GREENLAND WHITE-FRONTED GOOSE STUDY

REPORT OF THE 2001/2002 NATIONAL CENSUS OF GREENLAND WHITE-FRONTED GEESE IN BRITAIN

Final report – September 2003

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SUMMARY

Two complete censuses of all known Greenland White-fronted Goose wintering haunts in Britain found a total of 18,600 birds in autumn 2001 and 16,163 in spring 2002. These totals do not include those WeBS counts not submitted to the Greenland White-fronted Goose Study, which normally constitute less than 1% of the total. The counts comprised 9 and 10 in England, 97 and 93 in Wales, 11,854 and 9,161 on Islay and 6,640 and 6,899 in the rest of Scotland in autumn and spring respectively. Counts were missing from Loch Snizort (Skye where the January count of 12 was substituted in both counts), from Muck (where the last count of 32 from 1999/2000 was substituted) and Loch Bee (Uists), Assapol (Mull), Colonsay, Oronsay and Loch Lomond where the February counts (of 93, 26, 104, 35 and 222 birds respectively) were substituted for the spring counts. These adjustments constituted just over 3% of the spring total. Breeding success was well below the average for the last 15 years at 7.85% young (n = 7,314 aged), brood size was 3.08 (n = 151 broods).

The spring count in Britain represents a decrease of 19.5% over the count in spring 2000 (the available last full count) and a 30.7% decline over the estimated 21,068 total for spring 2001 when Foot and Mouth disrupted the survey. Including the counts from Ireland, the global population of the Greenland White-fronted Goose was considered to be 26,422 in spring 2002, down by 21.9% on the last available full count in spring 2000, and down 34.7% on the peak population level of 35,573 in spring 1999.

As well as the usual report of the census, this report includes three extra accounts. Paul Shimmings reports on the recent status of the sub-species in Norway and Michael Frankis provides an account of numbers using an apparently previously unknown, but seemingly regular wintering site in Northern England. Finally there is a brief overview of our concerns about the recent declines in numbers of Greenland White-fronted Geese.

INTRODUCTION

The 2001/2002 survey was the twentieth annual census of Greenland White-fronted Geese carried out in Great Britain by the Greenland White-fronted Goose Study. As usual, full censuses were attempted in autumn and spring to coincide with the International counts made concurrently in Northern Ireland and the Republic of Ireland and co-ordinated there by the National Parks and Wildlife Service from Dublin. Table 1 shows the most recent total census data available to the present (based on the internationally co-ordinated counts from 1999/2000, 2000/2001 and 2001/2002).

Table 1. Spring Greenland White-fronted Goose census totals for 1998/9, 1999/2000 and autumn 2000. The British total for spring 2001 (missing because of the Foot and Mouth Disease outbreak) was estimated based on the relationship between spring and autumn counts from previous seasons. At the time of compilation, collation of count coverage for the rest of Ireland in 2000 remains incomplete, hence values in brackets use data substituted from 1998/99 to generate provisional global populations totals. Since numbers had declined on the previous winter in all other areas, this likely represents an overestimation of the true total. No data are available from spring 2001.

	spring 1997	spring 1998	spring 1999	spring 2000	Spring 2001	spring 2002
Wexford	8751	8306	8958	8330	-	7133
Rest of Ireland	4788	4899	4617	(4617)	-	3158
Islay	11210	12224	13560	11201	13281	9161
Rest of Britain	8357	7396	8438	8056	7787	7002
Population total	**34442**	**32835**	**35573**	32204	**-**	**26454**

ARRIVAL/DEPARTURE DATES

There were few very early arrivals in 2001, mainly because of the unusually late departure from Iceland, nevertheless, birds were reported back on Coll 10 October and at Loch Ken and Bute (43 geese) on 13 October. More typical first observations for this year were 31 at Oust, Caithness 16 October, rising to 53 by 30 October; first arrivals on Loch a'Phuill, Tiree on 19 October and another 10 on the Reef there the same afternoon, birds were back on the Dyfi Estuary (mid-Wales) on 20 October and 41 at Loch Bee, on the Uists on 21 October. The run of southerly winds through much of October conspired to keep many of the Whitefronts in Iceland until the 27 October when the big arrivals started at Wexford in SE Ireland (A. Walsh pers. comm.). This is reflected in first observations in Scotland at some sites, as on North Uist (3 young with 4 adults on 28 October).

COUNT TOTALS

The counts presented in the table at the end of this report are based on the regular coverage of all known regular wintering sites organised by GWGS. The Wildfowl & Wetlands Trust is currently (September 2003) in the throes of a major revision of the WeBS database system at Slimbridge, so for the first time, the counts of Greenland White-fronted Geese submitted to WeBS have not been incorporated into the counts presented here. This inevitably means we shall be missing some counts from some regular sites in months when GWGS did not receive counts, and from sites not regularly used which are reported via WeBS. However, this total is usually much less than 1% of the British total, so the absence of these values will not make a substantial difference to the overall totals. Some counts (constituting less than 3% of the total) have had to be substituted from other years and months (see description in the summary

and count table at the end of the report). We propose to update these counts in the report of the winter 2002/2003 census in due course. Once again, we are very grateful to Scottish National Heritage for their coverage of certain flocks and the prompt and efficient supply of data.

AGE RATIOS

Breeding success for Greenland White-fronted Geese from the summer of 2001 was well below average, the proportion of young being 7.9% among the aged samples (Table 2), down on last winter's production figures. The overall ratio comprised 7.9% young on Islay (compared with 14.5% average during 1982-2000, and 8.2% last year) and 7.8% in the rest of Britain (compared with 14.4% average during 1982-2000 and 11.2% last year). The mean brood size was 3.08 (see Table 2) based on 151 families sampled from a restricted number of sites. The average on Islay (3.51) was higher than the 1982-2000 average there (3.20). In the rest of Britain the average brood size was 2.70 in 2001.

Table 2. Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Britain 2001/2002.

SITE	% YOUNG	SAMPLE	MEAN BROOD SIZE	SAMPLE
Westfield, Caithness	6.5%	62	4.00	1
Loch of Mey Caithness	5.8%	240	2.33	6
Fidden, Mull	32.3%	34	2.75	4
Assapol, Mull	0	26	-	-
Coll	12.8%	148	-	-
Tiree	7.7%	222	1.89	9
Lorn	16.7%	90	-	-
Benderloch	7.7%	65	-	-
Lismore	12.5%	176	2.44	9
Danna	6.5%	77	1.67	3
Moine Mhor	8.7%	23	2	1
Rhunahaorine, Kintyre[1]	6.4%	827	3.06	18
Machrihanish, Kintyre[1]	8.0%	840	3.35	20
Islay[1]	7.9%	3870	3.51	70
Jura	8%	100	2.67	3
Bute	6.8%	176	-	-
Loch Ken	4.4%	338	2	7
Scotland excl. Islay	7.81%	3444	2.70	81
OVERALL	7.85%	7314	3.08	151

[1]Details from Islay and Kintyre courtesy of Dr Malcolm Ogilvie

NATIONAL ACCOUNT

The occurrence of Greenland White-fronted Geese *Anser albifrons flavirostris* in Norway

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Introduction

Haftorn (1971) mentioned only one occurrence of Greenland White-fronted Goose *Anser albifrons flavirostris* in Norway: a bird shot at Varhaug in Hå municipality in the area known locally as Jæren (Rogaland county) on 7th November 1962. This bird had been ringed as an adult near Ata in Jakobshavn district in west Greenland on 12th July 1961. Haftorn (1971) stated that, because bill colour fades soon after death, it was not possible to use that feature to identify museum specimens. This short account attempts to describe the recent status of the sub-species in Norway, based on all existing known available reports.

Observations of Greenland White-fronted Geese in Norway 1962 – 2001.

Several records of Greenland White-fronted Geese in Norway have been published in recent years, and there are a number of additional records that are yet to be published. Up until the end of 1996, records of the Greenland subspecies (*flavirostris*) of Whitefronts were subject to scrutiny by the Norwegian Rarities Committee (NSKF). Since 1996, the local records committee in each county, which includes a number of records currently under review, has checked all reports of this race.

Table 1 presents all known reports listed in chronological order, based upon data taken from various sources. Records presented have been obtained from, amongst other sources, published reports from NSKF, from the NSKF database (which includes some accepted but unpublished records), from the local records committees, and from various Internet web pages.

Table 1. Complete listing of all known observations of Greenland White-fronted Geese in Norway 1962 – 2001 (see Figure 1 for geographical distribution of counties in Norway).

Date first seen	Date last seen	Place	District	County	Total	Comments
07.11.1962		Varhaug	Hå	Rogaland	1	found dead, ringed Atå, Jakobshavn, Greenland 12.07.61
13.12.1967		Landvik	Grimstad	Aust-Agder	2	2 ind.
26.03.1973	01.04.1973	Børsesjø	Skien	Telemark	2	2 imm
11.10.1974		Mølen	Larvik	Vestfold	1	ad
17.10.1976	31.10.1976	Nordre Øyeren	Fet	Akershus	40	both ads & juvs in flock
09.10.1978	12.10.1978	only district & county	Voss	Hordaland	1	1 ad
14.02.1982	15.02.1982	Orrevatn	Klepp	Rogaland	2	2 ind

24.05.1982		Altafjorden	Alta	Finnmark	2	2 ind
06.06.1983		Reinsnos	Odda	Hordaland	1	ad
01.01.1986	05.05.1986	Utsira	Utsira	Rogaland	1	1 ad
01.02.1986		Horpestad	Klepp	Rogaland	4	2 ad & 2 juv
14.09.1986	19.09.1986	Gaulosen	Melhus	Sør-Trøndelag	4	4 juvs
15.12.1986		Rossholmvika, Nordre Øyeren	Fet	Akershus	21	21 ind. (still 1 ind. 21.12.86)
24.04.1987	02.05.1987	Øksninga	Kvingla	Nord-Trøndelag	1	1 adult
17.04.1988		Sandblåstvågen	Fræna	Møre & Romsdal	11	6 ad & 5 juv
05.11.1988	25.02.1989	Orreosen	Klepp	Rogaland	1	1 juv
05.11.1988	27.11.1988	Orrevatnet	Klepp	Rogaland	1	1 juv
25.02.1989		Orrevatnet	Klepp	Rogaland	1	1 juv
12.11.1989		Makkevika	Giske	Møre & Romsdal	4	4 ind
02.05.1990	04.05.1990	Sandblåstvågen	Fræna	Møre & Romsdal	1	1 ad
06.05.1990	12.05.1990	Gaulosen	Melhus	Sør-Trøndelag	1	1 ind
18.09.1990	06.10.1990	Sandblåstvågen, Gaustadvågen & Male	Eide & Fræna	Møre & Romsdal	25	22 ad. 6 3 juv.
01.10.1990	01.04.1992	Hodneland	Lindås	Hordaland	1	1 juv. (oct.1990 - apr. 1994)
20.10.1990		Reve & Orre	Klepp	Rogaland	3	ad
27.10.1990	28.10.1990	Austrheim, Utsira	Utsira	Rogaland	1	1 juv
29.12.1990	29.04.1991	Bore & Orre	Klepp	Rogaland	4	4 ad
01.01.1991	24.04.1991	Bore & Orre	Klepp	Rogaland	18	up to 18 ind.
15.09.1991		Orrevatnet	Klepp	Rogaland	1	1 adult (shot - ringed 5PT)
26.09.1991	27.09.1991	Sandblåstvågen	Fræna	Møre & Romsdal	4	3 ad & 1 juv
29.09.1991		Kurefjorden	Rygge	Østfold	1	1 adult (ringed bird 1PR)
20.10.1991	29.12.1991	several sites	Hå & Klepp	Rogaland	11	up to 11 ind.
10.11.1991	31.12.1991	Bjårvannet & Orrevannet	Klepp	Rogaland	7	7 ind. (not same as above - different flock)
		Glærum	Surnadal	Møre & Romsdal	1	1 ad. wintered 1991, no dates
01.01.1992	19.04.1992	Hå and surrounding area	Hå	Rogaland	16	16 ind
11.10.1992		Gruddavannet	Klepp	Rogaland	1	1 adult
23.12.1992		Orrevatnet	Klepp	Rogaland	1	1 ind.
31.01.1993	17.04.1993	several sites	Hå & Klepp	Rogaland	2	2 adult
27.02.1993		Siradalen	Utsira	Rogaland	1	1 ind
29.09.1993	08.10.1993	Øysand	Melhus	Sør-Trøndelag	3	3 ad
27.11.1993	27.12.1993	Herdla	Øygården	Hordaland	10	3 ad & 7 juv
05.12.1993		Storavatnet	Fitjar	Hordaland	5	2 ad. & 3 juv. (some accepted as GWF)
01.01.1994	12.03.1994	Håtangen/Orreosen/Borre	Hå & Klepp	Rogaland	2	2 adult
16.01.1994		Breivik, One	Øygården	Hordaland	10	3 ad & 7 juv (see 1995/208
23.10.1994	30.10.1994	Gruddavannet	Klepp	Rogaland	3	2 ad & 1 juv
21.01.1995	23.04.1995	Gruddavannet & Orrevatnet	Klepp	Rogaland	1	1 ind
13.05.1995		Valla	Hemnes	Nordland	2	1 ad & 1 juv

25.09.1995		Øra	Meløy	Nordland	3	3 ind
03.10.1995	10.10.1995	Farstadvatnet	Vestvågøy	Nordland	6	4 ad & 2 juv
13.10.1995	04.11.1995	Bekkjarvik, Utsira	Utsira	Rogaland	1	1 adult
01.11.1995		Skjernevatnet	Vestvågøy	Nordland	1	1 adult
04.11.1995	26.11.1995	Gruddavannet & Orrevatnet	Klepp	Rogaland	8	8 ind. (same flock Skasheim 03 - 10.12.95, reduced to 7)
04.11.1995		Innstrandfjæra	Ørland	Sør-Trøndelag	6	6 ad & 5 juv
27.01.1996		Rise	Vestvågøy	Nordland	1	1 ind
27.01.1996	28.01.1996	Rødberg	Lindesnes	Vest-Agder	1	1 adult
04.02.1996	18.02.1996	Matlandsvågen	Karmøy	Rogaland	1	1 adult
02.05.1996		Lundleiret	Steinskjer	Nord-Trøndelag	1	1 adult
16.05.1996		Gaulosen	Melhus	Sør-Trøndelag	3	3 adult
17.09.1996	01.10.1996	Storeidvatnet	Vestvågøy	Nordland	20	20 adult
08.10.1996	09.10.1996	Verdalselva & Orin	Verdal	Nord-Trøndelag	7	7 adult
08.10.1996	13.10.1996	Hannangervann & Østre Hauge	Kviljø / Farsund	Vest-Agder	3	3 adult
09.10.1996		Farstadosen	Fræna	Møre & Romsdal	4	4 adult
09.10.1996	23.10.1996	Våg	Nærøy	Nord-Trøndelag	7	2 ad & 5 juv
15.10.1996		Herdla	Askøy	Hordaland	3	3 adult
16.10.1996		Arnøy	Nærøy	Nord-Trøndelag	2	2 adult
06.12.1996	03.04.1997	Skeisvatnet	Haugesund	Rogaland	1	
18.11.1997		Østre Hauge	Farsund	Vest-Agder	1	with 105 A.a.albifrons
13.04.1998	17.04.1998	Orreosen & Reve	Klepp	Rogaland	6	6 ind
13.04.1998		Tyrifjorden	Ringerike	Buskerud	2	2 juv
08.12.1998	31.12.1998	Stjørdal	Stjørdal	Nord-Trøndelag	5	5 ind. from 8th Dec. to end of year
12.10.1999	15.10.1999	Røst	Røst	Nordland	7	7 ind.
05.12.1999		Tomlevoll, Einafjorden	Vestre Toten	Oppland	1	1 juv
30.12.1999	05.03.2000	Karmøy	Karmøy	Rogaland	2	2 juv
14.01.2000	08.04.2001	Hillesland	Karmøy	Rogaland	1	
03.04.2000	06.04.2000	Orreosen	Klepp	Rogaland	1	1 ind
19.04.2000	22.04.2000	Orreosen	Klepp	Rogaland	5	5 ind
25.04.2000		Alfnesfjæra	Levanger	Nord-Trøndelag	1	1 ind
14.09.2000		Røst	Røst	Nordland	2	2 ind
17.09.2000		Øra	Meløy	Nordland	8	3 ad & 5 juv
30.09.2000		Austbø	Alstahaug	Nordland	11	present for ca. 1 week
07.10.2000	15.10.2000	Ilene	Tønsberg	Vestfold	5	5 ind
15.10.2000		Saupstad, Gimsøya	Vågan	Nordland	5	2 ad & 3 juv
01.11.2000		Fåvang nature reserve	Ringebu	Oppland	1	1 ad.
26.11.2000		Øra	Fredrikstad	Østfold	3	3 ind
16.04.2001	27.04.2001	Kvilhaug	Karmøy	Rogaland	2	
18.04.2001		Austrheim, Utsira	Utsira	Rogaland	2	
07.05.2001	09.05.2001	Storeidvatnet	Vestvågøy	Nordland	2	
25.09.2001		Met. Station	Bjørnøya	Svalbard	8	pair & 6 juv

27.09.2001		Tjøtta	Alstahaug	Nordland	15	13 ad & 2 juv
02.10.2001		Liland	Vestvågøy	Nordland	1	1 ad
06.10.2001	07.10.2001	Storeidvatnet	Vestvågøy	Nordland	18	14 ad & 4 juv
09.10.2001		Kvilhaug	Karmøy	Rogaland	2	
09.10.2001	31.10.2001	Kvilhaug	Karmøy	Rogaland	5	3 - 5 ind. (3 ind. 11 - 16 oct, 5 ad. 17 - 31 oct)
12.10.2001	28.10.2001	Tornesvatnet	Haugesund	Rogaland	1	ad
14.10.2001		Stad	Selje	Sogn & Fjordane	8	4 ad & 4 juv
19.10.2001		Mølen	Larvik	Vestfold	1	ad
20.10.2001	24.10.2001	Stormark	Fedje	Hordaland	1	ad
20.10.2001		Ilene	Tønsberg	Vestfold	1	ad
31.10.2001		Mjølhus	Karmøy	Rogaland	6	1 ad. 31.10.01, 6 ad 01.11.01 (the 5 "new" from Kvilhaug?)
03.11.2001		Nes	Bjugn	Sør-Trøndelag	1	1 ind.
03.11.2001		Nesheim	Farsund	Vest-Agder	5	5 ad.

The majority of the reports derive from the autumn, especially in Rogaland and Nordland, but there are a substantial number from the winter months (see summary in Table 2).

Table 2. Summary of sightings per county of Greenland White-fronted Geese in Norway 1962 - 2001.

County	Spring	Autumn	Winter	Total	Comments
Svalbard		1		1	
Finnmark	1			1	
Nordland	2	12	1	15	
Nord-Trøndelag	3	3	1	7	
Sør-Trøndelag	2	4		6	
Møre & Romsdal	2	3	2	7	
Sogn & Fjordane		1		1	
Hordaland	1*	5	2	8	*one seen in June
Rogaland	5	13	19	37	
Aust-Agder			1	1	
Vest-Agder		2	2	4	
Vestfold		4		4	
Østfold		2		2	
Akershus		1	1	2	
Telemark			1	1	
Buskerud	1			1	
Oppland		1	1	2	
Total	17	52	31	100	

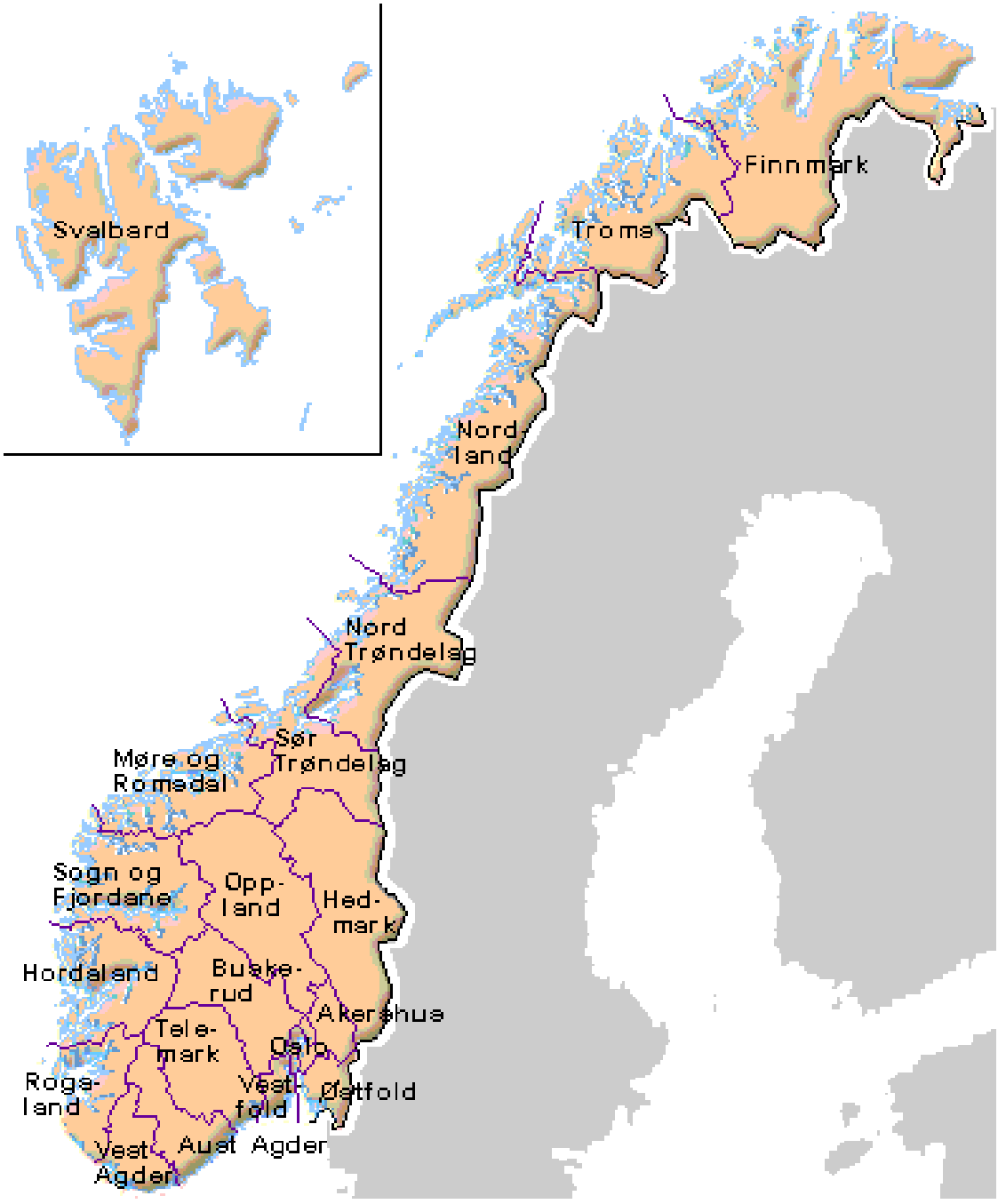
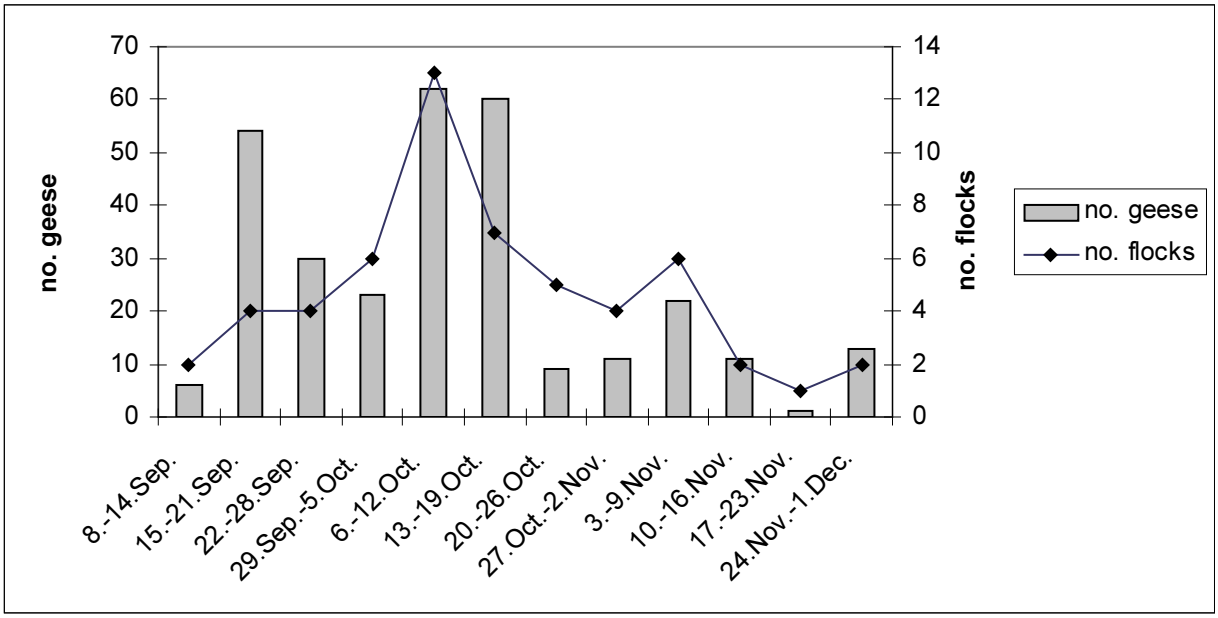


Figure 1. Map of Norwegian counties.

Intriguingly, there seems to be a bimodal frequency distribution of timing of arrival amongst the numbers of geese reported through the autumn in Norway (see Figure 2). Numbers of geese show a small peak in mid- to late September and a second peak mid-October, whereas total number of new flocks peaks noticeably in mid-October. Generally, the major arrival of Greenland White-fronted Geese to Iceland from Greenland occurs around 18-21 September, whereas the onward journey from Iceland to the ultimate wintering grounds takes place in early October (although both are modified by wind conditions). Hence, it is very tempting to suggest that the first flush of arrivals to Norway coincide with the first leg of the normal migration patterns of Greenland White-fronted Geese, and the first "peak" corresponds to overshoots, "missing" Iceland en route from Greenlandic breeding areas. The second peak (also reflected amongst the flocks as well as total individuals) is later and may therefore correspond to birds departing Iceland and being blown off course later in October. These birds fail to reach the wintering grounds, but instead turn up in Norway.

Figure 2. Timing of first arrivals of Greenland White-fronted Geese recorded in Norway for all years 1974 – 2001 combined (based on date of first record for each flock).



If this pattern were generally true, we might furthermore expect that Greenland White-fronted Geese appearing during the first phase of arrival in late September to turn up further north in Norway that those being deflected between Iceland and Ireland/Britain. The latter would be expected to predominantly occur in the south and west. There is some evidence to support this, because Greenland White-fronted Geese were more likely to be recorded in North and Central Norway during September than would be expected by chance (Table 3, $\chi^2 = 6.25$, $P<0.05$). Similarly, of the birds reported later in the season, significantly more occurred in the south-west and south-east of Norway that would be expected by chance (Table 3, $\chi^2 = 6.4$, $P<0.05$). Hence, it seems likely that there is a spatial and temporal separation in the timing of arrivals of Greenland White-fronted Geese in Norway.

Table 3. Geographical distribution (number of flocks) of early migrants (presumably birds that missed staging sites in Iceland) and late migrants (presumably birds that missed wintering areas in Ireland and Scotland).

	NORTH	CENTRAL	SOUTH-WEST	SOUTH-EAST
	Svalbard, Nordland, Nord-Trøndelag	Sør-Trøndelag, Møre og Romsdal, Sogn & Fjordane	Hordaland, Rogaland, Vest-Agder	Oppland, Oslo og Akershus, Vestfold, Østfold
Early migrants (8th September – 5th October)	9	4	2	1
Late migrants (6th October – 1st December)	7	5	20	8

Discussion

It is apparent that the Greenland White-fronted Goose occurs with some regularly in Norway. Of particular note is the regular occurrence of birds in Rogaland county (especially in the Jæren area), which represents the very extreme southwestern corner of the country. It appears that birds have become almost annual visitors to this area in recent winters. The birds that overwinter in Rogaland are restricted to a relatively small area, with a maximum of 40 kilometres between the most distant mainland sites (excluding Utsira, which is an island site). Rogaland has a relatively mild (oceanic) climate.

Dagsland (1996) stated that, although both races of Whitefront (i.e. *albifrons* and *flavirostris*) winter in the Jæren area of Rogaland, most of these were birds of Siberian origin. In some winters, there can be considerable numbers of wintering Whitefronts e.g. in 1995, when 300 individuals were recorded in Norway, and 250 remained through the winter, most occurred in Rogaland county (Jensen & Mjøs 1998).

Birds seen at sites further north than Rogaland County are mainly recorded in September/October and April/May. These records almost certainly refer to birds on passage, but it is a matter of speculation whether these are individuals on their way to Rogaland or to more traditional sites in Great Britain and Ireland. Given the timing and geographical spread of the early arrivals, it seems likely that these birds overshoot Iceland, thereby failing to reach landfall after leaving the east coast of Greenland before Norway. Birds recorded in October and November have almost certainly arrived in Norway due to unfavourable onwards migration conditions. October, in particular, tends to be dominated by low-pressure systems moving very rapidly westwards into the North Atlantic and North Sea areas. Since most of the population will have reached Iceland by October, it seems likely that these later birds are actually deflected during the flight from Iceland to Ireland and Britain. During both migration episodes, prevailing weather conditions during migration probably explain a large number of the occurrences of Greenland White-fronted Geese in Norway, and their differential abundance between years.

The adult shot at Orrevatnet, Rogaland, in autumn 1991 had been ringed at Wexford, southeastern Ireland on 23 October 1987, as a juvenile female (collar code 5PT), together with 4 siblings which were ringed, the parent male was unringed whereas the female parent was ringed (collar code 1PR). They all wintered at Wexford during the winter's 1988/89, 1989/90 and 1990/91, associating together with the other siblings of 5PT. 5PT was shot on 15 September 1991, and curiously 1PR turned up at Kurefjorden in Østfold county, about 450 km west from Orrevatnet, on 29 September the same year. 1PR was never seen at Wexford in winter 1991/92 but reappeared the following winter, and has been recorded there each winter hence (up to at least winter 2000/2001, it was apparently not present in 2001/2002). Neither of these two records of ringed birds has been accepted by the Norwegian Rare Birds Committee, and must be reconsidered in the light of the historical knowledge of their movements!

It is interesting that the next most frequented county is Nordland, well north along the coast of Norway from Rogaland, and where the majority of records come from the autumn. It is perhaps natural to speculate whether birds blown off course south of Iceland tend to hit the Rogaland coast, whilst those Whitefronts departing Greenland's east coast and deflected north of Iceland would hit Norway round about Nordland. This phenomenon might explain the relative lack of sightings between these two areas, a stretch of coast that logically falls in the "shadow" of Iceland for birds departing from Greenland.

Regarding individual annual totals, two years stand out from the others. In 1996, there were 11 records, totalling 52 individuals, a record total for Norway (Høyland et al. in press). However, this total was superseded in autumn/early winter 2001 alone, with a total of 14 records of 73 individuals in Norway (including a record of 8 individuals on Bjørnøya). It is perhaps no coincidence that a large number of Greylag Geese belonging to the Icelandic population (marked in Iceland or in Scotland) were also seen in Norway in autumn 2001 (A. Follestad & R. Swann pers.comm.). This tends to confirm the suggestion that weather has played a role during the autumn migration of geese from Iceland. Greylags generally leave Iceland in early to late October, like the Greenland White-fronted Geese, so their association in this year is not unexpected. October 2001 was characterised by a period of southerly and southwesterly air streams prevailing over much of Iceland, which resulted in very mild weather, but presenting a run of headwinds to any geese departing. This situation continued well into the month, and was doubtless responsible for the fact that the main arrival at Wexford and Islay occurred during 27-29 October, very much later than normal (see elsewhere in this report). It may therefore be that any geese departing before this onset of tailwinds would have encountered headwinds and the possible deflection westwards after departure from Iceland, resulting in the unusual occurrence this year.

Whether *flavirostris* has always occurred in Norway or whether this is a more recent phenomena is a matter of conjecture. The subspecies can be difficult to distinguish in the field, and indeed it was not described until 1948 (Dalgety & Scott 1948). Interestingly, the bird shot in 1962 was from the same general area as the more recent sightings in Rogaland. Alternatively, perhaps the increase in recorded sightings is simply due to the availability of better optical equipment, greater awareness as well as the availability of better identification literature in recent years. It may also be the case that the occurrence is to some extent weather dependent, such the actual number of arrivals likely to be detected varies considerably between years. Whatever, this analysis of observations in Norway, particularly

given those in recent years, indicates that *flavirostris* is now a regular annual visitor and can no longer be considered as rare.

Acknowledgements

Thanks to Tony Fox for encouraging me to putting all this onto paper, not least for information on ringed birds recorded in Norway. Alf Tore Mjøs kindly provided a list of all observations from the rarities committee files. Also the following county recorders sent information on the occurrence (including nil returns) of Greenland White-fronted Geese in their respective counties: Georg Bangjord, Morten Günther, Karl-Birger Strann, Harald Våge, Per Inge Værnesbranden, Øystein R. Størkersen, Tor Ålbu, Kjell Mjølsnes, Frode Falkenberg, Terje Lislevand, Geir S. Andersen, Per Arne Johansen, Jon Bekken, and Jon Opheim. Also thanks to John Doherty and the WWT team who made the observations on Bjørnøya.

The following persons have sent their records of Greenland White-fronted Geese either to the rarities committee or to the various local records committees, or whom are acknowledged as observers on various web pages (and where the sightings could be verified as being of *A.a.flavirostris*): J. Austevik, B. Berg, T. Berge, M. Bilet, Ø. Birkelund, O.K. Bjørnstad, D. Bollingmo, O. Bryne, M. Dagsland, S. Dahl, S. Dalgaard, J.B. Doherty, O. Drøseland, S. Efteland, B. Eliassen, J.O. Folkedal, S. Folkedal, M. Fredriksen, T. Frøland, R. Frølandshagen, L. Gabrielsen, J.O. Gjershaug, A. Grimsby, P.Ø. Grimsby, F. Grønningsæter, J. Grøtting, G. Gundersen, I.T. Gustad, J.R. Gustad, H.B. Hansen, K. Hassel, L. Hatten, H. Heggland, M. Helberg, O.B. Helland, S. Henriksen, M. Hodneland, H. Holand, B.O. Høyland, G. Högstedt, O. Jacobsen, R. Jensen, M. Kersbergen, B. Klevstad, S. Kringler, F. Kutshera, Y. Kvebæk, A. Larsen, S. Larsen, G. Lauglø, J. Lifjeld, S. Ludvigsen, A.T. Mjøs, G. Mobakken, J.K. Ness, G. Nordanger, G. Numme, K. Olsen, R.H. Olsen, T. Olsen, O.M. Oseland, F.H. Pedersen, T. Reve, K. Schølberg, K.A. Solbakken, T. Starholm, Ø.R. Størkersen, K.B. Sunde, T. Svendsen, C. Tiller, M. Vang, M. Venås, M. Viker, C. Voie, R. Voie, P.I. Værnesbranden, H. Våge, S. Øiangen, T. Ålbu. Sincere apologies to anyone who may have been omitted.

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A NEW FLOCK FROM NORTHERN ENGLAND

The regular occurrence of wintering Greenland White-fronted Geese *Anser albifrons flavirostris* near Grindon Lough, in northern England

by Michael Frankis, email: pfne10838@blueyonder.co.uk or michael.frankis@which.net

Although Greenland White-fronted Geese *Anser albifrons flavirostris* used to winter regularly at some sites in north-west England, and the subspecies occurs annually (sometimes in some numbers) throughout England, the regular wintering population remains largely confined to traditional resorts in Scotland, Wales and Ireland. It is therefore of considerable interest to report the following observations of a small flock that has begun to winter with some regularity at a site in Northumberland, hitherto only documented in the county bird reports. The following review represents a synthesis of reports compiled from *Birds in Northumbria* (the county annual bird reports) and the monthly bulletins of the Northumberland & Tyneside Bird Club. The archive of the NTBC record cards, stored at the Hancock Museum (Newcastle upon Tyne), was also checked and provided additional data, which had not been fully logged in the bulletins and annual reports.

The flock is based at Grindon Lough in western Northumberland, an 8.8ha natural lake at 200m altitude, grid reference NY 804 677, 15km west of Hexham. Grindon Lough is leased by the Northumberland Wildlife Trust and managed as a reserve, though the surrounding fields do not have any formal protection other than by being situated within the Northumberland National Park. However, shooting does not appear to take place there with any frequency if at all. The lough and surrounding fields are situated on a small area of limestone with relatively fertile soil; the surrounding unimproved grass pasture fields are mostly grazed by sheep and cattle though some are also improved and cut for silage. The Greenland Whitefronts roost on the lough with other geese (mainly Greylag Geese *Anser anser*, both wintering Icelandic and local feral birds, and feral Canada Geese *Branta canadensis*, a few hundred of each), and move onto surrounding fields to graze during the day. They often feed on their own separately from the other geese, preferring poorly-drained fields fairly rich in rushes *Juncus*, but will also join the Greylag flock to feed, and sometimes use the silage fields often preferred by the Greylags. Many Northumbrian birders have known the regular presence of wintering Greenland Whitefronts at Grindon for about ten years, but the significance of this flock in a national perspective has not been considered previously.

Grindon Lough is somewhat under-watched, so reports are infrequent, but in addition, the flock also often goes 'missing', sometimes for a month or more, because the undulating ground gives them numerous hollows in which they can disappear from view. They will also feed in fields up to 5-6km (maybe more?) from the lough, which can make them hard to find on a given visit, as for example, during the regular WeBS counts in recent years. Observation is from the minor road 200m south of the lough, as there is no public access to the fields or the water's edge. At times the flock feeds 5.5km west of Grindon Lough, near Gibbs Hill at NY 750 684, or (notably during W/SW gales) 3km northeast at grid ref. NY 816 697 where they are able to feed in the lee of a shelterbelt. It is not known if the flock remains throughout

spells of cold weather or not (a significant factor at this altitude), as the access road to the lough becomes dangerous in ice and snow, making observations very difficult or impossible.

Many of the reports summarised here were only assigned by the observers as 'Whitefront, race unspecified', largely because views at this site are often distant, making identification difficult, but also because some observers have regrettably had little interest in trying to identify them to race. Fortunately other observers have made the effort, and in each winter at least some of the records specified identification as *flavirostris*. The peak counts for each winter that are cited here are all based on such records that have been identified to race. Also, as will be seen from the records below, the arrival of the geese in October and their regular departure in mid to late April supports this field identification. In comparison, Russian *albifrons* race White-fronted Geese in Northumberland rarely arrive before severe weather displaces them from their normal wintering sites on the near continent, not usually before December or even January. They are also distinctly erratic in when, where, and how many arrive but generally exhibit a strong coastal bias.

The first confirmed *flavirostris* record from Grindon Lough was one present from 12th February to 20th April 1968, but subsequent occurrences were very rare until the 1991/1992 winter, with one on 22nd February 1981 the only bird identified as *flavirostris*. There were also eight unraced birds on 19th January 1975 and four unraced on 8th January 1983. They have however been regular in the 1991/1992 and all subsequent winters, with the following annual totals:

1991/1992: 4 adults were found on 19th October 1991, increasing to 9 by 12th January 1992 and 16 by 26th February, all 16 remaining to 22nd April.

1992/1993: 3 adults returned from 24th October, with 4 from 3rd-10th April, and one remaining to 21st April. Five birds reported on 28th November were not identified to race.

1993/1994: 3 adults from 17th October to 9th April, with 14 (9 adults, 5 juveniles) between 10th-20th February. On 31st December 1993, the 3 were feeding 3km E of the Lough. Four at Caistron (40km NE) from 20th-29th March were possibly some of the same group.

1994/1995: 2 from 27th October, then 6 from 20th November and 7 (plus 2 Eurasian race birds as well) on 22nd November, 6 again on 20th December and 4 from 4th-25th February, then 6 on 9th March, and 8 from 10th March - 8th April.

1995/1996: 6 from 26th October, then 9 from 17th February to 30th March, 16 on 31st March and then 9 again until 23rd April. Twelve counted on 4th January were not identified to race.

1996/1997: 5 on 3rd December, then 4 through the rest of December to 14th April.

1997/1998: 7 (5 adults, 2 juveniles) on 17th October, then 6 until at least 7th February.

1998/1999: 11 from 20th October to 11th April. 12 were present from 12th February to 4th April, but as none of the counts in that period specified the race, the 12th bird must be considered of unknown race.

1999/2000: 8 from 22nd October, then 9 from 28th October to 9th April (joined by 5 Eurasian race birds from 25th March - 9th April).

2000/2001: 8 from 22nd October to 18th April.

2001/2002: 9 from 2nd November to 7th April, with 11 on 9th Jan and 10 from 23rd-31st March, and one lingering to 11th April.

2002/2003: 8 from 20th October rising to 9 on 17th November; the 9 also seen near Greenlee Lough (5km west) on 9th December and near Gibbs Hill (5.5km west) on 5th March.

Although the numbers involved are modest, it is intriguing and exciting to document a hitherto overlooked but apparently recently regular wintering site for Greenland White-fronted Geese. Currently this is the only known such resort in England. Regular wintering at Grindon is not thought to have been overlooked before 1991/1992 winter, as the site is visited with sufficient frequency for any regular occurrence before then to have been detected. Grindon Lough was once (until they disappeared at the start of the 1970s) known as one of the premier UK sites for wintering Bean Geese, yet there is only the one Whitefront record from 1968 in this period. As can be seen, the available information is less fully documented than might be hoped, but certainly shows Greenland Whitefronts present every winter for the last 12 seasons.

The editors add: *If anyone has any additional information, counts or knowledge of these birds, please do not hesitate to send these to the Northumberland County Recorder, Ian Fisher, at 74 Benton Park Road, Newcastle upon Tyne NE7 7NB (e-mail ian@hauxley.freeserve.co.uk), with copies to Michael Frankis at the e-mail address above, and Tony Fox at the Kalø address (e-mail tfo@dmu.dk). We would be especially grateful for information (if it exists!) relating to any of the unraced birds noted above, additional dates (particularly October-November 1996 and March-April 1998), and for reports in the same general area away from Grindon Lough itself to discover the extent of their feeding area. We very much hope that we can monitor this site in future years and incorporate counts into the annual totals from this winter onwards.*

NEWS FROM GWGS

What is happening to the population of the Greenland White-fronted Goose?

by Tony Fox, National Environmental Research Institute, Kalø, Grenåvej 12, DK-8410 Rønde, Denmark - email: tfo@dmu.dk

Major Robin Ruttledge and Malcolm Ogilvie first documented the number and distribution of wintering flocks of Greenland White-fronted Geese in Ireland and Britain in the late 1970s. Their review (in the journal Irish Birds in 1979) pieced together the status of the population, showing that many of the wintering flocks occurred in remote bogland locations, far from bird-watchers and difficult to count. It is to the enormous credit of those two observers that they were able to compile from their own knowledge and a network of contacts, the basis for the wintering range we know for the subspecies today. On the scattered 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 then, that the population was listed on Annex I of the European Union Birds' Directive and 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 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 and Wetlands Trust as part of their Joint Nature Conservation Committee contract to supply waterfowl monitoring services to government. In Ireland, the government National Parks and Wildlife Service, 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 Service has also been cannon netting geese at Wexford (and to a limited extent elsewhere) and marking them with neck-collars. This effort, together with geese caught in Iceland and Greenland, and satellite tracking projects in conjunction with the National Environmental Research Institute in Denmark, has greatly contributed to our understanding of the population over recent years.

The good news, of course, was that numbers of Greenland White-fronted Geese 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 run of good breeding years in the 1980s, numbers increased rapidly to peak in the late 1990s (Figure 1). However, after peaking at 35,500 at that time, numbers have now 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 1). 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 resightings of the collared individuals, part of the National Parks and Wildlife Service project on the site) and observed declines in breeding success.

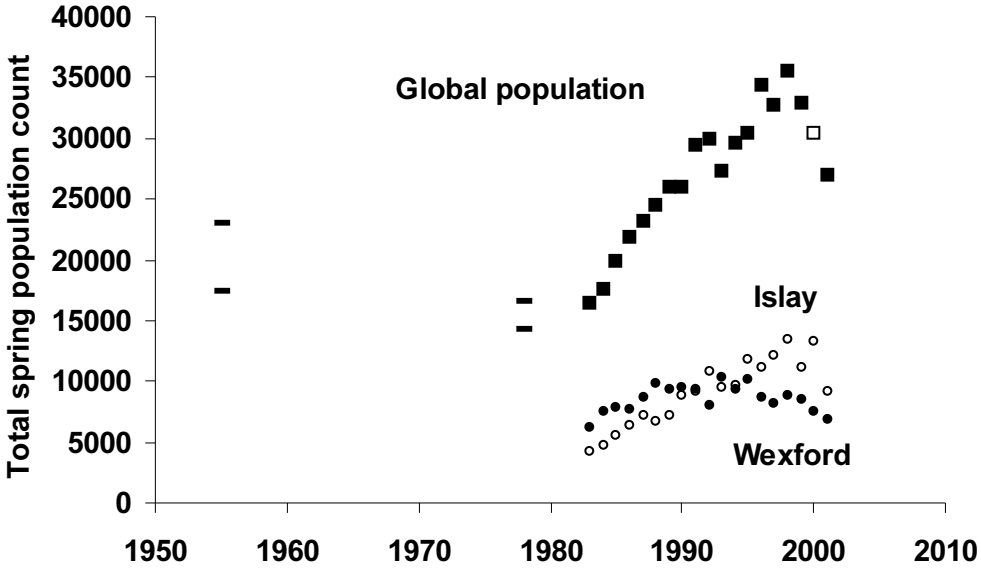

Figure 1. Graph of changes in abundance of Greenland White-fronted Geese since 1950. The values for the mid 1950s and late 1970s are the upper and lower limits estimated by Ruttledge & Ogilvie. Solid squares indicate the annual spring counts from the international census each year since spring 1983 (the open symbol for spring 2000 represents the value estimated from the autumn count in that season following the cancellation of the census due to the Foot & Mouth outbreak). Counts for Wexford Slobs and Islay are shown separately, to highlight the earlier peak and decline at Wexford compared to Islay.

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 these data show a long-term decline in the percentage of young birds returning to Wexford, and a similar trend (although not statistically significant) on Islay, since protection (see Figure 2). Wexford breeding success has been below average in 8 out of the last 10 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 3 years of age, compared with nearly 6 years in the 1990s. Overall, less that 5% of young birds hatched in the 1990s survive 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.

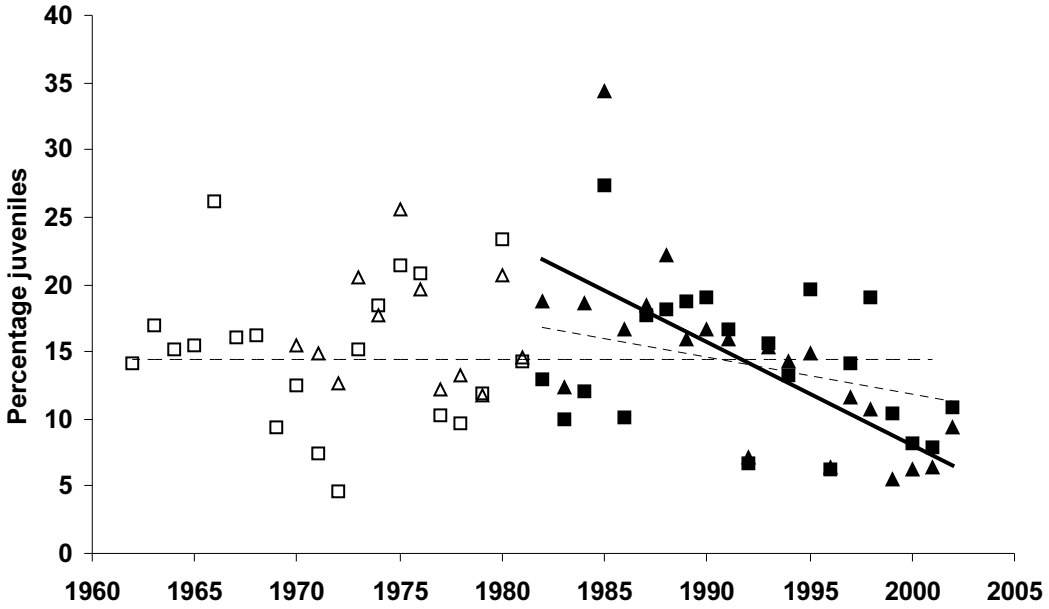

Figure 2. Graph of the percentage of birds of the year sampled at Wexford (triangles) and Islay (squares). Open symbols indicate prior to protection, solid symbols after. The heavy solid line shows the significant regression line that defines the decline in breeding success with time at Wexford since 1982. The trend on Islay is similar (dotted line) but fails to attain statistical significance. Note the percentage of young at both sites falls well below the overall average (horizontal pecked line) in the last four seasons.

So why these declines in reproductive success? The answer is that we do not really know. We can come up with plenty of theories, of course, but proving or disproving them can be difficult! It has been suggested, for instance, that Barnacle Geese feeding on agricultural habitats in Helgeland, western Norway en route to breeding areas in Svalbard fail to lay down sufficient nutrient stores for onward migration and successful reproduction because the diet is lacking in essential ingredients. Birds using semi-natural habitats breed more successfully because their diet does supply adequate nutrition. We know that in the last 20-30 years, many White-fronted Goose flocks have shifted from boglands and semi-natural habitats to feed more and more on autumn stubbles and intensively managed grassland. So could Greenland White-fronted Geese be suffering from the effects of too much "junk food"? We think not. If you look at the breeding success amongst different wintering flocks during the 1980s and 1990s when the population was expanding, the proportions of young were highest in those flocks associated with intensive agricultural land, and quite clearly lowest amongst bog-feeding flocks.

After a period of increase in overall number, 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. However, if this were the case, we would begin to see the reproductive success pick up again as the numbers of birds have fallen. So for instance, at Wexford, the numbers have been in decline since the mid-1990s, yet the percentage of young returning each autumn has continued to fall. In the absence of a recovery in reproductive success with the currently rapidly falling numbers, it is hard to be convinced that local density is causing the problem.

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 6 summers have been cool in west Greenland which has contributed to the run of poor production of young everywhere. However, weather has a greater effect on those geese breeding in the north of 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 egg 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 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. However, there have also been some mild springs and summers in very recent years, and yet the population has still bred rather poorly. Indeed, amongst the Wexford flock, the statistical relationship between breeding success and weather conditions on the breeding grounds in June seems to have broken down in recent years (although it still seems to hold for Islay wintering birds). Hence, whereas it did seem in the recent past spring and summer weather on the breeding grounds was a major limiting factor for all Greenland White-fronted Geese, it looks like some other factor may now be exerting a greater influence on limiting reproductive output.

As if these factors were not enough, substantial numbers of newly colonising Canada Geese *Branta canadensis* 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 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 White-fronted Geese 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 amongst Greenland White-fronted Geese.

What is clear is that we need to carry out more surveys of the west Greenland breeding areas, to repeat the aerial census carried out in 1999 by a consortium from Cornell University and Ducks Unlimited in the US and the National Environmental Research Institute in Denmark. That survey found that the two geese species tended to occur apart more often than was predicted by chance, suggesting for whatever reason, the two species avoided each other.

Jens' Nyelands' Ph.D study also showed that the Canada Geese were behaviourally dominant over Greenland White-fronted Geese during the moult on the summering areas. Indeed, the Canada Geese displaced them from favoured feeding habitats, forcing Greenland White-fronted Geese to eat the less nutritious plants than they favour in the absence of Canadas. A repeat aerial survey, although very expensive, would confirm whether Canada Goose numbers have continued to increase and expand in range at the expense of Whitefronts.

Quite what we can do if it does prove to be the Canada Geese that are affecting White-fronted Goose breeding success, will, of course, be an interesting question! We know from our neck-collaring and satellite tracking studies that the Canada Geese that breed in west Greenland winter along the eastern Atlantic flyway in the US from New York/New Jersey down into Delaware. Hence, any actions will necessitate international co-ordination between Europe, Iceland, Greenland, Canada and the United States. We urgently need the resurrection of the Flyway Management Plan drafted in 1992 by David Stroud with the support of Wetlands International, which specifically aimed to engage all the range states in a collaborative plan to safeguard the population. Hopefully, if we can find the political will, we can try and get the governments back around the table (as happened in Wexford in 1992 at a workshop organised by the National Parks and Wildlife Service). RSPB has also signalled its strong interest in helping the population, and is developing an approach to the European Union for funding to support conservation of the population, hopefully in the coming year or so.

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, several of the Argyll flocks and in very recent years the Mull flocks as well. 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 email or post at the address below. We welcome any counts at any time from any place!

I sit here at my computer feeling a very long way from Greenland White-fronted Goose wintering resorts!! I forget what it is like to be sitting in the freezing, lashing rain, pondering upon whatever possessed you to get out of bed at the crack of dawn to count birds. What I do hope is that this long ramble confirms why what you do on our behalf is so VITAL! Without ***your*** counts, ***your*** painstaking age ratio determinations, ***your*** reports of neck collar codes, ***your*** information about habitat use, we would have no idea about the trends in goose numbers, or the reasons behind the changes you observe. This is why your contributions to nature conservation are so important. Without them, we would never have found out that changes in the abundance of geese wintering thousands of kilometres away in Connecticut, or Delaware, are actually probably responsible for the declines in numbers of your local geese at Broubster, or Acharacle, or Barvas, or Kilpheder, or wherever. The geese can't thank you, but in the meantime, ***our*** hearty thanks for your contributions to date!

REPORT ACKNOWLEDGEMENTS

The censuses cannot be carried out were it not for the goodwill and hard work of a dedicated team of crack observers and we are running out of ways of adequately saying thank you to all the folk involved! It just would not happen without you, and it is a constant but agreeable surprise that we can maintain the network as the years go by. We are extremely grateful to everybody who has contributed counts of Greenland White-fronted Geese in 2001/2002, which include: J. Armitage, P. Batty, J. Bowler, R. Broad, W.A.J. Cunningham, A. Currie, R.C. Dickson, J. Duncan-Jones, J.Dye, A. Flynne, M. Frankis, C. Gillies, N. & M. Gregory, F. Harmer, P. Isaacson, R. Jones, S. Laybourne, M. Mackay, T. Mallows, E.R. Meek, S. Money, W. Neill, B. Neath, M.A. Ogilvie, B. Rabbitts, D. Rees, C. Rollie, R. Squires, A. Stevenson, A.C. Thirlwell, P. Webster, C. White & F. Younger. Thanks to SNH for coverage of sites in Argyll and our sincere apologies as ever for forgetting anybody whom we may have inadvertently omitted. The census is supported by the Joint Nature Conservation Committee through a sub-contract from the Wildfowl and Wetlands Trust, and we thank P. Cranswick for his help as nominated officer for the project. Finally, enormous thanks to Alyn Walsh and David Norriss (National Parks & Wildlife, Dublin) for providing the Irish count totals and to his network of counters throughout the country for their supply.

Finally, two very sad items to finish upon. Bert Dickson, one of our longest standing goose-counters has decided to throw in the towel after recording the geese at Stranraer ever since the inception of the counts organised by GWGS. His thorough and detailed observations have helped us enormously over the years, and we are extremely grateful for his help. His will be a hard act to follow - and indeed, if anyone is in a position to help with the counts of this flock, please get in touch with Ian Francis. We were deeply saddened to hear of the death of Neil Gregory earlier this year, after a period of illness. Neil and Mary Gregory have been keeping a close eye on the Lorn flock, near Oban, for several years, and they were regular correspondents. Neil's efforts were always much appreciated, and we send our sincere condolences to Mary.