

**REPORT  
OF THE 2007/2008  
INTERNATIONAL CENSUS OF  
GREENLAND WHITE-FRONTED GEESE**

by

**GREENLAND WHITE-FRONTED GOOSE STUDY**



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## SUMMARY

*This report presents the complete results of the surveys of the Greenland White-fronted Goose on the wintering grounds in spring 2008. This combines the counts from all the British resorts (coordinated by the Greenland White-fronted Goose Study) and those in Ireland (co-ordinated by the National Parks and Wildlife Service), although no counts were available from Norway where very small numbers may winter. Combining the counts from spring 2008 from the two networks gives a global total of 23,208 Greenland White-fronted Geese, down by 6.8% on the last world population estimate of 24,895 in spring 2006.*

*Excellent coverage was achieved in Ireland in spring 2008 which provided 7,536 from Wexford, combined with the count of 2,559 from the rest of Ireland. Counts were only missing from five regular wintering resorts in Ireland, and these amounted to only 2.1% of the Irish total. Two complete censuses of all known Greenland White-fronted Goose wintering haunts in Britain found totals of 12,122 birds in autumn 2007 and 13,113 in spring 2008. This compares with 12,271 and 12,536 respectively that were reported in the previous season at the same times of year. The 2007/2008 totals comprised 9 and 13 birds reported in England, 77 in Wales, 6,617 and 7,086 on Islay (compared with 6,194 and 6,025 respectively last season) and 5,419 and 5,937 in the rest of Scotland in autumn and spring respectively. Coverage in Britain was complete, except for Jura; all resorts were counted at least once in the season, including the Small Isles (not covered in many recent years), where sadly none were found during the Barnacle Goose aerial survey. Counts were missing from the specified count period from several resorts, but all were substituted with counts undertaken very close to the defined dates, amounting to 6.2% and 3.3% of the British totals in autumn and spring, respectively.*

*Breeding success amongst the British resorts was again below the average for the last 25 years at 9.7% young ( $n = 5,929$  aged), slightly down on the 10.2% of last year; mean brood size was 3.0 ( $n = 124$  broods). This included 10.1% on Islay, where mean brood size was 3.52 ( $n=44$ ). The trend for poor reproductive performance in recent years continued in 2007, but encouragingly broke 10% at several sites, including Kintyre. As a result, after the fall in numbers last year, there was a slight increase in the annual number counted in Britain in spring 2008 compared to the previous year. This was mostly due to an 18% increase in numbers counted on Islay in spring between 2007 and 2008, suggesting an underestimation of numbers there last year when the count was very much lower than in the previous season (representing a 15% fall in numbers there compared to the previous spring despite better breeding success in 2006). As mentioned above, the spring 2008 count from Wexford was 7,536, which was more than 1,000 fewer than counted in February and earlier in March, suggesting a major departure from the site which may also help explain the increase on Islay. We need to better understand patterns of within year movements between wintering sites to better interpret trends at different wintering resorts.*

*In Ireland, the percentage young amongst aged flocks in 2007/8 was 9.5% (based on 5,870 aged individuals), but this was heavily biased by the 10% amongst 5,292 aged at Wexford, where the mean brood size was 3.34 based on 151 broods. Elsewhere in Ireland, reproductive success was 5.4% ( $n = 578$ ).*

*Continuing low reproductive output in the population gives continued cause for concern for the population, which will be subject of a flyway management plan being prepared at present and to be discussed at a workshop organised by the Greenland White-fronted Goose Study to be held in February 2009, funded and supported by Scottish Natural Heritage.*

## INTRODUCTION

The 2007/2008 survey was the twenty-sixth annual census of Greenland White-fronted Geese co-ordinated in Great Britain by the Greenland White-fronted Goose Study and in Northern Ireland and the Republic of Ireland co-ordinated by the National Parks and Wildlife Service. Table 1 shows the most recent total census data available to the present, although counts from Ireland are missing from 2003, 2004, 2005 and 2007. Note the count at Wexford was unusually low for recent years and compared to the February count there, so this may partly explain the high count on Islay (see below). Unfortunately, we have no counts from southern Norway, but otherwise the spring 2008 count represents a full survey of all known winter haunts for this population, only the third such count since spring 2000.

*Table 1. Spring population census totals for Greenland White-fronted Geese, 2003-2008. At the time of compilation, collation of count coverage for the rest of Ireland from spring 2003, 2004 and 2005 was incomplete, hence global population totals cannot be estimated in these years.*

	spring 2003	spring 2004	spring 2005	spring 2006	Spring 2007	Spring 2008
<i>Wexford</i>	7915	8424	7707	7892	9713	7536
<i>Rest of Ireland</i>	-	-	-	2716	-	2559
<i>Islay</i>	10677	9653	7152	7111	6025	7086
<i>Rest of Britain</i>	7595	6734	6878	7176	6428	6027
<i>Population total</i>	?	?	?	<b>24895</b>	?	<b>23208</b>

## ARRIVAL/DEPARTURE DATES IN BRITAIN

John Bowler was the first to report the arrival of 32 birds on Tiree on 7 October, 20 were back at the Loons on West Mainland Orkney the same day, while Russ Jones had 14 back on the Dyfi on 8 October and Peter Cunningham saw the first of his flock return on 10 October, a pair with 5 young - especially pleasing for this little flock which has been hanging on in Lewis with increasingly small numbers. Seven birds were back on Colonsay on 12 October, but arrival to the wintering grounds appeared to be delayed in autumn 2007. As ever, it is very difficult to gauge the timing of return, because neither the very first birds back, nor the very last, necessarily reflect when the main part of the geese return – what do we use to best measure this timing? Generally, several observers felt that the geese were late back this season, and certainly many neck-collared birds observed at Hvanneyri in west Iceland on 22 and 24 September by Gerry Murphy and Graham McElwaine were still present when Arnor Sigfusson visited there on 20 October, when numbers were still very high on the farm. Early snow at the very end of the month finally sent the very last 14 birds away before November, but the implication was that many geese remained in west Iceland until the last week of October. Catriona White had 84 back at Lismore on 18 October and Arthur Thirlwell reported the first 6 birds at Loch Ken on 21 October, and most other sites reported arrivals quite late into the month - the first sighting of the 13 birds of the Northumberland flock being on 23 October, gratifyingly also including 3 juveniles! Bill Neill also saw his first Greenland White-fronted Geese (10) on North Uist on 23 October. We had an unaccredited report of 32 Greenland White-fronted Geese flying west past Burghead (with 3 Barnacle Geese) and 53 flying by North Queensferry, both observations on 29 October, although quite where they had come from (or indeed were going to) is another question!

In spring, the tendency for earlier and earlier departures continued and most departed very early on in April. Forty White-fronted Geese were seen leaving Lewis flying north to north west off Reef on 29 March, while 102 were seen heading north-west over North Uist at 13:06 on 4 April, when 140 also headed north over Loch Portain. On the 6 April heavy snow/hail forced 23 in from the far west to land on the machair by Aird Michael on South Uist and the same weather caught other migrating geese moving northwards, forcing a flock of 250-300 ashore at Ardnish on Skye where they were seen by Alan Horner who reported them via Bob McMillan. Twenty-seven White-fronts left Ardivachar, South Uist with 21 Whooper Swans on the evening of 7 April, but the heaviest movement was reported from Benbecula next day, when flocks of 67, 9, 140, 120 and 50 all passed over the Muir of Aird, with other reports of 220 heading north at South Glendale and 73 plus 44 over Grimsay the same day. It seems like 6 April marked the major departure, confirmed by a major departure from Wexford in SE Ireland that day and the main arrival at Hvanneyri in west Iceland during 7-9 April. The satellite-tagged birds marked and monitored by the Wildfowl & Wetlands Trust at Loch Ken also departed on 6 April and the majority of that flock had left by 10<sup>th</sup>, 3 remaining until 11<sup>th</sup>, the last report from that site. Nevertheless, there were still 20 birds at Lismore on 15 April, when the last 50 were seen heading north from Tiree and 14 birds persisted on the Dyfi until 20 April and 5 until the same date at the Loons on Orkney.

## BRITISH COUNT TOTALS

All known regular wintering sites were covered by GWGS together with counts carried out by Scottish National Heritage. Again this year, no data have been incorporated from the WeBS database, as these counts were not available at the time of report writing, but they normally only contribute a few birds from elsewhere in Britain away from those counted at the regular wintering haunts.

The autumn count was a little lower than last year, but the spring count was slightly up from last season in Britain (see Figure 1). Annual reproduction was not especially high, down a little on last year although much better than in some recent years, but most of the recovery resulted from the higher Islay count (see Table 1), with the total for the Rest of Britain continuing to decline as in recent years after the “blip” of an increase in 2006.

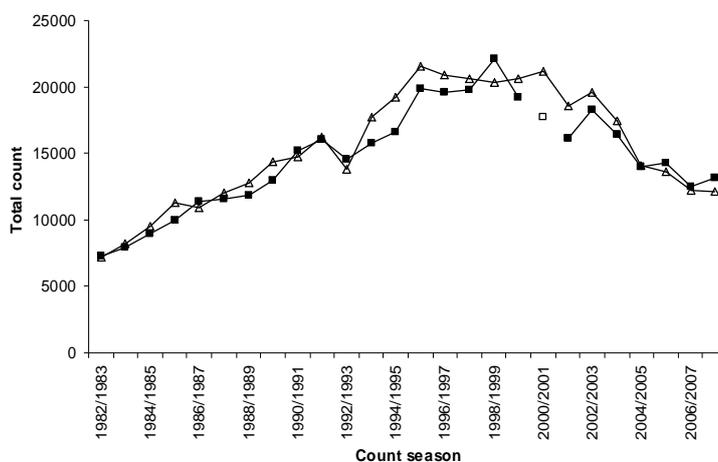


Figure 1. Counts of Greenland White-fronted Geese in Britain, 1982/1983-2007/2008, showing autumn (open triangles) and spring (filled squares) census results for each season. The value for spring 2001 (unfilled square) was missing on account of the outbreak of Foot and Mouth Disease that year and was therefore estimated from previous counts.

## COUNTS IN BRITAIN

A full breakdown of the count totals giving the maximum counts per month and the census period totals is presented on the next page. Following from the reports of last year, it was very much the same picture on Orkney, with geese again only recorded from the Loons and Swannay Loch areas, and all indications being that these counts relate to the same single wintering group of birds. There were again no reports from East Mainland Orkney. It was gratifying to see the little flock at Loch Urrahag on Lewis increase to 24 individuals, facilitated in part by the arrival of 2 families this year for the first time in many seasons! It was especially pleasing that the Scottish Government refused planning permission for the massive windfarm on Lewis - the fields traditionally used by Greenland White-fronts are right underneath the shadow of some of the proposed turbines, and their construction was likely to affect site use by the birds. Caithness numbers were similar to last year at the Loch of Mey site (c.9% young), but numbers were down amongst the Westfield flock where very few young could be found at all. There was no sign of geese in the Plockton area this year, but both Skye flocks seem to be holding their own since spring 2007. Thanks to the efforts of Carl Mitchell, the Small Isles were covered from the air during the aerial survey of Barnacle Goose in Scotland carried out in spring 2008, but alas no birds could be found. It is very difficult to cover the Small Isles effectively, and there remains the likelihood that the flock persists there without being seen from the air. Any follow up to confirm their status, site- and habitat use would obviously be very much welcomed in future years.

Improved coverage on Mull found a regular flock of up to 46 geese at Fidden, but the former site around Loch Assapol appears to have been more or less abandoned as has been suspected in recent years. Numbers on Coll and Tiree both fell by over 100 individuals between the spring of 2007 and 2008, part of the longer-term declines there. This may reflect the relatively low productivity amongst these two groups of birds and underlines the increasing difference between flocks in the proportions of young in their midst. This especially contrasts with the Kintyre flock on Machrihanish which again bucked the overall trend and showed another increase over the previous year, and where the proportions of young (almost 14%) reflected more the output of young in the 1980s and 1990s than current production in the population as a whole. There were unfortunately no reports from Jura, which was not covered this year. There was an abnormally low count at Loch Lomond in spring compared to the rest of the year, which affected that overall total, but generally numbers on Bute, Stranraer and the Dyfi showed little change on last year, whilst numbers at Loch Ken were a little down.

Much of the modest increase in overall numbers in Britain was due to an 18% increase in numbers counted on Islay in spring between 2007 and 2008, suggesting either an underestimation of numbers there last year when the count was very much lower than in the previous season (representing a 15% fall in numbers there compared to the previous spring despite better breeding success in 2007).

**BRITISH GREENLAND WHITE-FRONTED GOOSE CENSUS 2007/2008**

*shaded values are estimates for sites where no counts were received for the precise period of the international census periods*

SITE NAME	SEP	OCT	NOV	AUTUMN CENSUS	DEC	JAN	FEB	MAR	SPRING CENSUS	APR
<b>ORKNEY</b>										
Tankerness										
Loons		28	75	63	80	82	81	101	101	5
Loch of Swannay		23	75							
<b>CAITHNESS</b>										
Westfield		100	173	146	146		152	146	146	15
Loch of Mey				146		98	146	146	146	138
Loch of Winless										
<b>NE SCOTLAND</b>										
Loch Garten, Strathspey			4							
Loch of Strathbeg		4								
<b>WESTERN ISLES</b>										
Barvas/Shawbost, Lewis		7	17	17	17	24	24	24	24	
Balranald, North Uist		10								140
Kilpheder/Askernish, South Uist			32	32		22	30		30	59
Loch Bee/Kilaulay, South Uist			127	96	96		95	116	116	184
Benbecula				11			11	29	29	2
<b>INNER HEBRIDES</b>										
Loch Chaliun Chille, Skye			4	25	25	25	24		24	
Broadford, Skye			38	30	30	30	30		30	300
Plockton, Lochalsh				0					0	
<b>LOCHABER/NORTH ARGYLL</b>										
Muck/Eigg				0					0	
Loch Shiel/Claish Moss				37					37	
Lorn: Eriska/Benderloch				92	92				43	
Lorn: Appin			87	22	180	93	0	104	96	
Lismore		210	177	240	237	169	210		184	20
Tiree		113	746	752		720	787		803	
Coll			79	233			309	422	445	
Fiddon, Mull		3	39	39	46		39		39	
Assapol, Mull				0					0	
<b>SOUTH ARGYLL</b>										
Colonsay/Oronsay		115	71	109	110	55		32	98	
Jura: Loch a'Chnuic Bhric				0					0	
Jura: Lowlandman's Bay				0					0	
Danna/Kiels/Ulva		94	202	159		190	191	129	221	
Moine Mhor		13	16	23		23	23	25	18	
Rhunahaorine				1224					1451	
Machrihanish				692					852	
Clachan				120					181	
Gigha				194					153	
Glenbarr				44					33	
Isle of Bute		90	229	240	240	190	204	230	208	173
Endrick Mouth, Loch Lomond		114	182	221	223	176	220	70	29	
<b>ISLAY</b>			7980	6617	6617		6416	7086	7086	
<b>DUMFRIES &amp; GALLOWAY</b>										
Loch Ken		54	162	159	159	144	177	141	153	166
Stranraer			246	246	109	147	243	247	247	
<b>WALES</b>										
Dyfi Estuary		29	67	76	76	76	76	76	76	58
Anglesey			1	1	1	1			1	1
<b>ENGLAND</b>										
Lancashire Mosses			4	1						
Grindon Lough, Northumberland			8	8		13	13	13	13	13
<b>OTHER IRREGULAR SITES</b>										
Puddletown, Dorset					2					
Mains of Tullochgriben, Speyside			7	7	7	7	7			
<b>INTERNATIONAL COUNT TOTALS</b>				<b>12122</b>					<b>13113</b>	

## COUNTS FROM IRELAND

Thanks to the magnificent efforts of the count network in Ireland, we are delighted to be able to provide Irish totals for spring 2008. We are extremely grateful to the National Parks and Wildlife Service Rangers and other observers in the Republic, supplemented by the count network and RSPB staff in Northern Ireland, for providing us with these counts to enable a robust estimate of total population numbers for the Greenland White-fronted Geese this year. The full breakdown is shown in the table of Irish counts shown on the next page. For a very few sites, counts were substituted from counts outside the International Spring Census period dates, and for 5 sites no counts were available for flocks where the totals have been substituted by informed estimates based on the numbers seen at each in recent years. Only one of these, the flock frequenting the River Suck valley, holds substantial numbers, so these estimates only contribute 2.1% of the total Irish population, therefore deviations in these estimates from the real numbers present will make relatively little overall difference to the population totals.

Generally the overall picture from Ireland is not encouraging with widespread declines throughout the range, but especially amongst the more southerly distributed flocks. Recent count coverage has confirmed the disappearance of regular wintering Greenland White-fronted Geese at Bunduff, Lower Lough Derg, the Fergus and Shannon Estuaries, and especially in the south and west at Kilcolman, Doo Lough, Inny Island and the Blaskets. Numbers at a series of other resorts, especially Caledon, those in Clare/Limerick, Drumharlow, Kilglass/Castle Forbes and the River Nore flocks all continue to give considerable cause for concern. The northern flocks seem to be doing better than those wintering further south, with numbers on Lough Foyle and Swilly holding up well, although declines are still evident amongst many of these flocks as well.

The spring 2008 count from Wexford was 7,536, although this was well down on the counts of 9,053 (12 February 2008) and 8,838 (3 March 2008), which suggested a major departure from Wexford before the International Census count on 19 March 2008. The second Wexford March count was considered a good and accurate one, so a departure from Wexford may help explain the elevated count on Islay in spring 2008 compared with the previous year, as there are very few resorts elsewhere in the range that could accommodate so many birds in spring without noticeable changes in numbers. These potentially rapid shifts in large numbers of geese underlines the need for close collaboration regarding the counts at different resorts and the need for coordination of count coverage, especially during the International Census periods. Together with a contribution of 2,559 from the rest of Ireland, this Wexford total gives an overall global total of 23,208 Greenland White-fronted Geese, down from 24,895 in the last overall total count undertaken in spring 2006 (see Figure 2 below).

**IRISH GREENLAND WHITE-FRONTED GOOSE CENSUS 2007/2008**

*shaded values are estimates for sites with no counts received for the winter of 2007/8 and are substituted with informed estimates based on recent years*

<b>SITE NAME</b>	<b>SPRING CENSUS</b>	<b>STATUS</b>	<b>AGE RATIOS % young</b>	<b>sample size</b>
<b>DONEGAL</b>				
1. Loughs Foyle & Swilly	1107			
2. Dunfanaghy	35			
3. Sheskinmore lough	51		0	44
4. Pettigo	82			
<b>NORTH CENTRAL</b>				
5. Bunduff	0	EXTINCT		
6. Lough Macnean	69			
7. Lough Oughter	22			
8. Caledon	5			
Lurgangreen	50			
Kilcoole marshes	1			
<b>MAYO</b>				
9. Lough Conn	56		9.80	51
10. Bog of Erris	26			
<b>MAYO/GALWAY UPLANDS</b>				
11. Errif & Derrycraff	33		0	33
12. Connemara	24	*	0	24
<b>GALWAY LOWLANDS</b>				
13. Rostaff & Killower	76			
14. Lower Lough Corrib	20			
15. Rahasane turlough	56			
<b>CLARE/LIMERICK</b>				
16. Tullagher	16			
17. North County Clare	10			
18. Lower Lough Derg	0	EXTINCT		
19. Fergus & Shannon estuaries	0	EXTINCT		
<b>SHANNON HEADWATERS</b>				
20. Lough Gara	84			
21. Drumharlow Lough	10			
22. Loughs Kilglass & Castleforbes	20			
<b>MIDDLE &amp; LOWER SHANNON</b>				
24. North Lough Ree	34			
25. River Suck	150			
26. Little Brosna	242		2.29	175
<b>MIDLANDS</b>				
23. Midland lakes	260		8.79	239
27. River Nore	7			
<b>SOUTH WEST</b>				
28. Kilcolman	0	EXTINCT		
29. Doo Lough	0	EXTINCT		
30. Killarney valley	13		8.33	12
31. Inny valley	0	EXTINCT		
32. Blasket islands	0	EXTINCT		
<b>SOUTH EAST</b>				
34. Wexford	7536		10.00	5292
<b>TOTAL</b>	10095		9.54	5870
<b>TOTAL ex Wexford</b>	2559		5.36	578

\*possibly an incomplete count

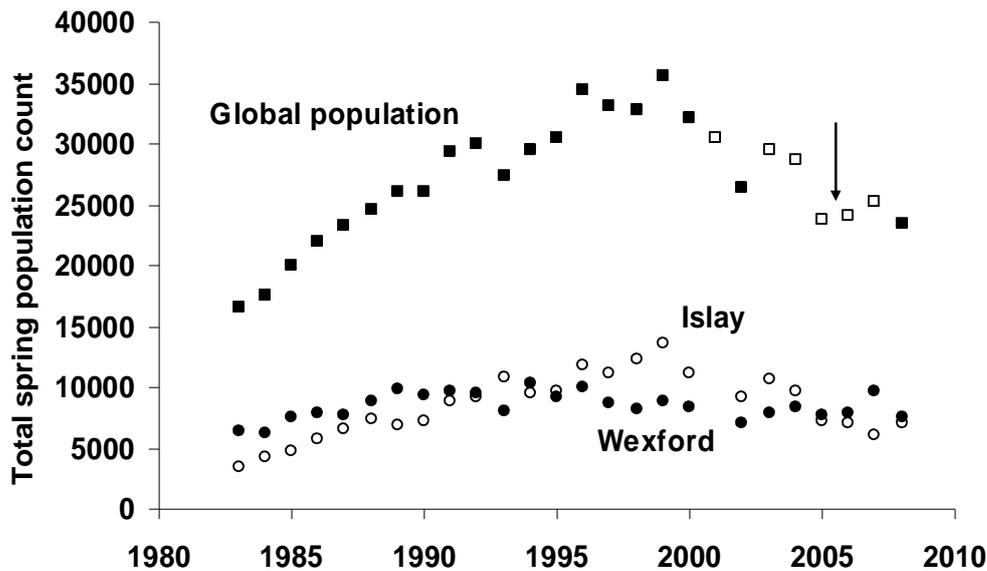


Figure 2. Combined global spring counts of Greenland White-fronted Geese from Britain and Ireland, 1983-2008, showing actual count totals (filled squares) and those estimated using modelled values for the missing “rest of Ireland” totals in some recent years (open squares). These values were calculated on the basis of the relationships between the “rest of Ireland” counts and combined Wexford and British values in previous years of full coverage. Values for spring 2001 (unfilled square) were missing on account of the outbreak of Foot and Mouth Disease that year and were therefore also estimated from previous counts. The arrow indicates the point where hunting in Iceland was stopped. Spring counts for Isey (open circles) and Wexford (closed circles) are also shown.

## AGE RATIOS IN BRITAIN

Following our pleas last year for more age ratio samples from flocks, we were delighted to report a substantial improvement in 2007/8. As can be seen from the table below, we achieved good and broad coverage even if overall production was disappointing low again. Overall production was 9.7% among the aged samples (Table 2) compared with 10.2% last season, but again there was considerable variance between wintering sites. It was gratifying to see that flocks in Caithness, Lewis, Loch Bee, Stranraer and Dyfi all broke 10% young amongst their number in winter 2007/8, especially the Lewis flock from which goslings have been noticeably absent in recent years. The two Kintyre flocks again produced conspicuously large numbers of young, which may contribute to the explanation for why these flocks show rather less marked declines in their number in recent years compared to some other flocks. Production of young on Isey was again below average (10.1% compared with 13.1% average during 1982-2006, but much the same level as 10.0% last year) and likewise groups in the rest of Britain performed a little less well than last year (9.3% compared with 12.8% average during 1982-2006 and down on 10.5% last year). Mean brood size was also lower at 3.03 (see Table 2) based on 124 families sampled from a restricted number of sites. The average values were 3.52 on Isey (slightly up on last year) and 2.76 elsewhere (much as last season). It was again evident that Greenland White-fronted Geese are good at returning with large families when they do bring young back! The problem seems still to be the numbers of pairs that are able to reproduce successfully are very much more limited than in earlier years, especially the 1980s and 1990s.

*Table 2. Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Britain 2007/2008.*

SITE	% YOUNG	SAMPLE	MEAN BROOD SIZE	SAMPLE
Loch of Mey, Caithness	8.90	146	2.60	5
Westfield, Caithness	1.96	146	2.29	7
Loch Urrahag, Lewis	28.57	21	3.00	2
Loch Bee, South Uist	12.60	127		
Kilpheder, South Uist	9.38	32	3.00	3
Tiree	7.45	564	2.21	42
Coll	3.80	79	1.50	3
Colonsay	0	109		
Lismore	4.07	172	1.75	7
Lorn	1.92	104	2.00	6
Danna	9.21	76		
Moine Mhor	8.00	25		
Rhunahaorine, Kintyre <sup>1</sup>	11.28	594	3.8	10
Machrihanish, Kintyre <sup>1</sup>	13.89	576	3.3	10
Islay <sup>1</sup>	10.11	2610	3.52	44
Bute	6.70	194		
Loch Ken	6.21	177	3.67	3
Stranraer	12.87	101	2.79	14
Dyfi Estuary	10.53	76	4.00	2
Britain, excl. Islay	9.31%	3319	2.76	80
OVERALL	9.66%	5929	3.03	124

<sup>1</sup>Details from Islay and Kintyre courtesy of Dr Malcolm Ogilvie

## AGE RATIOS FROM IRELAND

The age ratios sampled (see appended count table) suggested relatively low production away from Wexford, with 5.4% amongst 578 birds aged down country, again with the larger flocks (such as 9.8% at Lough Conn and 8.8% at the Midland Lakes centred on Lough Iron) showing higher levels of reproduction than some of the smaller flocks. The proportion of young at Wexford was 10% amongst 5,292 aged, with a mean brood size of 3.34, not too dissimilar to values from Islay (see above).

## OTHER NEWS

### *Satellite tracking of Greenland White-fronted Geese*

One of the most exciting developments of the year was the deployment of satellite transmitters on Greenland White-fronted Geese at Loch Ken in February 2008. Numbers of Greenland White-fronted Geese wintering around Loch Ken numbered 300 odd birds throughout much of the period of increase and decline in the overall population, with peaks of over 400 individuals. Since the late 1990s, numbers have dwindled from some less than 200 birds and it has been suggested that the local distribution of birds around Loch Ken has been changing.

The Wildfowl & Wetlands Trust (WWT), the Scottish Environment Protection Agency (SEPA), the National Trust for Scotland (NTS), Scottish Natural Heritage (SNH) and the Royal Society for the Protection of Birds have come together to look at developing a management plan for the areas used by the geese around Loch Ken and Threave in Scotland. As a precursor to this, it was deemed necessary to have a full knowledge of the feeding and roosting sites used throughout the winter in those areas. Thus a concrete outcome of this collaboration has been the "V-formation" project, started in November 2007. The aim of the project was to track Barnacle Geese and Greenland White-fronted Geese simultaneously from the Solway Firth region of Scotland to Svalbard and Greenland respectively. With regard to the Greenland White-fronted Geese at Loch Ken in particular, the project also aimed to map their roosting and feeding sites while on their wintering grounds, and then to compare the timings and sites used during the spring migration northwards, and the effects of weather systems on the timing of the different legs of these journeys. Local schools championed the geese and local schoolchildren have been able to follow their progress in real time on the web. The project funders included the Solway Coast Area of Outstanding Natural Beauty Sustainable Development Fund, NTS and SEPA under the Dee-Ken Catchment Management Plan.

As part of this project, four Greenland White-fronted Geese were caught and fitted with satellite transmitters and fitted with standard collars and leg rings supplied by NPWS in late February 2008 at Loch Ken by WWT researchers. Three of these geese are also part of the BBC World On the Move "Top Goose challenge". You can read about the travels of these geese on the WWT web site at:

[http://www.wwt.org.uk/blog/713/greenland\\_white\\_fronted\\_goose\\_diary.html](http://www.wwt.org.uk/blog/713/greenland_white_fronted_goose_diary.html)

You can see the trajectories followed by the geese if you go to:

<http://www.wwt.org.uk/research/tracking/maps.asp>

...and on the drop down menu in the top of the page enter “Greenland White-fronted Geese”.

Three of the transmitters have now stopped moving, one of them in southern Iceland in May, two on the west coast of Greenland during the summer, although it is not clear whether the birds have died or lost their transmitters.

The surviving transmitter, deployed on “Speedy” bearing the collar V2A, has shown the incredible endurance shown by this gander on his return migration leg to the winter quarters by taking a week to cross the Greenland ice cap. Weather conditions apparently affected the length of time he took to cross the ice-cap, and it is remarkable that he struggled for seven days to fly and walk across one of the wider parts of the ice cap, a feat of endurance that highlights the importance of feeding at staging sites along the flyway. Analysis of the pressure charts along the route over this period suggests that Speedy had wind, rain and even snow against him which would have prolonged the journey. It also likely forced him to take a more northerly route over one of the highest points of the ice cap, as well as through some of the lowest temperatures. The GPS data shows Speedy very likely walked some of the last part of the route and this data has mapped the shape of the ice cap in that area in some detail. We look forward to further news from WWT about the exciting results from this project!

### *Iceland*

Anne Würtz Petersen (the master’s student at Aarhus University), Roy King, John Turner and Tony Fox travelled to the Agricultural University of Iceland at Hvanneyri in spring 2008 for a short visit. The trip was planned to coincide with a full day workshop on Wetlands held at the University, consisting of invited speakers from Iceland and Bill Mitsch, a world renowned wetland scientist from Ohio State University in the US. This mini-conference presented a fascinating overview of the role of wetlands and particularly reviewed the importance of Icelandic wetlands in a national and global perspective. Much effort was also put into considerations about creating a wetland centre in Iceland to celebrate and inform about the importance of these vital ecosystems.

Anne presented the results of her work on the effects of human disturbance on goose feeding patterns at Hvanneyri which had been the subject of her master’s study in spring 2007. Her results showed that because of physical loss of hayfields at Hvanneyri formerly used by geese and changes in management of other fields, the geese now have only 50% of the hayfield areas available to them in 2007 that were accessible in 1997-1999. Loss of fields to barley and new strains of rye grass (both of which are important for feeding geese in autumn, but totally unattractive in spring) as well as abandoned fields had reduced the potential feeding area available, in addition to loss of fields under buildings. She showed that all was not lost, however, because relative modest increases in the areas of fields currently abandoned which could be reseeded with the favoured Timothy grass would quickly restore lost feeding habitat in previous years. Interestingly, the numbers of geese using Hvanneyri in 2007 were similar to those in 1997-1999 when the global population was very much larger, so Hvanneyri

continues to hold geese and “punch above its weight” in relative terms. What we saw was that geese aggregated in higher densities in the suitable fields that remained rather than being displaced to other staging areas. Anne also found that in contrast to the situation in the 1990s, geese did seem to respond more to human activity – fields nearer to roads and buildings were used less than those further away after correcting for the different grass sward types which have the greatest effect on goose feeding densities. There was no such pattern in the 1990s, suggesting (as one might expect based on similar studies elsewhere) that by crowding similar numbers of birds into fewer fields, they become more sensitive to disturbance. These results were also presented to undergraduate students at the University as part of their coursework.

Roy and John put in an enormous effort generating counts and reading rings on the farm and surrounds, and from their determinations of abdominal profile scores, we could show that just as in 2007, the geese arrived in Iceland at least one week earlier than they did back in the 1990s, their accumulation of fat stores was just as rapid as in the earlier studies. This enabled them to continue onwards to Greenland earlier than in former times having attained good body condition that much earlier in the season.

The team attended the conference of Iceland’s BirdLife partner Fuglavernd in Reykjavik and even managed to meet and thank personally the Icelandic Minister of the Environment for granting protection to Greenland White-fronted Geese from hunting in Iceland. She was very sympathetic to the idea of extending the existing network of Ramsar and protected areas and listened to our general thoughts on how to improve things for the geese in her country.

As we go to press, Anne has just successfully defended her thesis at the University of Aarhus which marks the end of her studies, and where she received deserved praise from the examination panel for an excellent thesis, so we wish her all the very best in future.

### *Greenland*

A very happy band of volunteers travelled to Isunngua in west Greenland in July 2008 to catch and mark more birds on the breeding areas. The team consisted of Ruth Cromie, Olivia Crowe, Becks Denny, Kenny Graham, David Hopkins, Becs Lee, David, Tom and Rachael Stroud and Huw Thomas. The group covered the area immediately north of Kangerlussuaq, the airport which is the point of entry to west Greenland with daily flights to and from Copenhagen in the summer. The team started by undertaking an extensive survey of the numbers and distribution of Canada Geese and White-fronted Geese in the area. This part of west Greenland has been subject to intermittent visits since 1988, when Canada Geese were first found in the area. Their numbers have increased dramatically since then, both in terms of numbers of breeding pairs and the abundance of non-breeding moulters. In the late 1980s and early 1990s, local summering numbers of Greenland White-fronted Geese also increased, but since the middle of the 1990s, their numbers have declined in line with trends in the population generally. A study by Jens Nyeland and Nigel Jarrett showed that where the two species occurred together in moulting flocks, Canada Geese were the dominant species, and that although when the two goose species fed alone their diet resembled those of each other, when mixed, White-fronted Geese tended to feed on less profitable food, seemingly because they were pressed away from the best foraging opportunities by the presence of Canada Geese.

Canada Geese were always behaviourally dominant over Greenland White-fronted Geese, even if the latter were in the majority! The moult period is a critical one for both species, since they are bound by their flightless state to feed on the edges of lakes to which they take to the safety of water when threatened by predators or humans. Hence, this constraint would potentially limit food at this particular time of year and form the basis for competitive interactions which may not be so serious at other times in the summer.

The 2008 team found very large numbers of Canada Geese and relatively few Greenland White-fronted Geese in the area, so it looks very much like the trend for increasing numbers of the North American species has continued. The major objective was the capture, marking and screening of individual geese for avian influenza and in all these respects, the project was outstandingly successful. One of the major benefits over previous years was the use of inflatable canoes that proved very much faster and more manoeuvrable (especially in talented hands!) than the previous inflatable boats (more at home off Blackpool beach) that have been used in the past to round up geese on their moulting lakes and drive them into the catching enclosure. The use of walkie-talkie radios also improved the efficacy of undetected surrounds to contain birds on open water. In the course of nine round-ups, a total of 123 Canada Geese (comprising 25 adults and 98 goslings of the year) were newly ringed, plus 29 retraps of geese caught in the same season, most of these from other adjacent sites. However during the very first catch, Canada Goose GAU was retrapped, which had been ringed as a gosling when first caught in the same area in 1997. It bore only a leg ring which was showing signs of severe wear, so it was given a new collar and leg ring bearing the insignia GIB. In all, 37 Greenland White-fronted Geese were captured and released with new collars and leg rings, (supplied by NPWS) comprising 20 adults and 17 goslings of the year. In addition, J1F was retrapped with her single offspring, she was also originally caught in the same area in 1997 and has wintered every year since at Tayinloan on Kintyre. Please do look out for brand new orange collars, particularly in Scotland this coming winter, as we greatly look forward to hearing about the progress and wintering areas of these newly marked individuals. Keep a look out for yellow neck rings on Canada Geese as well! Although the west Greenland Canada Geese winter along the Atlantic coast of eastern North America (generally in New Jersey/Connecticut down the coast towards Delaware), there is always the outside chance that individuals could get caught up with Greenland White-fronted Geese on their way south in autumn!

A full report of the entire project is in preparation, but in the mean time, you can read more about the project on the wiki website at:

<http://greenland08.wikispaces.com/>

### *Flyway Conservation Plan*

As you will all be very much aware, the conservation status of the Greenland White-fronted Goose has been causing considerable concern over the last 8 years. After the huge success of the conservation actions of the 1980s, including protection from winter hunting and much site safeguard throughout the world range, the population increased to a very gratifying 35,600 by 1999. However, as we all know since then the prolonged poor breeding success has eroded the conservation status and numbers have fallen to this year's low level.

In response to the problems associated with the poor reproduction, there have been discussions for a while concerning best international responses to the current declining numbers of Greenland White-fronted Geese. Following the addition of the population to the priority listing for conservation action in Scotland, see:

(<http://www.snh.org.uk/speciesactionframework/saf-greenland.asp>)

SNH have initiated a process to develop a series of actions aimed at assisting the more effective conservation of the population. This has been achieved by financial support to the Greenland White-fronted Goose Study to enhance the site profile part of the web site, see:

<http://greenlandwhitefront.homestead.com/Inventory.html>

However, a more major ambition has been to initiate actions aimed at developing an international action plan for the population. The intention is to convene a meeting of Range States and other interested parties on Islay 24-26th February 2009 to discuss possible actions for the species.

To assist in this process, the Greenland White-fronted Goose Study has been commissioned to summarise relevant data and information. At the moment, a rough first draft of a flyway management plan has been produced that needs considerable further work, but the workshop will be crucial in putting flesh on the initial bones. There remain major issues to discuss, including what level of formal endorsement such a plan achieves (and under which international treaties, if any).

There is a great deal of work to do to shape the programme and the plan so we can best use the assembled expertise. Although breeding success had been a tad higher the last two years, percentage young amongst the Irish flocks remains perilously low away from Wexford, so there is no room for complacency – we need to at least think about what should be done if we are not to see the conservation gains of the 1980s and 1990s eroded because of the poor breeding output of the population in very recent years. Hopefully, the workshop and plan will focus attention and set priorities in the most effective way for the future, but we will keep you informed about progress. If anyone would like to receive and comment on a copy of the plan, please do not hesitate to send an e-mail to Tony Fox via [tfo@dmu.dk](mailto:tfo@dmu.dk)

## **ACKNOWLEDGEMENTS**

With the population in such a state of flux, it is so important to keep up the effort counting Greenland White-fronted Geese and it is such a great pleasure to have the count network respond so well every year by providing counts, age ratios and ring resightings. A very sincere thanks to all of you again! For Britain during 2007/8, these include: John Adair, Bob Adam, Vicky Anderson, Dave Batty, Pat Batty, Pete Berry, John Bowler, D.M. Bryant, Roger Broad, George Christie, Paul Collin, Colin Corse, Peter Cunningham, Paul Daw, Tim Dean, Keith Duncan, John Dye, Keith Fairclough, Ian Fisher, Michael Francis, Dominic Funnell, Larry Griffin, Nick Haycock, Dick Hewitt, Ian Hopkins, A. & E. Horner, Keith Hoey, Sandra

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