



GooseNews

The Newsletter of WWT's Goose Monitoring Programme

Issue 1 (Autumn 2002)

An introduction to WWT's Goose Monitoring Programme

The UK is well known for its considerable importance to migratory waterbirds. More than five million individuals which breed in the Arctic, from Canada to central Russia, and in northern Europe seek out our extensive estuaries and inland wetlands as staging sites or wintering grounds. This importance is even greater for several populations of geese, e.g. Svalbard Barnacle Goose and Icelandic Pink-footed Goose, for whom the UK is their sole destination. The UK therefore has a special responsibility to conserve these birds and their habitats, obligations that are recognised by international directives, agreements and conventions. Key among these requirements is the need to monitor these populations.

The Wildfowl & Wetlands Trust's (WWT) mission is 'to conserve wetlands and their biodiversity', and our strategy includes a specific objective 'to monitor the numbers, productivity, survival, distribution, migration and health of the UK's waterbirds'. To realise this, WWT has, for over 50 years, operated a number of waterbird monitoring schemes, the largest and best known of which is the Wetland Bird Survey (WeBS), a partnership with the British Trust for Ornithology, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee (JNCC), the Government's advisor on nature conservation. Through the assistance of a large network of volunteer counters, WeBS aims to provide baseline surveillance of the abundance and distribution of many of the UK's wintering waterbirds.

A number of species, however, are not monitored effectively by WeBS. This includes most geese, since many feed away from wetland areas during the daytime. Therefore, WWT, in partnership with JNCC, other organisations and several local groups,

operates the Goose Monitoring Programme (GMP). In addition to surveys of abundance and distribution, the programme assesses other demographic parameters, namely productivity, survival and movements. This is achieved through surveys of the proportion of young geese, and through ringing schemes and the re-sightings that these generate. This additional information is crucial to understanding the trends in numbers and distribution. Again, we rely heavily on a network of volunteer observers that undertakes the majority of surveys, from counts to age assessments and ring-reading.

Together, the GMP and WeBS form a large part of WWT's Integrated Wildfowl Monitoring Programme. These data ensure that we can assess the status and trends of these species, identify and protect important sites, and ensure that conservation action is based on sound data and science.

Until now, participants in the various goose monitoring schemes have received feedback only about the components to which they have contributed. The introduction of *GooseNews* is intended to bring together the counters, age-assessors, ring-readers, ringers and all others who input to the programme, to integrate the results of the different schemes more closely and provide more comprehensive feedback to the participants, and to demonstrate how the GMP contributes to the conservation of goose populations.

A very big thank you to all those who contribute to the various schemes and projects that form the GMP. I hope that you will continue to do so in the future and that in some small way *GooseNews* provides a greater incentive to do so. We intend this to be an annual publication, and we hope you find it useful and informative. If you have any comments

(good or bad!) I would be very pleased to hear from you. Contributions for future issues would also be most welcome. Remember that this is the newsletter of the GMP network, so please use it as such.

Richard Hearn



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Monitoring Icelandic-breeding geese: the story so far

Two species of goose breed commonly in Iceland, the Greylag Goose and Pink-footed Goose. Both are a familiar sight and sound in many parts of Britain during winter and, though they are closely related and similar in many respects, they are ecologically distinct, particularly during the breeding season. Both are now considerably more numerous than 40 years ago (Figure 1). They are also shot in large numbers in Iceland and Britain, although relative hunting pressure is much greater for Greylag Geese, at least in Iceland.

Surveillance of these populations began formally in 1960, when the preliminary surveys carried out during the 1950s by Hugh Boyd and others from the then Wildfowl Trust were used to develop the Icelandic-breeding Goose Census (IGC, formerly the National Grey Goose Census). This census consists of two co-ordinated counts, carried out each October and November, which record the numbers of birds at known roosts and feeding areas. In addition, counts of the proportion of juveniles in feeding flocks are also made each autumn.

Ringling

Since the late 1980s, these geese have been colour-marked using plastic neck collars and leg rings. For Pinkfeet, this began in 1987 when WWT made the first large catch in Britain since the 1960s at its reserve at Martin Mere, Lancashire. Other catches followed, including some at a number of sites in Scotland, particularly Loch Leven, Perth & Kinross. Colour-marking of Greylag Geese began in 1992, and, with the exception of a handful of birds, those marked in Britain have all been caught at Loch Eye, Inverness, by the Highland Ringing Group. Between 1996 and 2000, winter marking was complemented by the capture and moulting geese at their breeding and moulting sites in Iceland by WWT and the Icelandic Institute of Natural History (IINH). By the end of spring 2001, some 3,137 Greylag and 5,629 Pink-footed Geese had been colour-marked, generating over 13,000 and 26,000 sightings or recoveries, respectively.

Hunting

Since 1995, hunting pressure has been monitored in Iceland through a

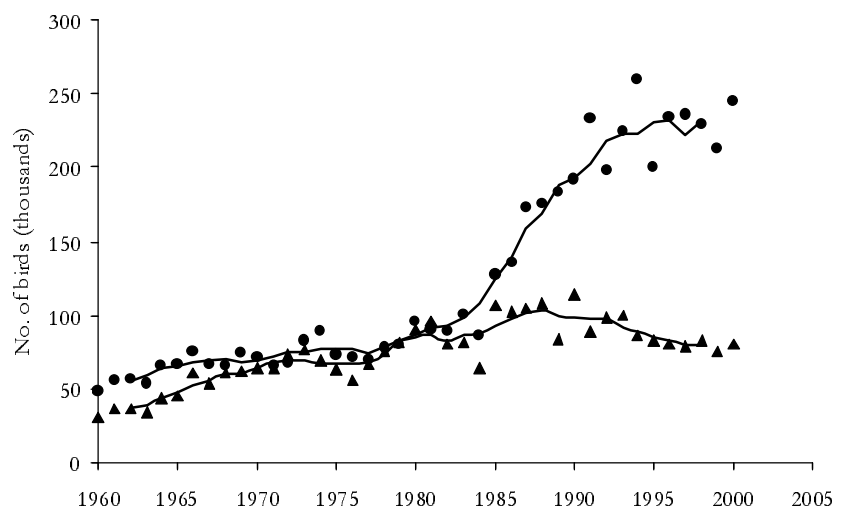


Figure 1. Population estimates of Icelandic Greylag Goose (▲) and Pink-footed Goose (●) since 1960, with 5-year running means as smoothed line (i.e. mean for 1998 is from population estimates for 1996-2000).

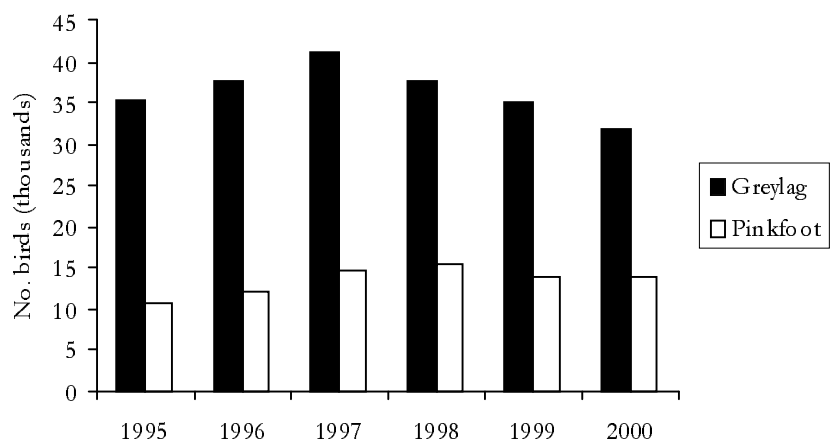


Figure 2. The number of geese shot in Iceland, 1995-2000. Source: Icelandic Wildlife Management Institute (<http://www.ni.is/veidi/>).

compulsory bag reporting system that requires all hunters to report the number of birds they have shot (anonymously) to the Wildlife Management Institute when renewing their licence each year. Geese, particularly Greylags, are among the most important quarry species. Since 1995, the total numbers shot have averaged 36,400 Greylags and 13,400 Pinkfeet (Figure 2). This reporting system also monitors the proportion of goslings in the hunting bag by examining the wings of shot birds. These data show that goslings are more susceptible to hunting: on average, 40% of the Greylag bag and 35% of the Pinkfoot bag is

comprised of goslings, around double the typical estimate of the proportion of young in autumn flocks. Given that Pinkfeet are approximately three times as numerous as Greylag Geese, but almost three times more Greylags are shot, there is clearly a large difference in hunting pressure in Iceland. This is related to differences in their distribution and phenology: Greylag Geese are found in the lowland areas of Iceland, where they are more accessible to hunters, whilst Pinkfeet occur in the central highlands. In addition, Greylags migrate to Britain some 3-4 weeks later than most Pinkfeet, giving hunters a

longer open season. This does of course mean that Greylags are exposed to hunting in Britain for a shorter period, but, hunting there is more restricted and the bag is likely to be smaller per hunter. Unfortunately, however, hunting bags are not monitored in Britain. Nevertheless, it is possible to make indirect estimates using the Icelandic bag estimates, ring recoveries and a set of population models. This suggests that around 20,000-25,000 Greylags and 25,000 Pinkfeet are currently shot each winter in Britain.

Analyses

During 2001, these different sources of data were used to estimate survival rates and develop a set of population models. Such models, given reliable information on the size, fecundity and mortality of a population, are important tools for understanding and predicting population trends. They can also allow the independent verification of data quality.

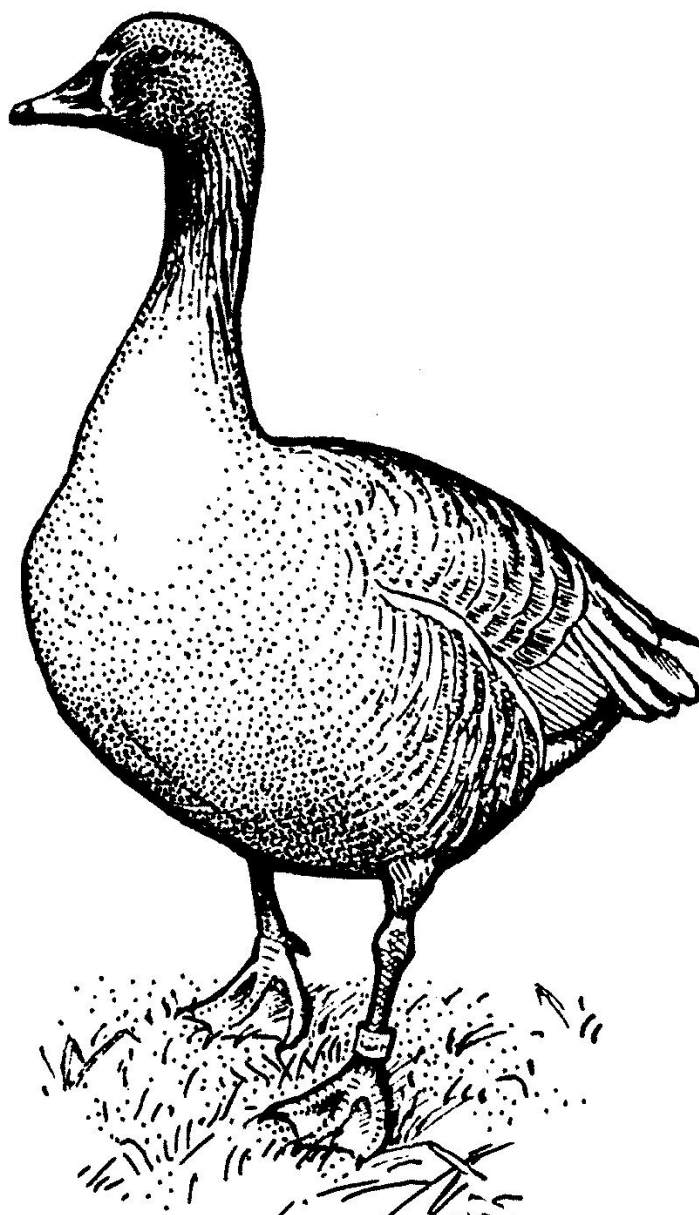
This revealed that, over the period 1996-2000, Greylag goslings survived better than Pink-footed goslings between summer and autumn, but less well between autumn and spring. The lower survival of Pinkfoot goslings between summer (i.e. when they were ringed) and the autumn is thought to be a consequence of greater natural mortality at this time, principally from Arctic Foxes. The lower Greylag gosling survival over the autumn and winter reflects the higher hunting mortality in Iceland. Overall, 47% of Greylag goslings and 39% of Pinkfoot goslings survived to their second summer.

Survival is much higher in adult geese, with 73% of Greylags and 81% of Pinkfeet surviving each year. More Pinkfeet survived during both the summer-to-autumn and autumn-to-spring periods, compared with Greylags. The higher mortality of Greylags is again thought to reflect hunting pressure. Comparison with Icelandic bag statistics showed that most mortality of adult Greylags was hunting-related, whereas more than half of adult Pinkfeet died of natural causes between spring and autumn, meaning that fewer adult Pinkfeet survived during this period in comparison to Greylag Geese.

When these adult survival rates are used to calculate mean lifespan, the difference becomes more apparent: Greylag Geese live for an average of 3.1 years, while Pinkfeet survive for around 5.1 years.

These analyses provided a number of important conclusions, as well as highlighting key gaps in the datasets. They indicated that the data for Pinkfeet is as unbiased as can be reasonably expected. They also showed that hunting mortality represents a minor fraction of total mortality when the geese are in Iceland – less than half for adults and

about 10% for goslings. It is not known whether this hunting mortality is additive or compensatory, in other words, whether the birds shot would have died anyway through natural causes or are an additional loss. Pinkfeet are, however, subject to higher hunting mortality in Britain, so total hunting pressure may be more likely to affect population growth. The degree to which this might occur is, however, uncertain. In conclusion, the data currently available make it impossible to be certain whether increased hunting could be sustainable for this population.



How many Greylags are there?

For Greylag Geese, the models threw up some potentially large discrepancies between the datasets. They suggested that the results of the IGC and the Icelandic bag statistics were incompatible: either the bag should be half that reported, or the population should be twice that counted by the IGC. In addition, neither the IGC totals nor the bag statistics were compatible with the survival estimates. It is unclear precisely where the problem lies, but it is likely to be from more than one source

Among these possible sources of error is the fact that Greylags are more prone to the use of small waterbodies and temporary floodwaters as roost sites. This may result in a greater proportion of the population escaping detection during the IGC. Also, the presence of UK-breeding Greylags may mask the full range of this population during the winter. This has recently been highlighted by sightings of marked birds in North Yorkshire and Norway. UK-breeding Greylags may, however, also affect the IGC by being counted as Icelandic birds. Furthermore, the earlier breeding and later autumn migration of Greylag Geese cause problems for the accurate assessment of the proportion of young in autumn flocks. By the time the whole population has arrived in Britain, the separation of adults and goslings is difficult and may lead to an underestimate of the number of young.

Given these problems, it is currently impossible to determine the effect of hunting on this population. Nevertheless, it seems likely that hunting is responsible for nearly all adult mortality when the birds are in Iceland and perhaps half of gosling mortality between fledging and arrival in Britain. Thus, any increase in hunting pressure is likely to impact population growth further, but, given current constraints in the understanding of observed trends in this population, this may be difficult to detect.

Recommendations

So what does all this mean for the future monitoring of these geese? In order to review this, a workshop was held last autumn at Hvanneyri Agricultural University, western Iceland. Representatives of WWT and IINH, as well as JNCC, Scottish Natural Heritage and a number of other organisations attended the meeting, which was opened

on the first evening by the Ministry for the Environment in Iceland.

Participants discussed the findings of the colour-marking programme and considered the worrying status of the Greylag population, which, according to the results of the IGC, has declined from more than 100,000 to around 80,000 over the last ten years (Figure 1). Recommendations for future monitoring, research and management were made. Those relevant to the WWT GMP network are summarised below. Initial progress has already begun, for example the late summer counts of Greylags, the Nosterfield Greylag Goose Project and the inclusion of other countries as part of the IGC. WWT will continue to work with its partners in order to develop these projects and the other recommendations.

Counts & surveys

1. WWT should maintain current monitoring activities and develop international co-ordination of the IGC, with inputs from Norway, Iceland, the Faeroes and Ireland.
2. WWT should plan and undertake a survey of sample squares in the UK (particularly for Greylag Geese) with the aim of generating a comprehensive autumn total which includes numbers on small wetlands, not regularly included in the current census.

Age ratios

1. There is a need to review age assessment methodologies for both species with respect to within-flock sampling, geographical sampling and seasonal timing. In particular, there is a need to understand better the relationship between age ratios in the field, in the hunting bag, and in the ringing catch.
2. There may be a need for geographical stratification of age assessments throughout the winter range. In particular, there is a need for Greylag Goose data from Orkney.
3. Collection of wing sample data from hunting bags in the UK is desirable.

Ringing

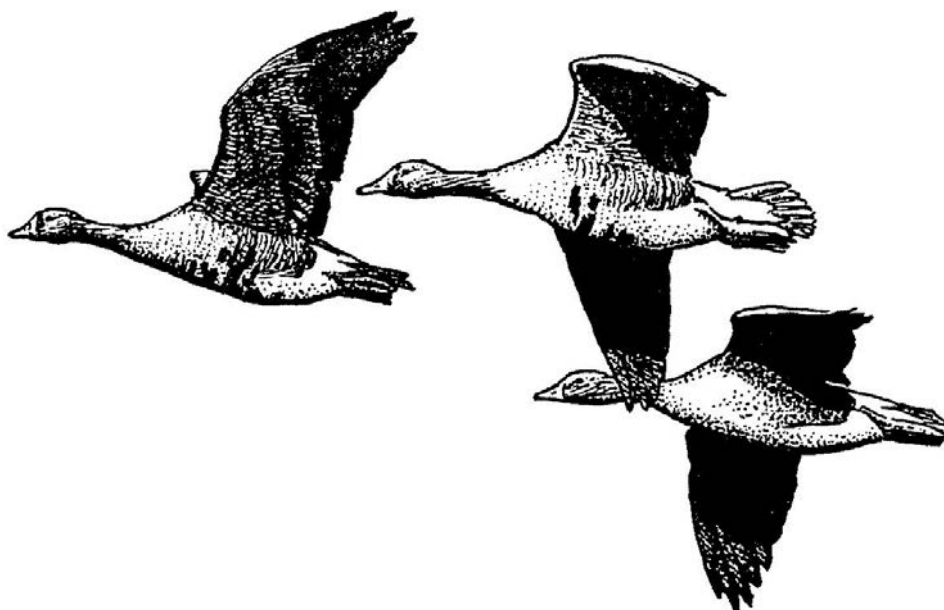
1. Ringing plays an important role in monitoring as well as providing research insights. Population parameters change over time, and a long-term commitment

to collect relevant data on a continuing basis is essential. The importance of long-term funding for these activities should be stressed highly with governments and other funding agencies.

2. A greater geographic spread of ringing activity within UK and possibly Iceland is desirable.
3. In using ringing for monitoring purposes, there is a need to review optimal numbers and distribution of different age classes of geese ringed.
4. Important insights into population dynamic processes can be gained from the collection of additional information from re-sightings of marked geese (e.g. family relationships).
5. In order to aid the analysis of survival from re-sighting data, observers in the UK should be encouraged to focus effort during specific periods. These are October and April for Pink-footed Goose and November and April for Greylag Goose. It is important, however, to maintain collection of observations outside of these periods for other purposes.

Richard Hearn & Morten Frederiksen





Sightings of marked birds: how to submit your records

With the increase in colour-marking projects in recent years, of geese and numerous other species as well, many birdwatchers are now familiar with the basic information required when submitting sightings of colour-marked birds. Coupled with the development of the EURING colour-marking website (<http://www.cr-birding.be>) by Dirk Raes, that provides an excellent source of information on how to contact relevant co-ordinators, never before have so many sightings been forthcoming.

In order to maximise the value of these sightings, observers of colour-marked geese in the UK are encouraged to follow the guidelines below whenever possible. Currently, the additional requirements only apply to WWT projects (see the listing on pages 8). These may be different for other projects and it is recommended that you confirm this before submitting large numbers of sightings. The most important thing to remember, however, is that all sightings are required. If it is not possible to follow the suggestions below, your observations are still of great value and will be gratefully accepted.

Essential information:

1. Species
2. Date
3. Location - please remember to record a 1-km grid reference with your location, e.g. SO7204.

4. Colour-marks seen, including colour, position (e.g. which leg) and engraved code (normally two or three alphanumeric characters).

Additional information:

1. Social status – i.e. whether the marked bird has a mate and/or family. If it has a brood, please record the number of goslings. If any of these birds are also marked, please identify the relationship between these birds. This type of information is important for looking at age of first breeding and lifetime reproductive success, yet is rarely reported. Observers are encouraged to report observations of social status whenever possible.
2. Habitat – please record what habitat or crop type the bird/s are using, for example improved grasslands, water, sugar beet or cereal stubbles.
3. Flock size – please count the flock that the marked bird/s are with.
4. Time of day

Submitting data:

An increasing number of observers now have access to home computers and choose to report sightings electronically. The benefits of this method could be increased considerably if these data were in a format that could be imported directly into the main databases at WWT. In order to facilitate this, a template will shortly be available as an Excel 2000

spreadsheet. If you would like to use this template during the coming winter, please contact me and I will forward a copy to you when it is available. Some other formats may also be suitable, particularly for those people submitting many hundreds of sightings each winter. Please contact me if you would like further details about these alternatives.

Sightings can be submitted at any time of the year. Due to the large number of sightings received for some species, however, it may not always be possible to provide immediate feedback. In such cases, observers will always be notified when to expect feedback on their sightings. For example, sightings of Pink-footed Geese are collated at the end of each winter. This reduces the time required to input data, especially if electronic data for the whole winter are submitted together, and means that observers get a full history for each bird that includes the whole of that winter, not just up to the point at which they submitted their sightings. If feedback is required before the normal reporting period, e.g. because observers pass this to land owners, I am always happy to process sightings immediately upon request.

If you would like further advice on any of the above, please do not hesitate to contact me.

Richard Hearn

All-Ireland Light-bellied Brent Goose Census: the 2001/02 season

Almost the entire population of Light-bellied Brent Geese that breeds in the East Canadian high Arctic over-winters in Ireland, with only a few hundred making the journey further south to the Channel Islands, northern France and even as far as northern Spain. In the spring, these geese travel almost 7,000 km to their breeding grounds in the Queen Elizabeth Islands, undertaking hazardous sea-crossings and an incredible flight over the Greenland ice-cap.

Since 1996/97, co-ordinated annual censuses of this population have been organised by the Irish Brent Goose Research Group, in collaboration with I-WeBS and WWT. The aim of the autumn census is to estimate the size of the total population at a time when it is concentrated at a few key sites; the midwinter census aims to assess numbers and distribution after birds have dispersed from autumn staging areas. Observers are asked to count flocks and collect information on productivity, brood sizes and habitat use. A total of 22,787 birds was counted in October, the highest census total yet recorded. By far the largest number, comprising over 19,580 geese, was recorded at Strangford Lough. At this

time, large flocks feed on the vast swards of eel-grass on the mudflats of the lough. Around 1,800 geese were recorded at Lough Foyle, another key staging site in the autumn. Elsewhere, large concentrations were at Tralee Bay, Lough Gill and Akeragh Lough (689) and Sligo Harbour (278). Only these four sites held numbers that exceeded the international threshold level of 200 birds.

Although the census total was high, productivity, measured as the proportion of juveniles in flocks, was less than 2% (aged sample 7,891). There were an average of 2.2 juveniles in family groups.

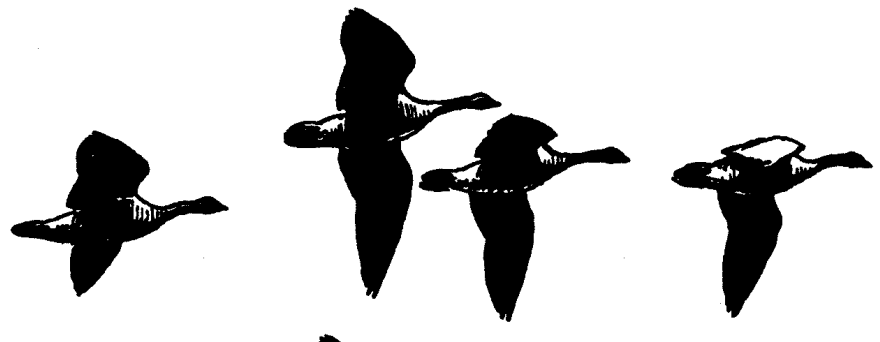
During the January 2002 count, 20,381 birds were recorded. As usual, flocks were recorded at many more sites than during the October census. Numbers at 19 sites exceeded the 200 threshold level. The highest totals came from Strangford

Lough (3,474), Dublin Bay (3,429), Rogerstown Estuary (2,759), Tralee Bay, Lough Gill and Akeragh Lough (1,998) and Wexford Harbour & Slobs (1,300).

The January count is always lower than in October because many birds leave the large estuarine sites during mid winter, dispersing thinly along rocky coastlines. Currently, census coverage of this habitat is poor. The Non-estuarine Waterbird Survey in 1997/98 estimated that around 3,000 Light-bellied Brent Geese probably occur in this habitat from mid winter to early spring. This estimate accounts for the number of birds generally missed during the midwinter census.

Very many thanks to all who participated in the censuses.

*James Robinson, Kendrew Colhoun
& James Orr*



Early results from satellite tracking of Canadian Light-bellied Brent Geese

Almost the entire population of 20,000 Light-bellied Brent Geese that breeds in the East Canadian high Arctic spends the winter around the coastline of the island of Ireland. Although this population is threatened, very little is known about its migratory routes and key staging areas. Needless to say, this information is essential in order to plan effective conservation action for these geese.

In May 2002, WWT attached satellite transmitters to six male Light-bellied Brent Geese in the Alftanes area of southwest Iceland. Using Argos satellite systems, WWT tracked the movements of these geese as they made an amazing migration across the Greenland ice-cap and Baffin Bay to breeding grounds in the Queen Elizabeth Islands in the Canadian Arctic (<http://www.wwt.org.uk/brent>). This information is enabling scientists from WWT to understand the migratory strategies of these geese and to identify important staging areas along the route. The return migration, which will begin in late August, will be tracked all the way back to Ireland.

This project is a major component of a much wider programme of research on these geese. WWT staff from Slimbridge and Castle Espie and the Irish Brent Goose Research Group, have initiated an international programme of research on this population that will serve to underpin an international Flyway Management Plan (FMP). This plan will highlight actions required to ensure the conservation of this threatened population for the future. As well as delimiting the migration routes and identifying important sites along the flyway, this programme of research will involve building a population model to predict the effects of the various threats that this population faces. Brent Goose experts from Ireland, Canada and Iceland are collaborating with WWT on this exciting project that has been funded by National Geographic.

James Robinson

Current Goose Monitoring Programme projects

The integrated surveillance of goose populations requires regular assessment of numbers (through count schemes), productivity (through age assessments) and survival (through ringing and subsequent sightings of colour-marked birds). A list of all GMP schemes and related projects is provided below. Further information on how you may contribute, including further details of methods and recording forms, can be obtained from the usual WWT address.

Icelandic-breeding Goose Census (IGC)

Aim

To assess the population size of Icelandic Greylag and Pink-footed Geese.

Method

Dawn counts at roost sites, although dusk roost counts and feeding counts may be included.

Timing

Two co-ordinated counts, one in October and one in November.

Contact

Richard Hearn, WWT

Notes

Formerly called the National Grey Goose Census, the name has recently been changed to reflect its expansion to include other countries where Icelandic Greylags are found during the winter, namely Iceland, Ireland, Norway and the Faeroes, and better reflect the goose populations concerned.

Greenland White-fronted Goose Census

Aim

To assess the abundance, distribution and breeding success of Greenland White-fronted Geese.

Method

Co-ordinated counts and age assessments of feeding birds.

Timing

Two co-ordinated counts, one in autumn and one in spring.

Contact

Tony Fox, Greenland White-fronted Goose Study (GWGS)

Notes

See page 11 for further details.

UK-breeding Greylag Goose Survey (UKGGS)

Aim

To count UK Greylag Geese (from the Re-established and Northwest Scottish populations) at sites within the area where migratory and resident Greylag populations overlap (i.e. Scotland, Ireland and northern England).

Method

Roost or daytime counts.

Timing

September, just prior to the arrival of Icelandic birds. Counts between April and August are also welcome.

Contact

Richard Hearn, WWT

Notes

This is a new census. The data will enhance surveillance of Icelandic Greylag Geese by providing a baseline against which IGC counts later in the year can be compared. Counts and age assessments in early summer from breeding sites and counts from sites outside of the core area are also welcome. They provide an excellent opportunity to establish regular surveillance of the UK-breeding populations. More contributors to this census are very welcome.

International Greenland Barnacle Goose Census

Aim

To assess the population size of Greenland Barnacle Geese.

Method

A combination of aerial survey and ground counts.

Timing

Conducted in spring every fifth year.

Contact

Peter Cranswick, WWT

Notes

Ground counts are undertaken annually in Argyll, particularly on Islay (co-ordinated by SNH).

Svalbard Barnacle Goose Census

Aim

To assess the population size of Svalbard Barnacle Geese.

Method

Ground counts at feeding areas.

Timing

Conducted each winter on a monthly basis.

Contact

Larry Griffin, WWT

Notes

Due to the need for careful co-ordination across the Solway, most counts are undertaken by professional staff. If, however, you live in the Solway area and would like to assist, please do make contact to discuss possibilities.

All-Ireland Light-bellied Brent Goose Census

Aim

To assess the abundance, distribution and breeding success of Canadian Light-bellied Brent Geese.

Method

Observers are asked to count flocks and collect information on productivity, brood sizes and habitat use.

Timing

Two co-ordinated counts, one in October and another in January.

Contact

Kendrew Colhoun, Irish Brent Goose Research Group

Notes

Carried out in collaboration with I-WeBS and WWT.

Goose Age Assessments (GAA)

Aim

To assess the breeding success of different goose populations.

Method

Counts of the proportion of young and brood size.

Timing

Survey periods vary according to species (see table).

Contact

Richard Hearn, WWT

Notes

Please contact the person listed in the relevant schemes above for further information regarding Greenland White-fronted Goose and Canadian Light-bellied Brent Goose.

Survey periods for Goose Age Assessments (GAA)

Population	Period	Notes
Icelandic Greylag Goose	Oct - mid Nov	Care needed with age identification
UK Greylag Goose	Aug - Sep	
Pink-footed Goose	mid Sep - mid Nov	
Bean Goose	Oct - Nov	
E White-fronted Goose	Oct - Jan	
G 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

Colour-mark Reading (CMR)

A number of different colour-marking schemes are currently in operation. Those where colour-marked birds are most likely to be encountered by observers in the UK are as follows:

Population

Icelandic-breeding Pink-footed and Greylag Geese

Marks used

Grey neck collars or white, orange or light green leg rings engraved with two or three alphanumeric characters.

Contact

Richard Hearn (Pinkfeet)
Bob Swann (Greylags)
bob.swann@freeuk.com

Population

UK-breeding Greylag Geese

Marks used

Two projects: 1) orange neck collars and leg rings with engraved code used at Nosterfield, Yorkshire (see page 10 for further details of this new project); 2) white leg rings with engraved code used at Sevenoaks, Kent.

Contact

Bill Haines (Nosterfield)
colourmarkedwildfowl@wwt.org.uk
Roger Taylor (Sevenoaks)
dreolin@btopenworld.com

Population

Greenland White-fronted Goose

Marks used

Orange neck collars and white leg rings with a matching alphanumeric code.

Contact

Tony Fox
tfo@dmu.dk

Population

European White-fronted Goose

Marks used

Black or yellow neck collars with engraved code. Some may also carry matching leg rings or yellow leg rings only.

Contact

Helmut Kruckenberg
kruckenbrg@aol.com

Population

Canada Goose

Marks used

Various projects using plastic leg rings with engraved codes.

Contact

Richard Hearn (for forwarding to individual project co-ordinators)

Population

Dark-bellied Brent Goose

Marks used

A combination of two engraved leg rings, one on each leg, of various colours.

Contact

Bart Ebginge
goose@alterra.wag-ur.nl

Population

Canadian Light-bellied Brent Goose

Marks used

Two yellow leg rings, one on each leg, each engraved with a single alphanumeric character.

Contact

James Robinson
James.Robinson@wwt.org.uk

Population

Svalbard Light-bellied Brent Goose

Marks used

One engraved leg ring (white, orange or light green) and a combination of plain colour-rings. Most likely to be seen at Lindisfarne NNR, Northumberland.

Contact

Steve Percival
steve.percival@btinternet.com

Population

Svalbard Barnacle Goose

Marks used

Engraved leg rings of various colours, except white.

Contact

Larry Griffin
Larry.Griffin@wwt.org.uk

Population

Greenland Barnacle Goose

Marks used

White leg rings engraved with three alphanumeric characters.

Contact

Steve Percival
steve.percival@btinternet.com

All sightings of colour-marked wildfowl, not just geese, can be sent either direct to the relevant project co-ordinator 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>

Breeding success of Dark-bellied Brent Geese in 2001

For the seventeenth consecutive year, experienced observers assessed the breeding performance of Dark-bellied Brent Geese in the UK. Geese were aged at a total of 121 localities within 21 estuaries or coastal areas on the English east and south coasts from north Lincolnshire to Dorset. A total of 123,672 birds was aged between September 2001 and March 2002. The overall proportion of juveniles was 6.2%, varying between 0.6% in September and 12.0% in March (Figure 3). The mean brood size per successful pair was 1.80 young.

The proportion of young and mean brood size of Dark-bellied Brent Geese recorded in the UK since 1992 is shown in Figure 4. According to the three-year cycle of good, poor and variable breeding success, 2001 was expected to be a variable year, following the year of peak lemming abundance in 1999. Following the disrupted cycle in the mid 1990s, annual productivity in this population has now been below the estimated rate of mortality (15%) in eight out of the last ten years. This is reflected in the short-term trend in the UK, which decreased by 16% over the period 1989/90 to 1999/00 (see The state of the UK's birds 2001, produced by RSPB, BTO, WWT and JNCC). The influence

of short-stopping on this trend, whereby birds spend the winter closer to their breeding grounds (in this case towards the east) due to milder winters, is, however, unknown and it is therefore not clear whether the UK trend is representative of the population as a whole.

Thanks are due to all the observers who contributed their data to this census in 2001/02. Their continued participation is much appreciated. Copies of the full report can be obtained from the WWT.

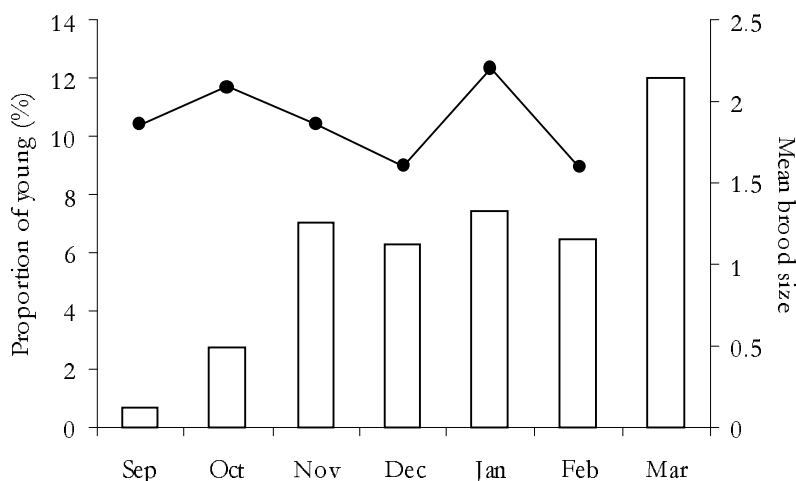


Figure 3. The proportion of young (bars) and mean brood size (dots) of Dark-bellied Brent Geese in different months during winter 2001/02.

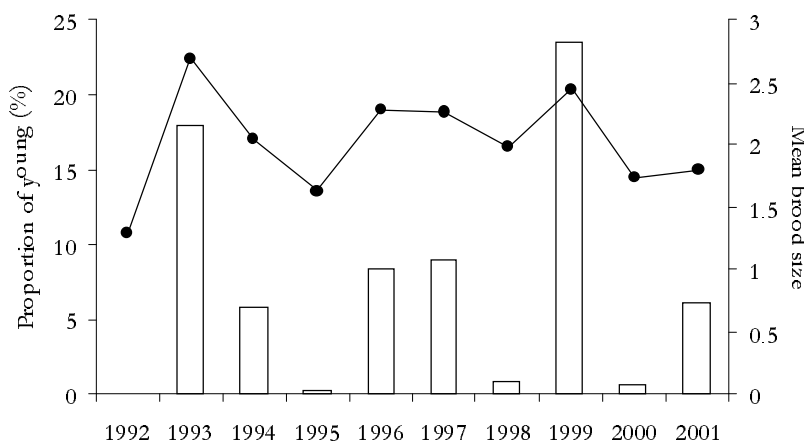


Figure 4. The proportion of young (bars) and mean brood size (dots) of Dark-bellied Brent Geese recorded in Britain, 1992-2001.

Atlas of Count Sites

What makes the data collected for monitoring schemes such as those forming the GMP different to casual records is that counters make repeated visits to the same area again and again. For some sites, these records go back to the 1950s and it is this regularity that allows us to produce population estimates and trends from the data.

The Atlas of Count Sites aims to map the boundaries of all sites where counts have been carried out. In this way, we can ensure that we have a reference for each site that facilitates the correct interpretation of data and continued standardisation should the counter change.

The process of collating these maps was started in 2001 by sending forms to all IGC counters that covered roost sites. The majority of these forms have now been returned and during 2003, they will be validated and processed. New forms will also be sent to counters of sites not covered in the first phase of this project, as well as those requiring further clarification. If you still have a form that

you have not yet returned, please complete and send to WWT as soon as possible. A more detailed report on this project, and its value to conservation, will be included in the next issue of *GooseNews*. Many thanks to all those counters that have so far returned forms for their sites.

Colour-marking of Icelandic-breeding geese

The number of contributions to this project continues to grow. During 2001/02, a total of 4,284 sightings of 1,071 individual Pinkfeet were received from 98 observers in 27 counties or regions. A high number of records was also received for Greylag Geese. This is a tremendous effort and all observers are thanked for their contribution. Unfortunately, no further marking took place during winter 2001/02 or summer 2002, apart from a small number of birds caught in Aberdeenshire by Grampian Ringing Group. Plans to revitalise the marking programme are being developed and it is hoped to begin catching again soon.

The 2001 IGC

The 2001 Icelandic-breeding Goose Census was conducted successfully and to date, most counts have been received, although those from some areas are still awaited. For the first time, co-ordinated counts from Iceland, Norway and the Faeroes are available. The full results of this census will be sent to participants as soon as possible and a summary will also be included in *GooseNews* 2.

The Svalbard Barnacle Goose Census

Annual monitoring of this population on the Solway last winter by WWT and others revealed a maximum of 23,524 birds to be present during early March 2002. The proportion of young was 3.14% and the mean brood size was 1.58 goslings per family group. In addition, during July and August 2001, just over 200 birds were caught and ringed in Svalbard, the first large catch there for several years.



The Nosterfield Greylag Goose project

A new collaborative project between WWT, the Swale and Ure Washlands Project and East Dales Ringing Group began in 2002. This project will study the dynamics of the UK-breeding Greylag Goose population in Yorkshire and form part of a wider study looking into the delimitation of the Icelandic Greylag population.

A small catch was made at Nosterfield, North Yorkshire, in August 2002 and future catches are planned for September 2002 and February/March 2003. These birds are primarily locally breeding Greylags, although it is likely that catches

in mid to late winter will include some Icelandic migrants. It is planned to extend this project to other sites in Yorkshire and further afield over the coming years and updates will be posted in future issues of *GooseNews*.

Birds are marked with orange neck collars engraved with three black letters. In addition, one third of the birds are also fitted with a matching leg ring. If the collar is present, there is no need to read this ring (unless you can't read the collar!), as the code is the same, but I would be grateful if anyone observing one of these birds could note whether it

was possible to check for rings and if so whether an orange ring was present or not.

All sightings of these birds are required, irrespective of where the bird was seen or whether it has been reported recently by other observers. Please send details of any sightings to the usual addresses: colourmarkedwildfowl@wwt.org.uk or the Slimbridge postal address, remembering to use the Excel template if possible.

Richard Hearn

The Greenland White-fronted Goose Study census network

Major Robin Ruttledge and Malcolm Ogilvie were the first to attempt to document the number and distribution of wintering flocks of Greenland White-fronted Geese in Ireland and Britain in the late 1970s. Their review in *Irish Birds* in 1979 pieced together the status of the population, showing many of the wintering flocks occurred in remote bogland locations, far from bird-watchers and difficult to count. On the evidence available at that time, Ruttledge & Ogilvie suggested that global wintering numbers had declined from 17,500-23,000 in the 1950s to 14,300-16,600 by the mid 1970s. Such was the concern raised, that the population was protected from hunting from 1982, under the Wildlife and Countryside Act in Scotland, and in Ireland under similar legislation.

Adequate monitoring was obviously a necessity if it was going to be possible to see if such protection had been effective in restoring the population to a more favourable conservation status. The Greenland White-fronted Goose Study (GWGS) was an independent study group established by a group of students at the University College of Wales, Aberystwyth initially formed around an expedition to the west Greenland breeding grounds in 1979. At the start of the 1980s, GWGS attempted to establish a network of counters to cover all known wintering sites in Great Britain, mainly through the efforts of David Stroud. This stalwart network of observers has continued to report annually on the numbers of Greenland White-fronted Geese, their breeding success and a great deal more at each of the known regular wintering sites right up to the present day. The annual census is now organised by Ian Francis and myself, and funded via a sub-contract from The Wildfowl & Wetlands Trust as part of their partnership with the Joint Nature Conservation Committee. In Ireland, Dúchas, with help from the RSPB in Northern Ireland, co-ordinate a parallel network in an international programme to monitor the world population of Greenland White-fronted Geese.

The good news is that numbers of Greenland Whites increased immediately following removal of hunting

mortality in Ireland and Britain (although the shooting moratorium was lifted at Wexford in 1985/86 and 1989/90 with strict bag limits in both years). Numbers at the most important Irish wintering site (Wexford Slobs) increased at a rate that was predicted if the previous hunting mortality had been 'additive' (i.e. birds killed were not some 'doomed surplus' that would have died anyway of disease/starvation but their deaths added to those by natural loss). Thanks also to a run of good breeding years in the 1980s, numbers increased rapidly to peak in the late 1990s (Figure 5).

After peaking at 35,500, however, numbers have since fallen back to less than 27,000 last winter (2001/2002). The recent decline has been abrupt, hidden to some extent by the lost count in spring 2001 due to the Foot and Mouth epidemic (numbers were estimated from the autumn count that

year). Numbers on Islay, the major Scottish resort, have continued to increase, but show signs of stabilising in the last five winters or so (Figure 5). In contrast, numbers at Wexford Slobs stabilised and started to decline as long ago as the mid 1990s. This pattern can be explained there by stable annual survival rate (based on re-sightings of collared individuals, part of a large Dúchas marking project on the site) and observed declines in breeding success.

So why the decline? Annual adult survival appears constant, and based on the movements of collared birds, we know that emigration from Wexford to other winter resorts is no higher now than in previous years. As well as just counting the birds, the international monitoring programme samples the proportions of young in the population at as many winter resorts as possible (first-winter birds lack white on the face and black bars on the belly). Analysis of

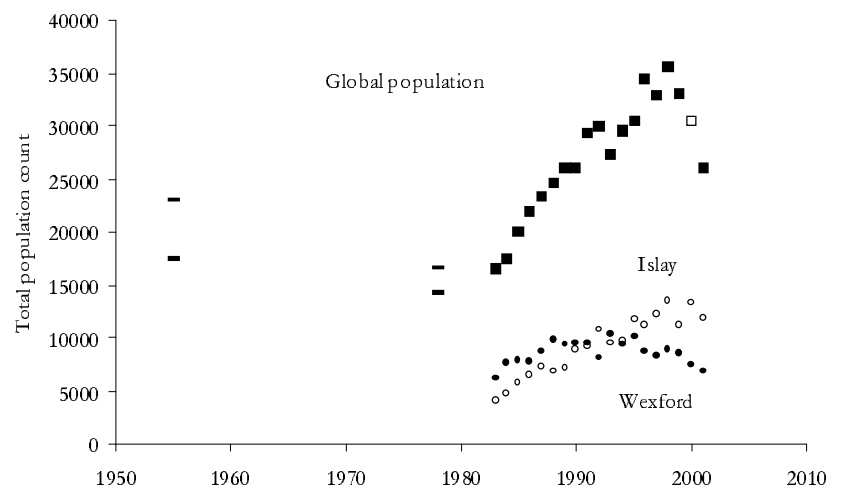


Figure 5. Changes in estimated abundance of the Greenland White-fronted Goose, based on wintering numbers in Ireland and Britain. Maximum and minimum estimates (-) given for the 1950s and 1970s come from Ruttledge & Ogilvie 1979. Subsequent global population totals come from the combined international spring census data from each of the last 19 winters (■), courtesy of Dúchas for counts from Ireland. The empty symbol (□) in winter 2000/2001 represents an estimated value, generated from the preceding autumn count (the spring census was abandoned because of Foot and Mouth Disease that season). Spring counts from Wexford Slobs (●) and Islay (○) are shown below.

these data shows a long-term decline in the proportion of young birds returning to Wexford, and a similar trend (although not statistically significant) on Islay, since protection (see Figure 6). Wexford breeding success has been below average in eight out of the last ten years, such that numbers of new recruits fail to replace annual losses in the population in many recent years. Simple mathematics can show that this has caused the stabilisation and decline in numbers at Wexford, and the same general pattern is almost certainly responsible for the decreases throughout the wintering range. Information from the collared birds shows that in the 1980s, known-aged geese captured at Wexford bred on average at just over three years of age, compared with nearly six years in the 1990s. Overall, less than 5% of young birds hatched in the 1990s survived to breed at all compared to over 20% in the early 1980s. For some reason, it is becoming increasingly difficult for young geese to breed at all.

Why these declines in reproductive success? The answer is that we do not really know. After a period of increase in overall numbers, it may be that some finite resource (such as spring staging areas or gosling rearing habitat) limits the numbers of geese able to breed successfully. Hence, increasing numbers have now reached some kind of carrying capacity with regard to summer habitat. Weather also plays a role – geese return

with most young following summers with an early spring thaw and warm temperatures. Five out of the last six summers have been cool in west Greenland, which has contributed to the run of poor production of young everywhere.

Weather, however, has a greater effect on those geese breeding in the north of the range, where the spring is late, and

autumn comes earlier, than further south. Satellite tracking and ringing recovery data confirm that birds nesting in the 'Banana Belt' in the far south of The Greenland breeding range tend to winter in Scotland. Here, the longer season enables geese to delay laying if necessary in late springs, but still breed successfully. In the north of the range, late springs have a more dramatic effect because of the shorter nature of the

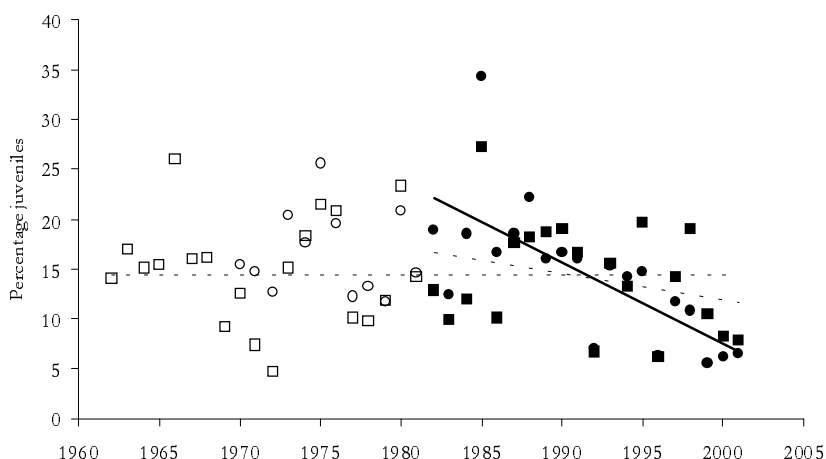
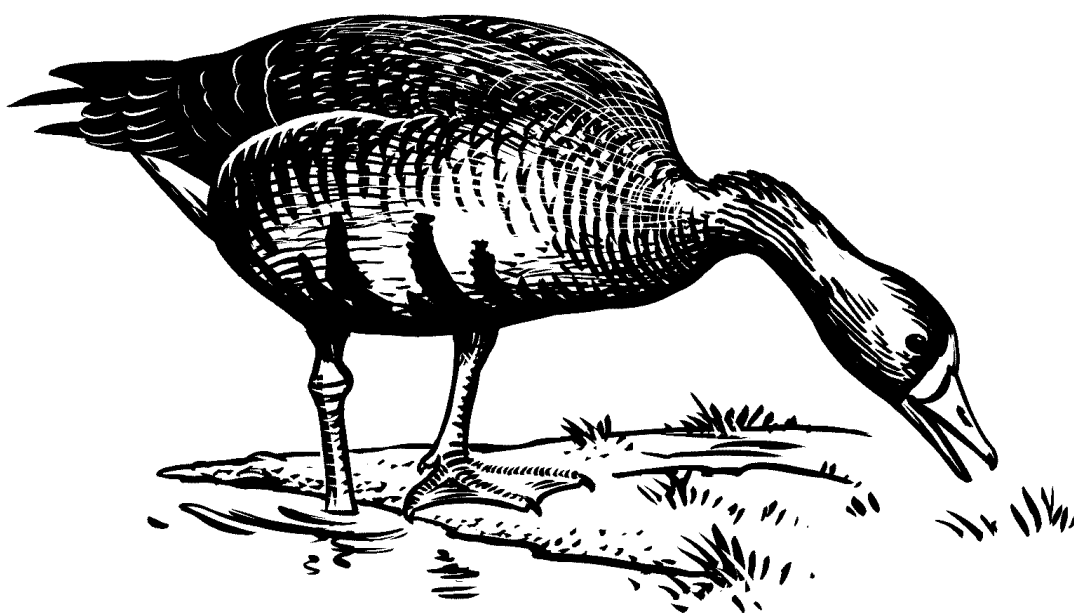


Figure 6. Changes in the percentage of first-winter birds amongst samples of birds at Wexford (○,●) and Islay (□,■). Open symbols (○,□) indicate pre-protection levels, filled symbols (●,■) indicate post-protection. Horizontal dotted line indicates the average annual percentage for both sites combined. Fitted regression lines show the modelled decline over time (solid thick line is a statistically significant decline at Wexford, the dotted thin line least squares best fit which fails to attain statistical significance from the Islay data).



season, and we would expect birds breeding there to suffer more from depressed breeding success in late springs than those further south. Since Wexford and southern wintering flocks tend to breed in the north of the nesting grounds, this fits with observations that show that these geese, lacking the buffer of a longer season, have shown earlier and more serious declines in production. As if these factors were not enough, substantial numbers of newly colonising Canada Geese of the *interior* race now breed in rapidly increasing number in west Greenland. The White-fronted Goose was formerly the only common goose species nesting in west Greenland, although Snow Geese have been present in northwest Greenland for many years. Despite the fact that Whitefronts and Canada Geese coexist throughout parts of the Canadian Arctic, studies show that Canada Geese are behaviourally dominant over White-fronted Geese in Greenland; so much so that Whitefronts have almost disappeared from one study area where Canada Geese continue to increase. At present, we cannot judge the scale of this effect, but the rapid spread of Canada Geese strongly suggests that inter-specific competition could be contributing to falling breeding success in Greenland White-fronted Geese.

Even if we cannot yet unravel this difficult nature conservation problem, there is no doubt that without the dedicated efforts of the counters, it would simply not have been possible to detect the full implications of a downturn in numbers. Equally, without counters undertaking age ratio and brood size determinations, it would be impossible to monitor breeding success and understand the consequences for changes in overall numbers. The last vital element has been the role played by the individual marking programme that enables estimation of annual survival and emigration rates, and the detailed knowledge that comes from following individually marked birds throughout their lives. Without these data, we simply could not understand what factors drive the observed changes in overall numbers of geese. GWGS is fortunate in ensuring good annual coverage of all known British winter resorts, but we always have difficulty covering the island of Muck and in very recent years the Loch Lomond flock at Endrick Mouth. So if you would like to join the network, or particularly are able to provide counts from these two or any other sites, do

please get in touch with me by e-mail or post at the address given at the end of this newsletter. We welcome any counts at any time from any place!

Anyway, next time you are sitting in the cold lashing rain, pondering upon whatever possessed you to get out of bed at the crack of dawn to count birds or why you are suffering eye strain trying to read the code on a goose collar 400 m away, do please remember how vital the information is that you are collecting! Despite the call of a comfy armchair and a warm cup of cocoa, your counts and observations are essential to help us document and understand changes in the abundance and distribution of waterbirds. It may be difficult to be so philosophical whilst freezing in the field! But reading about our hugely enhanced understanding of goose population dynamics based firmly on your contributions to the GMP and other such schemes will, I hope, make you feel slightly more inclined to go out and do it again for us in the coming season! In the meantime, our hearty thanks for your contributions to date.

Tony Fox

Survey dates for winter 2002/03

Icelandic-breeding Goose Census

Count forms for the 2002/03 IGC have been mailed to all counters with this issue of *GooseNews*. If you have not received your forms, or would like to participate for the first time, please contact Richard Hearn. The dates for this year are 12/13 October and 9/10 November 2002. If you are unable to count on these dates, please let either your Local Organiser or Richard Hearn know so that we may try to arrange for cover of your site by another counter.

International Greenland White-fronted Goose Census

The provisional dates for the co-ordinated international counts in 2002/03 are 7-11 December and 29 March to 2 April. Other monthly counts are scheduled for 9-13 November, 11-15 January, 8-12 February and 8-12 March.

International Greenland Barnacle Census

The next 5-yearly census will take place during spring 2003. The provisional date is 29 March to 2 April. In addition, the monthly counts to be conducted in Argyll & Bute by SNH are timetabled for 9-13 November, 11-15 January, 8-12 February and 8-12 March.

Goose Age Assessments

The standard surveys will again be running during 2002/03 as usual. The ideal periods in which to age the principal goose species are given on page 8.

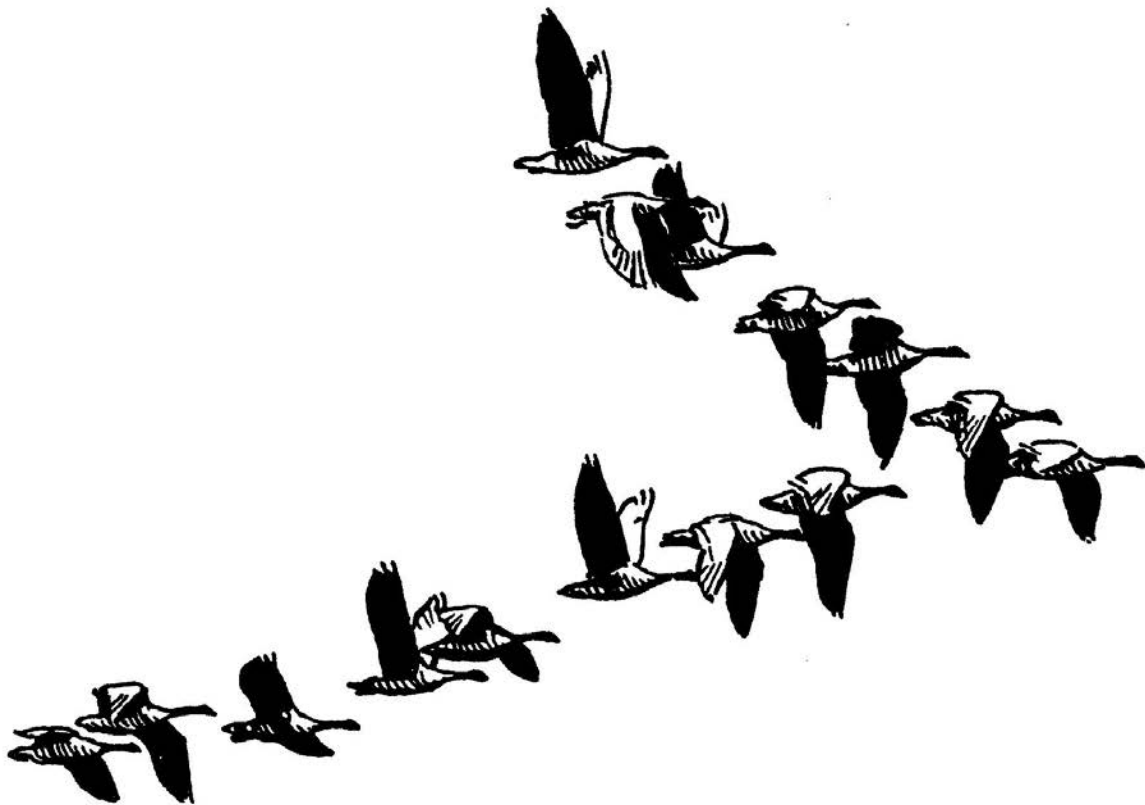
New threat to Þjórsárver

The 120 km² oasis of Þjórsárver (pronounced Theeorsarver), in central Iceland, is the most important site for breeding Pink-footed Geese in the world, supporting an estimated 6,000-10,000 pairs. It also supports many thousands of moulting Pinkfeet during late summer, as well as important numbers of breeding waders such as Purple Sandpiper and Red-necked Phalarope. It is designated as a wetland of international importance under the Ramsar Convention and

afforded additional protection under Icelandic law. Unfortunately, the Þjórsá river is also important to the country's hydro-electric industry. Consequently, the area has been threatened by a series of proposed hydro-electric developments over the past three decades, the latest of which proposes the construction of a 24 m high dam and a 32.5 km² reservoir. It has been estimated that this reservoir would result in the flooding of at least 8% of the area used by nesting Pinkfeet. Further areas may be lost to the geese

through peripheral development and disturbance. Currently, it is expected that the Icelandic Planning Agency will approve the development. WWT, along with many others, will be investigating ways of ensuring that this results in the smallest possible impact upon the integrity of the Þjórsárver Ramsar Site.

Source: Icelandic Nature Conservation Association <http://www.inca.is/> and Icelandic Institute of Natural History



Staging site fidelity of Greenland White-fronted Geese in Iceland

Using re-sightings and recoveries of marked birds, Tony Fox and his co-workers were able to show that, during the late 1980s and 1990s, Greenland White-fronted Geese exhibited a high degree of site loyalty at spring and autumn staging areas in Iceland. They found that during the spring more than 90% of goslings were still associating with their parents and siblings and that 96% of all within-spring movements were less than 4 km. Similarly, only 4%

of sightings in subsequent springs were of geese that had moved more than 4 km from their location in the previous spring. More birds, however, showed a shift in staging area between spring and autumn or autumn and spring, with 12% moving greater than 4 km. In all such cases, geese moved to Hvanneyri Agricultural College, the only hunting-free area for these birds. In addition, Fox found that the geese from southern wintering areas in Ireland (Wexford) were more likely to use staging areas in the west of Iceland, while those from the

Scottish wintering grounds (mainly Islay) preferred the southern lowlands of Iceland. This high degree of site loyalty and limited exchange between staging areas means that strategic refuge creation in both the western and southern lowlands is important in order to protect adequately the whole of this small and unique population of geese.

Source: Bird Study 49: 42-49

Population dynamics of Greater Snow Geese and the implications for hunting regulations

Stéphane Menu and colleagues studied the Greater Snow Goose, a population that has increased 10-fold in the past 30 years and is now severely impacting the fragile Arctic ecosystem in which it breeds. The management of such over-abundant species is an increasing problem for conservation biologists and it is essential that management prescriptions be based upon a sound understanding of the dynamics of the population concerned. Therefore, Menu investigated the relationship between productivity, survival, hunting mortality and population growth, and concluded that changes in the level of hunting mortality are the main reason for changes in the population growth. This arises as hunting mortality is largely additive to natural mortality, i.e. birds that are shot would probably have otherwise survived. Changes in reproductive rates were not thought to be responsible for the large increase in population size, as they have remained fairly constant over this time, although with large annual variation linked to climatic conditions. Given the continued increase in the number of Greater Snow Geese, management actions aimed at increasing hunting mortality may, therefore, be appropriate in order to limit the growth of this population and preserve its habitats in the Arctic and elsewhere.

Source: Journal of Applied Ecology 39: 91-102

The effects of spring hunting

Julien Mainguy and others have recently used radio telemetry to investigate the effects of spring hunting on Greater Snow Geese. They found that in years with a spring hunt a lower proportion of females returned to the breeding areas (28%) than in years without a hunt (85%) and that fewer females nested in years with a spring hunt (9% vs 56%, respectively). Yet most of these females that failed to reach the breeding areas had survived: 66% were located in the following autumn, compared to 81% during years without a spring hunt. They also found that in years with a hunt, geese started laying 2-7 days later and clutch size decreased by approximately 1.5 eggs. The authors suggest that poor body condition upon arrival in the Arctic was a major reason for this reduced breeding effort, late nesting and lower clutch size. For many birds, it appears that their body condition was so poor that they simply skipped breeding. This situation is likely to have arisen as a result of increased disturbance by hunters during the spring, a critical period for geese when the accumulation of body reserves is vital for a successful reproductive season. This impact is in addition to the direct mortality caused at the time of the hunt and needs to be considered in population management models aimed at reducing the number of birds in over-abundant goose populations.

Source: The Condor 104: 156-161

Latest census of Svalbard Pink-footed Geese

On 4-5 November 2001, the annual international count of Svalbard Pink-footed Geese was carried out by ornithologists from Denmark, Norway, the Netherlands and Belgium, led by Dr Jesper Madsen. The preliminary estimate was 38,556, of which the majority were in the Netherlands (83%) and Denmark (13%). These geese move further south during mid winter, concentrating in the Netherlands and Belgium. The proportion of young in the population was estimated at c.11%, a little below the long-term average.

Source: Jesper Madsen *in litt*.

Forthcoming meeting of the Goose Specialist Group

The 7th Annual Meeting of the Wetlands International/IUCN Goose Specialist Group will be held in the Cota Doñana, southern Spain, from the 14 to 17 December 2002. The meeting will focus on population management of migratory geese and population studies of Greylag Geese. Further details can be obtained from the Group's website (the address for which can be found below).

Websites of Interest

The following websites may be of interest to readers of *GooseNews*. If you have any suggestions for future sites worth mentioning, please send the relevant URL to WWT.

Wildfowl & Wetlands Trust Light-bellied Brent Goose satellite tracking project
<http://www.wwt.org.uk/brent>

Wetlands International Goose Specialist Group
<http://www.wetlands.org/networks/Goose/Goose.htm>

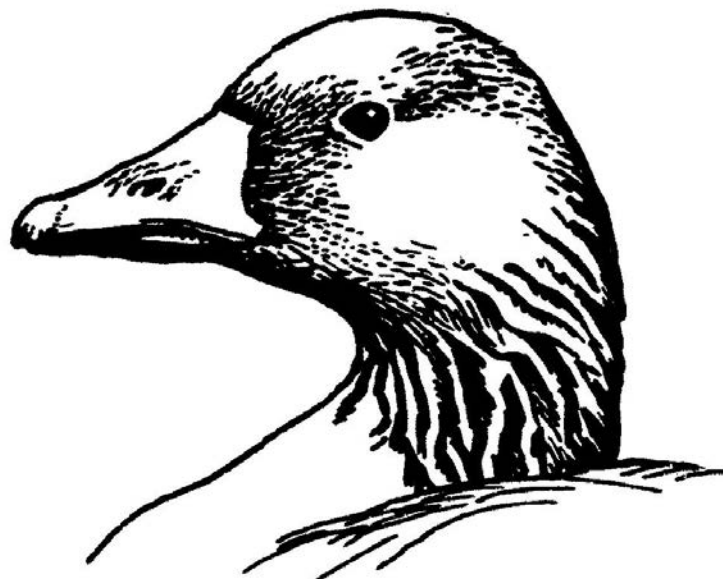
German White-fronted Goose Study
<http://www.blessgans.de/>

International Goose Research Group
<http://www.goose.org/main.html>

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Many thanks for all your help

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

GooseNews is the newsletter of WWT's Goose Monitoring Programme. It is sent to participants each autumn. It 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 the Waterbird Monitoring Unit at WWT.



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