

Best wishes,
David

GREENLAND WHITE-FRONTED GEESE IN BRITAIN; 1983/84

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INTRODUCTION

The winter of 1983/84 was the second year that a complete census of Greenland White-fronted Geese wintering in Britain was undertaken. In Ireland simultaneous counts were again organised by the Forest and Wildlife Service, and these will be published separately in due course. As well as the International counts in autumn and spring, monthly counts were made at the main British site of Islay as part of the Nature Conservancy Council's (NCC) goose monitoring programme.

The British total in November 1983 was 8,188, a 14% increase on that of November 1982. However, the April 1984 total for Britain was down to 7,494 with less correspondance between autumn and spring totals than in 1982/83 (Table 1).

ARRIVAL DATES

A party of 160 Greenland Whitefronts were seen south of Wexford in Ireland on 9 September (O. Merne). Such an early arrival was quite exceptional and the majority of birds did not arrive at British sites until the more usual time of the second week in October.

The first British birds to arrive were the Dyfi Whitefronts: a flock of c50 were seen flying in from the west over Aberystwyth on 6 October. On Islay, the first party of 12 were seen on 12 October, with the main influx of Greenland Whitefronts, Barnacle Geese and Whooper Swans occurring on 14 October. On this date also, Whitefronts were seen in passage (with Pinkfeet, Barnacles and Greylags) flying south past Colonsay. This Colonsay passage continued until 19 October.

At Loch Ken the first flock of c105 Whitefronts arrived on 16 October and numbers increased rapidly after this. At Endrick Mouth, Loch Lomond, the first sighting of c 100 birds was made on 20 October.

The size of arriving parties on Islay was small with the mean of 8 skeins being 11 (range 7-23).

DEPARTURE DATES

Observers were asked to make a special note of dates of departure for comparison with arrival dates recorded by the 1984 Greenland expedition to the breeding grounds. There was a sharp fall in numbers between the two complete counts on Islay on 17 & 18 April. A similar drop was noted at Wexford between 16 & 17 April and it seems that even by these early dates some birds were moving away from normal haunts. In Caithness, the last sighting of birds in the Westfield area was on 15 April, whilst at Loch of Mey the last sighting was on 22 April. In South Uist the last birds at Loch Hallan were seen on 17 April and on Colonsay on 1 April. Elsewhere several sites seem to have already have been deserted by the time of the spring census (Table 2). The first birds in Greenland were seen at Søndre Strømfjord on 6 May and small flocks were seen flying over the ice-cap from a Hercules transport plane on 10

May. In Eqalungmiut Nunat, north of Søndre Strómfjord, the first birds were also heard on 6 May but no birds were seen to land until 11 May. Numbers at a lowland feeding and 'staging' area peaked on 28 May. A fuller analysis of the spring movements will be published in due course.

COUNT COVERAGE

Count coverage was again excellent with virtually all British sites being visited for both the autumn and spring counts (Table 2). Where counts were not made figures have been estimated on the basis of 1982/83 counts and indicated as such. In view of the continuing lack of information concerning the small flock on Muck and Eigg (Ruttledge & Ogilvie 1979; Stroud 1983), this site is now assumed to have been deserted and the totals for 83/84 amended appropriately. (Any information to the contrary would be welcome).

During the spring census I.S. Francis, N. Penford & R. Quick made a thorough survey of Coll and Tiree, also taking in Loch Lomond and Loch Ken. Additionally, I. Hopkins and J. Rhead undertook a comprehensive survey of the feeding and roosting sites on Kintyre. Much of the material from these surveys and site information from elsewhere, will not be presented here but incorporated in the complete site inventory in preparation.

The British total for November 1983 was 8,188, a 14% increase from the total for 1982/83. This increase however, was entirely accounted for by a very high Islay count (4,592) and numbers elsewhere had generally fallen. The proportion of the British population on Islay (56%) was significantly higher than in 1982/83 (45%) and although it is encouraging to see high numbers on Islay, this trend is worrying in view of local attitudes to geese and current habitat loss there (see below).

Table 3 gives the breakdown of Islay counts during the winter (count areas as Stroud 1983). The island total fell from a peak of 4,592 on 23 November to 3,331 on 20 January. Subsequently numbers appeared to increase again to a spring peak of 4,198 on 27 March. Although it is possible that this fall in numbers reflects movements off the island, it is thought much more likely that it is due to changes in count 'quality'. There is a very high correlation between the total Islay count and mean flock size (ie as flocks become smaller, and more scattered, it becomes harder to find all the birds on the island and the total falls accordingly - Bignal, Easterbee & Stroud in prep.). This provides at least circumstantial evidence to suppose that there are no major movements off the island in mid-winter.

The pattern of Whitefront distribution in Islay remained similar to previous years with highest numbers in the Kilmeny area (Table 3). Mean flock size on Islay was again low ranging from 69 on 1/2 November to 28 on 16/17 February. Spring flock sizes on Coll averaged 31 (n=29), Tiree averaged 39 (n=47), Loch Lomond averaged 33 (n=4), whilst the mean size of three flocks at Loch Ken was 126.

Totals for each 10 km square on Islay, and elsewhere in Britain are available on request.

DISCUSSION

The increase in the autumn numbers is hard to reconcile with another poor breeding season. However, when the autumn 1983 census is compared with that of autumn 1982, there has been a continued fall in numbers at British sites away from Islay (8.6% decline). This decline, from 3939 to 3596 is what would be expected from the smaller number of young produced in 1983.

The very high count on Islay (cf Ruttledge & Ogilvie 1979), is felt to reflect

the ever increasing thoroughness of the count there rather than any sudden increase in numbers. Prior to 1982/83 counts were made by one person over a series of days (usually two). In 1982/83, counts were made by three teams of counters covering the whole island in one day. From this seasons peak count, on 23 November, counts have been made by four teams synchronously. This has undoubtedly resulted in much better coverage of previously known sites and the discovery of 'new' Whitefront areas. Counting methods and problems are more fully discussed by Bignal, Easterbee & Stroud (in prep.).

Elsewhere, coverage of several difficult sites has been good. The Kintyre sites of Rhunahaorine and Machrihanish were counted simultaneously for both the autumn and spring censuses.

Numbers at Stranraer in spring had dropped by 300 from the autumn count. If these birds were still present in the area but not located during the census period this could account for some of the large discrepancy between the autumn and spring national counts. It may be that more information will come to light later as to the movements of these birds during spring 1984.

A previously unknown, but apparently traditional, Welsh site was discovered this winter at Bryn-Du, Mynydd Clogau, Montgomeryshire. Seventeen birds were present when the site was first found on 20 November, and 24 geese were feeding in the area in mid-March, however, on 30 March no birds could be seen and there were no recent droppings. This small flock is possibly at threat from rough shooting in the area, with several shooting butts around the roosting pools, however there are, as yet, few details of the shooting mortality of this flock.

PRODUCTIVITY

1983 was a very poor breeding year with a very late thaw and long periods of snow, fog and rain in midsummer. Such weather in Greenland would have had a severe effect on both adults before nesting and goslings after hatching.

The proportion of young on Islay in the autumn was 9.9% (mean brood size 2.66) whilst in the spring it was 11.7% (mean brood size 2.68). As in 1982/83 there were no overall differences in the autumn productivity figures between the Islay birds and those elsewhere in Scotland or Wales (Table 4), however in the spring the rest of Scotland had significantly fewer young than on Islay (sites where more than 100 birds were aged ranged from 6.0% - 8.3%). Mean brood size was also lower away from Islay in the spring, although the combined national total was similar to that found in the autumn.

From the autumn ageings it is possible to calculate that the British Greenland Whitefront sub-population held 787 young in 309 families. The corresponding figures for autumn 1982 were 971 young in 329 families.

Ageings undertaken at Wexford also indicated a below average breeding year, but with significantly more young than in Scotland. This conforms to a long standing trend.

DARVICS

No 'new' birds were seen this winter but a total of 17 birds were identified, usually at past wintering sites. Additionally two, previously unrecorded, 1979 birds were caught in Egoalungmiut Nunat during summer 1984. These birds (A03 & A71) bring the total of birds seen or recovered since ringing to 62 out of 96, however, not all of these have been in Britain.

The list below gives the locations of Darvic ringed birds seen during winter 1983/84. A full listing of all sightings during the last 5 winters is available on request.

- A05 Loch of Mey, Caithness; seen Caithness 1980/81, no records since.
- A06 seen Parton, Loch Ken; previously 79/80 at Loch Lomond.
- A11 Shot Lough Foyle, N. Ireland 5/11/83; no previous sightings
- A14 Avenvogie, Islay; same site as 79/80, 80/81, 81/82 & 82/83.
- A18 Avenvogie, Islay; " " " " "
- A19 Avenvogie, Islay; " " " " "
- A24 Avenvogie, Islay; " " " 82/83.
- A26 Avenvogie, Islay; " " " 81/82 & 82/83.
- A31 Avenvogie, Islay; " " " " "
- A32 Avenvogie, Islay; " " " " "
- A38 Avenvogie, Islay; " " " " "
- A60 Islay House, Islay; " 80/81.
- A61 Castle Douglas, Galloway; shot ("found freshly dead").
Islay 79/80, 80/81, 81/82; Loch Ken 82/83
- A66 Avenvogie, Islay; same site as 79/80, no other sightings.
- A67 Avenvogie, Islay; same site as 79/80, no other sightings.
- A72 Blackpark, Islay; same site as 82/83.
- A96 Kindrochid, Islay; Machrihanish, Kintyre 79/80 & 80/81.

Additionally one Darvic ringed bird was seen, but not read, at Lonban, Coll.

A further 88 geese were caught and Darvic ringed in Greenland in July and August this year. The ring is similar to those used in 1979 but the letter-digit-digit codes start with K and T instead of A. The rings again read up the leg with the letter lowermost. The Darvic rings were placed on the left leg whilst in 1979 they were placed on the right leg. Thus it should be possible to tell in which year a bird was ringed in the event of not being able to read the ring code.

Site Fidelity

The report of the 1982/83 census gave information on the extreme site faithfulness of Greenland Whitefronts based on an analysis of the past 4 years sightings. This information has now been updated to include last winters sightings (Table 6). Stroud (1983) explains the derivation of the data. These figures again demonstrate the extreme site faithfulness of Greenland White-fronted Geese in winter with 98% of all sightings being at the same location as the previous sighting.

SITE THREATS

We have received no information to suggest any new or major threats to Greenland Whitefront wintering sites away from Islay this year. However, on Islay itself, several important sites, in particular roost sites, have been damaged or lost.

The important roost at Feur Lochain in north-west Islay was formally notified as a SSSI by the NCC this summer, which at least gives the area nominal protection from the rapid afforestation now occurring over most of the island. The protection now conferred on this site and the nearby Glac na Criche SSSI is welcome. The vegetation of this latter Greenland Whitefront feeding and roosting site has recently been thoroughly described by Lindsay, Riggall & Bignal (1983).

The most important development of the year, and one which could have profound effects on the Islay Greenland Whitefronts, is the proposed commercial peat-

cutting of a large area of virgin bog called Eilean na Muice Dubh (Duich Moss). This area is the most important single site in Britain for Greenland White-fronted Geese.

In March 1983 the Scottish Malt Distillers Ltd (SMD) put in an application to extract peat from Eilean na Muice Dubh. Their application for planning permission coincided with notification by NCC to the District Council that they intended to designate the area a SSSI. Because of the conflict of interest, the District Council (who supported SMD's application) referred the matter to the Scottish Office, and the Secretary of State eventually 'called in' the planning application for his adjudication in November 1983.

This area of bog has always held an important goose roost and counts there have regularly found 300+ birds going to roost. However, it was only after the application to dig peat across the site had been submitted that co-ordinated counts around the whole of this large site were made. These showed that in excess of 600 birds regularly used the roost and thus the bog held considerably more birds than at any other site in Britain; indeed, four times the number required to qualify for International importance (Scott 1980).

At an early stage the NCC and Greenland White-fronted Goose Study had objected to the proposal to cut peat on the site. Once the full significance of the site as a goose roost had been realised, our submission to the Secretary of State was formally supported by the International Council for Bird Preservation, the Islay Natural History Trust, the International Waterfowl Research Bureau, the Royal Society for the Protection of Birds, the Scottish Ornithologists' Club, the Wildfowl Trust and the World Wildlife Fund, since it was by then too late for these organisations to object in their own right.

Quite apart from its interest as a site for Greenland Whitefronts, the bog, in itself, is a nationally important peatland (Grade 1 NCR site). The bulk of the bog has never been drained or cut and thus is hydrologically and morphologically intact over most of its surface. The centre of the bog has a well developed pool system (used by the geese at night) and there are extensive 'flows' of actively growing Sphagnum. It has a very rich invertebrate community, and the site has breeding Dunlin and Red-throated Divers.

The site qualifies for protection under the Regional (Strathclyde) Structure Plan, national legislation (Wildlife & Countryside Act), European legislation (the EEC Directive on the Conservation of Wild birds), and an International Convention to which Britain is a signatory (the Ramsar Convention). Under the EEC Directive Britain has a responsibility to protect the habitats of scarce "Annex 1" species, (including Greenland Whitefronts), whilst under the Ramsar Convention the Government has an obligation to protect the wetland habitat of internationally important concentrations of wildfowl.

The main grounds for opposition to this planning development were:

- 1) A site of national and international importance would be lost (above), because commercial peat-cutting in only a small area of the bog would inevitably have a more profound effect over a wider area due to widespread drainage. There is a large body of research on the irrevocable effects of such drainage on mire hydrology and ecology. Ruttledge & Ogilvie (1979) found that at half the 93 sites in Britain which had been deserted or at which numbers had significantly fallen, development and drainage of peatland feeding and roosting sites had been responsible. They implicated peatland development as the most important single reason for the decline of the small Greenland Whitefront population in the 1950s - 1970s.

2) There is no immediate demand for the peat since not only is the distillery working on short time, but there is also a 2-3 year stockpile of cut peat at the Distillery. There is at least another 15 years supply available from a commercial peat-cutting firm operating near Eilean na Muice Dubh.

3) Alternative sources of peat have not been fully investigated. At least seven other sites of apparently suitable quality were listed in the NCC submission, and another site with deep, highly humified peat is owned by the District Council and is currently being prepared as a rubbish dump without any attempt at prior extraction.

4) Since the site is an SSSI, the NCC are obliged to make good any extra financial costs involved with exploiting a source of peat further from the Distillery than Eilean na Muice Dubh. Thus there would be no extra costs to SMD in cutting peat at another site.

5) SMD admit that the project will create no new jobs and the issue is NOT one of jobs versus conservation, much as the media would like it to be.

In July this year the Secretary of State decided in favour of the development of the site, in an essentially political decision:

"...the Secretary of State is not satisfied that the likelihood of the proposed development having a detrimental effect on the hydrology, and hence on the nature conservation interest of Duich Moss has been established. As regards the Greenland White-fronts' use of Duich Moss as a roost site, the Secretary of State notes that the proposed development would affect only a small part of the total area of the Moss and that the operations involved would for the most part be undertaken during periods when the geese are not present on the island. He therefore considers it unlikely that the proposed development would disturb the geese to such an extent as to cause them to desert the roost site. Overall, the Secretary of State takes the view that, if undertaken with appropriate care, the proposed development would not have any significant adverse effect on the nature conservation interest of Duich Moss."

This decision amounts to a total rejection of the submission of the Nature Conservancy Council who had stated:

"...we are of the opinion that such extraction would directly and indirectly result in serious and irreversible damage to the nature conservation interest of the site. Justification for this view is supported by inspection of the nearby area now being worked commercially". (Our emphasis).

His decision also totally misses the point, stressed in both NCC and GWGS submissions, that the threat to the geese comes not from immediate human disturbance but to longer term deterioration of the roost habitat as a result of the peat cutting.

Since the decision to allow the development to proceed, the RSPB have formally registered a complaint with the European Commission that the Government is breaching the EEC Directive on Bird Conservation. It is to be hoped that something will result from this move.

The Nature Conservancy Council are currently calling for a moratorium on the development whilst a full hydrological survey of the bog can be carried out to satisfy the Minister of the damaging effects of the development. Such a moratorium would be possible since there are ample stocks of both cut and uncut peat to supply the Distillery whilst a survey was undertaken. This

initiative has our full support.

The loss of this prime Scottish site to development is particularly depressing coming as it does at a time of unprecedented pressure on this habitat (Reynolds 1984). A recent survey of the rate of loss of Irish bogs (Ryan & Cross 1984) showed that of sites of scientific interest listed in the period 1968-74 and resurveyed in 1983 most had been damaged or lost to development. The worst category was that of the mid-Irish raised bogs where

"in terms of scientific interest, 24 sites (96%) have suffered complete or partial loss of their scientific interest and in 18 cases (72%) this loss is now irreversible. Assuming that this rate of destruction is reasonably representative of the unmodified midland raised bogs then all remaining unprotected raised bogs of this type will be damaged within one year ie by 1984, irreversibly damaged within 5 years ie by 1988 and completely destroyed within 17 years ie by the year 2,000." Within Ireland as a whole "only 3 peatlands since 1970 have received full protection and 7 have been partly protected. This rate of site conservation is not adequate to ensure the conservation of the range of variation present in Irish peatlands. It is obvious from such figures that the future of peatland conservation in Ireland is bleak unless effective methods for preventing exploitation of the most outstanding sites can soon be found."

As the traditional and current habitat of Greenland White-fronted Geese through much of their winter range, such continuing loss of nationally important sites in both Britain and Ireland is disturbing to say the very least; the more so that their ultimate protection depends not so much on the guidelines developed by the statutory conservation bodies, but rather on political whim.

Postscript

The bodies objecting to this development were able to present a very well researched case to the Secretary of State (as it turned out ignored), demonstrating the national and international importance of the site. This was entirely due to the large body of information on sites and numbers of wintering Greenland Whitefronts that has been accumulated over the last two years. Without this information, supplied by counters all over Scotland, we would not have been in a position to object so forcefully. Thank you.

ACKNOWLEDGEMENTS

We are again indebted to all who have helped us this year, both with census counts on Islay and elsewhere, and with support during our opposition to the development at Eilean na Muice Dubh. We are, as always, extremely grateful to all concerned for their time and efforts on our behalf and do not take this for granted.

M. Avery, S. Benn, S. Bignal, Dr J.D.S. Birks, R. Broad, J. & P. Clarke, R. Cockerill, W.M. Condry, R. Coomber, W.A.J. Cunningham, A. Currie, J. Davies, P.J.S. Dawson, T. Dawson, R.C. Dickson, T.D. Dick, T.J. Dix, P. Dolton, Dr I.T. Draper, Rev. & Mrs Duncan-Jones, J. Dye, Dr N. Easterbee, T. Eggeling, D. Forshaw, A.D. Fox, L. Fox, I.S. Francis, Prof. A. Gardarsson, A.G. Gordon, H. Gray, A.J. Kerr, E. Hardy, R. Hawley, C.G. Headlam, I. Hepburn, ICBP, Dr C. Imboden, I. Hopkins, INHT, IWRB, D. Jackson, D. Jardine, A.R. Jennings, K. Kampp, S. Laybourne, J. Mackintosh, M. Madders, Prof. G.V.T. Matthews, O. Merne, D. Minns, J. Mitchell, J. Moore, NCC, B. Neill, D. Norriss, Dr M.A. Ogilvie, N. Penford, C. Pickup, S. Percival, R. Quick, M.N. Rankin, P. Reynolds, J. Rhead, RSPB, R. Scott, SOC, G. Sheppard, J. Skilling, M. Smart, R. Squires, A.G. Stewart, L. & S. Street, M. Still, Dr J.M. Stroud, N. Thingvad, R.

Thaxton, P.M. Thompson, Dr C. Tydeman, J. Uttley, T. Weir, R. White, The Wildfowl Trust, H.J. Wilson, P. Wormall.

In particular we would like to especially thank Dr Eric Bignal for his organisation of the complex Islay counts and for his efforts beyond the call of duty to ensure a more secure future for Greenland Whitefronts.

The Nature Conservancy Council, the World Wildlife Fund and the Islay Natural History Trust all gave financial support for the survey.

REFERENCES

- Bignal, E, Easterbee, N & Stroud, D.A. (in prep.) The distribution and abundance of geese on Islay, Argyll.
- Lindsay, R.A.; Riggall, J. & Bignal, E.M. (1983). Ombrogenous mires in Islay and Mull. Proc. Roy. Soc. Edinburgh **83B**: 341-371.
- Reynolds, J. (1984). Vanishing Irish boglands. World Wildlife News, Spring 1984: 10-16.
- Ruttledge, R.F. & Ogilvie, M.A. (1979). The past and current status of the Greenland White-fronted Goose in Ireland and Britain. Irish Birds **1(3)**: 293-363.
- Ryan, J.B. & Cross, J.R. (1984). The conservation of peatlands in Ireland. Proceedings of the International Peat Congress, Dublin.
- Scott, D.A. (1980). A Preliminary Inventory of Wetlands of International Importance for Waterfowl in West Europe and Northwest Africa. IWRB, Slimbridge. 126pp.
- Stroud, D.A. (1983). Greenland White-fronted Geese in Britain; 1982/83. GWGS, Aberystwyth. 14pp.

NB It is possible that further counts undertaken during spring 1984 may come to light and this total should be regarded as provisional for the time being. Further information can be obtained from the address below:

**Greenland White-fronted Goose Study,
School of Biological Sciences,
University College of Wales,
Aberystwyth,
Dyfed, GB.**

or Kindrochid, Sanaig, Bruichladdich, Islay, Argyll, Scotland.

Table 1. Regional totals 1982/83 and 1983/84.

	Nov 82	April 83	Nov 83	April 84
North-East Scotland	457	576	315	410
North-West Scotland	185	80	177	101
North Argyll	873	1068	985	874
South Argyll: Islay	3250	3441	4592	4198
other sites	1723	1413	1342	1484
Galloway	595	631	683	346
England	33	0	1	3
Wales	73	73	93	77
BRITISH TOTAL	7189	7282	8188	7494

Table 2. Peak monthly counts at British Greenland White-fronted Goose wintering sites.

	OCT	NOV 1-13	NOV 14-30	DEC	JAN	FEB	MAR 1-24	MAR 25-1	APRIL 2-30
NORTH-EAST SCOTLAND									
ORKNEY: Tankerness/Holm	0	0	<u>0</u>					36	
Loons/Ibister	14	28	<u>49</u>					<u>47</u>	
CAITHNESS: Stemster/Westfield			<u>91</u>					<u>c140</u>	
Hallan			<u>52</u>						
Lyth			<u>118</u>						
Loch Scarmclate								102	
Loch of Mey								<u>80</u>	
CROMARTY: Loch Eye	+		<u>5</u>	0				<u>[5]</u>	
NORTH-WEST SCOTLAND									
LEWIS: Barvas/Shawbost	0	27	<u>27</u>	29		21	<u>0</u>		
BENBECULA: Nunton			<u>[0]</u>					<u>[0]</u>	
SOUTH UIST: Loch Hallan	0	0	<u>17</u>	17				<u>19</u>	19
SOUTH UIST: Loch Bee			<u>[55]</u>		c50	47		<u>[0]</u>	
SKYE: Loch Snizort		<u>58</u>		55	8	58		<u>[58]</u>	
Broadford			<u>20</u>	24				<u>[24]</u>	
GAIRLOCH: Longa Island			<u>[0]</u>					<u>[0]</u>	
MUCK & EIGG			<u>[0]</u>					<u>[0]</u>	
NORTH ARGYLL									
TIREE: The Reef			<u>203</u>				160	<u>338</u>	
Elsewhere			<u>154</u>				640+?	<u>59</u>	
COLL: Caoles			<u>125</u>					<u>0</u>	
Uig/Acha/Lonban			<u>80</u>					<u>113</u>	
Arnabost/Cliad			<u>230</u>					<u>198</u>	
LISMORE ISLAND					100		<u>0</u>		
BENDERLOCH: Eriska Is.	90-95		<u>c90</u>	36	96		<u>98</u>		
LOCH SHIEL: Kentra Moss			<u>44</u>		40		<u>45</u>	<u>30</u>	
MULL: Loch Poit na h-I			<u>36</u>					<u>22?</u>	
Loch Assapoll			<u>23</u>						<u>38</u>
SOUTH ARGYLL									
COLONSAY	73?		<u>29</u>		82			<u>48</u>	
JURA: Lowlandsmans Bay			<u>18</u>					<u>[18]</u>	
Loch a Chnuic Bhric			<u>52</u>					<u>[52]</u>	
ISLAY		4030	<u>4592</u>	3936	3468	3730	3453	<u>4198</u>	3346
KEILLS			<u>16</u>					<u>[0]</u>	
DANNA			<u>91</u>			36	<u>53</u>		
MOINE MHOR		<u>19</u>					<u>0</u>		0
CLACHAN: Loch nam Gad					48			<u>85</u>	
RHUNAHORHINE	600+	450+	<u>763</u>	356	621			<u>560</u>	
MACHRIHANISH		400+	<u>177</u>		95			<u>483</u>	
BUTE: Kerryfean	69		<u>43</u>	60-65			65	<u>65</u>	65
LOCH LOMOND: Endrick	c100	120	<u>134</u>				c130	<u>c120</u>	134
RENFREW: Barr Loch			<u>[0]</u>					<u>[0]</u>	

Table 2. Contd.....

GALLOWAY										
STRANRAER: West Freugh			<u>350</u>					<u>50</u>		
LOCH GRANOCH			<u>0</u>					<u>[0]</u>		
BLADNOCH VALLEY		6	<u>43</u>	6	0			<u>[0]</u>		
CREE VALLEY			<u>0</u>					<u>[0]</u>		
LOCH KEN	c275	c290	<u>c290</u>					(156+)	<u>290</u>	
AYRSHIRE: several sites			<u>[0]</u>					<u>[0]</u>		
ENGLAND										
DEE ESTUARY				30			6			
LANCASHIRE: Formby Moss			<u>1</u>		1				<u>[0]</u>	
Other sites				1			<u>3</u>			
WALES										
CLWYD: Anglesey			<u>0</u>						<u>[0]</u>	
DYFED: Dyfi Estuary	72	76	<u>76</u>	c78	75	75	<u>78</u>			76
POWYS: Bryn-Du			<u>17</u>				<u>24</u>		<u>0</u>	

NOTES: Totals given are peak monthly counts, those counts used in derivation of spring and autumn census totals are underlined. If counts during census periods were either missing or obviously inaccurate the closest accurate count to the census date has been used.

Table 4. Summary of Ageings undertaken, 1983/84.

	Total aged	Number young	% young	Number broods	Mean brood size	Frequency of broods					
						1	2	3	4	5	6
AUTUMN 1983											
Islay	2121	210	9.9%	78	2.66	16	21	23	12	3	3
Rest Scotland	1310	120	9.2%	47	2.40	11	20	8	4	2	2
England	2	1	-	-	-						
Wales	76	8	10.5%	3	2.67		1	2			
BRITAIN											
SPRING 1984											
Islay	2006	234	11.7%	83	2.68	25	14	22	10	8	4
Rest Scotland	1094	81	7.5%	40	2.15	17	13	4	1	3	2
BRITAIN											
	3100	315	10.16%	123	2.51	42	27	26	11	11	6

Table 5. Islay Ageings.

AREA	NOVEMBER 83		APRIL 84	
	Total	% juvs	Total	% juvs
Oa	748	7.9%	262	14.9%
Ardtalla	0		0	
Gruinart	54	9.3%	104	5.8%
Gorm	286	12.6%	309	14.5%
Rhinns	96	16.7%	297	8.1%
Laggan	62	29.0%	395	10.9%
Glen	152	13.1%	189	18.5%
Kilmeny	723	7.7%	450	9.1%
ISLAY	2121	9.90%	2006	11.66%

Table 3. Monthly counts, by area, of Greenland Whitefronts on Islay.
OCTOBER - JANUARY 1983/84

AREA	OCT 24	NOV 1	NOV 2	NOV 15-18	NOV 22	NOV 23	DEC 20	DEC 21	JAN 19	JAN 20
OA	873	929	722	836	592	865	580	703	678	271
ARDTALLA	0	0	0	0	0	0	0	0	26	168
GRUINART	-	451	386	418	614	415	328	243	188	350
GORM	888	(329)	445	414	552	454	372	227	94	87
RHINNS	0	180	465	607	384	504	346	205	437	340
LAGGAN	-	(100)	382	395	475	646	548	330	459	485
GLEN	-	154	144	260	290	350	276	271	146	146
KILMENY	-	(356)	1486	1382	1018	1358	1486	1662	1440	1484
ISLAY	-	(2499)	4030	4312	3925	4592	3936	3641	3468	3331

FEBRUARY - APRIL 1984

	FEB 16	FEB 17	MARCH 16	MARCH 27	APRIL 17	APRIL 18
OA	472	540	546	1040	513	536
ARDTALLA	0	0	0	0	0	0
GRUINART	308	329	129	241	176	75
GORM	251	207	347	364	213	109
RHINNS	455	421	357	500	142	189
LAGGAN	143	323	435	327	263	503
GLEN	164	185	270	171	37	170
KILMENY	1685	1725	1352	1555	1820	978
ISLAY	3478	3730	3435	4198	3164	2560

NB. '-' indicates the area was not counted, whilst 0 indicates the area was counted but no geese were found. Incomplete counts on 1 November are bracketed. Very poor visibility on this day lead to poor counts in some areas. A count on 15 March with suspected considerable overcounting has been excluded.

Table 6. Movements of Darvic ringed Greenland White-fronted Geese.

Total number of sightings/ recoveries:	317
Total number of sightings/recoveries in winter:	315
Number seen/recovered once only:	17
shot	8
seen	9
Number seen/recovered more than once:	43
Total number of individuals recorded:	60
Moves as a proportion of all sightings	
Total number of sightings/recoveries more than once =	315-17
	= 298
Number of sightings at same locality as last sighting	291 (97.6%)
Number of moves between sightings and winters	6 (2.0%)
Number of moves between sightings in same winter	1 (0.3%)
Moves between winters	
Total number of goose/winters	115
No. of birds seen in only one winter:	17 (14.8% of all sightings)
More than one winter at the same site	92 (93.8%)
Moves between winters	6 (6.2%)