3.4 THE USE OF ROOST SITES

3.4.1 Introduction

The traditional feeding and roosting habitat of the Greenland White-fronted Goose appears to have been the extensive peatlands in western and northern Scotland, central west Wales and Ireland. Whilst the feeding habits of Greenland White-fronts have changed over recent decades, increasingly favouring improved pastures and arable crops, there is still a strong affinity for roosting in bogs where these are available.

It is evident that White-fronted Geese also feed at night at these roosts, as described by Stroud (1984), on species such as White-beaked Sedge Rhynchospora alba, Cotton Grass Eriophorum angustifolium, Bulbous Rush Juncus bulbosus, Bogbean Menyanthes trifoliata and White Water Lily Nymphaea alba thus retaining a link with their ancestral feeding habitats.

Over the winter of 1991-92 systematic observations were made of roost-flighting White-fronts on Islay and Jura in an attempt to locate the major roosts, their catchment areas and to assess patterns of roost-use. The data was supported by extra observations made during 1992-93

3.4.2 Methods

3.4.2.1 Observations of the roost sites

Greenland White-fronted Goose roost sites on Islay were investigated using three methods: (i) roost-flight observations (ii) roost counts and (iii) roost-site investigations on foot.

For the roost-flight observations the geese were located at least 30 minutes before dusk and watched until they left for their roost sites, when attempts were made to follow them visually or, if necessary, by car. An image intensifier was used to follow the movements of the birds over long distances in poor light. Most of the major sub-populations of White-fronted Geese on Islay were monitored in this way during the 1991-92 winter, with a view to locating their roost sites and identifying their "catchment" areas, although it was not always possible to locate the precise roost site for flocks where the birds flew out of sight into hilly areas. Observations where birds merely flew "out of sight" (O) towards a roost were therefore classified separately from those of birds seen landing at a definite (R) or approximate (C) roost site. Precise

counts were made of the size of the flock prior to departure, and the time of departure from the feeding areas was also recorded. Departure times of flocks accidentally flushed by the observer, or prematurely flushed for some other reason, were excluded from the analyses.

Further information on the precise location of roost sites, particularly in areas where it was difficult to determine where the birds had landed, was obtained by visiting these areas on foot during daylight hours to look for droppings ("roost-piles" indicating that a bird had been in one place for several hours) and feathers. In the more remote areas this involved extensive surveys for potential roost sites. The extent to which the birds roosted at loch or lochan sites could not be determined by this method, however, since the droppings were lost under water. The characteristics of areas identified as roost sites were described and brief habitat details recorded.

In addition to the departure from the feeding areas, counts were also made of birds arriving at known roost sites to obtain an estimate of the total number of birds using a roost on a particular night, although at large roost sites where birds arrived from several directions it was sometimes difficult for a lone observer to obtain an accurate count. Movements from the feeding areas to the roost site were recorded more frequently than the arrival of birds at the roost site itself because, at the roost, it was often difficult to determine the feeding-sites used by the birds involved and it was also difficult to assess when all the birds had arrived.

3.4.2.2 Radio telemetry

Nocturnal radio-tracking of the three geese fitted with radio transmitters was undertaken to determine variation in roost-use by individual birds.

Two geese caught at Rockside on 20th February 1992 (ringed 2HH and 3HH) were fitted with radio transmitters mounted dorsally on the tail feathers with the (vertical) ground plane antenna attached. The transmitters remained fixed to the birds for only two weeks before they managed to pull them off. The single White-fronted goose caught during the 1992-93 winter (4HH) was also fitted with a radio transmitter, but on this occasion the transmitter was attached dorsally to the back using super-glue, and the ground plane antenna was removed before application, in an attempt to reduce the bird's awareness of the transmitter. This method appeared to be more successful - the transmitter remained in place for two months before falling off in the first week of January 1993.

In 1991-92 radio "fixes" were made at least twice a day, and up to three times a night for seven nights, in order to monitor the birds' use of the roost site. Night fixes were made in the early evening,

at around midnight, and just before dawn, to determine whether the birds remained at the roost throughout the night. The location of the bird fitted with a transmitter in 1992-93 was recorded on a daily basis whilst the transmitter remained in place.

3.4.2.3 Habitat at the roost sites

The botanical nature of three roost sites - Moine nam Faoileann, Feur Lochan and West Loch Gorm - was also assessed in terms of plant species composition and abundance in October 1993 using the methods described in Section 3.2.2.3 above.

3.4.3 Results

3.4.3.1 Distribution of roost sites, roost counts and roost catchment areas

The "source" feeding area and subsequent roost area of all roost flights monitored are presented in Table 3.4.3.1a. Field codes for the "source" feeding areas from which the birds departed are given, along with the name and grid reference of the roost to which they flew.

The results of roost counts, or roost totals based on the number of birds observed roost-flighting to roosts simultaneously, are presented in Table 3.4.3.1b.

Data describing the distribution of roost sites, roost counts and roost catchment areas for the 1991-92 and 1992-93 winters are summarised on the 1:50000 *OS Landranger* series map of Islay (Figure 3.4.3.1a). All known roost sites are marked by red hatching. Hatched areas represent areas where birds were seen to land or where roosting signs were found during roost investigations. Larger roost complexes are surrounded by a dashed red line to represent the general area of a roost, with exact roosting sites marked in red hatch within the overall boundary. Smaller roosts are marked by a red circle. Red circles with a question mark represent possible roost sites where birds were seen flying into a general area with the exact site not subsequently confirmed. Potential roost sites checked on foot but where no evidence of roosting was found are marked by black circles containing a cross.

Roosts with counts of over 100 birds (1% of the island population) are accompanied by a yellow marker with the maximum observed count for the site. Roosts of fewer than 100 birds have the maximum count marked in pencil alongside. Sites which were considered to have been pre-roost bathing sites are marked as small red circles with no figure for number of birds using the site alongside.

Roost-flight paths are marked by black arrows, with a number on or alongside the arrow representing the maximum number of birds observed using this route. Dashed tails represent flight paths to alternative roosts ("satellite" roosts) used by the same feeding flock on different nights (probably related to the lunar cycle and night-feeding - see below). Arrows with dashed tails with a question mark represent unconfirmed flight paths.

Source feeding areas are marked in black hatch and represent all the major feeding flocks on the island. The roost-flight paths emanating from each feeding area have been assessed to exclude possible overlap caused by the same flocks flying to roosts from different source areas on different nights. Feeding flocks linked by arrows are thought to be the same birds feeding in different areas. Roost-flight arrows from these areas are shown converging with the sum minimum total from all contributory areas marked on the arrow after convergence.

By interpolation it is possible to arrive at an upper estimate of the number of birds using a roost by summing the numbers on each roost-flight path converging at a roost-site. This probably represents a maximum but realistic estimate of roost-use. Table 3.4.3.1c. presents observed counts and interpolated estimates using the above method for the major roost sites in the 1991-92 winter, along with counts for the early 1980s (from Stroud 1984).

Over 80 roosts or roost complexes were recorded, including 16 used by >300 birds, making them potential Ramsar sites (if not already designated as such, see Table 3.4.3.1c). Roost-site characteristics are described below in the discussion.

Using all the above information, roost catchment areas were determined for roosts in areas where the most intensive observations were made - the Gorm, Laggan and Rhinns count areas. Catchments are marked in blue on the map.

3.4.3.2 Roost-flight departure times in relation to sunset

The frequency distribution of roost-flight departure times is presented in Figure 3.4.3.2a in relation to sunset times (sunset on Islay being 12 mins later than in Edinburgh).

Most roost-flights occurred about 15-65 minutes after sunset (mean time difference between sunset and roost departure 37.44 minutes, SD 22.87) In Figure 3.4.3.2b the seasonal pattern of roost departures is shown in relation to sunset. All roost-flight departures occurred after sunset. In December and January the earliest departures occurred some 20 minutes after sunset, with further departures spread

over the next hour. In contrast, by March, the earliest departures occurred at, or very soon after, sunset and most roost-flights had ceased within 20 minutes of sunset.

This seasonal trend was examined by regressing the time interval between sunset time and roost-flight departure on sunset time (a measure of daylength) (see Figure 3.4.3.2c). There was a highly significant negative correlation between sunset-departure interval and sunset ($r = -.466$, $p<.0001$), indicating that following sundown White-fronts delay departure to their roost-sites longer the earlier that the sun sets.

3.4.3.3 Roost use by birds fitted with radio transmitters

The two birds fitted with radio transmitters in the 1991-92 winter (2HH and 3HH) were paired, and thus data obtained from them cannot be considered independent. The pair was marked at Rockside, and roosted at the Allt na Criche roost, part of the Loch Gorm West roost complex. The birds were monitored on seven nights over the two weeks that they carried the transmitters: they roosted at Allt na Criche on all nights (though in slightly different positions within the roost area) and were present at the roost at all three observation times on each occasion. They were recorded feeding at nine fields on Coul farm and at six on Rockside farm during the winter, although 23 (49%) of the 49 day-time observations found them in one of two fields on Rockside Farm (RK02 and RK04), which supports the results of Section 3.1.4.1 indicating that individual geese concentrate on a small number of fields in their home range.

There was insufficient information on habitat in the fields used by 2HH and 3HH during 1991-92 to determine whether the type of habitat selected changed during the winter. More detailed information was available for the single bird (4HH) fitted with a transmitter during the 1992-93 season, who was recorded mainly on improved pasture in early November, transfered to arable fields in late November and early December, then grazed on both old and recently improved pasture each month from late December onwards. 4HH was seen feeding at 14 fields on Aoradh, 16 at Sunderland farm and 3 at Rockside, but again the majority 47 (47%) of 100 sightings were from just 3 fields (AO28, SU13 and SU22). It was also recorded at roost on 25 nights between 6 November and 6 January, and was found to use 3 roost sites; Gruinart Flats, Loch a' Gheoidh and Moine nam Faoileann. During the first half of November, 4HH appeared to roost exclusively at Gruinart Flats before transfering to Loch a'Gheoidh on 16 November. It switched from the satellite roost at Loch a' Gheoigh to the core roost at Moine nam Faoileann during the following evening, and returned to Moine nam Faoileann each evening for the following week. From 24 November onwards it mainly used Loch a' Gheoidh and Gruinart Flats, but did transfer from Gruinart Flats to Moine nam Faoileann during the night of 15 December before returning to Gruinart Flats two nights later.

3.4.3.4 Botanical surveys of the roost sites

Vegetation surveys at Moine nam Faoileann were conducted within one metre of open dystrophic pools with Juncus bulbosus, Menyanthes trifoliata, Eriopohorum angustifolium and Sphagnum cuspidatum. Broken swards gave evidence of goose grazing in the pools. An analysis of species abundance surrounding the pools, in relation to the National Vegetation Classification, described the habitat as a Scirpus cespitosus-Eriophorum vaginatum blanket mire, with Drosera and Sphagnum sub-communities. Eriophorum vaginatum, E. angustifolium, Calluna vulgaris, Narthecium ossifragum and Sphagnum capillifolium were amongst the most abundant species, with Scirpus cespitosus, Myrica gale, Sphagnum papillosum, Carex panicea and Molinia caerulea also consistently present.

The eastern side of the Feur Lochain roost complex included areas of deep open water surrounded by a Molinia dominated plant community, although the community appeared to be local to the area immediately around the lochans. Lochans on the western side of Feur Lochain had large beds of Menyanthes trifoliata and Nymphaea alba, with some of the lochan margins being dominated by Juncus effusus. A detailed vegetation survey one metre from the pools indicated that species abundance was similar to the vegetation cover at Moine nam Faoileann, and the habitat was again described as a Scirpus-cespitosus-Eriopohorum vaginatum blanket mire (NVC classification).

A more cursory survey of the mires associated with the old peat workings at Loch Gorm found extensive shallow pools with Eriophorum angustifolium and Sphagnum cuspidatum, although the overall community appeared to be less Sphagnum-rich than at Moine Faoileann and Feur Lochain, with more E. angustifolium and Scirpus cespitosus cover. Nevertheless, NVC communities were likely to be the same.

3.4.4 Discussion

3.4.4.1 Roost site and counts

Over 60 roost-sites or roost complexes used by >100 birds were found over the winter (see Roost Map), including 16 with >300 birds, representing 1% of the world population of this sub-species, and thus candidates for designation as Ramsar sites (if not already designated). Further fieldwork will surely find more roosts, and more information is required for the remote areas to the north of the Ballygrant valley and east of the Glen road which were not visited on foot.

The total of 9728 birds counted at all roosts used by >100 birds in 1991-92 (see Table 3.4.3.1c) corresponds closely with the December

1991 whole-island White-front count (10,003). Roosts of <100 birds were not included in the calculation of totals as these were all considered to be satellites of other, larger roosts (see below).

Accurate counting of White-fronts entering roosts is difficult, even when using an image intensifier, and is particularly difficult at larger roost complexes where geese come in from different directions and land at different sub-roosts. In this study, most observations were of roost-flighting flocks leaving their source feeding areas, rather than on waiting at roosts for birds to arrive. By aggregating the roost-flights from discrete feeding flocks, interpolated estimates of numbers of geese using the main roosts were made (see Table 3.4.3.1c and 1:50000 Roost Map).

Whilst the total of the interpolated estimates (12,516) exceeds the maximum 1991-92 Islay White-front count of 10,003 by 25%, the estimates for each roost are probably valid estimates of the number of individual birds using a particular roost site over the course of a winter, a figure which may be considerably higher than the number of birds using a roost on any one night. This suggests that there is a degree of overlap in roost tenancy by individual birds, and this is perhaps to be expected. As described below, birds may use satellite roosts at certain times of year, and it is likely that some of these have been mistakenly classified as core roosts in Table 3.4.3.1c. Moreover, it is possible that birds make decisions on roost-use on a day-to-day basis depending on factors such as weather conditions and proximity to night-feeding sites. For example, the south Port Charlotte feeding flock generally roosted at Laggan Bog/Lochan na Nigheadaireachd, but on the evening of 1st April 1992 during a strong northerly gale this flock (of 277 birds) first headed east towards Laggan as usual, but then apparently found the wind too strong and flew north-west to Maol Chuirn-a-mheall - thereby avoiding the flight across Loch Indaal. This shift was taken into account when calculating roost totals for Laggan Bog but, where such information is lacking, duplication is likely to occur.

3.4.4.2 Roost catchment areas

Preliminary estimates of roost catchments for the Rhinns, Gorm and Laggan areas are marked on the Roost Map in blue - only in these areas was it reasonably certain that the satellite roosts had been identified. The approximate catchment areas of the main roosts over the rest of the island can be determined from the Roost Map by tracing the roost-flight arrows to the feeding areas from which they originate. Before definitive catchment areas for these roosts can be determined more work is needed to identify those roosts which are satellites of larger roosts.

Catchments in the Rhinns, Gorm and Laggan areas showed little overlap (though the Gruinart Flats picture is more complex than indicated on

the map, and may include overlap with the Loch an Raoin and Moine nam Faoileann roosts). Not surprisingly, the larger roosts had larger catchment areas. The link between Laggan Bog and Port Charlotte feeding areas was unusual, but mirrors similar movements by Barnacle Geese from the Laggan Point roost (Percival 1988).

White-fronts did not necessarily roost at the roost-site nearest to their feeding areas. For example, the Sunderland Farm flock flies 4 km to Moine nam Faoileann when a much closer roost site at Loch Treunaidh is only 1.5 km distant. Most feeding areas were <4 km from roosts. The most distant regularly observed roost-flight was that of 7-8 km made by birds flying to Maol Chuirn-a-mheall from feeding areas at Octofad. One wonders whether these birds have been displaced from a former roost site by afforestation of the bog areas adjacent to Octofad, perhaps Loch a' Gheoidh (see Stroud 1984).

3.4.4.3 Roost characteristics

The major roost complexes and core roosts were in bogs, often with patterned mire systems or old peat cuttings. Perhaps as a consequence of the above, they were also in areas of very low relief, providing clear all-round views, but also very exposed. Many roosts were associated with small pools and lochans. The edges of such lochans, as well as vegetation hummocks within lochans, appear to be favoured sites, provided that they are covered by short vegetation. There was little evidence of birds using open-water for roosting, those lochans that were used being very small (<50 m wide). More direct observations of roosting birds are needed to clarify the role of open-water at roost-sites.

Though roosts are often centred on pool systems, evidence from the distribution of roost piles shows that White-fronts may roost up to 100 m away from water. Some roosts had no pool systems at all, but usually possessed some form of hummock and hollow system, which seems to be highly preferred by roosting Greenland White-fronted Geese, the birds roosting on the drier hummocks between the wetter hollows. Even the atypical roost sites away from bogs tended to possess hummock and hollow characteristics. At the recently grazed bogs at Gruinart and at Lossit Point these characteristics are produced by old surface drainage systems.

Short vegetation appeared to be favoured over rank vegetation (eg. very short prostrate wet-heath and moss-dominated bog vegetation). A range of "quaking mire"-type sites was also used, from pristine Sphagnum-dominated communities to degraded peat "wallows".

At many roosts (eg. Moine nam Faoileann, Loch Gorm West, Loch Treunaidh, Laggan Bog and Maoll Chuirn-a-mheall) derelict hand-cut peat cuttings provided the focal pools and quaking Sphagnum-dominated

communities which seem to be so preferred. It is difficult to assess whether geese would roost at these sites if there were no peat-cut areas. Either way, it is clear that the Eriophorum angustifolium and Menyanthes, which often grow in these "artificially" wet areas, provide an abundance of night-feeding opportunities which would otherwise not exist.

Unusual roost sites included Gruinart Flats where White-fronts roosted in open fields, possibly gaining "protection" from the large number of night-feeding or roosting Barnacle Geese in the fields. Nearby at Corsapol small numbers of White-fronts were also recorded roosting in fields, but with no Barnacle Geese in the vicinity. At Lossit Point birds roosted on a gently sloping headland and/or in the fields. The large roost at Machrie Peat Cuttings was also unusual in that the birds roosted in a wet area of machine-cut peat, the peat apparently providing similar "quaking" conditions to those often found at more normal bog sites. Presumably this site provides no feeding opportunities for the birds, and it would be interesting to look at its use in relation to season and moon-phase.

3.4.4.4 Roost flight behaviour

In the late afternoon feeding flocks of White-fronts appear to coalesce, and spend the last few hours prior to departure feeding intensively. (Counts made during this period may give a misleading impression of the number of birds using a particular area, as there appear to be favoured roost-departure fields, often elevated and/or sloping providing a good view and unobstructed take off.)

Flocks are noisy at take off, though this gradually decreases as the birds head roost-wards and sort themselves out into skeins. Roost-flights usually occur directly towards the roost, though the route taken depends on the prevailing wind and weather - sometimes resulting in misleading conclusions if the birds go out of sight before they are near their eventual roost-site.

White-fronts generally depart for roosts in poor light conditions, up to 112 minutes after sunset, thus tracking them to their roost site can be very difficult and may take several nights. Departure is usually earlier in poor weather conditions. There was a seasonal trend in the timing of roost departure, with birds delaying departure longest in mid-winter when day-length is shortest. As the geese *feed* intensively during the pre-roost-flight departure period, it is likely that they delay departure in order to maximise feeding time during the short days. This in turn may indicate that in mid-winter White-fronts on Islay may experience difficulty in achieving their daily food intake requirement (possibly exacerbated by poor grass growth at this time). A similar situation has been demonstrated at the Little Brosna flood plain, Ireland (Mayes 1991). As daylength increases, there is less delay between sundown and roost departure,

suggesting that the birds have achieved their daily food intake requirement. Hence autumn and spring are probably the best times for observing roost flights in reasonable light conditions, and at these times accidentally flushing the birds from feeding areas when making roost-flight observations should have the least detrimental effect upon their net daily food intake.

3.4.4.5 Pre-roost bathing sites

On some nights, roost-flighting birds land at lochs and lochans to preen and bathe before flying on to roost sites later, which can lead to confusion regarding true roost sites. This behaviour was observed at Loch Drolsay, Loch Gorm and Loch Finlaggan. Birds finally flew from these sites to known roosts in very poor light conditions. Clearly care must be taken when assigning roost status to lochs and lochans. The majority of roost-sites found in 1991-92 were on bog vegetation or around the edges of small lochs (see Roost Characteristics above). Of the few night-scope observations made on birds at roost sites where open water was present, no birds were seen roosting on the open water itself. However, 80 birds were observed at Lochan na Nigheadaireachd (Laggan) one hour after sunset, apparently roosting on the open water, and it looked as if they might spend the night there.

Counts of large numbers of geese at Ballinaby Pool and Upper Esknish Pool were thought to represent pre-roost bathing aggregations or possibly satellite roosts (see below).

3.4.4.6 Roost-use variations

It was clear from repeated observations in the Loch Gorm area that use of any particular roost varied throughout the course of a winter. This appeared to be related to the state of the moon: during new moon phases, most geese roosted at the major "core" roosts such as Feur Lochain, Moine nam Faoileann and Loch Gorm west. With a full moon, "satellite" roosts were used, such as Loch a' Gheoidh (AO), Loch a' Gheoidh (SU), Ballinaby Pool and Loch na Cachle. Satellite roosts may be feeding sites themselves (as evidenced by uprooted Eriophorum and other semi-aquatic vegetation), or they may act as bases from which nocturnal excursions can be made to other feeding sites nearby. This includes night-feeding in fields - in the Sunderland Farm area, for example, the Loch a' Gheoidh (AO) roost was used by birds which later flew out into the adjacent fields to feed. The same probably occurs at Ballinaby Pool.

However, use of satellite roosts was most evident in mid-winter, with some being unused by March/April. It could be that their use is partly governed by short day length, when night-feeding

is presumably most important in maintaining the daily food intake requirement (as has been noted for Barnacle Geese on Islay (Percival 1988)).

3.4.4.7 The characteristics of roosts and their catchments

It is clear that the juxtaposition of bog roost sites in proximity to suitable feeding areas is one of the factors which makes Islay so suitable for White-fronted Geese. Few areas can have this intimate mixing of habitats. In addition, the existence of derelict hand-worked peat cuttings provides an abundance of suitable roost sites within degraded bog areas which otherwise would not provide suitable roost sites.

Roosts were divided into core and satellite roosts, the latter being used perhaps primarily as feeding sites and/or as bases from which to move out into nearby night-feeding areas (including improved fields). Core roosts typically consist of large numbers of birds, occur in exposed bog situations in areas where incidental human disturbance is minimal/non-existent, and probably act as important refuges for these birds which roost on the ground often away from water.

The roles of the "core" vs. "satellite" roosts must be considered in the development of any species management plan. It is clear that the dynamics of roost-use are complex, depending on season, the phase of the moon, day-time feeding, and possibly prevailing weather conditions. D. Stroud (pers. comm.) has also suggested that there may be year-to-year variations depending on the exploitation and subsequent growth of Eriophorum angustifolium, possibly operating on a three-year cycle.

Table 3.4.3.1a. Observations of roost flights by Greenland White-fronted Geese over the 1991-92 winter, giving field numbers of the "source area" in which the birds were seen feeding prior to departure for the roost.

Key to roost flight table.

Table headings are presented as follows:

Date	Source Field no.	Flock Size	Roost	Roost Area	Ref Acc.	Grid Ref.

Date = Date of observation.

Source field no. = Area code and field number (eg. "EK 48") of source area of feeding flock prior to roost flight.

If only the area code is given (eg. "EK") this means that only the approximate area from which roost-flighting birds originated was known.

Flock = Flock size.

Roost = Roost site towards which the flock flew.

Roost names followed by a question mark (?) are not definite.

Roost Area = Nearest area code (in the field numbering system) to the roost - this gives an approximate roost location without having to check its grid reference).

Ref Acc ("reference accuracy") - refers to accuracy of grid reference given.

O - birds seen flying "out of sight" at the grid ref. given.

c. - approximate roost area.

R - accurate roost ara - birds seen landing or droppings found at the site subsequently.

Grid Ref = six-figure reference of roost site, approximate roost site or site where birds disappeared grom view (see Ref. Acc. above).

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source Field	no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
13.04.92	FL	06	45	Airigh nan Caisteal	FL	O	380 703
12.04.92	MR/FL		40	Airigh nan Clach	MR	O	380 710
13.04.92	FL	09	30	Airigh nan Clach	MR	O	380 710
6.04.92	KM	15	80	Allt Loch Bharra-dail	KM	c.	392 643
10.12.91	BH	09	200	Allt an Leacaich	BH	R	247 619
4.01.92	BH	07	182	Allt an Leacaich	BH	R	247 619
5.12.91	RK	02	290	Allt na Criche	RK	R	215 648
5.12.91	RK	10	390	Allt na Criche	RK	R	215 648
4.12.91	CO		100	Allt na Criche	RK	R	221 651
4.12.91	RK	08	340	Allt na Criche	RK	R	221 651
8.01.92	CO		100	Allt na Criche	RK	R	216 649
8.01.92	RK	02	110	Allt na Criche	RK	R	216 649
8.01.92	CO		120	Allt na Criche	RK	R	216 649
26.11.91	RK	02	100	Allt na Criche	RK	R	215 648
22.02.92	RK	04	60	Allt na Criche	RK	R	215 648
22.02.92	CO	03	130	Allt na Criche	RK	R	215 648
25.02.92	CO		80	Allt na Criche	RK	R	215 648
25.02.92	RK	02	170	Allt na Criche	RK	R	215 648
27.02.92	RK	02	300	Allt na Criche	RK	R	215 648
11.03.92	CO		50	Allt na Criche	RK	R	215 649
11.03.92	RK	02	230	Allt na Criche	RK	R	215 649
20.04.92	CO	03	200	Allt na Criche	RK	R	216 649
24.04.92	CO	03	72	Allt na Criche	RK	R	216 649
24.04.92	CO	04	100	Allt na Criche	RK	R	216 649
24.04.92	RK	02	147	Allt na Criche	RK	R	216 649
3.04.92	BE/KD		50	An Carn	KD	R	325 657
5.02.92	KP	09	140	An Sopachan area?	BM	O	374 691
24.02.92	BB		170	Ballinaby pool	BB	R	218 673
12.03.92	BB	24	10	Ballinaby pool	BB	R	219 673
31.01.92	MY	09	15	Beinn Bhan	AV	O	385 575
30.03.92	AV		30	Beinn Bhan S	AV	O	384 556
24.03.92	NG		70	Beinn Bhreac?	NG	O	425 620
28.01.92	KI	08	6	Carn Mor by KI road KI31	KI	R	212 604
26.01.92	AO	51	30	Carra-mhoine?	GG	c.	266 678
15.02.92	GG		35	Casach Loch Ceara	GG	R	250 687
6.03.92	GD	06	13	Castlehill	GD	O	370 515
7.02.92	LR	12	30	Castlehill/B Uraraidh?	GD	O	375 515
14.01.92	CV	06	20	Cladville bog	CV	R	171 545
14.01.92	CV	14	40	Cladville bog	CV	R	171 545
4.01.92	BH		4	Cnoc Breac	CS	R	257 657
4.01.92	BH	06	30	Cnoc Breac	CS	R	257 657
28.02.92	CP	07	20	Corsapol Bog	CP	c.	308 664
3.04.92	BE		44	Corsapol Bog	CP	R	310 664
15.04.92	CP		20	Corsapol Bog (CP43)	CP	R	306 662
11.03.92	CO	50		Coulererach	CO	c.	216 653
20.04.92	CO	04	74	Coulererach	CO	R	216 653
25.03.92	CR	60		Cruach Bog (CR35)	CR	R	317 585

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source Field	no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
9.01.92	BW?		20	Duich Moss	DU	c.	325 560
9.01.92	LN?		50	Duich Moss	DU	c.	325 555
9.01.92	TL		70	Duich Moss	DU	c.	325 560
9.01.92	TL		112	Duich Moss	DU	c.	325 560
9.01.92	MY?		156	Duich Moss	DU	c.	332 557
9.01.92	BW?		200	Duich Moss	DU	c.	325 560
25.01.92	AV	19	30	Duich Moss	DU	R	337 562
25.01.92	CN	22	120	Duich Moss	DU	R	332 556
25.01.92	CC	27	140	Duich Moss	DU	R	332 556
25.01.92	CN	24	190	Duich Moss	DU	R	332 556
31.01.92	MY	04	64	Duich Moss	DU	c.	325 555
31.01.92	MY	08	168	Duich Moss	DU	c.	325 555
23.03.92	BW		150	Duich Moss	DU	c.	325 560
23.03.92	TL		191	Duich Moss	DU	c.	325 560
23.03.92	NB		200	Duich Moss	DU	c.	332 555
24.03.92	KG	27	70	Duich Moss	DU	c.	335 555
14.04.92	NB	07	50	Duich Moss	DU	c.	335 555
14.04.92	GC	12	60	Duich Moss	DU	c.	335 555
14.04.92	GC	50	100	Duich Moss	DU	c.	335 555
14.04.92	KG	23	100	Duich Moss	DU	c.	335 555
14.04.92	AV	19	130	Duich Moss	DU	c.	335 555
25.03.92	BW/RM		50	Duich flats?	DU	O	310 550
18.03.92	LO	50	50	Dun Bhoraraig	LO	R	179 571
29.02.92	KL		16	Dunlossit area	NG/KL	O	427 650
29.02.92	KL		250	Feolin Bog	JU	c.	455 695
3.03.92	KL		530	Feolin Bog	JU	R	452 698
9.04.92	KL	13	134	Feolin Bog	JU	c.	449 690
9.04.92	KL	20	280	Feolin Bog	JU	c.	449 690
13.04.92	KL	11	150	Feolin Bog	JU	c.	453 695
6.12.91	LK		34	Feur Lochain	SG	R	251 695
6.12.91	LK		90	Feur Lochain	SG	R	251 695
6.12.91	BB		60	Feur Lochain	SG	R	251 695
6.12.91	GG	13	90	Feur Lochain	SG	R	251 695
10.01.92	BB		54	Feur Lochain	SG	R	247 694
15.02.92	LK		45	Feur Lochain	SG	R	251 695
15.02.92	SG		85	Feur Lochain	SG	R	251 695
15.02.92	BB		240	Feur Lochain	SG	R	251 695
1.03.92	BB/LK		230	Feur Lochain	SG	R	251 695
10.03.92	BB	12	15	Feur Lochain	SG	R	251 695
10.03.92	BB		100	Feur Lochain	SG	R	251 695
10.03.92	BB	12	120	Feur Lochain	SG	R	251 695
12.03.92	BB		150	Feur Lochain	SG	R	251 695
26.03.92	LK		20	Feur Lochain	SG	R	251 695
26.03.92	SG	03	20	Feur Lochain	SG	R	251 695
26.03.92	SG	06	20	Feur Lochain	SG	R	251 695
26.03.92	SG	04	35	Feur Lochain	SG	R	251 695
20.04.92	BB	07	80	Feur Lochain	SG	R	250 695
20.04.92	BB	06	110	Feur Lochain	SG	R	250 695
20.04.92	BB	02	120	Feur Lochain	SG	R	250 695
10.01.92	LK		25	Glac na Criche	SG	R	226 710
24.03.92	NG		100	Glas Bheinn?	NG	O	420 590
29.03.92	KG		50	Glas Bheinn?	NG	O	420 590
3.02.92	EK/KM		100	Gleann Maraiche	EK	O	386 640
3.02.92	KM	34	200	Gleann Maraiche	EK	O	386 640
5.02.92	KM	03	70	Gleann Maraiche	EK	O	386 640
5.02.92	KM	12	90	Gleann Maraiche	EK	O	386 640
7.04.92	EK	16	50	Gleann Maraiche	EK	O	382 638
7.04.92	EK	31	65	Gleann Maraiche	EK	O	382 638
7.04.92	EK	34	85	Gleann Maraiche	EK	O	382 638
7.04.92	EK	44	200	Gleann Maraiche	EK	O	382 638

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source	Field no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
28.12.91	KB/GL		30	Glen Astaile S	GL	c.	287 448
29.12.91	GL?		20	Glen Astaile S	GL	c.	286 449
29.12.91	GL?		20	Glen Bun an Easa?	GA	O	295 466
29.12.91	GL?		50	Glen Bun an Easa?	GA	O	295 466
18.12.91	OV	02	100	Glen Drolsay	SC	O	333 660
18.12.91	OV	02	220	Glen Drolsay	SC	O	333 660
18.12.91	OV	02	950	Glen Drolsay	SC	O	333 660
7.03.92	BE/SC		900	Glen Drolsay	SC	O	330 677
1.04.92	BE		400	Glen Drolsay	SC	O	335 665
2.04.92	OV/BE		20	Glen Drolsay	SC	R	333 657
2.04.92	OV/EO		20	Glen Drolsay	SC	R	334 667
2.04.92	OV/BE		25	Glen Drolsay	SC	R	327 664
2.04.92	OV/BE		25	Glen Drolsay	SC	R	332 660
2.04.92	OV/BE		60	Glen Drolsay	SC	O	330 676
2.04.92	OV/EO		350	Glen Drolsay	SC	O	330 676
5.04.92	BE		100	Glen Drolsay	SC	O	335 665
5.04.92	SC		220	Glen Drolsay	SC	O	335 665
5.04.92	EO		230	Glen Drolsay	SC	O	335 665
5.04.92	DA	04	160	Glen Drolsay/Loch Sibhinn	SC	O	335 655
5.04.92	NB	19	180	Glen Drolsay/Loch Sibhinn	SC	O	335 655
5.04.92	BE	26	200	Glen Drolsay/Loch Sibhinn	SC	O	335 655
7.04.92	EK	17	47	Glen Drolsay	SC	O	335 655
5.03.92	NG		73	Goirtean an Uruisge?	NG	c.	415 626
5.03.92	NG		134	Goirtean an Uruisge?	NG	O	415 626
4.01.92	BH	07	2	Gortanchuirn Glen	BH	R	250 623
21.12.91	AO		24	Grainel Bog (AO56)	AO	R	266 665
21.12.91	AO		30	Grainel Bog (AO56)	AO	R	266 665
30.04.92	SU	01	80	Grainel Bog	AO	R	267 666
30.04.92	SU	01	50	Grainel Bog (AO15)	AO	O	275 675
26.01.92	FO/US		50	Gruinart Bog	AO	c.	290 657
26.01.92	AO	55	100	Gruinart Bog	AO	c.	290 657
6.02.92	FO	12	30	Gruinart Bog/Flats	AO	O	270 660
16.04.92	FO/US		50	Gruinart Bog (AO67)	AO	R	289 659
20.01.92	SU		30	Gruinart Flats	AO	c.	280 666
27.02.92	SU	09	50	Gruinart Flats or Bog	AO	O	270 658
28.02.92	CP	59	12	Gruinart Flats (AO25)	AO	c.	283 672
28.02.92	LY	28	23	Gruinart Flats (AO30)	AO	R	285 664
28.02.92	AO	55	28	Gruinart Flats (AO30)	AO	R	285 664
28.02.92	FO/SU		70	Gruinart Flats (AO30)	AO	R	285 664
9.03.92	SU		35	Gruinart Flats?	AO	c.	280 666
19.03.92	SU	18	20	Gruinart Flats?	AO	O	277 557
15.04.92	FO/US		40	Gruinart Flats (AO30)	AO	R	284 664
15.04.92	FO/US		60	Gruinart Flats (AO31)	AO	R	286 663
15.04.92	CP		30	Gruinart Flats (CP57)	CP	R	288 668
16.04.92	AO33?		30	Gruinart Flats (AO31)	AO	R	286 664
16.04.92	AO55		40	Gruinart Flats (AO31)	AO	R	286 664
16.04.92	FO?		80	Gruinart Flats (AO31)	AO	R	286 664
25.01.92	AV	19	70	Kilennan Bog	AV	R	373 579
23.03.92	CC?		40	Kilennan Bog (AV22)	AV	R	373 580
24.12.91	KB+RB	19	80	Kinnabus	KB	O	290 416
7.02.92	LR	12	50	Lag Odhar?	KT	c.	339 506
7.01.92	CT		25	Laggan Bog	LN	c.	292 575
7.01.92	CT	08	50	Laggan Bog	LN	c.	300 575
7.01.92	RM	18	48	Laggan Bog?	LN	O	295 575
7.01.92	CT	08	50	Laggan Bog/Grunnd Loch?	LN	O	288 573
21.01.92	PC		250	Laggan Bog?	LN	?	290 570
29.01.92	PC		100	Laggan Bog/Grunnd Loch?	LN	c.	290 573

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source Field	no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
29.01.92	LN	16	9	Laggan Bog	LN	R	290 566
29.01.92	LN	18	46	Laggan Bog	LN	R	290 566
25.03.92	CT	24	30	Laggan Bog	LN	c.	292 570
4.04.92	PC		140	Laggan Bog	LN	c.	290 570
4.04.92	PC		160	Laggan Bog	LN	c.	290 570
17.04.92	PC		330	Laggan Bog?	LN	c.	290 570
18.04.92	PC		290	Laggan Bog?	LN	c.	290 570
8.03.92	LR		15	Leorin Lochs S	LR	R	370 481
8.03.92	LR		45	Leorin Lochs S	LR	R	368 480
8.04.92	KP	15	100	Loch Carn nan Gall area?	BM/FL	O	370 705
8.04.92	KP	09	119	Loch Carn nan Gall area?	BM/FL	O	370 705
9.04.92	KP	09	40	Loch Carn nan Gall	BM/FL	O	370 705
10.04.92	FL		40	Loch Carn nan Gall?	BM/FL	O	380 705
6.12.91	LK		30	Loch Corr	SG	R	225 695
10.01.92	LK		54	Loch Corr	SG	R	226 695
20.04.92	BB	04	30	Loch Corr	SG	O	225 695
11.02.92	LR		40	Loch Eighinn?	GD	O	330 503
11.02.92	LR		200	Loch Eighinn?	GD	O	330 503
3.02.92	NG	05	100	Loch Fada	NG	O	414 636
1.12.91	FL/KL		280	Loch Finlaggan	FL	R	389 680
6.12.91	LK		12	Loch Gorm North	BB	c.	227 665
6.12.91	LK		110	Loch Gorm North	BB	R	226 665
17.12.91	OV	02	1300	Loch Sibhinn area	KD	O	330 653
3.04.92	BE/KD		50	Loch Sibhinn Lochans	MC	R	322 649
8.12.91	KW		30	Loch Treunaidh	CS	R	260 634
8.12.91	KW		38	Loch Treunaidh	CS	R	260 634
8.12.91	KW		70	Loch Treunaidh	CS	R	256 635
9.12.91	KW	14	125	Loch Treunaidh	CS	c.	258 634
15.12.91	KW		60	Loch Treunaidh	CS	R	256 636
15.12.91	SU		8	Loch Treunaidh NW	CS	R	252 638
15.12.91	KW		50	Loch Treunaidh SE	CS	R	258 635
16.12.91	PC		25	Loch a' Bhogaidh	BS	R	225 578
4.04.92	PC	47	35	Loch a' Bhogaidh	BS	R	225 579
8.04.92	KP	15	70	Loch a' Chaorainn	BM	c.	370 694
12.04.92	KP		110	Loch a' Chaorainn?	BM	O	370 694
2.03.92	JU		120	Loch a' Chnuich Bhric Bog	JU	R	448 743
30.11.91	SU		80	Lock a' Gheoidh (AO)	AO	R	262 658
2.12.91	SU		35	Loch a' Gheoidh (AO)	AO	R	262 658
2.12.91	SU	18	120	Loch a' Gheoidh (AO)	AO	R	262 658
30.11.91	SU		80	Loch a' Gheoidh (AO)	AO	R	262 658
17.01.92	SU		150	Loch a' Gheoidh (AO)	AO	R	262 658
20.01.92	AO		4	Loch a' Gheoidh (AO)	AO	R	262 658
20.01.92	SU		342	Loch a' Gheoidh (AO)	AO	R	262 658
26.01.92	SU		300	Loch a' Gheoidh (AO)	AO	R	262 658
13.02.92	SU	09	150	Loch a' Gheoidh (AO)	AO	R	262 658
27.02.92	SU	07	20	Loch a' Gheoidh (AO)	AO	R	262 658
11.03.92	SU	18	50	Loch a' Gheoidh (AO)	AO	R	262 658
24.03.92	KG	27	140	Loch a' Mhuilinn-ghaoithe	AV	R	420 567
24.03.92	KG	23	158	Loch a' Mhuilinn-ghaoithe	AV	R	420 567
29.03.92	KG		50	Loch a' Mhuilinn-ghaoithe	AV	R	420 567
30.03.92	AV		100	Loch a' Mhuilinn-ghaoithe	AV	R	420 567

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source Field	no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
10.01.92	AO		17	Loch an Fhir Mhor?	AO	c.	265 695
10.01.92	AO		22	Loch an Fhir Mhor?	AO	c.	265 695
10.01.92	AO		24	Loch an Fhir Mhor?	AO	c.	265 695
13.01.92	KT	06	100	Loch an Lin/L Muchairt?	KT	R	321 478
17.01.92	FO	21	30	Loch an Raoin	FO	R	280 646
6.02.92	FO		40	Loch an Raoin	FO	R	280 645
6.02.92	FO	21	50	Loch an Raoin	FO	R	280 645
6.02.92	FO	13	60	Loch an Raoin	FO	R	280 645
15.04.92	FO	12	100	Loch an Raoin	FO	R	280 646
29.01.92	LN	16	8	Lochan na Nigheadaireachd	LN	R	280 558
29.01.92	PC		80	Lochan na Nigheadaireachd	LN	R	280 558
9.04.92	KP	09	40	Lochan na Tais Bheinn?	BM	c.	367 704
26.12.91	CV	27	150	Lossit?	LO	O	175 555
14.01.92	MN		310	Lossit?	LO	O	178 550
15.01.92	CV?		32	Lossit Point	LO	R	175 565
27.01.92	LO	51	250	Lossit Point	LO	O	173 563
18.03.92	CV?		8	Lossit Bog	LO	R	188 577
18.03.92	CV?		10	Lossit Bog?	LO	O	188 570
13.01.92	BV	28	50	Luig Rhadha?	KT	c.	304 466
13.01.92	BV	14	100	Luig Rhadha?	KT	c.	304 466
13.01.92	BV	13	120	Luig Rhadha?	KT	c.	304 466
20.03.92	BV	22	70	Luig Rhada/Glen Ghraisdail	KT/GA	c.	305 465
20.03.92	BV	29	110	Luig Rhada/Glen Ghraisdail	KT/GA	c.	305 465
20.03.92	BV	14	172	Luig Rhada/Glen Ghraisdail	KT/GA	c.	305 465
16.01.92	MC	04	64	Lyrabus Bog	LY	R	297 642
16.01.92	LY	24	130	Lyrabus Bog	LY	R	297 642
7.02.92	LR	04	170	Machrie Peat Cuttings	KT	R	338 493
8.02.92	LR		200	Machrie Peat Cuttings	KT	R	338 493
11.02.92	LR	07	130	Machrie Peat Cuttings	KT	R	338 493
6.03.92	GD	06	15	Machrie Peat Cuttings	KT	R	338 493
20.03.92	BV	29	80	Machrie Peat Cuttings	KT	R	338 493
12.01.92	RB	18	100	Maoile Mhor?	IV	O	325 435
24.12.91	RB		230	Maol Buidhe	GA	c.	300 460
24.12.91	KB	19	370	Maol Buidhe	GA	c.	300 460
28.12.91	KB/GL		170	Maol Buidhe	GA	O	300 460
29.12.91	GL/KB		120	Maol Buidhe	GA	c.	294 458
30.12.91	KB		50	Maol Buidhe?	GA	O	300 457
30.12.91	KB?		100	Maol Buidhe?	GA	O	300 457
30.12.91	KB		100	Maol Buidhe?	GA	O	300 457
12.01.92	RB	18	60	Maol Buidhe/Maol nan Eun	GA	c.	310 456
13.01.92	BV	22	70	Maol Buidhe/N Oa	GA	c.	300 460
13.12.91	BS		10	Maol Chuirn-a-mheall ?	BH	O	231 613
13.12.91	BS		60	Maol Chuirn-a-mheall ?	BH	O	231 613
13.12.91	BS	01	140	Maol Chuirn-a-mheall ?	BH	O	231 613
14.12.91	BS	01	50	Maol Chuirn-a-mheall ?	BH	O	231 613
14.12.91	PC		50	Maol Chuirn-a-mheall ?	BH	O	231 613
14.12.91	BS?		100	Maol Chuirn-a-mheall ?	BH	O	231 613
16.12.91	PC		15	Maol Chuirn-a-mheall	BH	c.	231 613
4.01.92	BH/PC		40	Maol Chuirn-a-mheall	BH	R	240 617
14.01.92	CV?		6	Maol Chuirn-a-mheall	BH	O	200 595
21.01.92	OM	19	110	Maol Chuirn-a-mheall	BH	c.	240 617
21.01.92	OM	20	130	Maol Chuirn-a-mheall	BH	c.	240 617
28.01.92	KI	08	120	Maol Chuirn-a-mheall	BH	c.	236 616

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source	Field no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
9.02.92	OF	12	45	Maol Chuirn-a-mheall	BH	c.	233 615
9.02.92	OF	19	90	Maol Chuirn-a-mheall	BH	c.	233 615
14.03.92	OF		150	Maol Chuirn-a-mheall	BH	c.	233 615
16.03.92	OF	03	26	Maol Chuirn-a-mheall	BH	c.	233 615
17.03.92	OF?		20	Maol Chuirn-a-mheall	BH	c.	231 615
17.03.92	OF?		120	Maol Chuirn-a-mheall	BH	c.	231 615
17.03.92	KI	04	300	Maol Chuirn-a-mheall	BH	c.	231 615
1.04.92	PC	35	277	Maol Chuirn-a-mheall	BH	c.	235 613
29.12.91	GL/KB		90	Maol Ghrasdail	GA	c.	306 455
20.03.92	BV	13	11	Maol Ghraisdail/Luig Rhada	GA	c.	300 460
20.03.92	KT	10	12	Maol Ghraisdail/Luig Rhada	KT/GA	c.	305 465
20.03.92	KT	01	30	Maol Ghraisdail/Luig Rhada	KT/GA	c.	305 465
20.03.92	BV	10	51	Maol Ghraisdail/Luig Rhada	GA	c.	300 460
20.03.92	BV	11	67	Maol Ghraisdail/Luig Rhada	GA	c.	300 460
30.01.92	CN/KG		54	Maol a' Chatadail	KG	O	413 599
30.01.92	CN	10	102	Maol a' Chatadail	KG	O	413 599
7.03.92	KP		150	Maol nan Caorach	BM	O	359 685
7.03.92	BM		130	Maol nan Caorach?	BM	O	359 685
5.01.92	LR		38	Moine na Surdaig?	LR	O	370 490
5.01.92	LR		100	Moine na Surdaig?	LR	O	377 499
5.01.92	LG		200	Moine na Surdaig?	LR	O	372 492
5.01.92	LR		300	Moine na Surdaig?	LR	O	370 495
11.02.92	LR	13	71	Moine na Surdaig?	LR	O	375 500
11.02.92	LR	07	160	Moine na Surdaig?	LR	O	380 497
11.02.92	LR	07	250	Moine na Surdaig?	LR	O	373 490
8.03.92	LR		350	Moine na Surdaig?	LR	O	377 494
8.03.92	LG	06	360	Moine na Surdaig?	LR	O	387 484
26.11.91	RK	17	100	Moine nam Faoileann?	GG	R	258 682
29.11.91	SU	06	92	Moine nam Faoileann	GG	R	258 682
30.11.91	SU		300	Moine nam Faoileann	GG	R	258 682
6.12.91	RK?		120	Moine nam Faoileann	GG	R	258 682
2.12.91	SU	18	20	Moine nam Faoileann	GG	R	258 682
2.12.91	RK?		60	Moine nam Faoileann	GG	R	258 682
2.12.91	SU	06	400	Moine nam Faoileann	GG	R	258 682
13.12.91	SU	18	252	Moine nam Faoileann	GG	O	260 660
21.12.91	AO		24	Moine nam Faoileann	GG	R	258 682
10.01.92	AO		31	Moine nam Faoileann?	GG	c.	258 681
10.01.92	SU		125	Moine nam Faoileann?	GG	c.	258 681
17.01.92	SU		150	Moine nam Faoileann	GG	R	258 682
24.01.92	RK?		90	Moine nam Faoileann	GG	R	258 682
26.01.92	SU		70	Moine nam Faoileann	GG	R	258 682
4.02.92	SU	02	50	Moine nam Faoileann	GG	R	258 682
4.02.92	SU	01	100	Moine nam Faoileann	GG	R	258 682
27.02.92	SU	07	110	Moine nam Faoileann	GG	R	258 682
27.02.92	RK	09	160	Moine nam Faoileann	GG	R	258 682
27.02.92	SU	09	250	Moine nam Faoileann	GG	R	258 682
1.03.92	RK?		120	Moine nam Faoileann	GG	R	258 682
1.03.92	SU?		300	Moine nam Faoileann	GG	R	258 682
9.03.92	RK		160	Moine nam Faoileann	GG	R	258 682
9.03.92	SU		300	Moine nam Faoileann	GG	R	258 682
11.03.92	RK	10	70	Moine nam Faoileann	GG	R	258 682
11.03.92	SU	18	400	Moine nam Faoileann	GG	R	258 682
11.03.92	CO		30	Moine nam Faoileann?	GG	O	222 655
19.03.92	SU	18	300	Moine nam Faoileann	GG	R	258 682
24.04.92	SU	01	40	Moine nam Faoileann	GG	R	258 682
24.04.92	RK	08	133	Moine nam Faoileann	GG	R	258 682
30.04.92	SU	01	60	Moine nam Faoileann	GG	R	258 682
29.03.92	KG		30	Monadh a' Choilich	KG	R	390 588
14.04.92	KG	23	100	Monadh a' Choilich	KG	R	393 590

Table 3.4.3.1a (cont.) Roost flights of Greenland White-fronted Geese, Islay 1991-92.

Date	Source Field	no.	Flock Size	Roost	Roost Area	Ref Acc	Grid Ref
16.01.92	MC	20	80	Na Binneagan (KD)	KD	c.	318 654
3.04.92	BE	09	105	Na Binneagan (KD)	KD	R	318 654
3.04.92	MC	23	120	Na Binneagan (KD)	KD	R	318 654
3.04.92	BE/KD		200	Na Binneagan (KD)	KD	R	318 654
3.04.92	BE	14	200	Na Binneagan (KD)	KD	R	318 654
30.03.92	NG/KG		40	Na Binneagan (NG)	NG	R	398 593
27.01.92	OF		12	Octofad reseed (OF12)	OF	R	207 547
22.01.92	CO	01	110	Sliabh nan Grainnseag	CO	R	217 653
22.01.92	CO	17	130	Sliabh nan Grainnseag	CO	R	217 657
20.04.92	CO	04	100	Sliabh nan Grainnseag	CO	R	216 656
19.12.91	FL	??	60	Srath Luachrach	MR	O	396 691
23.12.91	MR	08	39	Srath Luachrach	MR	R	397 700
23.12.91	MR	19	82	Srath Luachrach	MR	R	397 700
23.12.91	FL?		100	Srath Luachrach	MR	R	397 700
11.01.92	MR?		125	Srath Luachrach	MR	R	395 700
11.01.92	FL?		125	Srath Luachrach	MR	R	395 700
9.04.92	FL	03	34	Srath Luachrach	MR	O	399 696
9.04.92	MR	03	88	Srath Luachrach	MR	O	399 696
9.04.92	KP	30	110	Srath Luachrach	MR	R	397 700
10.04.92	MR/FL		300	Srath Luachrach	MR	R	397 700
12.04.92	MR/FL		330	Srath Luachrach	MR	R	397 700
13.04.92	MR/KL		30	Srath Luachrach	MR	R	397 700
13.04.92	KL	13	110	Srath Luachrach	MR	R	397 700
13.04.92	FL	27	260	Srath Luachrach	MR	R	397 700
3.02.92	NG	05	100	Storakaig	NG	O	415 625
12.04.92	KP		100	Tais Bheinn?	BM	c.	363 703
6.04.92	EK	55	10	Tiervaagin	EK	R	381 646
11.02.92	LR		70	Uisge na Criche?	GD	O	325 520
6.03.92	GD	06	15	Uisge na Criche?	GD	O	326 516
21.03.92	GD/LR		140	Uisge na Criche	GD	R	322 528
8.04.92	EK	07	140	Upper Esknish Pool (EK34)	EK	R	375 641
8.04.92	EK	48	250	Upper Esknish Pool (EK34)	EK	R	375 641

Table 3.4.3.1b. Roost counts of Greenland White-fronted Geese, Islay 1991-92

Date	Roost	Roost Area	Total	Grid Ref
13.04.1992	Airigh nan Caisteal	FL	45	c.380 703
12.04.1992	Airigh nan Clach	MR	40	c.380 710
13.04.1992	Airigh nan Clach	MR	30	
6.04.1992	Allt Loch Bharra-dail	KM	80	c.392 643
10.12.1991	Allt an Leacaich	BH	200	247 619
4.01.1992	Allt an Leacaich	BH	182	
5.12.1991	Allt na Criche	RK	680	215 648
4.12.1991	Allt na Criche	RK	440	
8.01.1992	Allt na Criche	RK	330	
26.11.1991	Allt na Criche	RK	100	
22.02.1992	Allt na Criche	RK	190	
25.02.1992	Allt na Criche	RK	250	
27.02.1992	Allt na Criche	RK	300	
11.03.1992	Allt na Criche	RK	280	
20.04.1992	Allt na Criche	RK	200	
24.04.1992	Allt na Criche	RK	319	
3.04.1992	An Carn	KD	50	325 657
5.02.1992	An Sopachan area?	BM	140	c.374 691
24.02.1992	Ballinaby pool	BB	170	218 673
12.03.1992	Ballinaby pool	BB	10	
31.01.1992	Beinn Bhan	AV	15	c.385 575
30.03.1992	Beinn Bhan S	AV	30	
24.03.1992	Beinn Bhreac?	NG	70	c.425 620
1.03.1992	Carn Beannachd	GG	60	254 674
28.01.1992	Carn Mor by KI road KI31	KI	6	212 604
26.01.1992	Carra-mhoine?	GG	30	c.266 678
15.02.1992	Casach Loch Ceara	GG	35	250 687
7.02.1992	Castlehill/B Uraraidh?	GD	30	c.375 515
6.03.1992	Castlehill	GD	13	
14.01.1992	Cladville bog	CV	60	171 545
4.01.1992	Cnoc Breac	CS	34	257 657
28.02.1992	Corsapol Bog	CP	20	308 664
3.04.1992	Corsapol Bog	CP	44	
15.04.1992	Corsapol Bog (CP43)	CP	20	
28.02.1992	Corsapol fields (CP07)	CP	60	302 664
11.03.1992	Coulererach	CO	50	216 653
20.04.1992	Coulererach	CO	74	
25.03.1992	Cruach Bog (CR35)	CR	60	317 585
9.01.1992	Duich Moss	DU	50	325 555
9.01.1992	Duich Moss	DU	402	
9.01.1992	Duich Moss	DU	156	
25.01.1992	Duich Moss	DU	450	
25.01.1992	Duich Moss	DU	30	
31.01.1992	Duich Moss	DU	232	
23.03.1992	Duich Moss	DU	341	
23.03.1992	Duich Moss	DU	200	
24.03.1992	Duich Moss	DU	70	
14.04.1992	Duich Moss	DU	440	

Table 3.4.3.1b (cont.) Roost counts of Greenland White-fronted Geese, Islay 1991-92

Date	Roost	Roost Area	Total	Grid Ref
25.03.1992	Duich flats?	DU	50	c.310 550
18.03.1992	Dun Bhoraraig	LO	50	179 571
29.02.1992	Dunlossit area	NG/KL	16	c.427 650
29.02.1992	Feolin Bog	JU	250	455 695
3.03.1992	Feolin Bog	JU	530	
9.04.1992	Feolin Bog	JU	414	
13.04.1992	Feolin Bog	JU	150	
6.12.1991	Feur Lochain	SG	274	251 695
10.01.1992	Feur Lochain	SG	54	
15.02.1992	Feur Lochain	SG	370	
1.03.1992	Feur Lochain	SG	230	
10.03.1992	Feur Lochain	SG	235	
12.03.1992	Feur Lochain	SG	150	
26.03.1992	Feur Lochain	SG	95	
20.04.1992	Feur Lochain	SG	310	
10.01.1992	Glac na Criche	SG	25	226 710
24.03.1992	Glas Bheinn?	NG	100	c.420 590
29.03.1992	Glas Bheinn?	NG	50	
3.02.1992	Gleann Maraiche	EK	300	c.386 640
5.02.1992	Gleann Maraiche	EK	160	
7.04.1992	Gleann Maraiche	EK	400	
28.12.1991	Glen Astaile S	GL	30	287 448
29.12.1991	Glen Astaile S	GL	20	
29.12.1991	Glen Bun an Easa?	GA	70	295 466
18.12.1991	Glen Drolsay	SC	1270	c.330 675
7.03.1992	Glen Drolsay	SC	1040	
1.04.1992	Glen Drolsay	SC	400	
2.04.1992	Glen Drolsay	SC	500	
5.04.1992	Glen Drolsay/Loch Sibhinn	SC	990	
7.04.1992	Glen Drolsay	SC	47	
5.03.1992	Goirtean an Uruisge?	NG	207	c.415 626
4.01.1992	Gortanchuirn Glen	BH	2	250 623
21.12.1991	Grainel Bog (AO56)	AO	54	266 665
30.04.1992	Grainel Bog	AO	80	
30.04.1992	Grainel Bog (AO15)	AO	50	
9.01.1992	Gruinart Bog (AO55)	AO	32	c.290 657
26.01.1992	Gruinart Bog	AO	150	
6.02.1992	Gruinart Bog/Flats	AO	30	
16.04.1992	Gruinart Bog (AO67)	AO	50	
9.01.1992	Gruinart Flats (AO29)	AO	78	c.280 666
20.01.1992	Gruinart Flats	AO	30	
27.02.1992	Gruinart Flats, or Bog	AO	50	
28.02.1992	Gruinart Flats (AO25)	AO	12	
28.02.1992	Gruinart Flats (AO30)	AO	121	
9.03.1992	Gruinart Flats?	AO	35	
19.03.1992	Gruinart Flats?	AO	20	
15.04.1992	Gruinart Flats (AO30)	AO	40	
15.04.1992	Gruinart Flats (AO31)	AO	60	
15.04.1992	Gruinart Flats (CP57)	CP	30	
16.04.1992	Gruinart Flats (AO31)	AO	150	

Table 3.4.3.1b (cont.) Roost counts of Greenland White-fronted Geese, Islay 1991-92

Date	Roost	Roost Area	Total	Grid Ref
25.01.1992	Kilennan Bog	AV	70	373 579
23.03.1992	Kilennan Bog (AV22)	AV	40	
24.12.1991	Kinnabus	KB	80	c.290 416
7.02.1992	Lag Odhar?	KT	50	c.339 506
6.01.1992	Laggan Bog	LN	10	c.290 570
7.01.1992	Laggan Bog	LN	75	
7.01.1992	Laggan Bog?	LN	48	
7.01.1992	Laggan Bog/Grunnd Loch?	LN	50	
21.01.1992	Laggan Bog?	LN	250	
29.01.1992	Laggan Bog	LN	55	
29.01.1992	Laggan Bog/Grunnd Loch?	LN	100	
25.03.1992	Laggan Bog	LN	30	
4.04.1992	Laggan Bog	LN	300	
17.04.1992	Laggan Bog?	LN	330	
18.04.1992	Laggan Bog?	LN	290	
8.03.1992	Leorin Lochs S	LR	60	368 480
8.04.1992	Loch Carn nan Gall area?	BM/FL	219	c.370 705
9.04.1992	Loch Carn nan Gall	BM/FL	40	
10.04.1992	Loch Carn nan Gall?	BM/FL	40	
6.12.1991	Loch Corr	SG	30	225 695
10.01.1992	Loch Corr	SG	54	
20.04.1992	Loch Corr	SG	30	
11.02.1992	Loch Eighinn?	GD	240	c.330 503
3.02.1992	Loch Fada	NG	100	c.414 636
1.12.1991	Loch Finlaggan	FL	280	389 680
6.12.1991	Loch Gorm North	BB	122	226 665
3.04.1992	Loch Sibhinn Lochans	MC	50	
17.12.1991	Loch Sibhinn area	KD	1300	c.330 653
8.12.1991	Loch Treunaidh	CS	138	c.260 634
9.12.1991	Loch Treunaidh	CS	125	
15.12.1991	Loch Treunaidh	CS	60	
15.12.1991	Loch Treunaidh NW	CS	8	
15.12.1991	Loch Treunaidh SE	CS	50	
16.12.1991	Loch a' Bhogaidh	BS	25	225 578
4.04.1992	Loch a' Bhogaidh	BS	35	
8.04.1992	Loch a' Chaorainn	BM	70	c.370 694
12.04.1992	Loch a' Chaorainn?	BM	110	
2.03.1992	Loch a' Chnuich Bhric Bog	JU	120	448 743
30.11.1991	Loch a' Gheoidh (AO)	AO	80	262 658
2.12.1991	Loch a' Gheoidh (AO)	AO	155	
17.01.1992	Loch a' Gheoidh (AO)	AO	150	
20.01.1992	Loch a' Gheoidh (AO)	AO	346	
26.01.1992	Loch a' Gheoidh (AO)	AO	300	
13.02.1992	Loch a' Gheoidh (AO)	AO	150	
27.02.1992	Loch a' Gheoidh (AO)	AO	20	
11.03.1992	Loch a' Gheoidh (AO)	AO	50	
15.03.1992	Loch a' Gheoidh (SU)	SU	40	236 641
16.03.1992	Loch a' Gheoidh (SU)	SU	90	

Table 3.4.3.1b (cont.) Roost counts of Greenland White-fronted Geese, Islay 1991-92

Date	Roost	Roost Area	Total	Grid Ref
24.03.1992	Loch a' Mhuilinn-ghaoithe	AV	298	420 567
29.03.1992	Loch a' Mhuilinn-ghaoithe	AV	50	
30.03.1992	Loch a' Mhuilinn-ghaoithe	AV	100	
10.01.1992	Loch an Fhir Mhor E (AO61)	AO	6	c.265 695
10.01.1992	Loch an Fhir Mhor?	AO	63	
13.01.1992	Loch an Lin/L Muchairt?	KT	100	c.321 478
17.01.1992	Loch an Raoin	FO	30	280 646
6.02.1992	Loch an Raoin	FO	150	
15.04.1992	Loch an Raoin	FO	100	
15.04.1992	Loch na Cachle	RK	24	221 646
29.01.1992	Lochan na Nigheadaireachd	LN	88	280 558
9.04.1992	Lochan na Tais Bheinn?	BM	40	c.367 704
26.12.1991	Lossit?	LO	150	c.188 570
14.01.1992	Lossit?	LO	310	
15.01.1992	Lossit Point	LO	32	
15.01.1992	Lossit reseed (LO51)	LO	106	
27.01.1992	Lossit Point	LO	250	
18.03.1992	Lossit Bog	LO	8	
18.03.1992	Lossit Bog?	LO	10	
20.03.1992	Luig Rhada/Glen Ghraisdail	KT/GA	352	c.310 460
13.01.1992	Luig Rhadha?	KT	270	c.310 460
16.01.1992	Lyrabus Bog	LY	194	297 642
7.02.1992	Machrie Peat Cuttings	KT	170	338 493
8.02.1992	Machrie Peat Cuttings	KT	370	
11.02.1992	Machrie Peat Cuttings	KT	130	
6.03.1992	Machrie Peat Cuttings	KT	15	
20.03.1992	Machrie Peat Cuttings	KT	80	
12.01.1992	Maoile Mhor?	IV	100	325 435
24.12.1991	Maol Buidhe	GA	600	300 460
28.12.1991	Maol Buidhe	GA	170	300 460
29.12.1991	Maol Buidhe	GA	120	294 458
30.12.1991	Maol Buidhe?	GA	350	300 457
10.01.1992	Maol Buidhe	AO	2	263 676
12.01.1992	Maol Buidhe/Maol nan Eun	GA	60	310 456
13.01.1992	Maol Buidhe/N Oa	GA	70	300 460
13.12.1991	Maol Chuirn-a-mheall ?	BH	210	c.240 617
14.12.1991	Maol Chuirn-a-mheall ?	BH	200	
16.12.1991	Maol Chuirn-a-mheall	BH	15	
4.01.1992	Maol Chuirn-a-mheall	BH	40	
14.01.1992	Maol Chuirn-a-mheall	BH	6	
21.01.1992	Maol Chuirn-a-mheall	BH	240	
28.01.1992	Maol Chuirn-a-mheall	BH	120	
9.02.1992	Maol Chuirn-a-mheall	BH	135	
14.03.1992	Maol Chuirn-a-mheall	BH	150	
16.03.1992	Maol Chuirn-a-mheall	BH	26	
17.03.1992	Maol Chuirn-a-mheall	BH	440	
1.04.1992	Maol Chuirn-a-mheall	BH	277	
29.12.1991	Maol Ghrasdail	GA	90	c.308 455
20.03.1992	Maol Ghraisdail/Luig Rhada	GA	171	
30.01.1992	Maol a' Chatadail	KG	156	c.413 599
7.03.1992	Maol nan Caorach	BM	150	c.359 685
7.03.1992	Maol nan Caorach?	BM	130	

Table 3.4.3.1b (cont.) Roost counts of Greenland White-fronted Geese, Islay 1991-92

Date	Roost	Roost Area	Total	Grid Ref
5.01.1992	Moine na Surdaig?	LR	368	c.384 494
11.02.1992	Moine na Surdaig?	LR	481	
8.03.1992	Moine na Surdaig?	LR	710	
26.11.1991	Moine nam Faoileann?	GG	100	c.258 682
29.11.1991	Moine nam Faoileann	GG	92	
30.11.1991	Moine nam Faoileann	GG	300	
6.12.1991	Moine nam Faoileann	GG	120	
2.12.1991	Moine nam Faoileann	GG	480	
13.12.1991	Moine nam Faoileann	GG	252	
20.12.1991	M n Faoileann or L a Gheoidh	GG/AO	265	
21.12.1991	Moine nam Faoileann	GG	24	
10.01.1992	Moine nam Faoileann?	GG	156	
17.01.1992	Moine nam Faoileann	GG	150	
24.01.1992	Moine nam Faoileann	GG	90	
26.01.1992	Moine nam Faoileann	GG	70	
4.02.1992	Moine nam Faoileann	GG	150	
27.02.1992	Moine nam Faoileann	GG	520	
1.03.1992	Moine nam Faoileann	GG	420	
9.03.1992	Moine nam Faoileann	GG	460	
11.03.1992	Moine nam Faoileann	GG	470	
11.03.1992	Moine nam Faoileann?	GG	30	
19.03.1992	Moine nam Faoileann	GG	300	
24.04.1992	Moine nam Faoileann	GG	173	
30.04.1992	Moine nam Faoileann	GG	60	
29.03.1992	Monadh a' Choilich	KG	30	390 588
14.04.1992	Monadh a' Choilich	KG	100	
16.01.1992	Na Binneagan (KD)	KD	80	c.318 654
3.04.1992	Na Binneagan (KD)	KD	625	
30.03.1992	Na Binneagan (NG)	NG	40	c.398 593
22.01.1992	Sliabh nan Grainnseag	CO	240	217 653
20.04.1992	Sliabh nan Grainnseag	CO	100	
19.12.1991	Srath Luachrach	MR	60	397 700
23.12.1991	Srath Luachrach	MR	221	
11.01.1992	Srath Luachrach	MR	250	
9.04.1992	Srath Luachrach	MR	232	
10.04.1992	Srath Luachrach	MR	300	
12.04.1992	Srath Luachrach	MR	330	
13.04.1992	Srath Luachrach	MR	400	
3.02.1992	Storakaig	NG	100	c.415 625
12.04.1992	Tais Bheinn?	BM	100	c.363 703
6.04.1992	Tiervaagin	EK	10	381 646
11.02.1992	Uisge na Criche?	GD	70	322 528
6.03.1992	Uisge na Criche?	GD	15	
21.03.1992	Uisge na Criche	GD	140	
8.04.1992	Upper Esknish Pool (EK34)	EK	390	375 641

Table 3.4.3.1c Roost-sites used by >100 White-fronted Geese, Islay 1980-84 (Stroud 1984) and 1991-92 - roost counts and interpolated estimates.

Roost-site[1]	1981-84 Stroud (1984)	1991-92 max. observed count[2]	1991-92 interpolated estimate[2]
Allt an Leacaich	-	200	200
Ballinaby Pool	-	*170*	*170*
Duich Moss	600+	**608**	**1322**
Feolin Bog, Jura	-	**530**	**530**
FEUR LOCHAIN	300+	**370**	**520**
Glac na Criche	*150*	*25*	*25*
Gleann Maraiche	-	**400+**	**400+**
GLEN DROLSAY AREA	+	**1000**	**1100**
Goirtean an Uruisge area	-	207	207
Gruinart Flats & Bog	-	150	150
LAGGAN BOG/*L na Nigh'dchd*	?	**330**	**505**
Loch Finlaggan	*400*	*280*	*280*
Loch Gorm North	*800*	*122*	*122*
LOCH GORM WEST	-	**680**	**680**
Loch Treunaidh Area	50+	138	168
Loch a' Bhogaidh	*200+(?)*	*35*	*35*
Loch a Chnuic Bhric Bog	-	120+	120+
Loch a' Geoidh (AO)	*0*	***346***	***346***
Loch Leathan /M nan Caorach	+	-	280?
Loch Kinnabus (NR 300 420)	?	*0*	*0*
Loch a' Mhuilinn-ghaoithe	-	*298*	*298*
Loch an Raoin	100+	130	190
LOSSIT AREA	-	**310**	**310**
NORTH OA Total	-	**600**	**1200**
(Maol Bhuidhe)	-	***600***	***600***
(Maol Ghrasdail)	-	*130+*	*130+*
(Luig Rhada)	-	***350***	***350***
Lyrabus Bog	-	194	194
Machrie Peat Cuttings	-	**370**	**370**
MAOL CHUIRN-A-MHEALL	-	**440**	**690**
Maol a' Chatadail	-	156	156
Moine na Surdaig	-	**710**	**710+**
MOINE NAM FAOILEANN	200+	**520**	**580**
Monadh a' Choilich	-	100	100
NA BINNEAGAN (KD)/L Sibhinn	300	**675**	**675**
Srath Luachrach	-	**400**	**400**
TAIS BHEINN AREA	-	250	**339**
Uisge na Criche	-	140	140
Upper Esknish Pool	-	***390***	***390***
TOTAL		9728	12516

Notes:
1. Roost-sites in capitals represent totals for roost complexes Sites in italics are thought to be satellite roosts or pre-roost bathing sites, and are not included in the calculation of totals.
2. Figures in **bold** represent potential Ramsar sites.

Fig 3.4.3.1a

KEY To GREENLAND WHITE FRONTED GOOSE ROOST MAP.

- Loch Gorr — Roost site and name + max count if < 100
- FEUR LOCHAIN — several roost sites within a major roost complex
- 250 — roost of > 100 birds, + max count.
- Feeding flock. roost flight path & max number of birds observed
- Unconfirmed flight path
- Flight path to alternative roost sites
- Unconfirmed roost area
- (?) Unconfirmed roost site
- Sites thought to be pre-roost bathing sites only.
- Potential roost sites - checked but no evidence of roosting birds.
- Small roost site
- Roost catchment areas.
- Presumed roost catchment

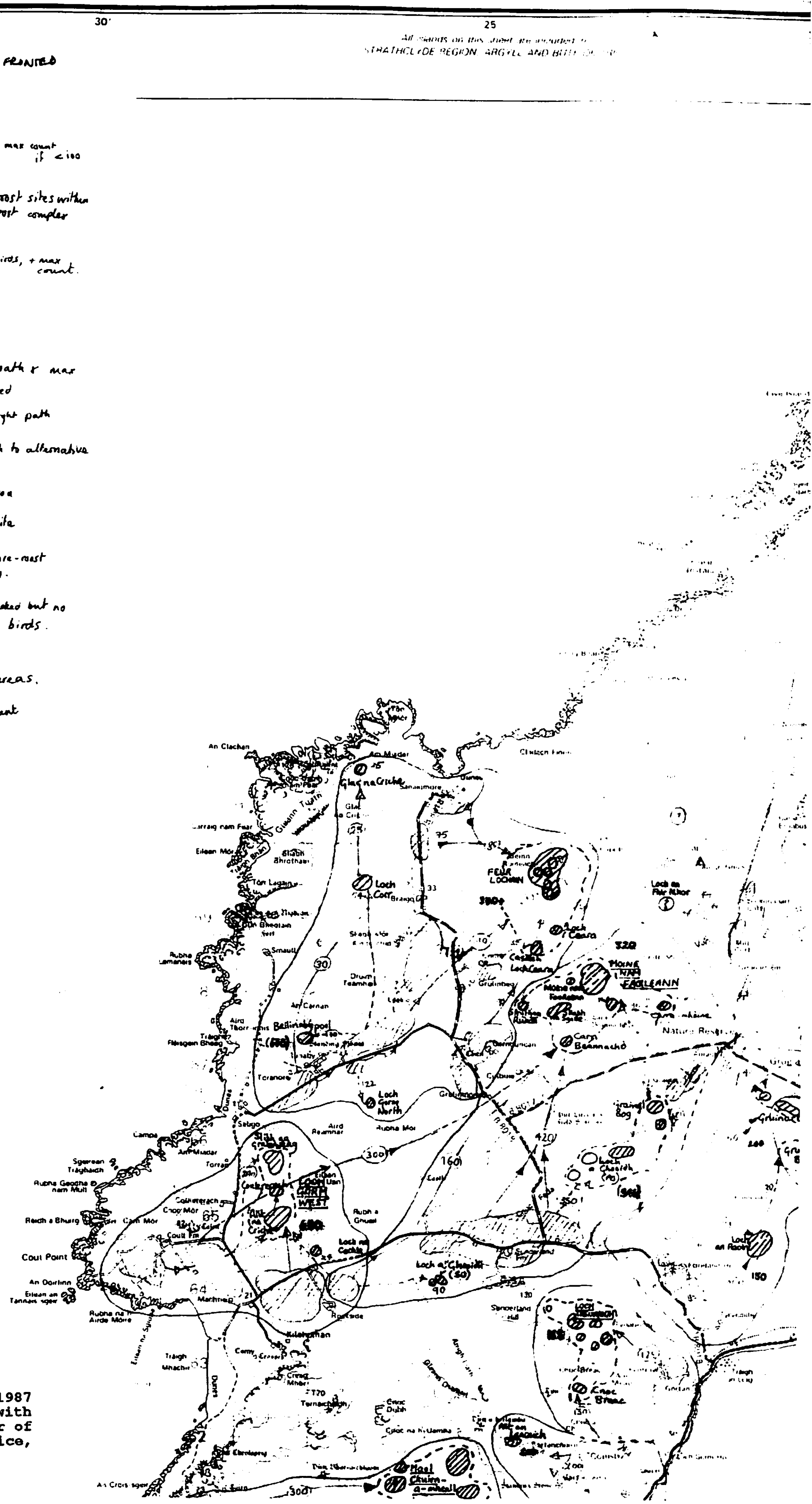

Fig 3.4.3.1a (cont)

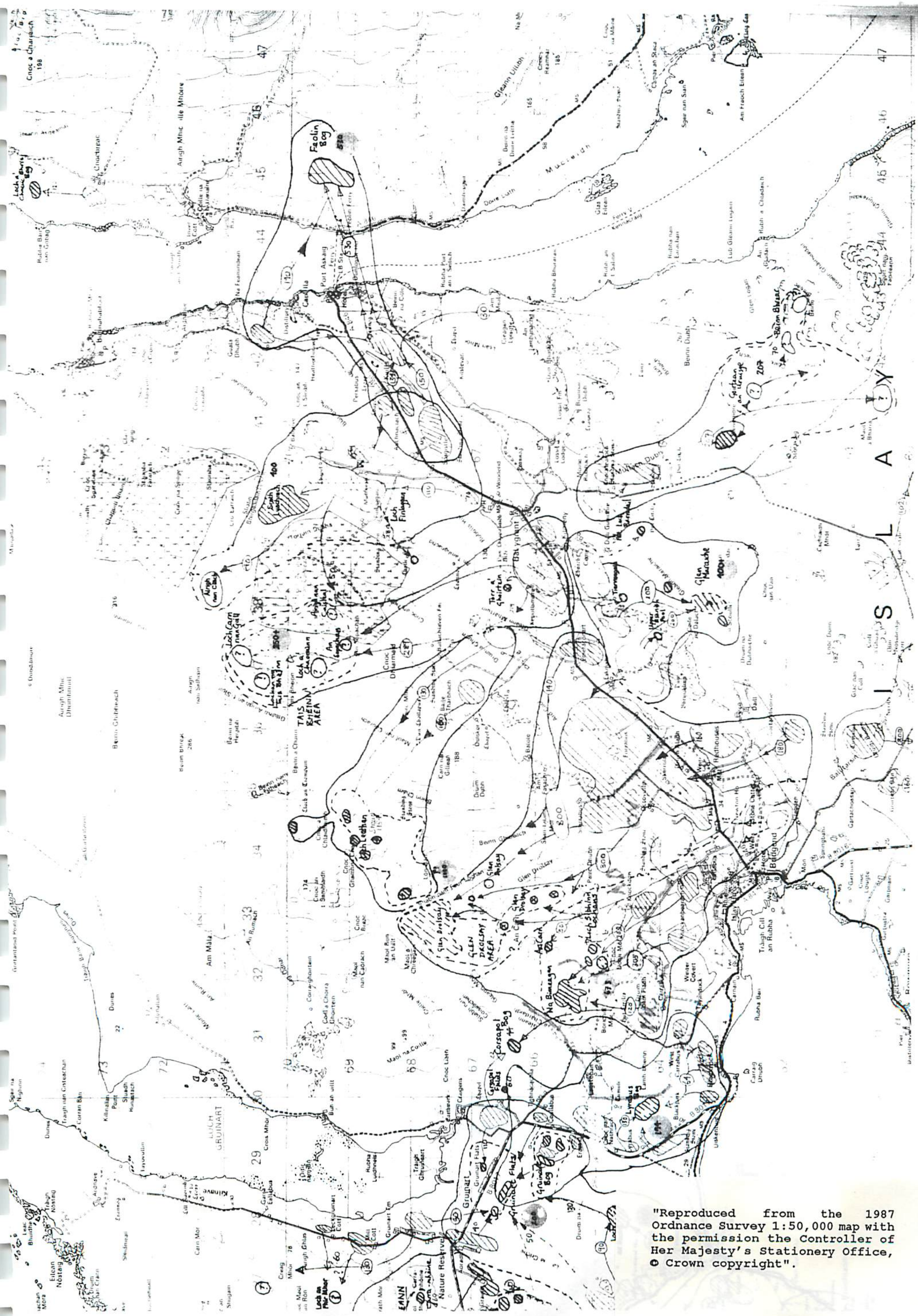

Fig 3.4.3.1a (cont)

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Fig 3.4.3.1a (cont)

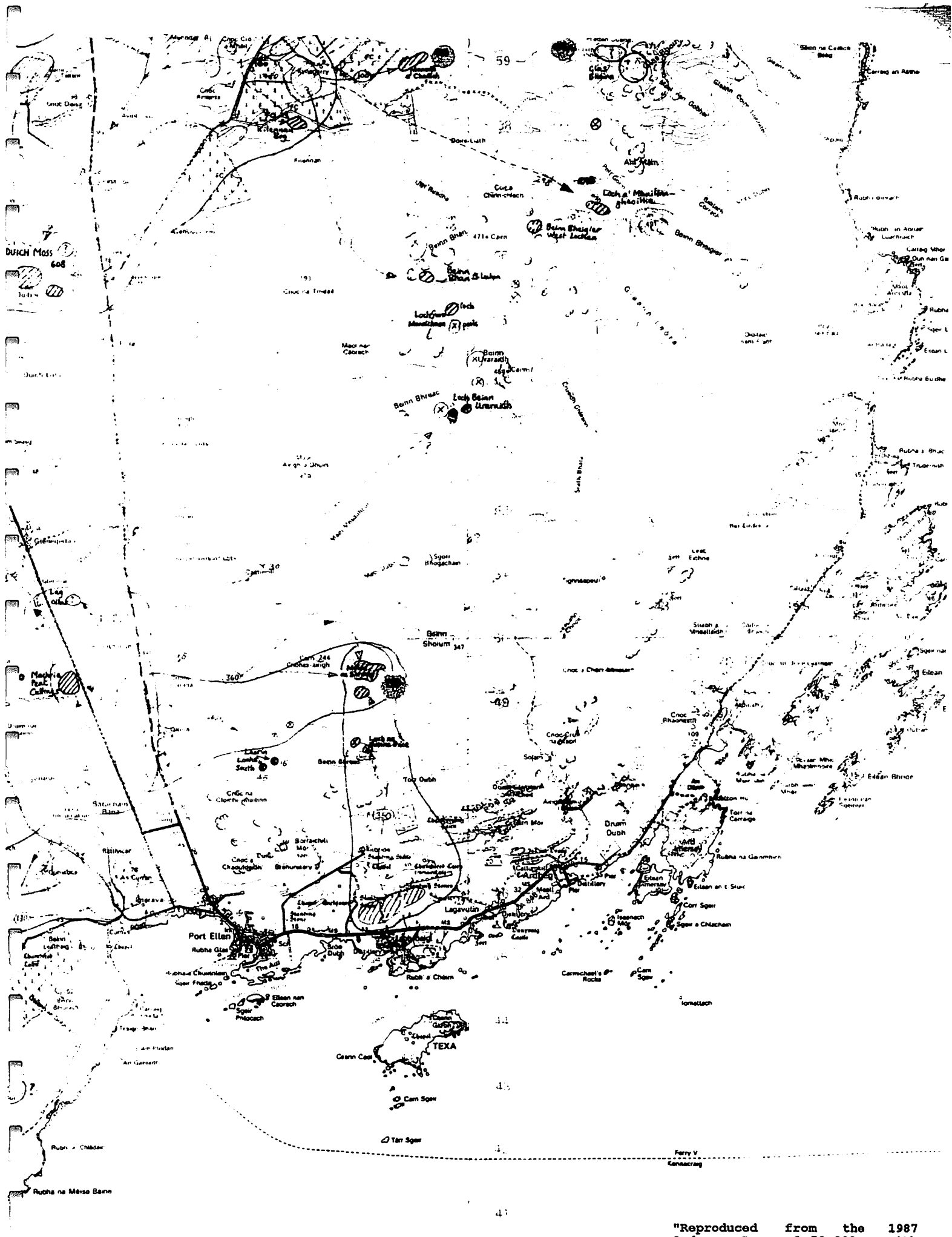
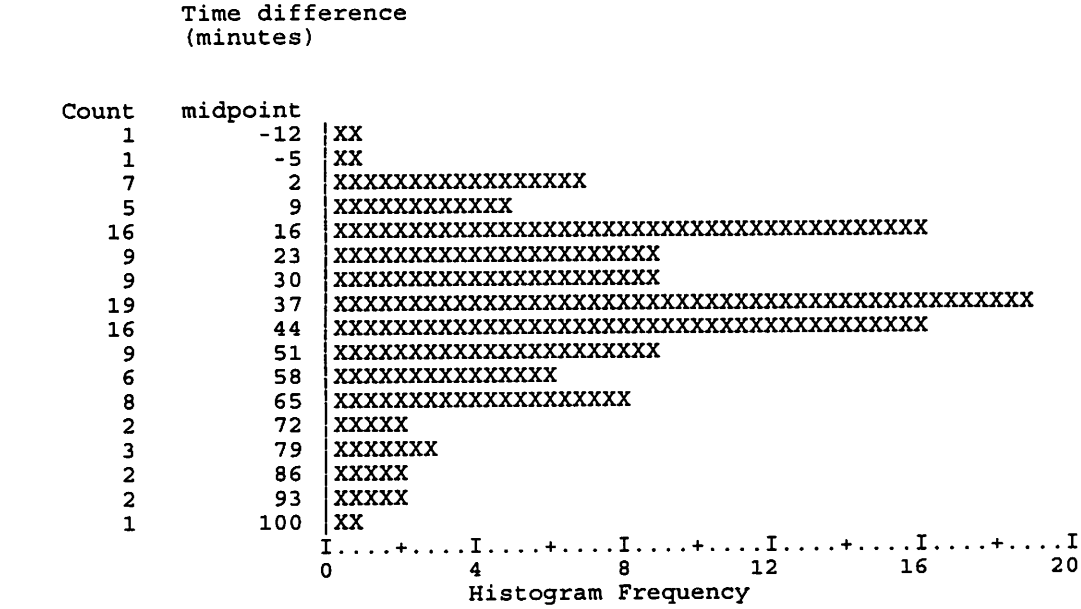


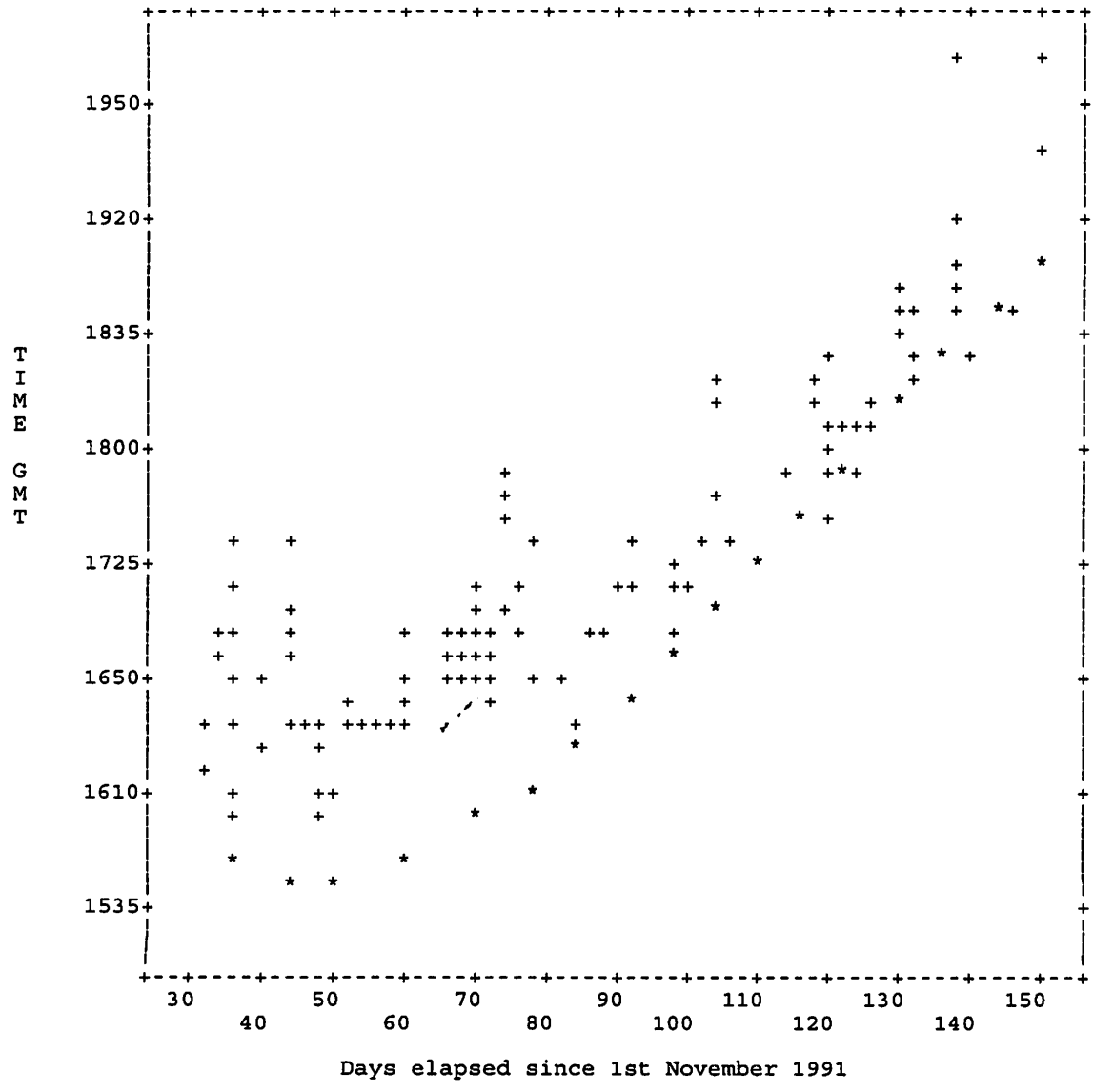
Fig 3.4.3.1a (cont)

Figure 3.4.3.2a. Frequency distribution of time difference between sunset and roost-flight departures of White-fronted Geese, Islay 1991-92.



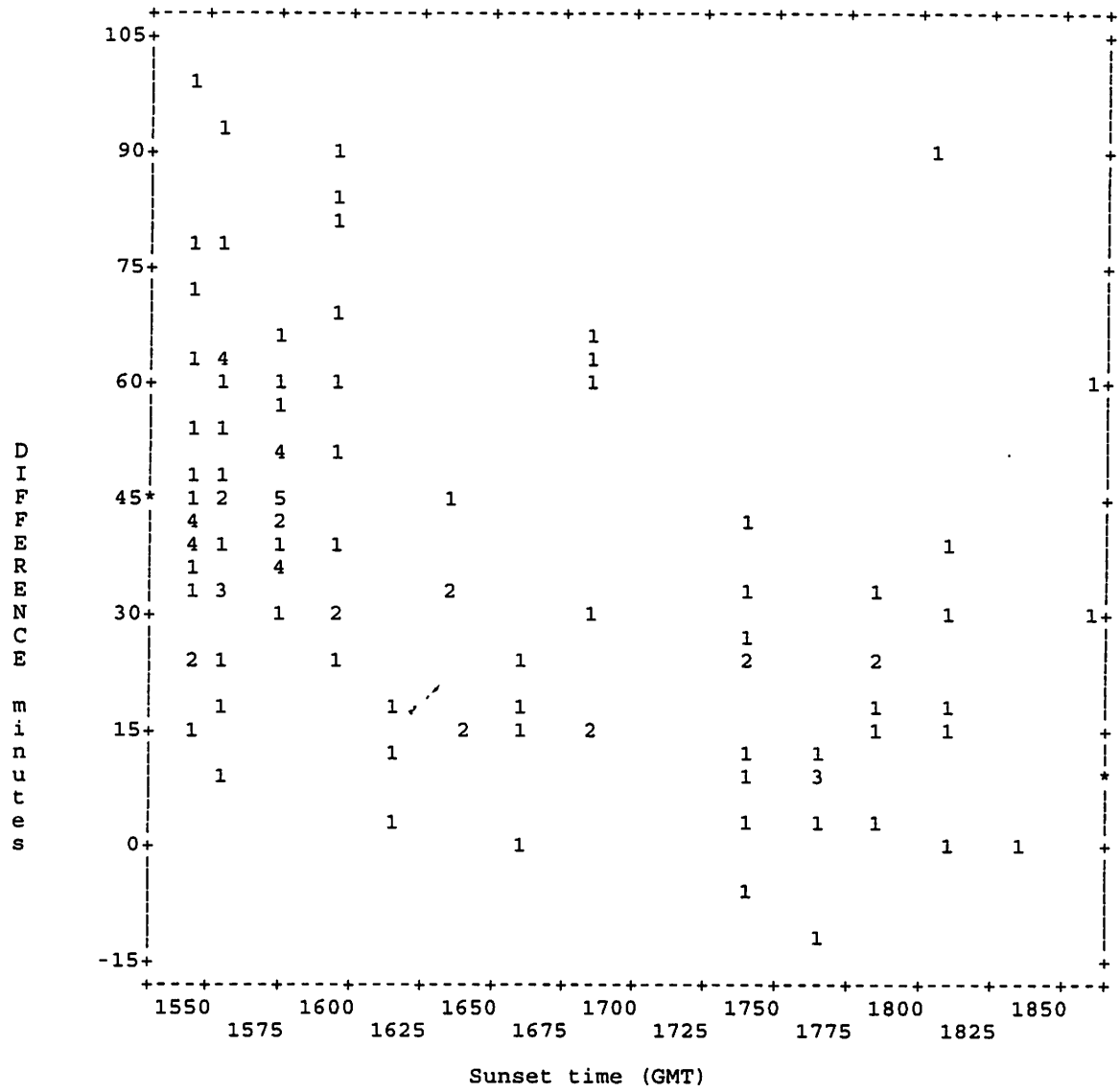
Mean	37.48	Std Err	2.12	Std Dev	22.87
Median	37.00				
Range	112.00	Minimum	-12.00	Maximum	100.000

Figure 3.4.3.2b. Roost-flight times of White-fronted Geese in relation to sunset times, Islay, December 1991-March 1992.



KEY: + Time of roost-flight departures
* Sunset time

Figure 3.4.3.2c. Regression analysis of a) time difference between White-fronted Goose roost-flight departure and sunset on b) sunset time.



Regression statistics of sunset-departure time difference on sunset time.

Correlation -.46635 R Squared .21748 S.E. of Est 20.47618 Sig. .0000
Intercept(S.E.) 223.32148(33.08867) Slope(S.E.) -.11247(.01998)
n = 115.

KEY: Numbers represent number of cases