



GooseNews

Issue no. 5 Autumn 2006

The Newsletter of WWT's Goose & Swan Monitoring Programme

A conservation success for us all

It is likely that a goose or a swan is rarely the first bird to come to mind when thinking of priorities for conservation action. Almost all have done rather well in recent decades, increasing both in range and abundance. In contrast, many bird species typical of farmland and woodland habitats have declined, in some cases dramatically, and have therefore rightly received considerable attention from conservation organisations. Nevertheless, in addition to these successes in goose and swan conservation over recent decades, several populations are currently declining. One of the most notable of these is the Greenland White-fronted Goose, which decreased in number by approximately one third between 1999/2000 and 2004/05.

Detailed information on their abundance, distribution, breeding success, and survival has provided a thorough understanding of the nature of this problem – quite simply, over a number of recent years the geese have not been producing sufficient young to replace annual losses of adult birds, probably through competitive interaction with an expanding population of Canada Goose now spreading in west Greenland. Therefore, the recent news from Iceland that Greenland Whitefronts are to be removed from the quarry list, and thus fully protected there, from August 2006, is very welcome. Although hunting in Iceland is not the primary cause of the recent decline, this reduction in annual mortality will nevertheless be a great boost to this beleaguered population. The decision to introduce this measure comes after a great deal of sustained lobbying of the Icelandic government, primarily by the Greenland White-fronted Goose Study (GWGS). An important part of this success was the strength of the case that could be presented to Icelandic ministers, due to the excellent flyway-wide dataset collected by the GWGS/GSMP network that demonstrated beyond doubt that this population is in serious decline. This clearly shows the direct benefit to conservation that all the commitment and effort in the field shown by the mainly volunteer network can yield – this is a conservation success for each and every one of us to feel proud of!

The rise and fall of this population is summarised in more detail on pages 4-5 by Tony Fox and Ian Francis, the coordinators of GWGS, where they also highlight the further problems still facing Greenland Whitefronts, and the effort that will be needed to ensure the long-term safety of this charismatic goose.

Richard Hearn



Greenland White-fronted Goose (Alyn Walsh)

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Avian Influenza

All active GSMP fieldworkers have been sent information regarding highly pathogenic avian influenza (H5N1) with this issue of *GooseNews*. Please take a moment to read these guidelines as they contain important information on health and safety, and ways in which you may be able to assist in the detection of possible outbreaks. If you are an active fieldworker and have not received this information, please contact us for a copy, or view it on the WWT website at <http://www.wwt.org.uk/research/monitoring/fieldworkers.asp>

New IGC Local Organisers

Jeremy Squire and Mike Scott have recently taken over the role of Local Organiser for the Icelandic-breeding Goose Census in Fife and Borders, respectively. We would like to thank them for their enthusiasm in taking on this important role, and we would also like to thank the retiring LOs, Allan Brown and Peter Gordon, for their immense support and effort in the past in ensuring good coverage for this census in their regions.

GSMP flyer

A flyer designed to promote the GSMP and raise greater awareness of its role amongst bird watchers in the UK will be circulated via *British Birds* and *Bird Watching* in September 2006. Additional copies of this flyer are also available for anyone who feels they may be in a position to distribute them, for example at local bird club meetings. If you would like a supply of these flyers, please contact the Waterbird Monitoring Unit at WWT.



GSMP website

A reminder that much information on the Goose & Swan Monitoring Programme and the species it covers can be found on WWT's website, at <http://www.wwt.org.uk/research/monitoring/>. This includes detailed information on results of surveys reported in this issue of *GooseNews*, and various resources for GSMP fieldworkers, such as counts forms. Back issues of reports are being steadily added, starting with the recent addition of IGC reports back to 1980/81.

Staff changes at WWT

Since the last issue of *GooseNews*, there have been a number of changes in the Waterbird Monitoring Unit. Peter Cranswick, formerly the Unit Head, has assumed the role of Programme Manager for the Threatened Waterbirds Unit, while Richard Hearn replaces him as Programme Manager for Waterbird Monitoring. In the past year, Helen Rowell, with whom many of you will have corresponded regarding the IGC and other GSMP activities, has left WWT. The main contact for GSMP activities is now Jenny Worden (see back page for contact details), with Colette Hall providing the lead for some GSMP projects (primarily Dark-bellied Brent Goose monitoring and CUDI). Other new staff also assisting on some GSMP projects are Lisa Allen, Gareth Bradbury and Anne Harrison.

December IGC counts

Many thanks to all IGC counters for the superb effort in carrying out the new coordinated December count. As you will see from Jenny Worden's summary of the 2005 census on page 10, excellent coverage was achieved. With further development of coordinated survey effort between the UK and Iceland, it is hoped that by the end of the current trial period in 2008 we will be able to confidently determine whether December is now a better month in which to count Iceland Greylag Geese. The same assessment will also be carried out for Pink-footed Goose using the long-running October and November counts.

Northwest Scotland Greylag Goose Survey 2006

Unfortunately, due to a lack of funding, it has been necessary to postpone the planned 2006 survey until 2008. Although funding for 2008 has not yet been secured, detailed plans have been made and it is highly likely that the required funding will be available. Thanks to everyone who expressed an interest in this survey, with apologies to anyone that has not already received notification of this postponement.

Further information will be made available in due course on the GSMP web pages, and in *GooseNews* 6. If you are interested in taking part in this survey in August 2008 and would like to receive further updates as they become available, please contact the Waterbird Monitoring Unit.

Survey dates for 2006/07

Icelandic-breeding Goose Census

Count forms for the 2006/07 IGC have been mailed to all counters or Local Organisers with this issue of *GooseNews*. If you have not received your forms, or would like to participate for the first time, please contact the Waterbird Monitoring Unit at WWT Slimbridge. The coordinated count dates for this year are:

14/15 October, 11/12 November and 16/17 December

If you are unable to count on any of these dates, please contact either your Local Organiser if you have one, or the Waterbird Monitoring Unit at WWT, so that we may try to arrange for cover of your site by another counter. As usual, we would like to encourage all counters to also carry out a count during September, particularly at those sites where Re-established or Northwest Scotland Greylag Geese occur. September counts are not strictly coordinated but should be carried out as close as possible to the end of the third week of September, although any counts made during the month will be of value (see page 8 of *GooseNews* 2 for further details).

Please remember that, ideally, all sites should be covered during the October, November and December counts as, although some may only support one species, in some years early arrivals of Greylag Geese or late arrivals of Pink-footed Geese mean that the traditional month for estimating their population size (normally November for Greylag Geese and October for Pink-footed Geese) may differ. This is particularly important during the next two winters as we continue to collect data that will allow us to reassess whether the ideal month for counting these geese needs to be changed.

International Dark-bellied Brent Goose Census

The next flyway-wide coordinated count will be held on 5/6 May 2007. If you monitor a site where Dark-bellied Brent Geese may be found in May but have not been contacted regarding this survey in the past two years, we would be pleased to hear from you.

Colour-mark Reading

All sightings of colour-marked wildfowl, not just geese and swans, can be sent either direct to the relevant project coordinator or to 'Colour-marked Wildfowl' at WWT Slimbridge, or by email to colourmarkedwildfowl@wwt.org.uk.

Further details of other colour-marking projects can be found on the EURING colour-marking website: <http://www.cr-birding.be>

Age Assessments

Age assessments will continue during 2006/07 as usual. The survey periods vary between species and are shown below.

Population	Period	Notes
Whooper Swan	Oct - Jan	
Bewick's Swan	Nov - Feb	
Iceland Greylag Goose	Oct - mid Nov	care needed with age identification
North west Scottish Greylag Goose	Aug - Sep	
Re-established Greylag Goose	Aug - Sep	
Pink-footed Goose	mid Sep - mid Nov	
Bean Goose	Oct - Nov	
European White-fronted Goose	Oct - Jan	focus on Jan
Greenland White-fronted Goose	Oct - Jan	focus on Dec
Dark-bellied Brent Goose	Sep - Mar	focus on Oct - Nov
Light-bellied Brent Goose (both populations)	Sep - Mar	focus on Oct - Nov
Barnacle Goose	Oct - Dec	
Canada Goose	Jun - Jul	care needed with age identification of fledged birds

Greenland White-fronted Geese in 2004/05, with good news from Iceland!

If you read the journal *British Birds*, you will have seen in the May 2006 issue a major review of the status of the Greenland White-fronted Goose, describing its recent “rise and fall”. The fact is that after becoming something of a conservation success story through the 1980s and 1990s, this population is now in some trouble.

In the late 1970s, the future of the Greenland White-fronted Goose looked rather gloomy. It was known that numbers had shown consistent declines at many of its resorts, but because of the remote nature of many of the flocks, it was poorly covered by conventional waterbird surveys at that time, making it difficult to document the precise nature of changes in its abundance. The activities of the Greenland White-fronted Goose Study went some way to changing this situation. In collaboration with the National Parks and Wildlife Service in Ireland and a superb network of local counters throughout the winter range, the precise distribution and abundance of the population was established and an annual survey of all known wintering resorts has been achieved every year since winter 1982/83. An individual marking programme was also initiated in Ireland, following successes with marking on the breeding grounds. In 1982/83, hunting on the wintering grounds ceased under protective legislation that came into force that year.



Greenland White-fronted Geese (Alyn Walsh)

The effect of protection from winter hunting was immediate, with sustained increases becoming evident at many resorts, providing strong evidence that the hunt added to annual mortality, rather than removing a harvestable surplus that would have died of other causes anyway. Numbers overall increased by 5-6% per annum under protection through the 1980s and 1990s and from the 16,500 counted in 1982/83, the population peaked at 35,600 in winter 1999/2000. A less conspicuous trend during the period of increase, however, was the progressive decline in production of young during this same period: in the 1980s, the Greenland White-fronted Goose regularly returned with c.14% young in the flocks, but as the 1990s drew on, so that proportion fell to constitute less than 10%, less than the number of birds required to replace birds lost through natural losses and from hunting which continued in autumn in Iceland. As production of young fell, so did the potential for the population to replace annual losses until,

following the 1999/2000 peak, the population went into decline.

The reasons for the poor production are not clear and are discussed in some detail in the *British Birds* article. Cooler summers in Greenland, higher population densities as a result of the increase in number and changes in predator abundance could all contribute to the reduction in reproductive success. However, all of these factors fail to explain the decline in any satisfactory or convincing way. The most likely explanation seems to be the arrival of the Canada Goose in West Greenland from North America, where relaxation in hunting along the Atlantic flyway of the eastern United States may have encouraged an increase in numbers. Whatever the reason, since their first major arrival the late 1980s, more and more Canada Geese have been turning up in West Greenland where formerly the White-front had been the only goose species present in any number. Studies in the early 1990s showed that Canada Geese are behaviourally dominant over White-fronted Geese and displaced them from the best feeding areas during the flightless moult period and that in one study area, the Canada Geese had ultimately displaced White-fronted Geese from an area where only they had been previously present. Although aerial surveys undertaken in 1999 and 2005 showed no increase in breeding Canada Goose pairs, there was a six fold increase in non-breeding (probably moult migrant) Canada Geese, and declines in numbers of White-fronted Geese that mirrored those seen on the wintering grounds.

It does seem likely therefore that Canada Geese are implicated in the decline in reproductive performance of the Greenland White-fronted Goose, potentially as a result of physical displacement from former nesting areas. However, it is hard to prove this effect without detailed studies on the breeding grounds, and even there it is difficult because the two species now rarely occur together to enable effective studies of competitive interactions. One recent study in a particularly large Ramsar wetland on Disko Island suggested there were few interactions between the two species, and at least at that site, no competition for food, so the jury is still out!

The last season’s annual survey for which data are currently available (spring 2005) found a total of 14,030 birds in Britain, the major resort still being Islay in the Inner Hebrides where 7,152 were counted. Coverage was more or less complete; missing counts contributing a mere 1% to the overall total. The troubles for the population continue, however, with an average of 7.8% young in the flocks, close to the value for 2003/04, but well below the average for the last 15 years, and of course well below the numbers of young needed to replace the 15-20% annual mortality, resulting in a 14% decline in numbers over the previous spring (a slightly greater percentage decline compared with those over the previous two seasons). Of course, it has always been the case that out of a population of tens of thousands, very few Greenland White-fronted Goose pairs ever returned to the wintering grounds with young. However, now it would seem that there are no more than 550-570 pairs in the entire population that reproduce successfully each year (*ie* bring

at least one young bird back to the winter quarters). A great deal of the decline could be attributed to the 26% fall in number on Islay, which is especially worrying since Islay had maintained numbers better than in other parts of the range until very recently. Although the data from Ireland are not collated yet, it now seems very unlikely that the spring 2005 global population total will exceed 24,000 which would represent a very dramatic decline from the peak in spring 2000, and suggests the population will fall back to pre-protection levels in a very few years from now.

It is difficult to see what can be done to improve the conservation status of the Greenland White-fronted Goose under these circumstances, apart from hope that the Canada Goose and White-fronted Goose can co-exist (as they do successfully throughout much of the central Canadian Arctic) albeit at population levels below those of the Greenland White-fronted Goose in the late 1990s. The Inuit of West Greenland do not hunt the Canada Geese in any great number and once back in the US and Canada, they are indistinguishable from their kind that have bred in Arctic North America, so disproportionate hunting of Greenland birds is not possible.

The most positive news of recent weeks is the announcement from Iceland of the end of the autumn hunt of White-fronted Geese in Iceland, which until last autumn, still took some 3,000 birds per annum. In the 1980s, this kill was obviously sustainable, in the sense that the population increased at the rate of 5-6% per annum despite this level of harvest. At the present time, this level of artificial mortality was clearly becoming unacceptable, and as the total number fell, so this additional mortality was simply accelerating the already alarming rate of decline. Hence, although the Icelandic autumn hunt was not the original cause of the decline, the population simply could not tolerate this level of kill in its present parlous state without adding directly to natural sources of mortality through the annual cycle. Voluntary constraint on the part of some Icelandic hunters had reduced the level of kill in recent years, but clearly this was not enough. It is therefore of the utmost importance that the Icelandic Ministry of the Environment



Greenland White-fronted Goose hunter (Alyn Walsh)

declared an end to the hunt as from this coming autumn (2006), a decision which came as a considerable relief to all those involved with the conservation of the Greenland White-fronted Goose.

It is of course increasingly important to continue to annually monitor breeding success, annual survival and the changes in abundance of this population as a result of this major change in legislation to fully understand the impact of the removal of this major source of mortality on the population. It will be interesting to see just what effect this will have on the numbers of Greenland White-fronted Geese in the coming years, but it is also essential that the management planning process, started in the early 1990s by the range states but never formally ratified, should be taken up again in the light of the present declines. It becomes ever clearer that progress towards effective conservation of this population necessitates international agreement and action, and the existence of agreed priorities under a management plan for the population would go a long way towards achieving such coordination.

Tony Fox & Ian Francis

Staging Barnacle Geese in Norway during autumn 2005

Barnacle Geese from the breeding population in Svalbard are a regular sight during the autumn migration from vantage points along the Norwegian coast. Flocks in autumn are normally seen from mid-September to mid-October, which ties in well with arrivals of these geese on the Solway Firth, where they over-winter. Few Barnacle Geese are observed resting at these coastal sites – most flocks are seen heading in a southerly direction. Those that are seen feeding at coastal sites are normally small in number and present for only short periods.



Barnacle Geese (Nicholas Cottrell)

Autumn 2005, however, was an exceptional year. Both myself and other ornithologists soon became aware of flocks of staging Barnacle Geese at several sites along the coast. They were observed staging at several sites along the Norwegian coast in considerable numbers, from the county of Nordland in the north to Rogaland in the south. All of these sites are along the normal migration route for Barnacle Geese from Svalbard, and observations of ringed birds confirmed that these were indeed from that population.

The highest count of feeding Barnacle Geese was almost 6,000 on 7th October (Figure 1), virtually all of which were in Nordland county, with counts of 2,000+ at Tenna and Sør-Herøy, 3,500+ at Andøya, and 430 at Vega. All of these sites are traditionally used by large flocks of spring-staging Barnacle Geese, and there were probably many more than these 6,000 Barnacle Geese in Norway on that day as not all sites used in the spring were visited, and these counts were largely opportunistic. Counts from other sites in Nordland were from areas where spring counts are not nearly as high, such as Røst, Saupstad and Fredvang where 800-1,500 were present. There were also high counts farther south, especially from Møre & Romsdal (660+) county and from Sogn & Fjordane (up to 650).

The large numbers of Barnacle Geese seen feeding in Norway during autumn 2005 was also reflected in the later arrival of large numbers to the Solway Firth. There were under 14,000 on the Solway at the end of October 2005, *ie* just over half of the

population (L. Griffin *pers. comm.*). There are a number of factors that may have led to these large numbers in Norway during autumn 2005, such as:

- They may have been forced by adverse conditions to undertake the migration southwards when they had insufficient body reserves to complete the journey. This would necessitate staging south of Svalbard and Bear Island (*ie* along the coast of the Norwegian mainland) in order to build up sufficient body reserves.
- Winds in September 2005 were mainly from the south-west and were often rather strong. This may have forced the Barnacle Geese to rest on route.
- Late spring and early autumn 2005 were particularly wet, especially in Helgeland and at other sites in Nordland county. As a result, farmers were unable to harvest the second cut of silage, and there was much surplus grass left standing. This may have proved attractive to flocks of migrating Barnacle Geese. Indeed, observations from Herøy municipality in Nordland revealed that most geese fed in fields of rather long grass which would normally have been cut and baled by the time Barnacle Geese undertake the autumn migration.

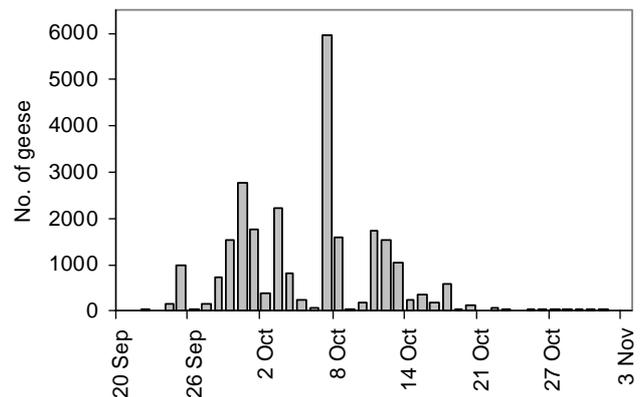


Figure 1. Total counts (minimum) of feeding Barnacle Geese in Norway during autumn 2005.

Data upon which this short article is based have been obtained from various internet web sites as well as the author's own field observations.

Paul Shimmings

Postscript: Many counters on the east coast of Scotland will have also noticed the unusually large numbers of Barnacle Geese present at a number of sites during October and into November, from Shetland to Northumberland. This was reflected in the slow build-up of numbers on the Solway Firth last autumn. If you have counts of Barnacle Geese that have not been forwarded to either your local county bird recorder, or to the GSMP or Wetland Bird Survey secretariat at BTO, please forward them to the Waterbird Monitoring Unit at WWT Slimbridge.

Greylag Geese in the Faroe Islands

The Greylag Goose was once a common breeding bird in the Faroe Islands, although little information exists on its numbers as by 1800 the population was already very small, and by 1830 they had ceased breeding altogether.

However, they have slowly re-established themselves over the course of the past 65 years, and in particular in the past 20-25 years. In around 1940 a few pairs began to breed, but very rarely, and by 1981 the population had only increased to around 2 - 10 pairs. Very few of these Greylag Geese spent the winter in the Faroe Islands, and those that did were from a small population of semi-tame birds in Tórshavn. In most years, only during the spring and autumn were migrating Greylag Geese from the Iceland population observed, and then mainly in bad weather.

The real increase began in the late 1980s, by which time a few breeding pairs had become established at most suitable sites around the Faroe Islands. Since then, a steady increase has taken place and by 2005 there were thought to be about 250 pairs, although a comprehensive survey has not yet been carried out.

The number of Greylag Geese moulting in the Faroe Islands has increased more rapidly, suggesting that birds from elsewhere, probably Iceland, come to the Faroe Islands in order to moult. This is despite the fact that there are very few lakes in the Faroes, and today only two are used by moulting birds - Sandsvatn (81 ha), where fewer than 100 birds occur, and Toftavatn (51 ha). Greylag Geese began to breed at Toftavatn in about 1985, and by 1988 the breeding population had reached 10 pairs. Today, it is still only around 20-25 pairs due to hunting by humans. The first moulting geese, a flock of five, were observed there in 1988, and since then the moulting population has increased dramatically, with more than 1,200 counted there by Petur Mortensen in 2005 (Figure 2).

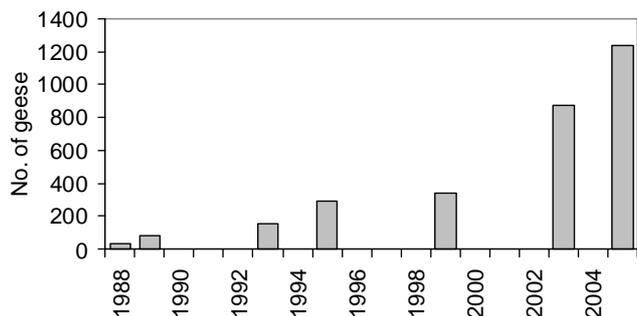


Figure 2. The number of Greylag Geese at Toftavatn, Eysturoy in June to August 1988-2005.

The most important wintering area is Sandsvatn, on Sandoy. The first four wintering Greylag Geese were observed there in 1975/76, with nine in the following winter, and around 330 by 2005/06. By this time the total wintering population in the Faroes was 500 to 1,000 birds.



Greylag Goose (Nicholas Cottrell)

In total, 111 Greylag Geese have been ringed in the Faroe Islands, most of which belong to the semi-tame population in Tórshavn. There have been two recoveries away from the Faroes, one in Scotland and one in Denmark, both of which were shot. One bird ringed in Iceland has also been observed in the Faroes.

Despite these increases in the breeding, moulting and wintering numbers of Greylag Geese, these birds are heavily persecuted in the Faroes, even though they are afforded, along with all other goose species, total protection against all forms of hunting, including adult birds, goslings and eggs. However, in reality there is little done to enforce this protection. A lot of geese are shot every year - some for food and others because the farmers believe that they eat grass provided for their livestock.

Furthermore, many eggs and small goslings are taken for food, particularly for the Christmas period, and some farmers destroy nests and eggs, either directly or by pricking the eggs. This is the reason why the Faroese breeding population has taken so much time to increase - actually there should be a population of several thousand breeding pairs! With thanks to Hanna Joensen, Petur Mortensen and Bergur Olsen for their help with this work.

Jens-Kjeld Jensen

Results from the 5th International Swan Census

The International Swan Census, which took place in January 2005, was a great success, and very many thanks must go to everyone who took part and helped to ensure excellent coverage was achieved, particularly for all the extra effort involved in searching the countryside for additional sites.

This mid winter census of Whooper and Bewick's Swans is the fifth since the first coordinated survey took place in the early 1980s, and it involved the efforts of hundreds of volunteer and professional ornithologists, not only in Britain and Ireland but across the whole wintering range of each population, including Iceland and mainland Europe. The counts have helped to estimate the current size of each population, assess population trends, and provide valuable information regarding important feeding and roosting sites, habitat use and breeding success. The results show differing trends for these two species within Britain and Ireland.

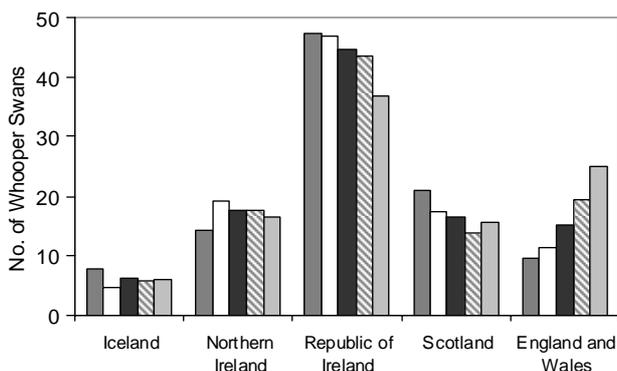


Figure 3. Changes in the total numbers of Whooper Swans in Iceland, Britain and Ireland 1986-2005. Numbers of swans are expressed as percentage of the census total: dark grey (1986), white (1990), black (1995), hashed lines (2000) and pale grey (2005).

The total number of Iceland Whooper Swans counted was 26,366, the highest to date, representing a 26% increase on the January 2000 census total (Table 1). This population (which winters mostly in Britain and Ireland) has undergone a period of sustained growth since the mid 1990s, with a staggering rise of 66% since 1995 when around 16,000 individuals were counted. Numbers have increased in all countries (with the exception of Wales), with the most marked increases occurring in England and Scotland. The proportion of swans recorded in the Republic of Ireland decreased from 43% to 37% between 2000 and 2005, and likewise a decrease of 18% to 16% was seen in Northern Ireland (Figure 3). Conversely, the proportions in England and Scotland increased from 19% to 25%, and 14% to 16%, respectively. A similar proportion of the census total remained in Iceland in winter when compared to January 2000.

The large rise in numbers in England is attributed to continuing increases concentrated at just two sites in the country; Ouse Washes in Norfolk and Martin Mere in Lancashire. These two

sites held 86% (5,544 individuals) of the total counted in England in January 2005. As in 2000, the Highlands region held the largest numbers of birds (829) in Scotland in 2005, although many areas experienced substantial changes in numbers between the two censuses.

It is possible that the increasing British numbers of Whooper Swans, particularly in East central England, may be inflated by an increasing proportion of birds from the Northwest European population wintering in Britain. This population breeds from Fenno-Scandia to Northwest Russia and winters in continental Europe, but it is known from ringing studies that a small number winter in Britain. A greater understanding of the extent of interchange between populations, and use of British and Irish wintering grounds by the Northwest European population, is necessary to ascertain the true size of these expanding populations.

In contrast, numbers of the Northwest Europe population of Bewick's Swan wintering in Britain and Ireland have decreased by 5% since 2000 (Table 1), to around 7,200 individuals. Numbers in both Northern Ireland and the Republic of Ireland have decreased dramatically from 1,244 in 1984, to just 224 in January 2005. Declines have also occurred in many western regions of Britain. Two areas which have seen increases in numbers, however, are East Anglia and Southeast England, which suggests a possible eastward contraction of the wintering range. East central England continues to hold the largest concentrations of Bewick's Swans in Britain and Ireland (Figure 4); the Ouse Washes regularly holding internationally important numbers, and accounting for 77% of all Bewick's Swans recorded in Britain and Ireland during the January 2005 census. Although annual fluctuations at the Ouse Washes occur, numbers have continued to rise with a 7% increase between January 1995 and January 2005, in contrast to the rest of Britain where combined counts fell by 39%.

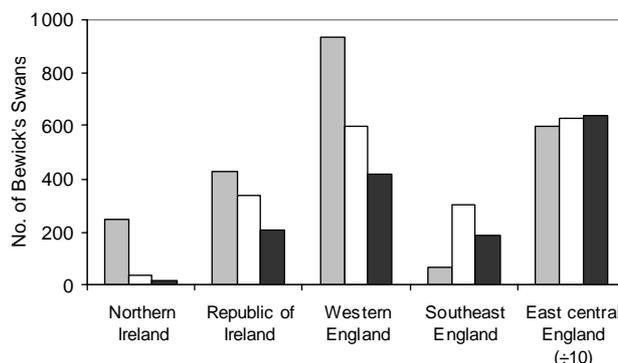


Figure 4. Regional changes in Bewick's Swan numbers 1995-2005: 1995 (grey bar); 2000 (white bar); 2005 (black bar). Note that owing to large numbers in East central England, the totals for this region are divided by 10 for illustration.

The Northwest Europe population of Bewick's Swans as a whole underwent a substantial increase between 1987 and 1995, from 16,046 to 29,277, with the great increase in the Netherlands. The population throughout the rest of Northwest Europe was also censused in January 2000 and 2005, but full results are still awaited. These results will help to determine whether declining numbers in parts of Britain and Ireland are reflected elsewhere in the range and are therefore a cause for concern, or whether the decline in Britain and Ireland is due to a shifting distribution, with a greater proportion of the

population now found elsewhere, most probably as a result of changing climatic conditions and warmer winters allowing more swans to remain closer to their breeding grounds during the winter.

The full results will be published later this year and will also be available on WWT's Goose & Swan Monitoring Programme web pages www.wwt.org.uk/research/monitoring/.

Jenny Worden

Table 1. The total numbers of Whooper and Bewick's Swans counted in January 2005.

Region	Number of Whooper Swans	Percentage change 2000-2005	Number of Bewick's Swans	Percentage change 2000-2005
Northern Ireland	4,331	18	13	-62
Republic of Ireland	9,748	8	211	-39
England	6,495	64	6,980	-3
Wales	94	-16	12	-
Scotland	4,142	45	0	-
Iceland	1,556	29	n/a	n/a
Total	26,366	26	7,216	-5

Low breeding success for Whooper and Bewick's Swans in 2005

Annual age assessments conducted by a network of observers in Britain and Ireland have shown that 2005 was a poor breeding year for both the Iceland population of Whooper Swan and the Northwest European population of Bewick's Swan.

Assessments of Whooper Swan flocks during the 2005/06 winter found an overall proportion of young of 12.1 %, and a mean brood size of 2.5 cygnets per successful pair. This falls far below the proportion of young seen during the international census in January 2005 (19.2 %), and that also found during the 1995 and 2000 censuses (17.9 % and 16.8 %, respectively). The low proportion of young in 2005/06 may be partly attributable to a higher proportion of non-breeding sub-adults in the population, after the highly successful breeding season in 2004.

In all regions, the proportion of young Whooper Swans was below average (Table 2), with the exception of the Republic of Ireland, where productivity was higher than the mean of the previous five years. Given that there is a tendency for Whooper Swans ringed in West Iceland to winter in Ireland, this suggests that swans in the western part of the breeding range had a relatively successful breeding season in 2005.

Particularly low numbers of juveniles (8.8%) were found in flocks at the Ouse Washes - this continues the decline seen in the proportion of young in flocks wintering there since 2001/02. This may indicate a preference by families to select wintering sites closest to their Icelandic breeding grounds, with a greater proportion of non-breeding birds migrating further south. Further studies are needed to determine the possible displacement of smaller families by larger ones (the dominant units in the winter flock), in areas closer to the breeding range. If so, this may also partly explain the regional variation in mean brood size.



Bewick's Swan (Richard Tavor Jones)

Breeding success of Bewick's Swans was similarly low. The proportion of young was 10.9% (well below the five year mean of 14.7 %), and the mean brood size was 2.2 cygnets per successful pair. With the exception of Slimbridge, Southwest England, where 17.7 % young was recorded, the proportion of young was relatively low in all regions (Table 2). Although conditions on the breeding grounds are likely to be important in determining the population's breeding success, high productivity of swans wintering at Slimbridge may perhaps be partly attributable to the regular supplies of grain received by the birds throughout the winter, and the relative protection from disturbance and predation at the site. However, research has shown that smaller flocks, such as those recorded at Slimbridge, comprise higher proportions of juveniles than do larger flocks, which may also explain this trend.

A low proportion of young was recorded both in Northwest England and in East central England. Counters in the

Netherlands, however, recorded 14.5% young (n=4,000) during the last week of November. This was the highest proportion of young in the Netherlands since winter 2001/02, when 14.6% young was recorded. The average proportion of young for both countries combined (12.7%), however, still indicates a relatively

poor breeding success for the Northwest European population in 2005.

Julia Newth & Eileen Rees

Table 2. The proportion of young and mean brood size of Whooper and Bewick's Swans recorded during the 2005/06 winter

Region	Whooper Swan		Bewick's Swan	
	% young	Mean brood size	% young	Mean brood size
Northwest England	14.9	2.6	10.5	2.3
East central England	8.8	2.0	10.6	2.1
Southwest England			17.7	2.2
Southwest Scotland	13.0	3.4		
North & Central Scotland	13.0	2.8		
Northern Ireland	14.1	1.8		
Republic of Ireland	16.6	2.3		
Total	12.1	2.5	10.9	2.2

The Icelandic-breeding Goose Census 2004 and 2005

The population size, distribution and breeding success of Greenland/Iceland Pink-footed Geese and Iceland Greylag Geese were monitored during autumn/winter 2004 and 2005. Many thanks go to everyone in the IGC network for their ongoing support, particularly as this latter year saw the introduction of a third coordinated count in December, due to concerns that the effectiveness of the November count may have been compromised in recent years by later departures from the breeding grounds. This extra count will be carried out for a trial period of three years (2005-2007) so that we can reassess the most suitable time to census Greylag Geese. The new December count was met by a huge response – 161 sites were surveyed during December – almost 90% of those surveyed in November!

Winter 2004 saw the highest number of Pink-footed Geese recorded yet (271,934 in October 2004) and the peak count of Greylag Geese was the largest since 1990 (110,534 in November 2004) (Figure 5). Once adjustments for the presence of birds from the Re-established or Northwest Scotland Greylag Goose populations were made, as well as the inclusion of estimated counts for key sites not counted, population estimates of 292,154 and 107,207 for Pink-footed Goose and Greylag Goose, respectively, were derived. This represented a 4% increase in Pink-footed Goose numbers between 2003 and 2004 and a 32% increase in Greylag Goose numbers. This large rise in Greylag Goose numbers was partly due to the number of geese estimated to be present in Iceland during November 2004 (20,000) which far exceeded any previous estimates, although it was clear that many more than usual were present in Iceland in November.

Counts of both Pink-footed Geese and Greylag Geese in 2005, however, were lower than the preceding year. Totals of Pink-footed Geese counted were 234,120 in October, 258,258 in November and 244,064 in December. After the addition of estimated counts for key sites not counted, a population estimate of 268,650 was derived. This represents a decrease of 8.0% since 2004/05 which contrasts with the sustained increase

shown by this population over the past 25 years, although annual fluctuations are not uncommon.

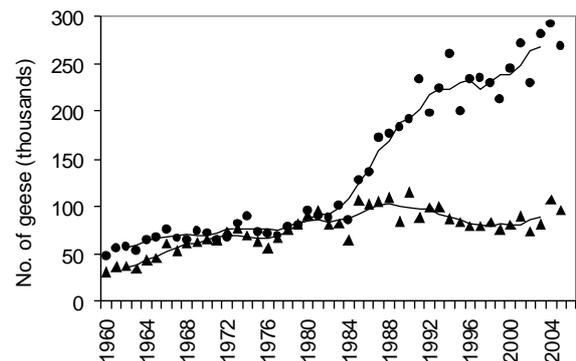


Figure 5. Population estimates of Pink-footed Goose [circles] and Iceland Greylag Goose [triangles], 1960 to 2005. The 5-year running means (eg mean for 2003 is from population estimates for 2001-05) are shown as lines.

Likewise, both October and November counts of Greylag Geese in 2005 were lower than those of the preceding year, however, counts were not received for some important regions in North Scotland in these months. A total of 13,882 was counted in October, with 94,359 in November and 83,295 in December. Once adjustments for non-Icelandic birds were made, as well as the inclusion of estimated counts for key sites not counted, a population estimate of 95,938 was derived. This represents a decrease of 10.5% since the previous adjusted estimate of 107,207.

Recent data collected during the census also suggest that Pink-footed Geese, like Iceland Greylag Geese, may be departing later from the breeding grounds. During recent years the peak count has occurred in November in three of the last four years and four of the last seven, whereas prior to this period the peak

count only occurred once in November (in 1990). Subsequent censuses should clarify whether the population is best censused in November due to progressively later arrival from the breeding grounds.

Both species had a good breeding season in 2004 with 19.4% of young recorded in Pink-footed Goose flocks and 28.2% in Greylag Goose flocks. The breeding success of both species in 2005, however, was lower than the previous year. The overall proportion of young in Pink-footed Goose flocks was 18.1% and, although lower than the preceding three years, was comparable to the mean of the most recent five years (18.1%). The mean brood size of 1.7 goslings per successful pair was lower than in 2004 (2.1) and lower than the five year mean (2.3). Considerable variations in the proportion of young in flocks of Pink-footed Geese existed between regions in 2005. The lowest percentages of young were seen in East central Scotland (15.3%), Southeast Scotland (16.7%) and West England (14.7%). In East England, however, a comparatively high proportion of young (23.7%) was recorded. As few age ratio data have been collected in this region in the past, it is not possible to confidently ascertain whether this region regularly supports a higher proportion of families, although there is some suggestion of this.

The proportion of young Iceland Greylag Geese in surveyed flocks was 22.7%. Although lower than the previous season, this is higher than the mean of the preceding five years (21.1%) and the second highest over that time period. The mean brood size was 2.3 goslings per successful pair, lower than both the previous year (2.8) and the most recent five year mean (2.7).

A future priority of the IGC is to address the few remaining gaps in coverage, including the development of regular coordinated counts in Iceland and Norway to ensure that estimates of population size are as accurate as possible. The full report of the 2004 and 2005 Icelandic-breeding Goose



Greylag Goose (Richard Taylor Jones)

Censuses can be downloaded at <http://www.wwt.org.uk/research/monitoring/reports.asp>.

Jenny Worden

Greenland Barnacle Goose numbers continue to rise!

Although the entire population of Greenland Barnacle Goose is not due to be censused until 2008, regular annual counts at several key locations in Argyll, the Outer Hebrides and Orkney have suggested ongoing increases to the Scottish wintering population.

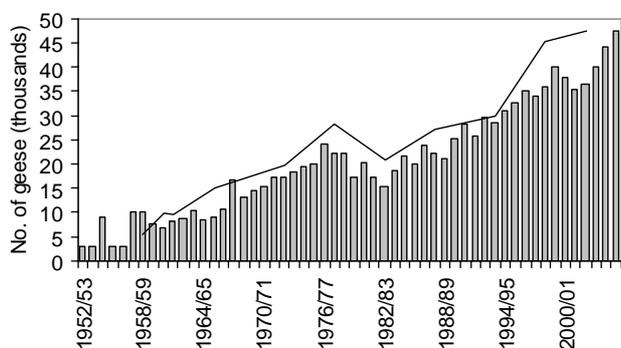


Figure 6. Annual peak counts of Greenland Barnacle Geese on Islay (bars), and international census totals for Scotland (line), 1958/59-2005/06.

Overall numbers in Argyll during spring 2006 were the highest recorded yet, and increased by almost 20% since the preceding year, and 49% over the past five years. This region includes Islay, the single most important wintering location in the flyway, where numbers reached 47,303 in March 2006. Numbers on Islay accounted for over 70% of the total during the last full census in 2003, and have undergone a long-term sustained increase, rising 24% over the past five years (Figure 6).

Peak counts at another important site, South Walls, Orkney reached 2,000 in November 2005, and numbers there have also increased since the 1990s (by 76% in the past ten years). A continued increase has also been observed in the Uists, where combined counts of 4,659 in February 2006 far exceeded any in the most recent ten year period for which data have been collected.

Such an increase in numbers corresponds with the high breeding success in 2004 – 16.1% young were recorded last winter, the best breeding season for 14 years.

Jenny Worden

Breeding Success of Dark-bellied Brent Geese in 2005

Productivity data received from wintering sites in the UK indicate that 2005 was a particularly successful breeding year for Dark-bellied Brent Geese. A total of 77,949 geese were aged at 20 different estuaries or coastal sites along the English east and south coasts, from Northumberland to Devon. The highest numbers were aged at Langstone Harbour, North Norfolk and Blackwater Estuary. The majority of birds were aged in grass fields (46.0%), while a combined total of 30.4% were aged on intertidal habitats.

The overall proportion of young was 28.4% (Figure 7), the highest recorded since 1991 (31.1%) and only the second time in the last 12 years that the percentage of juveniles has exceeded the average annual rate of mortality (15%). The proportion of young within flocks remained high throughout the winter, varying between 27% in October and 32.3% in April. Over three-quarters of the flocks aged held either 15-30% or 30-50% young, with considerably fewer flocks containing 5-15% young. Of the 1,284 families recorded, the mean brood size was 2.8 young per successful pair.

The breeding success of Dark-bellied Brent Geese is known to be greatly influenced by lemming abundance, as well as other factors such as weather. Reports from monitoring stations in the Arctic indicated that conditions in 2005 were favourable, with exceptionally high numbers of lemmings and above average spring temperatures. Preliminary information on Brent numbers and productivity from Russia and elsewhere in Europe also indicate that 2005 was an extremely good breeding season.

As a result of poor productivity, the population of Dark-bellied Brent Goose has been declining, both in the UK and across the whole flyway, since the early 1990s, such that it is now officially

recognised as threatened by Birdlife International. The excellent breeding season in 2005 is, therefore, a welcome relief for the population, though whether there is any positive effect on the trend will require continued investigation.

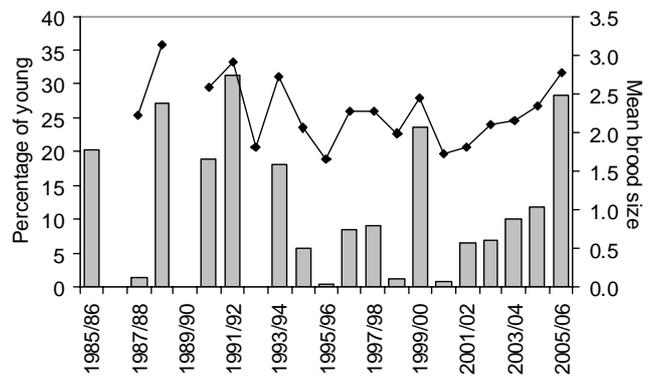


Figure 7. The percentage of young (bars) and mean brood size (dots) of Dark-bellied Brent Geese recorded in Britain, 1985/86-2005/06.

As always, our thanks go out to the network of experienced fieldworkers who undertook the age assessments of Dark-bellied Brent Geese for the twenty-first consecutive winter. We are extremely grateful for their help, advice and continuing support.

The full report can be downloaded from <http://www.wwt.org.uk/research/monitoring/reports.asp>.

Colette Hall

Breeding success of European White-fronted Geese in 2005

Prior to 2004/05, estimates of annual breeding success for European White-fronted Geese had only been made at Slimbridge, Gloucestershire, and national trends in breeding success in the UK were, therefore, determined using data collected from just this site. In winter 2005/06 a total of 1,491 European White-fronted Geese was aged in four regions, and the overall proportion of young (34.3%) and the mean brood size (3.01) (Table 3) were higher than in the previous year (27.4% and 2.4, respectively). Compared with previous estimates from Slimbridge, the proportion of young was the highest recorded for 13 years.

Preliminary data from Europe also suggest an increase in breeding success compared with the previous year, and reports

from monitoring stations in the Arctic also suggest that 2005 was generally a good breeding season for geese.

Colette Hall

Table 3. The proportion of young and mean brood size of European White-fronted Geese in the UK during winter 2005/06.

Region	% young	Mean brood size
Essex	9.1	-
Gloucestershire	31.6	3.25
Norfolk	36.9	2.41
Suffolk	38.0	3.5
Overall	34.3	3.01

Latest Svalbard Barnacle Goose monitoring

The arrival of Barnacle Geese at the Solway Firth was late in autumn 2005, and it is likely that the majority of the population was not present until around the first week of November. Many thousands were grounded in Shetland and Norway during September and October due to bad weather, and many also remained in East Scotland well into October.

Coordinated counts were carried out across the whole of the Solway during 2005/06, providing a population estimate of 23,900 Svalbard Barnacle Geese (Figure 8). This is a decrease of 3,000 (11%) on the estimate in 2004/05. Breeding success was fairly poor again: the proportion of young was 7.9% and the mean brood size per successful pair was 2.50 goslings. This is the highest proportion of young since 2002, although is still lower than the current 10-year mean (9.0%, 1.84 s.e.). Brood size was the highest recorded since 1980: the mean for the most recent ten years (1996-2005) is 1.77 (0.10 s.e.) goslings per successful pair, ranging from 1.37 to 2.50.

Despite the decrease in numbers between 2004/05 and 2005/06, the population remains in good condition following the sustained increase from the 1960s to mid 1990s. Since then, numbers have been somewhat stable, fluctuating at around 25,000. As numbers have increased, the breeding success, as measured by the proportion of young birds in wintering flocks,

has decreased, suggesting that density dependent factors may be depressing individual reproductive success.

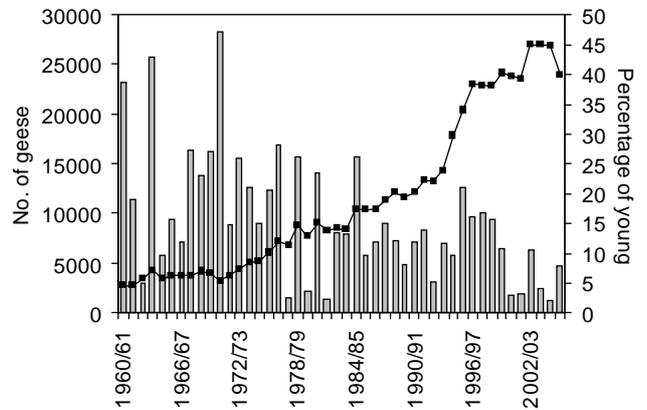


Figure 8. The population size (dots) and proportion of young (columns) of Svalbard Barnacle Geese, 1960/61-2005/06.

Larry Griffin

Taiga Bean Geese continue to thrive at Slamannan

Since their arrival at the Slamannan Plateau, Falkirk, in the late 1980s, Taiga Bean Goose numbers have been steadily increasing, with their peak numbers doubling between 1996/97 and 2004/05, and reaching 300 in 2005/06 (Figure 9). Slamannan is now firmly established as the key site for this species in the UK, following the rapid decline in numbers at the Yare Valley, Norfolk, during the 1990s. However, numbers there appear to be slowly increasing again and the peak count of 169 in 2005/06 represents the third successive increase and an 8.3% increase on 2004/05 (Figure 9).

The annual breeding success is still poorly understood for Bean Geese wintering in the UK. However, for the second consecutive year a sample of birds was aged at the Slamannan Plateau. The overall proportion of young was 14.4% (n=125), and the mean brood size was 1.25 young per successful pair (n=4). The late arrival of birds at the Yare Valley continues to hamper assessments of breeding success at that site.

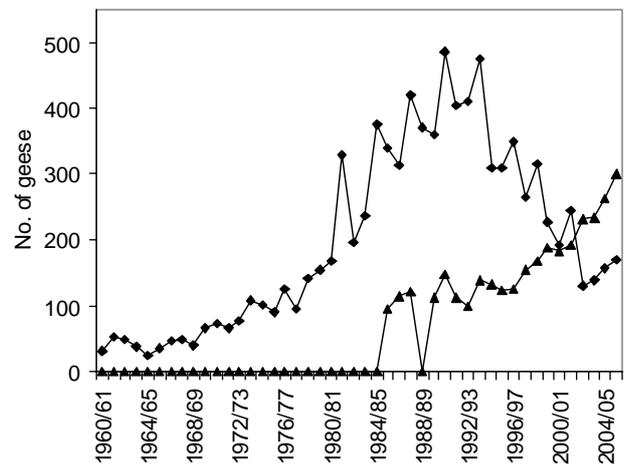


Figure 9. Annual peak counts of Taiga Bean Geese at Yare Valley (diamonds) and Slamannan Plateau (triangles).

Lisa Allen

International Census of East Canadian High Arctic Light-bellied Brent Geese 2005/06

For the fourth consecutive year, a complete census of all major sites supporting East Canadian High Arctic Light-bellied Brent Geese was carried out in Ireland and Iceland. Teams conducted thorough surveys during October 2005 from the air (Iceland) and ground (Ireland and Iceland). Of the 31 sites covered, 22 supported geese, including peaks of 21,885 at Strangford Lough, 3,641 at Lough Foyle, 2,023 at Tralee Bay and Castlemaine Harbour, and 836 at Dublin Bay. Aerial coverage of western Iceland located 1,496 birds. With only one significant site for which data are currently outstanding the population estimate is likely to be around 31,500, a decrease of 4.7% since autumn 2004. Nevertheless, this is the second highest census total since monitoring began (Figure 10).

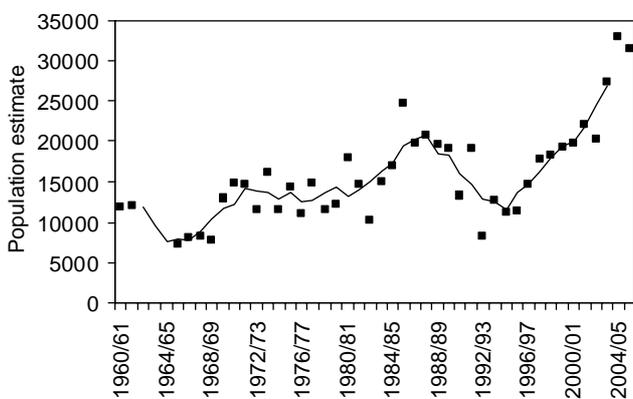


Figure 10. Population estimates of East Canadian High Arctic Light-bellied Brent Goose, 1960/61-2005/06. The five-year running mean (eg mean for 2002 is from population estimates for 2000-04) is shown as a line)

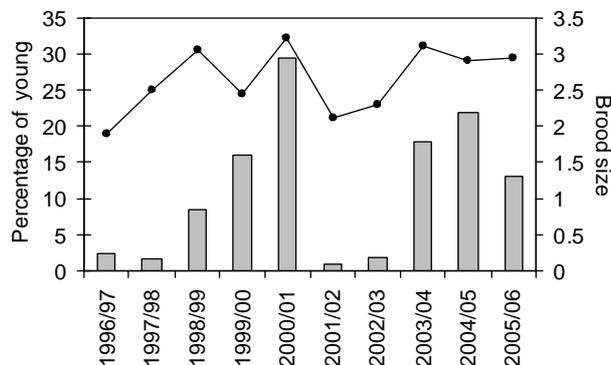


Figure 11. The mean percentage of young (bars) and mean brood size (dots) of East Canadian High Arctic Light-bellied Brent Geese, 1996/97 to 2005/06.

Breeding success was fairly average. The proportion of young geese in autumn flocks was estimated to be 12.9%, with an average brood size of 2.95 goslings per successful pair (Figure 11).

Many thanks to the many counters throughout both countries that helped to make this year's census so successful. A more detailed summary of this census can be found on the WWT website http://www.wwt.org.uk/research/monitoring/canada-brent_latest.asp.

Kendrew Colhoun, Kerry Mackie & Gudmundur A. Gudmundsson

Recent successes with capture and marking

Winter 2005/06 was the most successful for the capture of Pink-footed Geese for more than 10 years. Tay Ringing Group, steered by Alan Leitch and Les Hatton, successfully captured a total of 169 Pinkfeet at Loch of Lintrathen, Angus, during November 2005. A further 44 were caught by Grampian RG (Raymond Duncan and others) in April 2006. These birds provided a much-needed boost to the number of marked birds in this population, and all those involved are to be congratulated on their successes.

Capture of Greylag Geese also progressed well. Highland RG caught about 160 Iceland birds in October 2005 at the usual site of Loch Eye. The first catch of Greylag Geese from the NW Scotland population to be held on Tiree since 2002 took place on 2 July 2006. John Bowler, Carl Mitchell, Alan Leitch, Roger Broad and others, caught 117 birds at Loch an Eilein. This included six recaptures from previous years and, as usual, the adults were fitted with grey neck collars and the goslings with yellow leg rings. This work is helping to underpin appropriate management techniques for Greylags on Tiree and Coll through the Local Goose Management Scheme. Small numbers of Re-established Greylag Geese continued to be caught at

Hogganfield Loch, Glasgow and in the Forest of Dean, Gloucestershire. Other Re-established Greylags were caught at Sevenoaks, Kent by Dartford RG, with a total of 213 (including 100 retraps) in June 2006.

Increased catching effort of Svalbard Barnacle Geese by WWT and the North Solway Ringing Group was also made on the Solway Firth this year, resulting in a total of 195 being caught (77 in December 2005, and two catches of 89 and 29 in April 2006). The latter two catches included the 2¼ kg males chosen to carry the ARGOS satellite GPS tags: 'Sir Peter', 'Myrfyn', 'King Harald' and 'Magnar' (see page 16). Three-letter orange rings up to code CXZ have now been used (plus orange DAD on 'Magnar!'). Of the 179 new orange rings fitted this winter, 50 were seen again before the departure of the geese to Helgeland at the end of April, and in total there were just over 6,100 sightings of colour-ringed birds collected on the Solway in winter 2005/06.

Good catches of wintering swans were made at WWT centres: totals of 312 and 514 Whooper Swan captures were made at Martin Mere and Caerlaverock, respectively. This included 184

newly ringed birds at Martin Mere and 111 at Caerlaverock. At Slimbridge, 45 Bewick's Swans were ringed, and a total of 87 captures made. Swan ringing expeditions to Russia and Iceland continued during July/August 2005, and will be carried out again in 2006. In 2005, 173 Bewick's Swans were captured on the Pechora Sea off Nenetskiy National Nature Reserve, including two recaptured birds. A total of 119 (68%) of these birds were resighted at least once in Northwest Europe during the following winter. In Iceland, 353 Whooper Swans were captured, including 93 recaptures.

Finally, Kendrew Colhoun and Graham McElwaine report on another successful season of the East Canadian High Arctic Light-bellied Brent Goose marking/resighting programme: WWT in conjunction with its project partners in Ireland (Environment & Heritage Service and National Parks and Wildlife), Iceland (Icelandic Institute of Natural History) and Canada (Canadian Wildlife Service) continued to develop the colour-marking programme of the East Canadian Light-bellied Brent Goose population in 2005 and 2006. From a total of 562 birds cannon-netted by teams led by Robin Ward (WWT; captures in Northern Ireland, the Republic of Ireland and Iceland), Gudmundur A Gudmundsson (IINH; captures in Iceland) and Alyn Walsh (NPW; captures in the Republic of Ireland and Iceland), 500 were newly-marked using darvic leg-rings. A further 34 moulting birds were caught using helicopter round-ups on Bathurst Island, Nunavut in August 2005 by a team led by Sean Boyd (CWS), along with 200 Western High Arctic ("Grey-bellied") birds on Melville Island.

During spring staging, 165 birds were newly-marked in May 2006 in western Iceland. In the 2005/06 season 336 birds were newly-ringed in Ireland (111 Republic of Ireland; 226 Northern Ireland) in counties Down, Louth, Waterford and Kerry. The extension of the marking scheme to sites at which Brent Geese

have never previously been caught in the Republic of Ireland was a significant development and was supported by funding from NPW/EHS/WWT and The Heritage Council.

This ringing effort has resulted in the continued exponential rise in resightings – 8,397 records of 957 individuals last winter at the time of going to press. Greatly enhanced coverage was achieved, both in the concentrated autumn-staging period when most birds pass through Strangford Lough, and in checking out flocks Ireland-wide.

These figures do not include any of the considerable number of resightings of birds staging in Iceland in springtime. As with spring 2005, the team which went to assist with the ringing there also concentrated on trying to read ringed birds throughout the west coast, particularly away from the main study area which is located to the south of Reykjavik and which is subject to constant-effort ring-reading by our Icelandic colleagues. Over 600 observations were made there in May 2006.

We would like to take this opportunity to thank the many individuals who continue to contribute to cannon-netting operations and the resightings programme. In this regard, staff and students from Queen's University Belfast, Quercus, WWT, The National Trust, Environment & Heritage Service, National Parks & Wildlife, Gerry Murphy and Brian Duffy provided a great deal of support.

Any observations of these birds should be forwarded to Graham McElwaine, Resightings Coordinator, Irish Brent Goose Research Group, 100, Strangford Road, Downpatrick, Co. Down, Northern Ireland BT30 7JD. Ph. (028) 44612915, Email graham.mcelwaine@virgin.net.

Breeding success of East Atlantic Light-bellied Brent Geese at Lindisfarne

The proportion of young in flocks of East Atlantic Light-bellied Brent Geese was assessed on three occasions over the winter of 2005/06 at Lindisfarne, Northumberland, the only site in the UK where this population regularly occurs in any number. From a total of 2,129 birds aged, 6.5% were juveniles (Figure 12). Over the same three occasions, a total of 65 families were counted with a mean brood size of 2.12 young per successful pair.

The proportion of young in 2005/06 is the highest recorded since 2000/01, although no data were collected in 2003/04 or 2004/05. However, it is still a fairly poor level of breeding success and below the average for the past ten years (8.9%).

Many thanks to Steve Percival for carrying out the productivity counts at Lindisfarne.

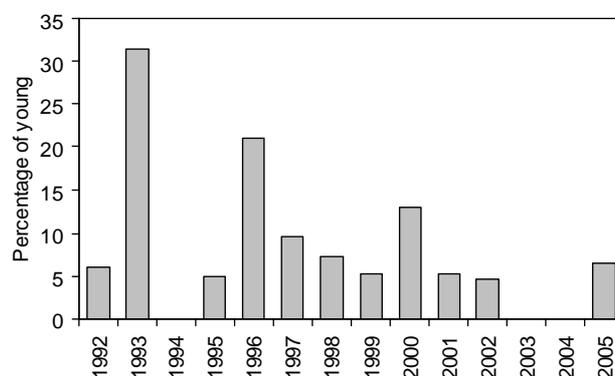


Figure 12. Proportion of young in flocks of East Atlantic Light-bellied Brent Geese at Lindisfarne, 1992/93-2005/06.

Gareth Bradbury

Satellite tracking Barnacle Geese – from the Solway to Svalbard

In April 2006, at WWT Caerlaverock, on the wintering grounds of the Svalbard Barnacle Goose on the Inner Solway Firth in Scotland, WWT, with the help of North Solway Ringing Group, caught four geese and fitted them with 30g ARGOS satellite solar GPS tags. Every two hours during daylight, the tags on these pioneering geese record data on their individual positions, speed, altitude and bearing which are relayed to a ground station every four days. After 35 years of research into the life history of the Barnacle Goose at Caerlaverock and elsewhere along the flyway, the prime aim of this new project was to identify a two to three week gap in our knowledge of the whereabouts of these geese as they move north during the spring.

This was achieved because after a 17-18 day stay in the usual stopover location of Helgeland, two of the geese ('Magnar' and 'Sir Peter') headed for Svalbard. Magnar completed the journey in 35 hours, stopping at pre-breeding areas around Hornsund from 20th May – 3rd June, when he moved to the well known breeding island of Dunøyane. In contrast, having left Helgeland, Sir Peter visited an unknown stop over site near Vesterålen in north Norway for just under two days before completing the migration to Svalbard by 22nd May, using similar pre-breeding areas to Magnar initially but then moving northeast over a period of three days to reach hitherto unknown breeding cliffs in the Idodalen area of Dicksonfjorden. At the end of June, both birds had been stationary at their respective breeding sites for a month.

Around the time that Magnar and Sir Peter were preparing to leave Helgeland, the two remaining geese ('Myrfyn' and 'King Harald') were just leaving Rockcliffe Marsh in Cumbria, along with 3,000 other geese. Unfortunately, they did not time their departure well and Myrfyn at least got caught up in a strong North Atlantic depression and likely perished by the 22nd May, having spent at least 6 days at sea without food or fresh water battling against gale force north-easterly winds in rough seas and rain. The last fix recorded was just 200km from Jan Mayen. No further fixes were obtained from King Harald's tag and he is thus assumed to have perished in the same storm. On migration the tagged geese generally travelled at between 40-80kph at or just above sea level (the highest altitude recorded

being 800m); Myrfyn, when travelling with the wind along the direction of the isobars reached 106kph, the fastest speed recorded.



Barnacle Goose 'Magnar' (Carol Hesketh)

The tags have already provided a wealth of information, and although for only a handful of individuals, in such a social species their choices will represent the strategies of many thousands of others within a flock. For instance, all four birds spent from two weeks to a month prior to migration from the Solway feeding primarily on pioneer saltmarsh communities where the grasses *Puccinellia maritima* or *Festuca rubra* were dominant. Also, for the two geese that did make it to Svalbard and ended up within 0.5km of each other, it could be seen how they moved between clusters of small island sites in Helgeland and how birds from that area could make the journey direct to Svalbard or stop over, albeit briefly, near the other main goose area of Vesterålen. The distance covered by Myrfyn whilst on his fateful migration is equivalent to that from the Solway to Svalbard direct, and for similar late departing birds in better weather conditions this may represent their strategy, *ie* little if any time being spent in Norway. More details can be found at <http://www.wwt.org.uk/barnacle>.

Larry Griffin

Goose Specialist Group meetings

The 9th GSG meeting, organized by Prof. Sándor Faragó of the University of Western Hungary, was held from 5-9 November 2005 in Sopron, Hungary, and was attended by 40 participants from 14 different countries (Belgium, Bulgaria, Estonia, Finland, France, Germany, Hungary, India, Netherlands, Norway, Russia, Spain, Sweden and Ukraine). Further information about this meeting, and the 10th meeting to be held in January 2007 in Xanten, Germany, can be found on the GSG website <http://www.geese.nl/gsg/index.htm>.

New report on the health of the UK's protected sites

In June 2006, the Joint Nature Conservation Committee launched the UK Nature Barometer, which shows changes in the state of UK Nature (species and habitats) by drawing together the results of surveillance schemes, biological recording, and protected site monitoring. The first comprehensive assessment of the condition of the UK's protected sites was completed by the Statutory Conservation Agencies in 2005 under the Common Standards Monitoring (CSM) programme and is summarised in a JNCC report that was launched alongside the Nature Barometer. The CSM report summarises assessments made since 1999 of the interest features of the 2,431,000 ha (or 10%) of the UK designated as Sites/Areas of Special Scientific Interest. The state of the 2.5 million ha designated as Special Areas of Conservation, the 1.4 million ha of Special Protection Areas, and the 759,000 ha of Wetlands of International Importance (Ramsar sites), was also assessed. This identified that the majority of the features for which the above sites have been designated are in a favourable condition, however, more than one quarter (27%) were considered to be in unfavourable condition. Among the individual designations, Ramsar sites are in the best condition, with 86% in a favourable state. Important aggregations of non-breeding birds are also faring relatively well, with 81% of the 732 assessments made in favourable condition. The average for all species groups was 68%. This important report highlights one of the many direct uses of bird count data such as that collected by GSMP fieldworkers. Further information on the UK Nature Barometer can be found at <http://www.jncc.gov.uk/page-3712>, and the full CSM report is available at <http://www.jncc.gov.uk/page-3520>.

Bigger is better for Barnacle Geese

Recent research by David Cope and colleagues on a captive flock of Barnacle Geese has shown that larger individuals with larger bills may have a disproportionately higher instantaneous intake of food (or bite size) than smaller individuals. Possible explanations for this finding may be that birds with larger bills also have larger brains and so may forage more effectively, or bite mechanics may change with larger bills (strength of muscles, angle of gape, etc...), or that larger birds are able to use slightly different techniques, such as vertical pecking or horizontal scything. The study further concludes that the larger bites taken by larger birds overcompensate for the increased energy demands of their size, and this may help to explain previously reported intraspecific fitness advantages of larger geese.

Source: Cope DR, Loonen MJJE, Rowcliffe JM & Pettifor RA. 2005. Larger barnacle geese (*Branta leucopsis*) are more efficient feeders: a possible mechanism for observed body size-fitness relationships. *Journal of Zoology* 265: 37-42

New BASC code on Iceland Greylag Geese

At the start of the 2005/06 wildfowling season, the British Association for Shooting & Conservation (BASC) revised their advice for goose shooting in recognition of the apparent decline of Iceland Greylag Geese observed since the early 1990s. BASC now advise their members for the time being to show restraint where migratory Greylag Geese occur. BASC also encourages members to assist organisations such as WWT as much as possible in new studies to improve the understanding of this population, particularly its abundance, distribution and conservation status. Recent difficulties with monitoring this population (see *GooseNews* 1, pages 2-4) mean that uncertainties over the extent of the observed decline continue to hamper accurate assessments of conservation status. Given this uncertainty, WWT welcomes BASC's precautionary approach to the harvest of this population, and its commitment to encourage members to assist with studies of the population dynamics of Iceland Greylag Geese. One way in which wildfowling can do this is to ensure that rings and collars found on shot birds are reported. WWT looks forward to further cooperation with BASC staff and members on projects to better elucidate the status of Iceland Greylag Geese.

Tracking Bewick's Swans using GPS

Last winter, a team from the Netherlands Institute of Ecology (NIOO-KNAW) caught 12 Bewick's Swans and fitted them with a neck collar that included a GPS-logger. This is a new technique that will yield precise information on the whereabouts of individual swans (both day and night, and year-round – the loggers are expected to work for 1-2 years). The Global Positioning System records information several times each day on the location of the swan using an inbuilt computer chip. Using 'Bluetooth' technology (the same as used in mobile telephones), the GPS unit then sends this information to the nearby researchers (as long as they are within 300 m of the swan!). The benefit of this new technique is that it allows more frequent and accurate positions of the bird to be gathered, when comparing to a satellite transmitter, but you have to be at the right place within 300 m of the swan and with your computer! In order to overcome this problem, the extensive and dedicated network of Bewick's Swan enthusiasts in the Netherlands provided NIOO-KNAW with up-to-date information on the location of these swans (by reading their neck collars) via a website (<http://www.nioo.knaw.nl/projects/ncfs/ncfs.cfm>). This allowed researchers to quickly locate swans and retrieve the data stored in their loggers. By mid-January, nine of the 12 swans had been seen again in the Netherlands, one of which went to the UK after Christmas (followed promptly by Dutch researchers!), providing detailed information on their day-to-day movements. More information on this fascinating new study can be found at <http://www.nioo.knaw.nl/cl/pdi/content/student.htm#tracking>.

Source: Wim Tijsen via email

The State of the UK's Birds 2005

The most recent edition of *State of the UK's Birds* reports a welcome decrease in the number of species of waterbird in decline over the most recent ten-year period, from 19 to 17. The number of species declining over the long-term remained the same, eight, although there were some changes among these species. Most notable was the Bewick's Swan, which no longer shows a long-term decline (Table 4). Furthermore, the short-term decline of this species has changed from the -75% reported in 2004, to -14% in the latest report. However, this is not due to a rapid turnaround in the fortunes of this species, but because the omission of some important counts in 2004 was rectified in the latest report. Consequently, whilst still showing signs of a decline over the most recent decade, Bewick's Swans have not undergone the dramatic fall in numbers that was previously thought (which is a great relief). Whooper Swan, Pink-footed Goose, Greenland Barnacle Goose, Svalbard Barnacle Goose and Svalbard Light-bellied Brent Goose populations continued to increase. In contrast, numbers of European White-fronted Geese continued to decrease in the UK, although at a flyway level this population remains healthy. Likewise, Dark-bellied Brent Geese showed a further decline reaching their lowest level of abundance for over 20 years. The decline of Greenland White-fronted Geese, as reported by Tony Fox on pages 4-5, has not yet occurred over a long enough period to be detected by the methods used in this report (*ie* there are still more today than there was ten years ago, despite the rapid decline in recent years).

The *State of the UK's Birds 2005* has been recently published, and a complimentary copy is enclosed for all GSMP fieldworkers. It is also available to download from WWT's website . <http://www.wwt.org.uk/research/monitoring/publications.asp>

Table 4. Percentage change in abundance of those goose and swan populations showing a decline in the period 1993/94-2003/04.

Species	Long-term trend (36 year)	Short-term trend (10year)
Bewick's Swan	245%	-14%
European White-fronted Goose	-78%	-58%
Iceland Greylag Goose	23%	-19%
Dark-bellied Brent Goose	223%	-36%

Canadian Light-bellied Brent Goose satellite-tracking 2005 and 2006 seasons

Between spring 2005 and spring 2006 we used satellite telemetry to track the migration of a total of 23 East Canadian High Arctic Light-bellied Brent Geese. Birds were tracked north from Ireland north (n=8), from Iceland to Arctic Canada (n=12) and from Arctic Canada south (n=3).

Four birds tracked in spring 2005 from Wexford, Ireland made it successfully to Iceland, most departing in mid-April. Three of the four birds returned to Ireland in winter 05/06 and a satellite transmitter was recovered from a recaptured bird in May 2006 in western Iceland. This same bird "Finnur" made the journey from Strangford Lough to Southwest Iceland in just over 21 hours. One bird disappeared, presumed shot, on spring migration in West Greenland.

Six further birds were tracked north from Iceland in May 2005, and their migration featured on BBC Northern Ireland *Supergoose* documentaries. All six successfully made the journey to the Canadian breeding grounds and three were subsequently observed in Ireland last winter. We know that at least one of these birds "Espie" was shot in West Greenland during autumn migration.

As part of an associated project with the Canadian Wildlife Service, 20 satellite tags were implanted in Western High Arctic Brent on Melville Island (www.washingtonbrant.org), and three Eastern High Arctic ("Irish") Brent on Bathurst Island, Nunavut in August 2005. The southward migration to Ireland was especially interesting, confirming for the first time that Iceland is not used for autumn staging by all birds, and suggesting that passage through western Scotland may be more intensive than previously thought. At the time of writing, two individuals from both populations had successfully returned to the breeding grounds having spent the winter, in Washington State and Ireland!

The current satellite telemetry project is tracking the migration of 10 geese from Ireland (n=4 in April) or Iceland (n=6 in May) to the Canadian Arctic and back. Their movements featured on BBC *Springwatch* and will continue to be followed in October on BBC *Autumnwatch*. Throughout, information on the progress of these birds is available online at www.wwt.org.uk/supergoose and www.bbc.co.uk/nature/animals/birds/supergoose/. Currently, six of these individuals are in the breeding grounds, spread out between Baffin, Devon, Ellesmere, Amund Ringnes and Bathurst Islands. Two further geese are in Greenland, and one remains in Iceland.

Having tracked this migration over several years and in a number of directions, detailed analysis of the results is now underway.

Kendrew Colhoun, Gudmundur A Gudmundsson, Sean Boyd & Alyn Walsh

New Taiga Bean Goose research in Denmark

Fewer than 3,000 Taiga Bean Geese overwinter in four different areas of the Danish mainland and in Norfolk, and have undergone recent declines, especially in Norfolk (although numbers have increased at the other UK winter resort, the Slamannan Plateau, Falkirk). In Denmark, Bean Geese have been protected in the Thy area since 1994, and in Viborg and Nordjylland a 3-year protection period was introduced in 2004. However, there are calls to reinstate hunting of this population in Denmark. Given the uncertainty over whether the population trends result from short-stopping in Denmark or declines in survival/reproductive success, it was decided to improve the count coverage and initiate studies of their demography and site interchange, especially if sustainable hunting is to be reopened again. A pilot project was started by the National Environmental Research Institute at Kalø, Denmark in 2006 to analyse existing count data, assess research and monitoring needs and initiate a capture-recapture study involving the marking of birds with collars (hopefully to begin in autumn 2006) to establish site-interchange between different areas of the range and support estimates of annual survival rates, breeding success and linkage of sites used by the population throughout the annual cycle. Subject to the success of the marking programme, further developments may involve studies of feeding ecology and habitat use, the use of satellite telemetry to link breeding, moulting, staging and wintering areas, or the study of the genetic differentiation of the population to better understand the factors affecting population size. Further information on this project can be obtained by contacting Ole Therkildsen (see page 20).

Ole Therkildsen

Modelling behavioural and fitness consequences of disturbance for geese along their spring flyway

Norwegian farmers in spring stopover areas of Svalbard Pink-footed Geese have begun using organised scaring devices in order to minimise goose use of grasslands. Marcel Klaassen and co-authors assessed the consequences of this practice on the fitness, survival and reproductive success of the geese. Dynamic programming was used to find the sequence of migratory decisions that maximises the fitness of female geese during spring migration. Parameters for the model were based on data gathered from individually marked geese between 1991-2003. The modelling suggested that the effect of scaring, in terms of fitness and site use, would be most noticeable on food intake rates, and would result in the redistribution of geese to other stopover sites. The severity of the outcome for individual geese was highly dependent on their level of experience of scaring: naïve birds could starve under moderate levels of scaring, whereas experienced birds were able to survive periods of high scaring levels, although they may be unable to breed.

Preliminary data from Norway appear to back up this modelling. Scaring regimes in Vesterålen have led to staging geese departing for the breeding grounds in poorer condition and with a subsequently reduced breeding outcome. The paper

concludes with a call for international management plans which acknowledge the interdependence of sites along the flyway, and for geese to be given the time to develop knowledge of where they can stop over and where they can't.

Source: Klaassen M, Bauer S, Madsen J & Ingunn T. 2006. Modelling behavioural and fitness consequences of disturbance for geese along their spring flyway. *Journal of Applied Ecology* 43: 92-100.

Circumpolar size variation in Greater White-fronted Geese

Results from a recent study of Greater White-fronted Geese show that there is significant variation in body size between the subspecies' found across the circumpolar breeding range of the species. The study compared over 3,000 geese from 16 breeding areas and found that Palearctic (Eurasia) forms varied clinally, increasing in body size from populations on the Kanin and Taimyr Peninsulas in the west to those on the Anadyr Lowlands of eastern Chukotka in the east. Nearctic (Alaska, Canada and Greenland) variation was less clinal, with the largest and smallest forms both breeding in Alaska, and the second largest (*A. a. flavirostris*) breeding in Greenland.

The results showed that body size in the species does not correlate with breeding latitude, but does correlate positively with temperature on the breeding grounds and negatively with breeding habitat and migration distance. In other words, subspecies' with smaller body size tend to breed in colder regions with briefer seasons where higher quality food plants occur, and have therefore made longer migrations. The study concluded that morphological variation in the species is a response to variable breeding environments, migration requirements and post-glacial phylo-geographical histories. This work may also help to qualify the nomenclature and distribution of the different subspecies.

Source: Ely CR *et al.* 2005. Circumpolar variation in morphological characteristics of Greater White-fronted Geese *Anser albifrons*. *Bird Study* 52: 104-119.

Many thanks for all your help

The greatest strength of the GSMP lies in the tremendous volunteer input from you, the counters, ring-readers and other participants. We hope that you will continue to support the GSMP and, through it, the conservation of swans, geese and wetlands throughout the UK and beyond.

GooseNews is the newsletter of WWT's Goose & Swan Monitoring Programme. It is sent to participants each autumn and is available either as a printed copy or a pdf file that can be sent via e-mail. If you would prefer to receive *GooseNews* in an alternative format, please contact WWT monitoring@wwt.org.uk.

GSMP contact

Jenny Worden

Waterbird Monitoring Unit, WWT, Slimbridge, Glos. GL2 7BT
T 01453 891255
E Jenny.Worden@wwt.org.uk

Contributors

Lisa Allen works in WWT Consulting at WWT Slimbridge
E Lisa.Allen@wwt.org.uk

Gareth Bradbury works in WWT Consulting at WWT Slimbridge
E Gareth.Bradbury@wwt.org.uk

Kendrew Colhoun co-ordinates the All-Ireland Light-bellied Brent Goose Census for the Irish Brent Goose Research Group, and WWT's Light-bellied Brent Goose conservation research
E Kendrew.Colhoun@wwt.org.uk

Tony Fox coordinates the National Census of Greenland White-fronted Geese in Britain
E tfo@dmu.dk

Larry Griffin coordinates WWT's research and monitoring of Svalbard Barnacle Geese
E Larry.Griffin@wwt.org.uk

Colette Hall is a Waterbird Monitoring Officer at WWT Slimbridge
E Colette.Hall@wwt.org.uk

Richard Hearn is the Programme Manager for Waterbird Monitoring at WWT Slimbridge
E Richard.Hearn@wwt.org.uk

Jens-Kjeld Jensen is an IGC counter in the Faroe Islands
E jkjensen@post.olivant.fo

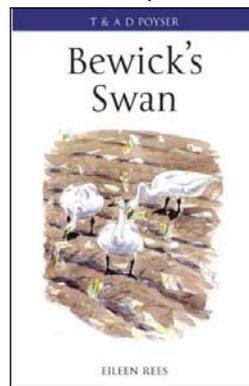
Julia Newth is the Bewick's Swan Project Assistant at WWT Slimbridge
E Julia.Newth@wwt.org.uk

Paul Shimmings is a freelance ornithologist in Norway who worked for WWT between 1987 and 1993 on the Barnacle Goose project at WWT Caerlaverock
E shimmy@online.no

Ole Therkildsen is a Biologist at the National Environmental Research Institute in Denmark
E oth@dmu.dk

Everything you have ever wanted to know about Bewick's Swans.....

July 2006 saw the launch of the latest monograph to be published by T & AD Poyser – the *Bewick's Swan* by WWT's Eileen Rees. The book is an impressive compilation of a vast amount of information from all over the range of the Bewick's Swan, which stretches from Ireland to Japan. Eight comprehensive chapters cover their numbers and distribution, migration, feeding ecology, breeding biology, social behaviour and life history, and threats and conservation.



As well as providing a detailed synopsis of the results of scientific research carried out over the past 45 years, the author also gives affectionate mention of the characters that have been involved in this research over the years, from the dedicated scientists at the Nenetskiy Zapovednik in Arctic Russia, to the unstoppable Dutch ring-readers and, of course, the swans themselves. It is this history

and personal touch that sets this book apart from many other, drier, monographs, and gives a great sense of the closeness of the Bewick's Swan network in Europe that is working to conserve this most appealing of birds.

The story begins in the early 1960s, when Sir Peter Scott first encouraged the Bewick's Swans wintering on the Severn Estuary to frequent the pond in front of his nearby house. From there, he recognised that each swan carried a unique bill pattern that could be used to follow them year after year. So began one of the longest running avian life history studies in the world, and one that continues today at WWT Slimbridge under the custody of Eileen Rees. But there is so much more, from the close relationship of Bewick's Swans and people in Japan, to the threats of habitat loss and illegal hunting. However, unfortunately I must leave it there and simply conclude with a recommendation that you take a look at this book and, over the long evenings to come this winter, absorb as much of the information it provides as you can (at least, that is what I intend to do). Then will you know what a lifetime's study this book truly represents.

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Goose & Swan Monitoring