. The changing status of the Great White Egret in Britain. *British Birds* **106**: 246–257.

Mendez, V., Gill, J.A., Burton, N.H.K., Austin, G.E., Petchey, O.L. & Davies, R.G. 2012. Functional diversity across space and time: trends in wader communities on British estuaries. *Diversity and Distributions* **18**: 356–365.

Mitchell, C., Hearn, R. & Stroud, D. 2012. The merging of populations of Greylag Geese breeding in Britain. *British Birds* **105**: 498–505.

Musgrove, A.J., Aebischer, N.J., Eaton, M.A., Hearn, R.D., Newson, S.E., Noble, D.G., Parsons, M., Risely, K. & Stroud, D.A. 2013. Population estimates of birds in Great Britain and the United Kingdom. *British Birds* **106**: 64–100.

Pearce-Higgins, J.W. & Holt, C.A. 2013. Impacts of climate change on waterbirds. *Marine Climate Change Impacts Partnership Science Review 2013*: 149–154.



SPECIAL THANKS

We wish to thank all surveyors and Local Organisers for making WeBS the success it is today. Unfortunately space does not permit all observers to be acknowledged individually, but we would especially like to credit the LOs for their efforts.

WeBS Local Organisers in 2012/13

ENGLAND

Avon (excl Severn Estuary)
Bedfordshire
Berkshire
Buckinghamshire
Cambridgeshire (incl Huntingdonshire)
Cambridgeshire (Nene Washes)
Cambridgeshire (Ouse Washes)
Cheshire (North)
Cheshire (South)
Cleveland (excl Tees Estuary)
Cleveland (Tees Estuary)
Cornwall (excl Tamar Complex)

Cornwall (Tamar Complex)
Cotswold Water Park
Cumbria (Duddon Estuary)
Cumbria (excl estuaries)
Cumbria (Irt/Mite/Esk Estuary)
Dee Estuary
Derbyshire
Devon (other sites)
Devon (Taw/Torridge Estuary)

Dorset (excl estuaries)
Dorset (Poole Harbour)
Dorset (Radipole and Lodmoor)
Dorset (The Fleet and Portland Harbour)
Durham
Essex (Crouch/Roach Estuaries and South Dengie)
Essex (Hamford Water)
Essex (North Blackwater)
Essex (other sites)
Essex (South Blackwater and North Dengie)
Gloucestershire
Greater London (excl Thames Estuary)
Greater Manchester
Hampshire (Avon Valley)
Hampshire (estuaries/coastal)
Hampshire (excl Avon Valley)
Herefordshire
Hertfordshire
Humber Estuary (inner South)
Humber Estuary (mid South)

Humber Estuary (North)
Humber Estuary (outer South)
Isle of Wight
Kent (Dungeness area)
Kent (East)
Kent (North Kent estuaries)
Kent (Pegwell Bay)
Kent (West)
Lancashire (East Lancs and Fylde)
Lancashire (North inland)
Lancashire (Ribble Estuary)
Lancashire (River Lune)
Lancashire (West inland)
Lee Valley
Leicestershire and Rutland (excl Rutland Water)
Leicestershire and Rutland (Rutland Water)
Lincolnshire (North inland)
Lincolnshire (South inland)
Merseyside (Alt Estuary)
Merseyside (inland)
Merseyside (Mersey Estuary)
Morecambe Bay (North)
Morecambe Bay (South)
Norfolk (Breydon Water)
Norfolk (excl estuaries)
Norfolk (North Norfolk Coast)
Northamptonshire (excl Nene Valley)
Northamptonshire (Nene Valley)
Northumberland (coastal)
Northumberland (inland)
Northumberland (Lindisfarne)
Nottinghamshire

Oxfordshire (North)
Oxfordshire (South)

Rupert Higgins
Richard Bashford
Ken White
Roger Warren
Bruce Martin

Charlie Kitchin
Paul Harrington
Vacant (now Kane Brides)
David Cookson
Chris Sharpe
Mike Leakey
Simon Taylor (now Pete Roseveare)
Gladys Grant
Gareth Harris
Colin Gay
Dave Shackleton
Peter Jones
Colin Wells
Peter Gibbon
Pete Reay
Terry Chaplin (now Brian O'Leary)
John Jones
Paul Morton
Toby Branston
Steve Groves

VACANT
Peter Mason

Julian Novorol
John Thorogood
VACANT
Anthony Harbott

Michael Smart
Helen Baker

Jamie Dunning
John Clark
John Shillitoe
Keith Wills
Chris Robinson
Jim Terry
Keith Parker
Harriet Billanlie (now Richard Barnard)
Nick Cutts
John Walker
Jim Baldwin
David Walker
Ken Lodge (now **VACANT**)
Geoff Orton
Pete Findley
VACANT
Heather Hilton (now **VACANT**)
Peter Marsh
Ken Abram
Jean Roberts
Tom Clare
Cath Patrick
Brian Moore

Tim Appleton

Chris Gunn
Bob Titman
Steve White
Vacant (now Kevin Feeney)
Dermot Smith
Clive Hartley (now **VACANT**)
Jean Roberts
Jim Rowe
Tim Strudwick
Michael Rooney
Jim Williams (now **VACANT**)

Steve Brayshaw
Daniel Turner
Steve Holliday
Andrew Craggs
Gary Hobson (now David Parkin)
Sandra Bletchly
Ian Lees (now Ben Carpenter)

Severn Estuary (England)
Shropshire
Solway Estuary (inner South)
Solway Estuary (outer South)
Somerset (other sites)
Somerset (Somerset Levels)
Staffordshire
Suffolk (Alde Complex)
Suffolk (Alton Water)
Suffolk (Blyth Estuary)
Suffolk (Deben Estuary)
Suffolk (Orwell Estuary)
Suffolk (other sites)
Suffolk (Stour Estuary)
Surrey
Sussex (Chichester Harbour)
Sussex (other sites)
Thames Estuary (Foulness)
The Wash
Warwickshire
West Midlands
Wiltshire
Worcestershire
Yorkshire (East and Scarborough)

Yorkshire (Harrogate and Yorkshire Dales)
Yorkshire (Huddersfield/Halifax area)
Yorkshire (Leeds area)
Yorkshire (South)
Yorkshire (Wakefield area)

Harvey Rose
Michael Wallace
Norman Holton
Dave Shackleton
Eve Tigwell
Steve Meen
Steve Turner
Ian Castle
John Glazebrook
Adam Burrows
Nick Mason
Mick Wright
Alan Miller
Rick Vonk
Penny Williams
Edward Rowsell
Richard Bown
Chris Lewis
Jim Scott
Matthew Griffiths
Nick Lewis
Julian Rolls (now Bill Quantrill)
Andrew Warr
Shirley Pashby (now Jim Morgan)
Bill Haines

VACANT

Paul Morris
Vacant (now Jamie Dunning)
Peter Smith

SCOTLAND

Aberdeenshire
Angus (excl Montrose Basin)
Angus (Montrose Basin)
Argyll Mainland
Arran
Ayrshire
Badenoch and Strathspey
Borders
Bute
Caithness
Central (excl Forth Estuary)
Clyde Estuary
Dumfries and Galloway (Auchencairn and Orchardtown Bays)
Dumfries and Galloway (Fleet Bay)
Dumfries and Galloway (Loch Ryan)
Dumfries and Galloway (other sites)
Dumfries and Galloway (Rough Firth)
Dumfries and Galloway (Wigtown Bay)
Fife (excl estuaries)
Fife (Tay and Eden Estuaries)
Forth Estuary (inner)
Forth Estuary (outer North)
Forth (outer South)
Glasgow/Renfrewshire/Lanarkshire
Harris and Lewis
Islay, Jura and Colonsay
Isle of Cumbrae
Lochaber
Lothian (excl estuaries)
Lothian (Tynninghame Estuary)
Moray and Nairn (inland)
Moray and Nairn (Lossie Estuary)
Moray Basin Coast
Mull
Orkney
Perth and Kinross (excl Loch Leven)
Perth and Kinross (Loch Leven)
Shetland
Skye and Lochalsh
Solway Estuary (North)
Sutherland (excl Moray Basin)
Tiree and Coll
Uists and Benbecula
West Inverness/Wester Ross

Rob Minshall
Bruce Lynch (now **VACANT**)
Anna Cheshier
Paul Daw
Jim Cassels
Dave Grant
Keith Duncan
Andrew Bramhall
Ian Hopkins
Sinclair Manson
Neil Bielby
John Clark
Euan MacAlpine

David Hawker
Paul Collin
Andy Riches
Judy Baxter

Paul Collin

Allan Brown
Norman Elkins
Michael Bell
Alastair Inglis
Duncan Pridde
John Clark
Yvonne Benting
John Armitage
VACANT
John Dye
Joan Wilcox (now Allan Brown)
Bobby Anderson
David Law
Bob Proctor
Bob Swann
Paul Daw
Eric Meek
Michael Bell
Jeremy Squire
Paul Harvey
Robert Macmillan
Andy Riches
VACANT
John Bowler
Yvonne Benting
VACANT



in association
with



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