

***The Royal Air Force
Ornithological Society***



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Edited by Ken Earnshaw

BRIEF DETAILS OF THE SOCIETY

The Royal Air Force Ornithological Society was formed in October, 1965, primarily to fill the need within the Service for an organisation wherein those interested in the study of birdlife could communicate and co-operate with each other, and publish the results of their activities.

The objects of the Society are:-

1. To bring together, both at home and abroad, members of the RAF, their dependants, and ex-serving members interested in birdlife.
2. To arrange for the circulation of members' current addresses, information on local ornithological societies, and a list of literature required for given areas.
3. To publish periodical reports and articles on the field activities of members.
4. To promote systematic observation at more isolated localities at home and abroad, and to assist in local ringing schemes and other field enquiries.
5. To stimulate interest in the study and protection of birds.
6. To build up a postal reference library.

Apart from individual studies and research, work on such aspects of ornithology as the Bird Strike problem particularly suited to RAF ornithologists and of paramount importance in Airfield safety, is actively encouraged. Regular expeditions are organised by the Society.

Full membership is open to all serving and ex-serving members of the Royal Air Force and their dependants and persons serving with or employed by the Royal Air Force; annual subscription £3 · 00.

Associate membership (without voting rights) may be offered to anyone interested in the work of the Society at an annual subscription of £3 · 00.

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EDITORIAL NOTE:

It is the policy of the Journal to give the fullest freedom to contributors to express their opinions. Only by doing this can the Society carry out the terms of its charter. The views expressed in this Journal therefore are those of the authors alone, and do not necessarily represent the views of the Editor.

THE RAFOS EXPEDITION TO BERNERAY AND MINGULAY
10 JUNE to 6 JULY 1985

General Report

N.A. Smith
B.R. Withers
edited by K.W. Earnshaw

RAIOS mounted an expedition to Berneray and Mingulay, Western Isles, Scotland, during June and July 1985. Team A were on Berneray from the 11th to the 21st June; Team B were on Mingulay from the 26th June to the 5th July. This expedition was the second such, the first being in 1979.

The aim of the expedition was to update the findings of the 1979 Expedition by conducting:

- a. seabird, landbird and habitat censuses;
- b. a ringing programme;
- c. a nest record scheme;
- d. mammal studies;
- e. specimen collecting;
- f. photography.

The initial planning was carried out by Wg Cdr D. Hollin and the detailed planning by the two team leaders. Approval was gained to mount the expedition under the terms of RAF GAI 2059. A successful application was made for financial assistance from the Hawker Siddeley RAF 50th Anniversary Awards Fund.

Oban was chosen as the forward assembly point for personnel and equipment, with the majority of equipment and all composite rations initially collected and securely packed at RAF Carlisle. The teams and equipment travelled from Oban to Castlebay, Isle of Barra, by scheduled ferry, a journey of approximately nine hours. Both teams reported uneventful crossings enlivened by views of, among others, Golden Eagles, Peregrine, Manx Shearwaters and Storm Petrels. In addition, Team A recorded Porpoises, Pilot Whales and a Killer Whale. The teams camped overnight at Castlebay prior to travelling to their appointed islands by chartered fishing boat.

The 12 members of Team A departed Castlebay for Berneray on the 11th June accompanied by Mr J. Crellin, owner of the southwest part of Berneray. Some of the team travelled in Mr D. Maclean's boat, whilst the remainder travelled on a survey vessel, the use of which had been negotiated by Mr Crellin. On arrival at Berneray, three hours were needed to get the team and equipment ashore via inflatable craft. Camp was established in the vicinity of a derelict croft which was temporarily re-roofed to provide a kitchen and call-over area. Team members were accommodated in small individual tents.

The first full day on the island was largely given over to a tour of the island, under the guidance of Brian Etheridge, to identify the eight main seabird colonies together with suitable count points. It was decided that the two ringers would work together and that two teams of five would undertake the seabird counts. During the remaining nine days over 500 counts were made at the eight sites with little time being lost due to bad weather. In addition, a count was made from the sea on the 18th June in order to cover those cliff faces which could not be seen from on-shore. This allowed a better estimate of the island's seabird population to be made.

A complete survey of the island was also made by both teams in order to obtain an estimate of the numbers of breeding landbirds. Nest record cards were completed for all nests found and were submitted to the BTO. This intensive survey was complemented by the work of the ringers who were assisted each day by a trainee ringer from the count teams.

Non-ornithological projects were also undertaken and added some variety in addition to the main tasks. A botanical survey was carried out by Nick Smith and Dominic Counsell. A record of plant species was made and the island was delineated into various plant communities in accordance with guidelines supplied by Dr Nigel Buxton. The collecting kit supplied by the Royal Museum of Scotland was used by Tony Marter to obtain specimens of beetles, spiders etc. Ian Jenner and Steve Bain made a collection of Goby and Guppy fish whilst Paul Triggs used Longworth traps to catch mice etc.

During the teams' stay on the island, generally very good weather was experienced, only one afternoon's activities being affected by mist. All team members were subjected to the effects of wind and sun but suncream proved an adequate defence. All of the tents stood up well to the wind conditions, their low profile being better suited to the exposed position than the eight-man tents previously used. The worst weather occurred on the 21st June during the return journey to Castlebay. In a northerly force 6 wind and 15-20ft. waves, the journey took two-and-a-half hours instead of the expected one-and-a-half hours.

At Castlebay, essential equipment for Team B was placed in the harbour store. After an overnight stay, the team departed for Oban on the morning ferry and dispersed on arrival.

Team B met all of its original objectives as well as achieving a few more. Fifty species of birds were recorded of which 23 were proven to breed. Estimated population figures were obtained for six seabird species together with a detailed survey of their main colonies and movements. The ringers supplemented these ornithological findings in processing 584 birds of 16 species. Plant community maps were compiled and forwarded to the NCC. A total of 92 plant species were identified, a significant increase over the 1979 results.

The deployment of Team B followed much the same pattern except that the survey vessel was not available. After departure from Oban on the 24th June and overnight camp at Castlebay, the team was delayed

in leaving for Mingulay for a further 24 hours by high winds. A smooth passage ensued on the 26th June, landing being made on the low rocks in Mingulay Bay. Camp was established in the ruined school house and paddock. Team members used individual tents for accommodation while a 12ft x 12ft tent was used as a common room and another, inside the ruined part of the house, acted as a kitchen. This satisfactory arrangement was interrupted on the 1st July by the arrival of a party of shepherds who wished to use the paddock for sheep shearing, staying until the 3rd July.

All fieldwork was carried out by groups of at least three team members in four main activities: seabird counts, landbird counts, ringing and non-ornithological tasks. It had been hoped that the seabird counts could be done in a manner allowing direct comparisons to be made with the results of the 1979 expedition. Unfortunately it proved impossible to locate some of the vantage points used in 1979 with sufficient accuracy to allow truly comparable counts to be made, particularly on the complex western cliffs. This factor and a shortage of available time led the team to concentrate its efforts on establishing six sample plots which were fully documented and photographed to provide a lasting basis for population monitoring.

The team's ringers were in action every day, activities which encompassed the whole island and as many species as possible. Only one night was really suitable for petrel ringing. However, the two sets of mist nets deployed on that occasion gave excellent results.

All team members deployed around the island were issued with 1:5000 scale maps in order that territorial behaviour of the commoner species could be plotted. These maps, together with general observations, were used to build up a picture of the common landbird populations of the island after the manner of the BTO Common Bird Census and also to plot territories and nest sites of some of the rarer species.

The non-ornithological tasks were many and varied. The most important of these was Dr Buxton's flora survey which was completed during the first two full days on the island. The other tasks were fitted in when ornithological work allowed and included trapping small mammals, collecting insects and taking censuses of butterflies and rabbits. Dr Buxton's short stay on the island was much appreciated by the team who benefitted from his experience on a wide range of subjects.

Weather conditions were generally good with continuous moderate rain on only two days. However, mist and drizzle, particularly on the western cliffs in the mornings, greatly reduced the time available for seabird counts. The afternoons were generally clearer and brighter. The night of the 3rd/4th July was very dark due to dense low stratus cloud giving excellent conditions for petrel ringing.

The team departed Mingulay on 5th July by fishing boat. After some difficulty of loading due to the low tide, the opportunity was taken of a circumnavigation of the island to further assess seabird numbers

before returning to Castlebay. An overnight stay on Barra was followed by a pleasant journey back to Oban and dispersal on arrival.

Team B achieved its aim of carrying out a comprehensive survey of the flora and fauna of Mingulay with the main emphasis on ornithological projects. Fifty species of birds were recorded on the island with breeding proven for 27 of these and suspected, but not proven, for a further six species. The ringers processed 384 birds of 16 species. A full survey of the flora was conducted, 116 plant species identified and 20 species of mosses collected.

During the visits to both islands, radio checks were carried out daily by D. Northgraves, using an HF link to STCICS to ensure availability in case of emergency. Contact was also maintained with Castlebay via a survey company representative on Berneray.

Below will be found a combined Annotated Systematic List of the birds of Berneray and Mingulay, reports on the seabird colony censuses, ringing activities, floral surveys including plant systematic lists for each island and supplementary notes.

The work of the 1979 expedition gave an excellent basis for both teams' efforts in 1985. It is to be hoped that the following sections of this report will, in turn, act as a stimulus for further work on Berneray and Mingulay. It was considered that the sizes of the teams deployed were the absolute minimum necessary to carry out survey and census work on islands of this size. On Mingulay in particular, the uncertain weather, the complex nature of the cliffs and the lack of manpower caused the number of counts of breeding seabirds to be less than ideal.

The overall expedition successfully achieved its aim. In addition it provided training for all participants in working under field conditions. The size of each team was smaller than those of the 1979 expedition. However all tasks were completed by the imposition of a rigorous work schedule. The two islands are ideally suited to adventurous training due to the rugged nature of the terrain and to the highly uncertain climate, even during the summer months. Long hours of survey and census work in such conditions draws heavily on the self-reliance and stamina of team members, whilst making a worthwhile contribution to the scientific knowledge of the natural history of these islands. It was found that the arduous nature of the tasks undertaken brought out the best in all team members and morale was high throughout.

It is recommended that a further expedition be mounted to Berneray and Mingulay after a suitable interval, e.g. five years, to build on the results accumulated so far.

COMPOSITION OF TEAMS

TEAM A - BERNERAY

Flt Lt N.A. Smith, RAF Stafford	Leader, Recorder
Sqn Ldr A.D. Marter, MOD London	
F/Sgt J.C. Jenner, RAF Kinloss	
Ch/tech. B. Etheridge, RAF Kinloss	Ringling Coordinator
Cpl P. Triggs, RAF Valley	
SAC S. Bain, RAF Lyneham	
WO2 C.E.A. Townley, Bates Military Team	
Mr W. Corris, Bicester	Ringer
Mr R. Raynor	
Mr D.C.R. Counsell	
J/I D.P. Northgraves, RAF Brize Norton	

TEAM B - MINGULAY

Flt Lt B.R. Withers, RAF Wyton	Leader
Flt Lt S.J. Lumby, RAF Henlow	
F/Sgt J. Parker, RAF Halton	
F/Sgt J.E. Veal, RAF St Athan	
Sgt W.G. Taylor, RAF St Athan	Ringer
Sgt F.A. Roberts, RAF Swanton Morley	Recorder
J/I J.P. Curtis, RAF Brize Norton	
J/I M.D. Read, RAF Wattisham	
SAC J. Clarke, RAF Brize Norton	
SAC R.L. Bayford, RAF Gutersloh	
SAC M.W. Roberts, RAF Brawdy	
Cpt A.J. Crease, Royal Scots Dragoon Guards	
Maj. P.M. Bain	
Mr M. Crease	
Dr N.E. Buxton, NCC Stornoway	
J/I D.P. Northgraves, RAF Brize Norton	

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Ministry of Defence (RAF)

DDPS7
DDTPEd

Royal Air Force Support Command

Command Accountant
CPEdO

Royal Air Force Strike Command

CPEdO
HQ 1 GP - for coordination of communications requirements

The Officers Commanding:

The parent stations of members of the Expedition.
RAF Stafford - for the loan and packing of equipment.
RAF Carlisle - for the transportation of equipment.
RAF Kinloss - for the loan of equipment.
RAF Brize Norton - OC TCW for the loan of radio equipment.
81 SU - for daily radio checks.

The Army Officers Commanding the parent units of the members of the Expedition

WO Halliday, Royal Scots Dragoon Guards - for help with equipment

Mr Lachlan MacLean of Craigston - for permission to visit and camp on the islands.

Guardline Surveys Ltd. - for assistance with transport and communications.

REFERENCES

- CLARK, W.A., 1938. The flora of the islands of Mingulay and Berneray. *Proceedings of the University of Durham Philosophical Society* 10: 56-70.
- LLOYD, C.S., 1974. Movement and survival rates of British Razorbills. *Bird Study* 21: 102-116.
- MACGREGOR, A.A., 1971. *Islands by the Score*. Michael Joseph.
- MEAD, C.J., 1974. Results of ringing auks in Britain and Ireland. *Bird Study* 21: 45-86.
- PENDLEBURY, B.A., 1981. Report of the 1979 RAFOS Outer Hebrides Expedition. London.
- SERGEANT, D.E. and WHIDBOURNE, R.F., 1950. Birds on Mingulay in the summer of 1949. *Scottish Naturalist* 63: 18-25.
- TAYLOR, K., 1986. Crossbill Postscript. *BTO News* 142: 9.
- UNDERWOOD, L.A. and STOWE, T.J., 1984. Massive wreck of seabirds in eastern Britain in 1983. *Bird Study* 31: 79-88.
- HOWARD, R. and MOORE, A., 1980. A complete check list of the Birds of the World. O.U.P.

ANNOTATED SYSTEMATIC BIRD LIST

Bird species seen on or around Berneray and Mingulay during the period 11th June to 5th July 1985.

Fulmar

Fulmarus glacialis

Found nesting on all suitable cliffs. On Mingulay one pair noted using an old Raven Corvus corax nest, at Ard nan Capuill (NL 751850).

Manx Shearwater

Puffinus puffinus

Sighted off the east coast of both islands on four occasions. Twenty-four and 29 birds off Nisam Point (NL 574798) in strong winds on 17th and 20th June respectively. All were flying south. One on 27th, and five on 28th June off Mingulay. No evidence was obtained of birds coming ashore at night. Found to be much scarcer than in 1979, when daily sightings of up to 50 were recorded.

British Storm Petrel

Hydrobates pelagicus

Despite constant searching of all suitable habitat on both islands, no concrete evidence of breeding was found. Using mist nets, and tape lures, at night on the coasts of both islands facing the sounds of Berneray, a total of 114 birds were netted and ringed; references to pages 43, 48

Leach's Petrel

Oceanodroma leucorhoa

Three birds were netted on Berneray on two nights. A further sighting of a single bird was made off the east coast of Mingulay during the return to Barra on 21st June. See ringing report page 43.

Northern Gannet

Morus bassanus

Seen daily off all coasts where singles or small parties noted flying north and south. A regular flyway was noted approximately 1km off Skate Point (NL 555804) oriented NNE-SSW. The largest party seen was 12 off the north coast of Mingulay on 1st July. Similar records in 1949 and 1979.

Shag

Phalacrocorax aristotelis

A common breeding species with nests found on all suitable cliffs containing eggs to fledged young. On Berneray a colony of 107 occupied nests was located under a large cave overhang at Sloc Greiligeo and a roost count of 350 birds was made at Sgeir Mhor (NL 576797) an alternative roost site was found to the west of Sloc an Ime (NL 563794). On Mingulay the largest party seen was 180 birds in Mingulay Bay on 29 June. See page 22, 39 and Ringing Reports.

Grey Heron

Ardea cinerea

A single bird seen in Berneray Sound (NL 560810) on 20th June and one seen near Skipisdale, Mingulay on 29 June. This species was not recorded in 1979.

Eider

Somateria mollissima

Observed daily. On Berneray at least 15 sitting females were located along the north and southeast coasts; many nests being found within Herring or Black-backed Gull colonies. Between 10 and 20 pairs were assessed to be breeding on Mingulay, being found mainly on the east and south coasts; this appears to be a slight increase since 1979. It was found that family parties never contained more than three juveniles and, in flocks, adults always outnumbered young. This would indicate low productivity.

Common Buzzard

Buteo buteo

On Berneray two pairs were breeding. One nest on a southwest facing sea cliff below the burial ground (NL 552801) contained three young. The second, 0.5km away, in Sloc Veacligeo (NL 557797) contained a single pullus.

Up to six birds were recorded daily flying over all parts of Mingulay but no evidence of breeding could be obtained. Two birds were noted regularly at the south end of the island which could indicate the use of Mingulay as a feeding area for birds nesting on Berneray. Numbers appear similar to 1979, but the proof of breeding on Mingulay in Sloc Chremisgeo (NL 569821) obtained in 1980 could not be repeated.

Peregrine Falcon

Falco peregrinus

A sub-adult male and an adult female were seen on three days, usually flying over the central and northern slopes of Berneray, but were not thought to be breeding on the island. On Mingulay breeding was strongly suspected by the daily presence of a pair of adults near the west coast, but was not confirmed.

Oystercatcher

Haematopus ostralegus

On Berneray a total of 24 breeding pairs were counted with most nest sites on the northern rocky shoreline, most nests contained eggs, but one contained three pulli.

Small numbers were recorded breeding on Mingulay mainly on the south and east coasts. On 29th June a total of 47 birds were counted, including a flock of C20 which roosted daily in Mingulay Bay. This is a similar situation to that found in 1949 and 1979.

Lapwing

Vanellus vanellus

A single bird was seen on Berneray on 16th June near the burial ground, but not seen subsequently. On Mingulay four territorial pairs were seen daily around Hecla Point and Sloc Chremisgeo but no nests or young were found. Breeding was proven on both islands in 1979.

Golden Plover

Pluvialis apricaria

A single bird was present on Mingulay at Hecla Point from 27th to 30 June.

Ringed Plover

Charadrius hiaticula

Recorded only from Mingulay where four pairs were seen daily. Three nests were found; one at Mingulay Bay and two at Bay Sletta (NL 555842). This is a slight increase on 1979.

Whimbrel

Numenius phaeopus

One seen and heard flying east over the centre of Berneray on 20th June. Another single was seen at Guarsay Mor (NL 549843) on Mingulay on 27th June.

Curlew

Numenius arquata

A single bird flying north over the jetty on Berneray on 11th June. Up to two birds seen daily along the south and east coast of Mingulay. Not suspected to be breeding.

Redshank

Tringa totanus

Singles were recorded only on Berneray; one being heard on the night of 16th/17th June and one being seen on 19th June.

Turnstone

Arenaria interpres

Recorded only from Berneray. A single bird on the north coast on 13th June and a flock of nine at Macleans Point (NL 567804) on 17th June.

Common Snipe

Gallinago gallinago

A breeding population of seven pairs estimated on Berneray and a breeding estimate of C30 pairs was found on Mingulay; the greatest density being found on the east of this island. There appears to be a substantial increase on Mingulay since 1979.

Great Skua

Catharacta skua

On Berneray one pair present and nesting on Aird Cholla (NL 558796), the nest contained one egg which was being incubated by the female alone. She was much darker than the male and had an orange-brown rump. This is the first record of confirmed breeding on Berneray.

On Mingulay a total of five pairs were identified. Three nests were found in the southwest where the three pulli were ringed. Only one pair on Mingulay was recorded in 1979 and 1980.

Arctic skua

Stercorarius parasiticus

A light phase bird seen moving south off Berneray near Nisam Point on 20th June. This species was not recorded in 1979.

Common Gull

Larus canus

Two seen flying through the Sound of Berneray on 14th June and a further singleton in the same area on 17th June. On Mingulay up to 28 seen daily along the east coast, but only two nests were found and two pulli ringed.

Herring Gull

Larus argentatus

The Berneray breeding population was approximately 105 pairs, the main colonies being 50 pairs at Cuiveg Point, 30 pairs at Nisam Point, 14 pairs at Keromadal and five pairs on Aird Cholla. Isolated nests were found at Seac a' Langich (NL 262807), Sloc an Ime (NL 562793), Sloc Cuigeo (NL 551806) and Sloc na Beiste (NL 547802).

The breeding population of Mingulay totalled C300 pairs which were found on all coasts, islets and stacks in mixed colonies with Lesser Black-backed Gulls. Fifty-nine pulli were ringed where identification could be guaranteed. The location of the largest colony, found at Bay Sletta, was different from that found in 1979 which was different from that found in 1949, indicating considerable local movement.

Lesser Black-backed Gull

Larus fuscus

On Berneray a total of 94 breeding pairs were counted with colonies of 45 pairs at Keromadal, 31 pairs at Curveg Point, 12 pairs at Aird Cholla and six pairs at Nisam Point.

On Mingulay small colonies were found on all coasts, islets and stacks. The total breeding pairs was estimated at C150.

Great Black-backed Gull

Larus marinus

A total of 20 breeding pairs were recorded on Berneray at the following locations; 12 pairs on Aird Cholla, four pairs at Nisam Point, two pairs at Rubh'an t-sith (NL 572803), one pair at Cuiveg Point and one pair at Sloc na Sealbhaig (NL 553799).

On Mingulay the estimate was C150 breeding pairs, colonies being found on all coasts, especially on islets and stacks.

The daily roost on Mingulay Bay averaged 32 birds with a peak count of 75 on 4th July. A flock of 120 was noted at Sloc Heisegeo (NL 550819) on 3rd July. Situation similar to that found in 1979.

Black-headed Gull

Larus ridibundus

Single adult birds seen in Mingulay Bay on 26th June and 4th July.

Kittiwake

Rissa tridactyla

Found breeding on Berneray in large numbers with the main colonies on the southern cliffs, particularly to the east of the lighthouse (NL 549803) and in Sloc Veacligeo.

On Mingulay found breeding in large numbers on the western cliffs. See pages 22 and 39 for details.

Common Tern

Sterna hirundo

A small colony, estimated at four pairs, was found on Mingulay at Hecla Point. Up to ten birds seen regularly in the area. Two pulli were found away from the nest. This species was not breeding in 1979.

Arctic Tern

Sterna paradisaea

Up to four birds seen in Berneray Sound on several days but no evidence of breeding was found on the island. Two nests were found on Mingulay, one containing two chicks and one egg and the other contained one egg. Up to five birds seen daily between Mingulay Bay and Hecla Point. Numbers found similar to 1979.

Razorbill

Alca torda

Breeding in large numbers on both islands, on suitable cliffs especially in the west and southwest. Full details on pages 22, 40.

Common Guillemot

Urea aalge

Similar situation to Razorbill with large numbers breeding on all suitable ledges on both islands, with the main colonies found on the western and southwest cliffs.

See details on pages 23 and 40.

Black Guillemot

Cephus grylle

On Berneray four pairs were in residence at Leac a'Langick and another pair possibly at Nisam Point. Nests were found well hidden in small gullies.

On Mingulay up to five birds seen daily along the southeast coasts and three birds seen in Bay Sletta on 1st July. Breeding strongly suspected but could not be proven. Numbers similar to 1979 when breeding was proven.

Atlantic Puffin

Fratercula arctica

Breeding in large numbers on steep slopes on both islands. Numbers very difficult to quantify due to variable attendance patterns, although colonies seemed to be most active in the mornings when birds returned with a catch to exchange duties in the burrows.

On Mingulay comparatively few birds seen during cliff counts except for 62 on Dun Mingulay (NL 546820) on 3rd July, 130 birds off Sloc Heisegeo on the 4th. The large colony at Rubh'an Droma (NL 570833) was surveyed on 2nd July, when 508 occupied burrows were counted. See Berneray count details on page 21.

Feral Rock Dove

Columba livia

Seen only once on Berneray when three birds present at Sloc an Ime on 19th June. On Mingulay birds seen daily in small numbers with a maximum of six at Upper Skipisdale (NL 558818) on 1st July. Breeding strongly suspected but not positively proven. Situation similar to 1949 and 1979.

Collared Dove

Streptopelia decaocto

Individuals seen on several days on Berneray with a maximum of three on 20th June. Two records from Mingulay. Single birds seen at Aneir on 30th June and 2nd July.

European Robin

Erithacus rubecula

One record only from Berneray; a single bird seen at the lighthouse on 12th June. This species was not recorded in 1979.

Whinchat

Saxicola rubetra

A single bird was caught in a mist net being set up to catch Storm Petrels at 22.15hrs on 16th June on Berneray. This species was not recorded in 1979.

Common Wheatear

Oenanthe oenanthe

Found to be fairly common breeding species on both islands. An estimated total of 50 pairs on Berneray and 73 pairs on Mingulay with the greatest density being found on the south and east of the latter island. Numbers were similar to the 1979 figures on Berneray. A slight increase on Mingulay's. See ringing totals, pages 45 and 49.

Blackbird

Turdus merula

A single bird was seen flying over the ruined village on Mingulay on 27th June. In 1979 both sexes were seen daily.

Song Thrush

Turdus philomelos

On Berneray two pairs were found breeding. One nest in the cottage above the camp site (NL 565803), contained four eggs on 13th June; the recently fledged juveniles of an earlier brood were close by. The second nest was situated under a rock above Sloc Cuigeo (NL 551806).

On Mingulay the species was seen and heard daily around the ruined village and at Aneir. A maximum of seven birds was recorded on 27th June. Two pairs strongly suspected of breeding in the eastern valley. A third pair possibly breeding southwest of Aneir. Recorded slightly less numerous than in 1979 on both islands.

Willow Warbler

Phylloscopus trochilus

On Berneray a single bird, probably the same individual was seen at the lighthouse on 14th, 15th and 18th June. A single bird seen and a snatch of song heard in the ruined village on Mingulay on 3rd July.

This species was not recorded in 1979.

Corn Bunting

Emberiza calandra

A single bird seen near Skipisdale on Mingulay on 27th June.

Twite

Acanthis flavirostris

No indication of breeding found on Berneray, where a flock of six birds seen daily. Breeding proven on Mingulay where a nest containing two eggs was found on Macphee's Hill (NL 568842). Mapping gave a total of 11 pairs widely distributed, mainly around the coastline.

European Cuckoo

Cuculus canorus

Recorded on both islands. One heard on the south side of Berneray on 19th June and singles seen on four more days. On Mingulay one heard in the ruined village (NL 565833) on 2nd July.

Common Swift

Apus apus

Three records on Berneray. Singles seen on 19th and 20th June and two birds flying east in anticyclonic conditions on 21st June. Mingulay had one sighting of a single bird over the north coast on 4th July.

Skylark

Alauda arvensis

A fairly common breeding species on both islands. Estimated at 14 pairs on Berneray, which is a decline from the 40-50 pairs recorded in 1979. On Mingulay mapping techniques indicated C33 pairs breeding, with the greatest density on the slopes of Carnan and Hecla in the south of the island. This shows an increase in numbers on Mingulay since 1949.

Swallow

Hirundo rustica

Sightings of mainly single birds seen flying over both islands. Maximum of four on Berneray on 14th June. On Mingulay singles seen in the ruined village on 30th June and 1st July and at Rubh'an Droma on 2nd July.

House Martin

Delichon urbica

Single bird seen flying east off Berneray on 20th June and a single seen in the ruined village on Mingulay on 4th July.

Pied Wagtail

Motacilla alba

A single visitor was seen at the lighthouse on Berneray on 18th June. Not recorded from this island in 1979. On Mingulay two birds were seen daily around the ruined village. A nest containing four eggs was found in the area. The presence of additional birds on the island was indicated by sightings of two juveniles on 28th June and three adults on 3rd July.

Meadow Pipit

Anthus pratensis

Berneray's breeding population was estimated at 27 pairs showing a marked decrease from the 100-150 pairs recorded in 1979. The breeding population of Mingulay indicated at C48 pairs seems to have retained the same level as that found in 1949 and 1979.

Wren

Troglodytes troglodytes

Rarely seen but often heard along the massive cliffs of the west and south coasts of Berneray. A nest containing small young was found built into the roots of an overhanging Thrift clump, Armeria maritima, at Tresivick. The breeding population was estimated at seven pairs. Similar to 1979.

On Mingulay a surprisingly small estimate of C14 pairs was arrived at by mapping; which could indicate under recording. Found to be more common in 1949 and 1979.

Red Crossbill

Loxia curvirostra

A flock of 11 Red Crossbills (or Scottish Crossbills, *L.Scotica*) in both male, female and immature plumage was first seen flying around Macphee's Hill, Mingulay, on 28th June. Subsequently, a flock of up to 17 birds was seen daily in the northern half of the island until 2nd July. The birds were usually found on tall heather and appeared to be feeding from that plant. An unusual record for a treeless island.

Two more records have come to my attention relating to Crossbills being seen in the Outer Hebrides and I quote as follows:

"Crossbills of indeterminate race or species have been recorded from all parts of the Hebrides in former times but since 1957 they have been irregular and less frequent visitors. Apart from an immature bird seen in Benbecula in April 1978, all the records are from the Stornoway Woods, North Rona and the Shiant Isles. These Isles happened to have observers during a widespread invasion of Crossbills in June and July 1972 when as many as 50 were seen on North Rona. Those occurring in the Woods, where there is adequate foot and suitable breeding habitat, were seen in January 1957, August 1962, September 1963, July 1972 and April 1975."

Peter Cunningham, Birds of the Outer Hebrides, 1983

"Finding such a woodland species on an island that possesses not a single tree was the biggest surprise of the week. All birds were of the European race (*L. c.curvirostra*) and not the heavier tilled Scottish race (*L. c.Scotica*).

"Total numbers appeared to fluctuate daily but Fianuis had the largest flock numbering 32 on 7th July. With smaller flocks at Pollan Uisge and Marcasga the days total was 51, the highest of the week.

"Flocks contained both adults and immatures and their diet was almost exclusively the seeds of Thrift.

"The birds were almost completely oblivious to man, carrying on feeding while expedition members watched and photographed them only a foot or two away.

"One almost full plumaged male was netted and ringed at Fianuis on 6th July. Due to the tameness of the species great difficulty was found in putting them to flight to enter the net, some birds even walked under it. However, with much clapping and waving of arms on the part of the humans the one bird took to the air and entered the net.

"A sad note on the species occurred when the expedition broke camp and a dead immature female was found under the leader's tent where it had obviously tried to escape the previous evening's wind and rain."

RAF Kinloss OS Expedition to North Rona, 3rd-10th July 1972

Editor

Common Starling

Sturnus vulgaris

The Berneray breeding population was estimated at 17 pairs. Numbers were swelled by juveniles from 16th June.

The breeding population of Mingulay was assessed as 10-20 pairs. Up to a maximum of 67 birds found roosting in the eastern valley on 2nd July. A small flock of 30 birds was seen at Bay Sletta on 28th June. Breeding proved in the ruined village and at Skipisdale. Eight pullus were ringed. See ringing details, pages 45 and 49.

Carrion Crow (Hooded Crow)

Corvus corone cornix

Three pairs with fledged young present on Berneray from 13th June. Seen on Mingulay daily in family parties of up to six birds. Estimate of three separate pairs bred successfully. Similar numbers to 1979.

Raven

Corvus corax

Up to four birds seen daily on Berneray, often flying across the Sound (NL 560810) to and from Mingulay. Two juveniles were flushed from within Sloc Greiligeo, indicating possible breeding.

Seen also daily on Mingulay in parties of up to six birds. One old nest found near Ard nan Capuill (NL 571850) which had been taken over by a pair of Fulmars. A further nest site suspected on the west coast giving a probable total of two pairs on the island. Similar numbers found in 1979.



TWITE

SEABIRD COLONY CENSUS - BERNERAY

During the expedition's visit the high cliffs of Berneray held substantial numbers of breeding seabirds. Fulmars, Kittiwakes, Razorbills, Guillemots and Puffins were particularly abundant and occurred continuously from Sloc Cuigeo on the northwest coast, westwards around Skate Point, thence southeastwards to Sloc an Ime. This represents a total cliff length of over 6km, much of it only visible from offshore.

Between Cuiveg Point and the eastern extremity of the island at Nissam Point there is only low broken cliff or sloping slab rock, totally unsuitable for the species mentioned above. However, most of the island's Herring and Lesser Black-backed Gulls nested along this stretch.

The north coast between Leac na'Fealla and Nisam Point is much flatter and held only a handful of nesting seabirds; a few pairs of Herring and Greater Black-backed Gulls, some Shags, Black Guillemots and a single colony of Puffins.

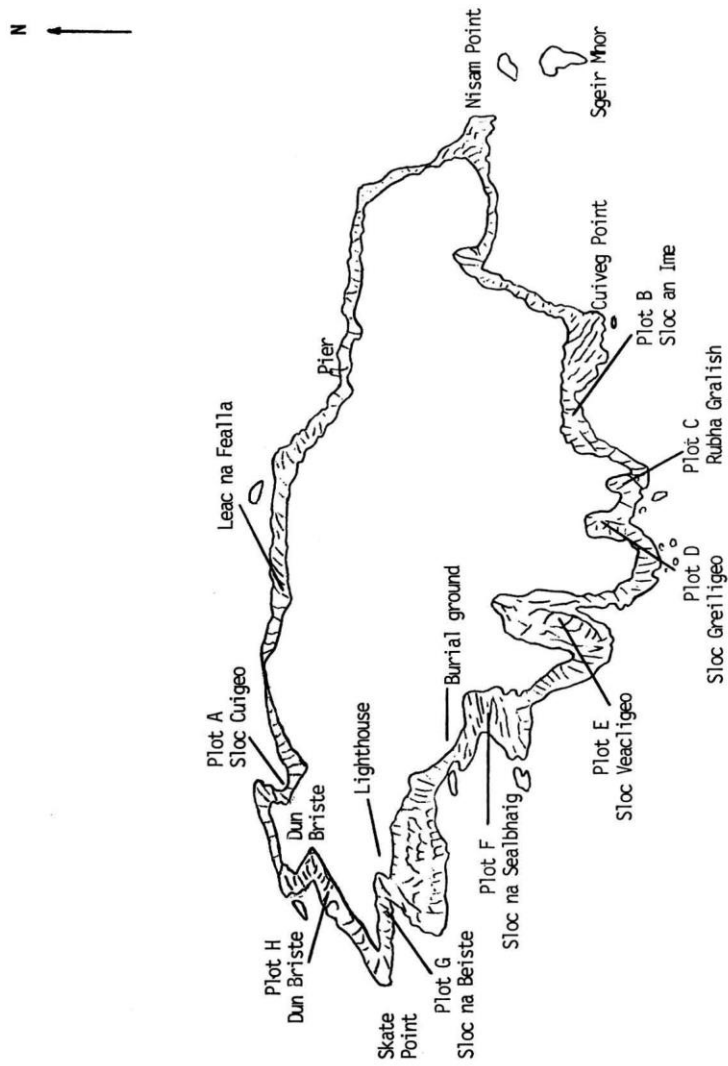
In order to assess more accurately any seabird population change since the previous RAFOS Expedition, it was decided to count the eight sub-colonies originally censused by that expedition in June 1979.

The eight sub-colonies chosen in 1979 as study plots were not necessarily the most densely populated sections of cliff, although clearly some were, but were selected primarily because they were in clearly defined areas and were relatively easy to count from safe land-based vantage points. The locations of the study plots as used in 1985 are given below:

Study Plot	Place Name	Grid References
A	Sloc Cuigeo	NL55108065-NL55258063
B	Sloc an Ime	NL56237950-NL56527960
C	Rubha Ghralish	NL56087940-NL56157940
D	Sloc Greilegeo	NL55957940-NL56057945
E	Sloc Veacligeo	NL55587955-NL55807945
F	Sloc na Sealbhaig	NL55307997-NL55407977
G	Sloc na Beiste	NL54508028-NL54858026
H	Dun Briste	NL54748045-NL54748055

A Sloc Cuigeo

A sheltered and well defined inlet on the northwest coast facing the island of Mingulay. The cliffs rise to a height of 60-90 metres. Only the lower sections are precipitous; the middle and upper levels consisting of broken and steep turf-covered slopes with a boulder chute in the western corner. The whole of this study plot can be seen and counted from viewing points to the west and east of the geo. Repeat counts were highly consistent and the figures quoted for the colony are considered accurate.



MAP 1: Berneray

B Sloc an Ime

An easily accessible sub-colony on the southeast coast. The sheer cliffs reach a maximum of only 30 metres but are densely populated. The study plot consists of three small, well marked indentations in close proximity. The easternmost is the most complex with sea caves, natural archways and a sea stack. This geo holds the Kittiwake colony and most of the Auks. The other two geos are populated mainly with Fulmars and have a Puffin colony on the grass slopes above. The study plot is relatively easy to census, repeat counts showing little variation. The results quoted below are considered to give an accurate assessment of the seabird populations present.

C Rubha Gralish

A small 'V' shaped geo with sheer, bare sea cliffs on both faces 30-60 metres in height. The western face held few birds and only the populated eastern face was counted from the opposing cliff top. Again, repeat counts showed relatively little variation and the results are considered to be fairly accurate.

D Sloc Greiligeo

A larger and more deeply indented geo than Plot C. The eastern cliff face is sheer, rising to approximately 85 metres at its highest point, and topped by boulder tumbles. The western side consists of a steep grass bank with rock outcrops. The lower slopes are of slab rock, which can be negotiated with care to reach the rocks at sea level. From this area, particularly in calm conditions and at low water, there is a safe route to the head of the geo. Here a large Shag colony is located in a dry cavern which is invisible from the slopes above. Almost all seabirds in the study plot breed at the head of the geo or on the eastern cliffs. A count is best carried out from a point on the grass slopes along the western side.

E Sloc Veacligeo

A vast and impressive chasm, 500 metres long and 150 metres deep, running south to north half way along the southern side of the island. The eastern flank of this geo consists of a single unbroken, sheer rock wall rising to 150 metres and populated with nesting Guillemots, Razorbills and Kittiwakes. The head of the geo and the western side present a complex pattern of steep grass slopes, broken by rocky outcrops, and minor cliff faces. It is occupied mainly by Fulmars, Puffins and Razorbills and is counted from a point midway along the eastern cliff. The impressive rows of nesting seabirds occupying this cliff are, in turn, counted from the grassy slopes opposite.

F Sloc na Sealbhaig

A large complex geo facing west densely populated by Razorbills and Guillemots. Of the eight plots, this was the most difficult to survey. The count figures showed great variation both between observers and on repeat counts. These 160-190 metre high cliffs are broken and rise in stages to complex boulder tumbles fringing the tops. All counts must be carried out from the cliff edge. The aspect of the nesting cliffs creates many blind spots, particularly affecting the lower levels, and observers need constantly to shift position to achieve a complete count. Views of the large Guillemot colonies at the bottom of the geo are never satisfactory.

G Sloc na Beiste

This study plot comprises part of the magnificent 180 metre high, sheer cliff face immediately to the west of the lighthouse. It is counted with safety from the site of the old fortress (dun) just outside, slightly below and to the southwest of the lighthouse perimeter wall. Even though only the middle and upper cliff sections are visible, the counts achieved are still realistic because it was found during the boat trip that very few birds were breeding on the lower, sea-sprayed levels of the cliff on this exposed headland.

H Dun Briste

From the ruins of the old fortress on this promontory, the observer counts the colony on the cliff face which extends from across the narrow gap below the fort southwestwards towards Skate Point. As in Plot G, only the higher cliff areas are safely visible to the counter. The lower parts are, however, generally devoid of nesting birds.

POPULATION ESTIMATES

Population estimates for the seabirds listed below were achieved by combining the mean count figures from the eight study plots with the results obtained by three members during a boat trip around the island on the afternoon of 18th June. The boat based estimates were necessarily less accurate than the land based counts, but do at least give an order of magnitude for what constitutes a very important percentage of all the major breeding species of Berneray.

Species	Population Estimate
Fulmar	1457 occupied nest sites
Shag	221 occupied nests
Kittiwakes	5114 occupied nests
Razorbill	11893 individuals ashore
Guillemot	19882 individuals ashore
Puffin	3062 individuals ashore

The significance of the estimates is discussed below, with comparisons with the 1979 counts, supplemented by tables and distribution maps.

Particular importance should be attached to the vast cliff face extending from beneath the lighthouse (NL 549801) for 800 metres towards Sloc na Sealbhaig (NL 554799). It contained over 50% of the island's Kittiwake nests (2650) and, nearly 40% of the Guillemots ashore (7700). Topped by broken rock faces and boulder tumbles which were packed with Razorbills, it was a magnificent spectacle.

Seabird counting was accomplished by two teams:

Team A	Team B
A.D. Marter (Leader and Coordinator)	C.E.A. Townley (Leader)
J.C. Jenner	P. Triggs
S. Bain	D.P. Northgraves
D.C.R. Counsell	R. Raynor

←-- N.A. Smith -->

The teams were tasked with counting five species of breeding seabirds using the following criteria:

- a. Fulmar - single birds (or a pair) apparently occupying a suitable nest site;
- b. Shag - nests containing eggs/young or with an adult in attendance;
- c. Kittiwake - occupied nests;
- d. Razorbill - individuals ashore in suitable nesting areas;
- e. Guillemot - individuals ashore in suitable nesting areas;

Serious counting commenced on 13th June and continued for the next eight days. All counts were made between 0900 hrs and 1300 hrs BST in generally fine, dry weather. No counts were carried out in conditions of rain, mist or with winds above force 4.

Puffins were treated differently. Although they occurred in all study plots, they were not counted at the same time as other seabirds. Single counts and estimates of all the larger colonies (and some of the smaller ones) were carried out in the early evening and the results are presented in map 7.

Results and comparisons with the 1979 counts:

The results of the 1985 counts and any population changes are discussed below for each species. Tables listing these results and including the 1979 counts follow the discussion. Direct comparisons between the 1979 and 1985 results are considered valid because, not only were identical counting methods employed, they were conducted at a similar stage in the nesting period and under very similar, settled weather conditions. Only the members of the counting teams were different and even these were of similar experience levels.

Fulmar

The number of breeding Fulmars on the island has shown a small increase during the period 1979 to 1985. Most study plots showed only minor increases in the number of nesting birds. About 80% of the island's 1457 occupied Fulmar nest sites were found in the eight study plots. Within these plots, the number nesting

rose from 1052 pairs in 1979 to 1142 pairs in 1985, a rise of 8.6%. This is equivalent to an average annual increase of 1.4% over six years. Fulmars occupied sites near the tops of the sea cliffs and avoided the sheer faces and bare ledges favoured by Kittiwakes and Guillemots. Because incubating birds tended to be spread evenly apart and were relatively closer to the observers than other species, counting was much easier and the final figures are considered accurate.

Shag

Although a large and conspicuous bird when breeding in an exposed site, most Shags on the island preferred to nest in a concealed position. Their favoured haunts were the small, well sheltered geos along the south and northwest coasts where they nested at low levels inside sea caves, under large boulders or in cracks and fissures in close proximity to the sea. Excluding data from Sloc Greiligeo (Plot D), the remaining study plots showed an increase from 44 occupied nests in 1979 to 60 in 1985. Study Plot D is treated separately because, although only a single nest could be seen from the count point, there is a large dry cavern at the head of the geo which is totally invisible from above and contained a dense Shag colony. Access to the cave can be achieved in dry, settled weather by clambering down to sea level at a point half-way along the western slopes of Sloc Greiligeo. A safe route then runs directly into the cave. When visited on 18th June 1985, the colony consisted of 107 occupied nests, the great majority of which contained eggs or small young. "Townley's Cave" (named after Clive Townley, its discoverer during the 1985 Expedition) was not visited in 1979 because its existence was unknown; however, 36 nests were counted in Plot D by the 1979 team, presumably in and around the cave mouth. Townley's cave held almost half the island's Shag population estimated at 221 breeding pairs. It is vital that future expeditions recount this important colony so that successful monitoring of the island's population is achieved.

Kittiwake

The 1985 counts revealed a dramatic increase in Berneray's Kittiwake population over the six year period. As in 1979, five study plots held Kittiwake colonies. Four plots showed increases of between 44% and 77% with the fifth showing only a minor one of 2%. The number of occupied nests present in the study plots rose from 1086 in 1979 to 1704 in 1985, an overall increase of 57%. This is equivalent to an average annual increase of almost 8%. The 1704 nests in the study plots represent a third of the island's estimated total of 5114 nests/breeding pairs.

Razorbill

The Razorbill was the only one of the five species regularly counted which the observers felt had been under-recorded. The inescapable impression was that this species, whether ashore on the rocks, whether in the large flights of auks around the sea cliffs or in the huge rafts on the sea below, was by far the most abundant seabird present on Berneray. Yet combined land and boat-based

counts gave only approximately 12,000 individuals ashore. Guillemots appeared to be far less abundant yet nearly 20,000 were counted on the cliffs. This anomaly can be explained by the differences in breeding habitat between the two species. Almost all Guillemots nested on exposed ledges on the open cliff and counting was relatively easy. In contrast, Razorbills showed a strong preference for a concealed site behind or under boulders, in fissures or in deep cracks in the rock face. For every Razorbill visible, there may have been three or four hidden from view. Moreover, the cliffs of Berneray were particularly suitable for this species, especially the line of cliffs running from the lighthouse southeastwards to Sloc Veacligeo. The rocks along this section of the coast were heavily fragmented and there were extensive boulder tumbles in the central and upper levels of the 180 metre high cliffs. It was here that the Razorbill was most abundant yet population estimates for much of this stretch could only be carried out during the boat trip. The boat-based estimates of the lower cliff levels were probably realistic but views of the upper levels were, at best, poor and large under-estimates certainly occurred. The value of comparing count data from the study plots collected in 1979 and 1985 may be questioned in view of the unknown size of the under-estimates which occurred when counting this species. However, a comparison is valid if it is assumed that a similar proportion of the population was visible to the observer during both visits. Table 4 shows very variable data regarding population changes, nevertheless some interesting trends are apparent:

- a. the three decreases recorded all occurred at the smallest colonies (300 birds or less);
- b. the remaining study plots all registered increases of up to 100% but the two largest in 1979 remained the most stable and showed the smallest population increases.

Combining the counts for all the plots, a population rise from 5443 birds in 1979 to 6683 birds in 1985 is shown, an increase of 23%. This is equivalent to a steady annual increase in the Berneray Razorbill population of a modest 3.5% over the six year period.

Guillemot

With one exception (Plot F), Guillemots could be counted with a fair degree of accuracy on the study plots. At most plots, birds occupied long, narrow breeding ledges and the often excellent vantage points allowed for rows of birds to be counted with relative ease. At Study Plot F, however, the Guillemots were concentrated on broad, complex ledges near to sea level and counting had to be carried out from the cliff top some 150 metres above. Repeat counts at this plot gave great variation and it was obvious that observers were having difficulty in standardising the area to be counted. On paper this colony showed a large decrease since 1979, and the loss of 1200 birds from an area of cliff densely populated with auks is difficult to interpret especially when compared with the results from the other study plots. It must be concluded

that the accuracy of the 1985 mean count for Plot F is in doubt. Mean counts at the remaining seven study plots are considered reliable and suitable for an estimation of the population change. The very small colony at Plot A remained unchanged. Plots B, C, D and E all showed increases of between 6% and 37%. The mean count for Plot H was only half that made in 1979 and it is perhaps significant that Razorbills at this site also showed a similar order of decrease. This apparent reduction was more than adequately compensated by the increase recorded at the neighbouring Study Plot G. The combined population count for all eight study plots was 8272 individuals ashore, almost identical to the 1979 figure of 8247 birds. However, if the unreliable data from Plot F is excluded, the combined mean counts for the remaining plots show a rise from 6073 in 1979 to 7299 in 1985. This 20% increase is likely to be real and is equivalent to the island's guillemot population expanding at a steady 3.1% per annum over the six year period. The grand total of Guillemots ashore, combining land- and sea-based counts, was 19,882 individuals of which 42% were present in the study plots.

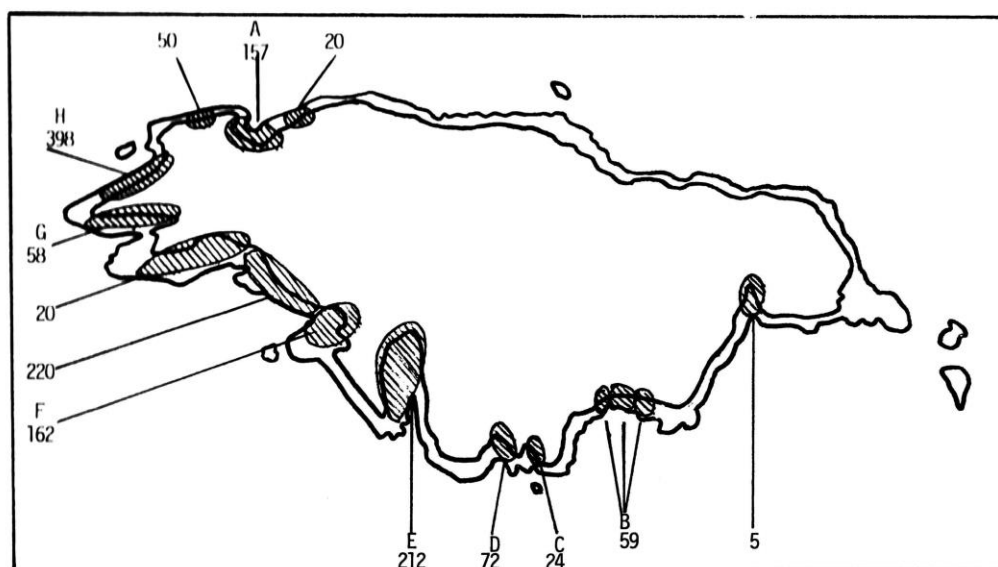
Future counts of seabirds on Berneray

Ornithological expeditions visiting the island in the future are encouraged to repeat the counts made at the RAFOS study plots so that long-term population trends can be monitored. If time or manpower is at a premium, even single counts, conducted with care, could provide a useful comparison if carried out in mid-June. It is recommended that priority should be given to the following five study plots located in sheltered geos and listed in order of ornithological importance:

- a. Sloc Veacligeo (Plot E);
- b. Sloc Greiligeo (Plot D);
- c. Rubha Ghralish (Plot C);
- d. Sloc an Ime (Plot B);
- e. Sloc Cuigeo (Plot A).

TABLE 1: Study plot counts of occupied Fulmar nest sites,
June 1985

Study Plot	No. of days visited	No. of counts	1985 Mean	Std. Dev.	1979 Mean
Sloc Cuigeo (A)	2	5	157	6	139
Sloc an Ime (B)	4	11	59	7	68
Rubha Ghralish (C)	4	10	24	2	20
Sloc Greiligeo (D)	4	8	72	6	72
Sloc Veacligeo (E)	4	11	212	19	195
Sloc na Sealbhaig (F)	4	13	162	25	166
Sloc na Beiste (G)	4	11	58	6	29
Dun Briste (H)	4	11	398	39	363
			1142		1052

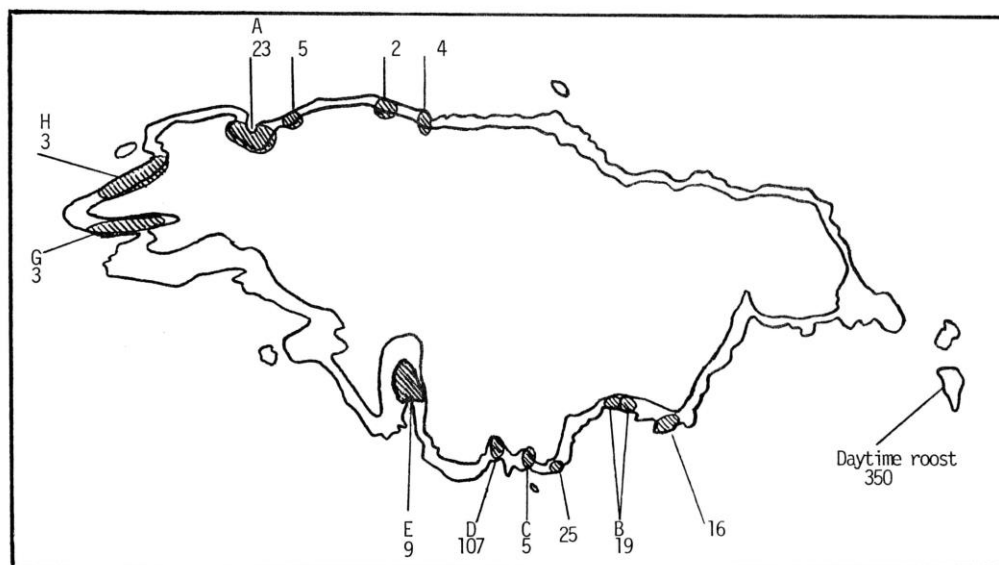


MAP 2: Distribution of 1457 occupied fulmar nest sites, June 1985

TABLE 2: Study plot counts of occupied Shag nest sites,
June 1985

Study Plot	No. of days visited	No. of counts	1985 Mean	Std. Dev.	1979 Mean
Sloc Cuigeo (A)	3	8	23	1	15
Sloc an Ime (B)	4	10	19	1	13
Rubha Ghralish (C)	4	14	5	1	7
Sloc Greiligeo (D)	4	13	107*	-	36
Sloc Veacligeo (E)	4	12	9	1	8
Sloc na Sealbhaig (F)	4	-	0	1	8
Sloc na Beiste (G)	4	18	3	-	0
Dun Briste (H)	5	18	3	-	1
			169		80

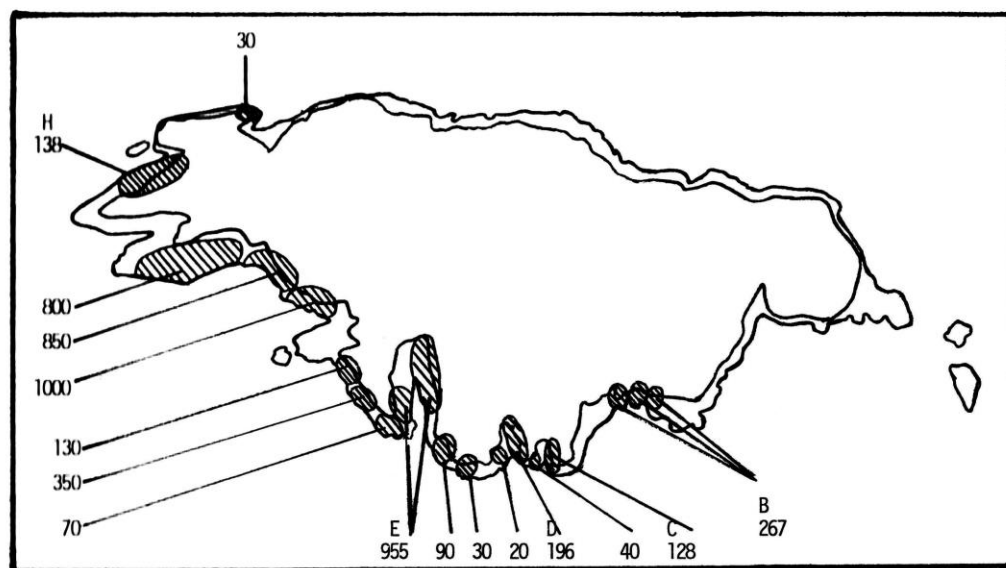
* Colony inside "Townley's" cave (see text)



MAP 3: Distribution of 221 occupied Shag nest sites, June 1985

TABLE 3: Study plot counts of occupied Kittiwake nest sites,
June 1985

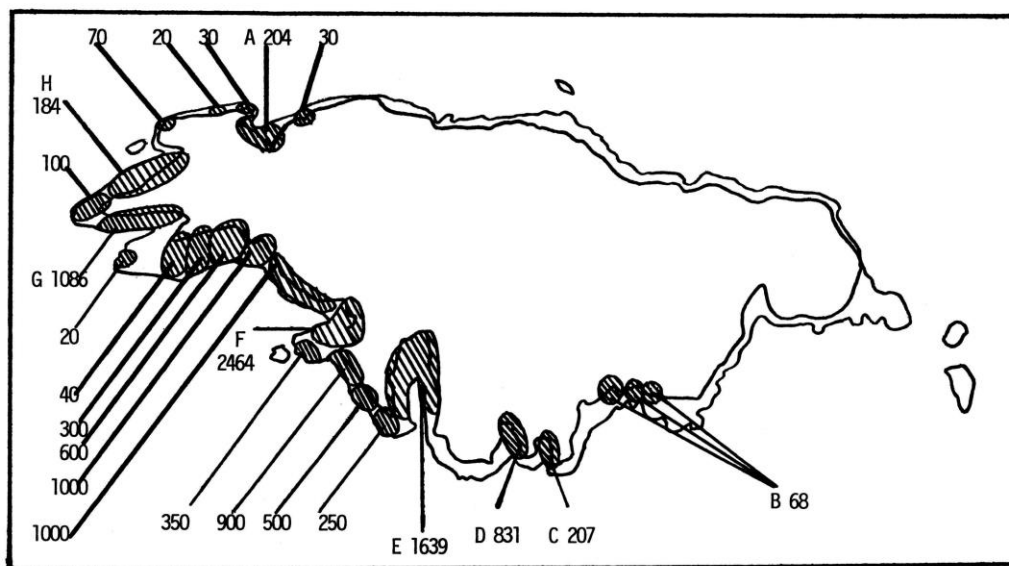
Study Plot	No. of days visited	No. of counts	1985 Mean	Std. Dev.	1979 Mean
Sloc Cuigeo (A)	5	-	0	-	0
Sloc an Ime (B)	4	10	267	26	170
Rubha Ghralish (C)	4	10	128	5	85
Sloc Greiligeo (D)	4	11	196	12	136
Sloc Veacligeo (E)	4	8	955	41	540
Sloc na Sealbhaig (F)	4	-	0	-	0
Sloc na Beiste (G)	4	-	0	-	0
Dun Briste (H)	4	12	158	26	155
			1704		1086



MV 4: Distribution of 5114 occupied Kittiwake nest sites, June 1985

TABLE 4: Study plot counts of Razorbills ashore. June 1985

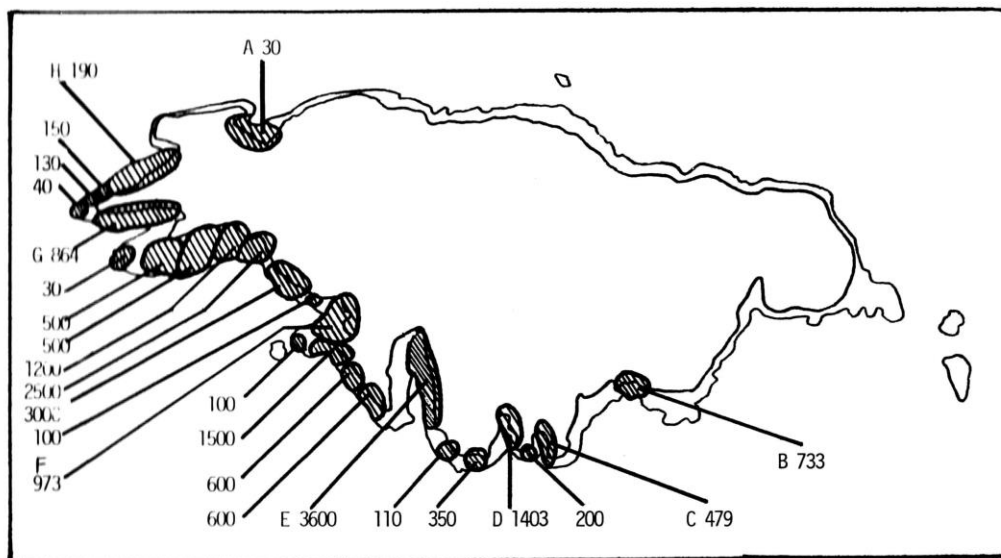
Study Plot	No. of days visited	No. of counts	1985 Mean	Std. Dev.	1979 Mean
Sloc Cuiego (A)	5	7	204	12	298
Sloc an Ime (B)	4	7	68	12	160
Rubha Ghralish (C)	4	8	207	32	114
Sloc Greiligeo (D)	4	11	831	130	395
Sloc Veacligeo (E)	4	11	1639	329	1311
Sloc na Sealbhaig (F)	4	11	2464	240	2213
Sloc na Beiste (G)	5	15	1086	140	689
Dun Briste (H)	5	14	184	33	313
			6683		5443



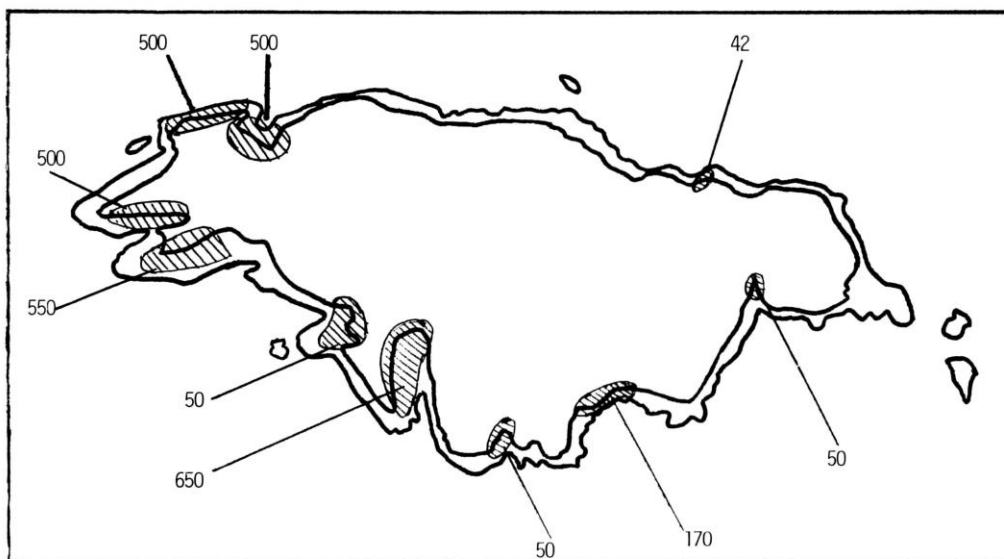
MAP 5: Distribution of 11893 individual Razorbills ashore, June 1985

TABLE 5: Study plot counts of guillemots ashore, June 1985

Study Plot	No. of days visited	No. of counts	1985 Mean	Std. Dev.	1979 Mean
Sloc Cuigeo (A)	5	10	30	3	32
Sloc an Ime (B)	4	6	733	100	586
Rubha Ghralish (C)	4	8	479	42	350
Sloc Greiligeo (D)	4	11	1403	166	1326
Sloc Veacligeo (E)	4	10	3600	292	3053
Sloc na Sealbhaig (F)	4	14	973 (see text)	168	2174
Sloc na Beiste (G)	5	18	864	193	330
Dun Briste (H)	5	14	190	17	396
			8272		8247



MAP 6: Distribution of 1985 Guillemots ashore, June 1985.



MAP 7: Distribution of the main Puffin colonies on Berneray with estimates of the maximum numbers of adults present outside burrows during evening counts, total 3062 individuals, June 1985.



Despite lengthy counts taken from our land-based observation points, the total number of birds accounted for seemed to be far less than the number estimated from observations of birds flying to and from colonies and loafing on the sea. The land-based total was increased considerably by the addition of the sea-based count. However, the total still did not seem representative. With this anomaly in mind and with the willing enthusiasm of team members, a series of seawatches was undertaken on 19th and 20th June between sunrise (approximately 0500 hrs BST) and 0812 hrs. The aim was to count auks to assess the number of birds returning to the island at first light. The count would produce a minimum population figure which excluded those birds remaining at the ledges or in the vicinity of the colonies by night.

Graph A illustrates the results of the seawatches and shows the rather erratic distribution of the numbers of auks observed passing Nisam Point (NL574799) in the 3 hours after sunrise. The area under the curve has been calculated and gives an approximate total of 58,000 birds which is far in excess of the 31,000 counted at colonies. The two noticeable peaks in the graph may be explained by the fact that the seawatch was different. It is also possible that the birds feed at two separate fishing grounds, one nearer than the other. At a flying speed of 30 mph and assuming a departure from the fishing grounds at first light, then the second wave of birds at approximately 0635 hrs would appear to have travelled about 45 miles. This would put their fishing area in the middle of the Minch, east of South Uist. This observation was also made by Sergeant and Whidbourne in 1949 (Sergeant and Whidbourne, 1950) who noted that birds from the Shiant Islands also used this fishing area.

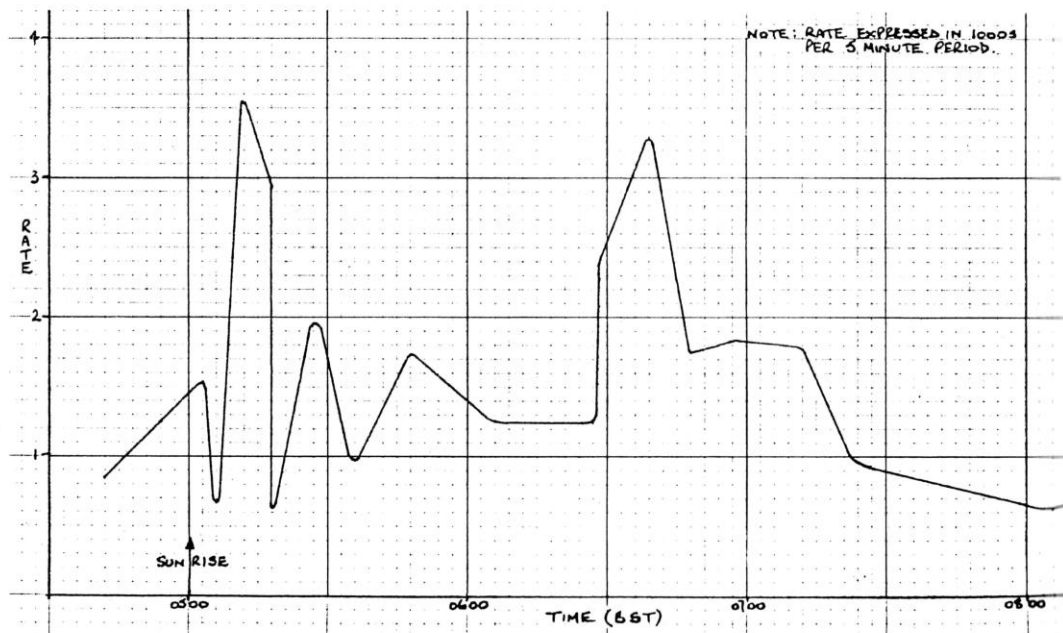
Incoming flocks were extremely varied in nature, some flying far out, some close in, some flew high, others close to the sea. There were mixed flocks and, when close enough, some single species flocks, mainly Razorbills, were identified. Kittiwakes, Fulmars, Shags and Manx Shearwaters often accompanied the masses of auks.

The birds approached the island from two different directions; some from due east of Nisam Point while the vast majority arrived from the north-east. Most colonies were situated either on the south or western cliffs and birds "peeled-off" at the appropriate point as they flew close to the south coast. The last colony entered on Berneray was Sloc Cuigeo and it is interesting to note that a small number of additional birds were passing this point en-route to colonies on the western cliffs of Mingulay. Strangely, very few birds used the Sound of Berneray to take a short cut. Could it be that auks have been using the southern route since before the Sound of Berneray was created?

Gannets which got caught up in the morning auk movement met other Gannets which had flown down the western side of the Outer Isles at Skate Point. Both groups of birds circled rather aimlessly

off the Point before flying back to the north, invariably up the western side of the islands. From the top of Skate Point a Gannet flyway could be seen extending in a south-westerly direction towards deeper waters.

The significance of the seawatch data is that it greatly increases any previous population estimates of auks on Berneray. Diamond et al, 1965, gave an estimate of 10,875 individuals which is increased by the 1985 data by a factor of 2.8 to 5.3. Clearly further work is required in this interesting and unique environment.



Graph A: Number of Auks flying past Nisam Point, Berneray

During the 1979 RAFOS Expedition seabird counts were carried out at 13 colonies (A to N on map no.7) on Mingulay from 52 count points located on the north-east, north and west coasts of the island. The aim of the 1985 Expedition was to repeat these counts using the same count points in order that any population differences would be revealed. Grid references for these colonies and count points are given in Table 6.

Unfortunately it proved impossible to repeat the 1979 counts in a manner which allowed direct comparison of all results. This was caused by a lack of manpower, poor weather on the cliffs on many mornings and the inability to find the exact locations of several of the count points, particularly in colonies K, L, M and N.

In order to provide as accurate an estimate as possible of any population changes and to provide a firm basis for any future work on the island, five study plots were chosen from the faces counted in 1979 which were easily delineated. These plots covered as many habitat types, aspects and species ranges as possible, were relatively easily counted and, probably as a result of this, their resultant mean counts had relatively small standard deviations.

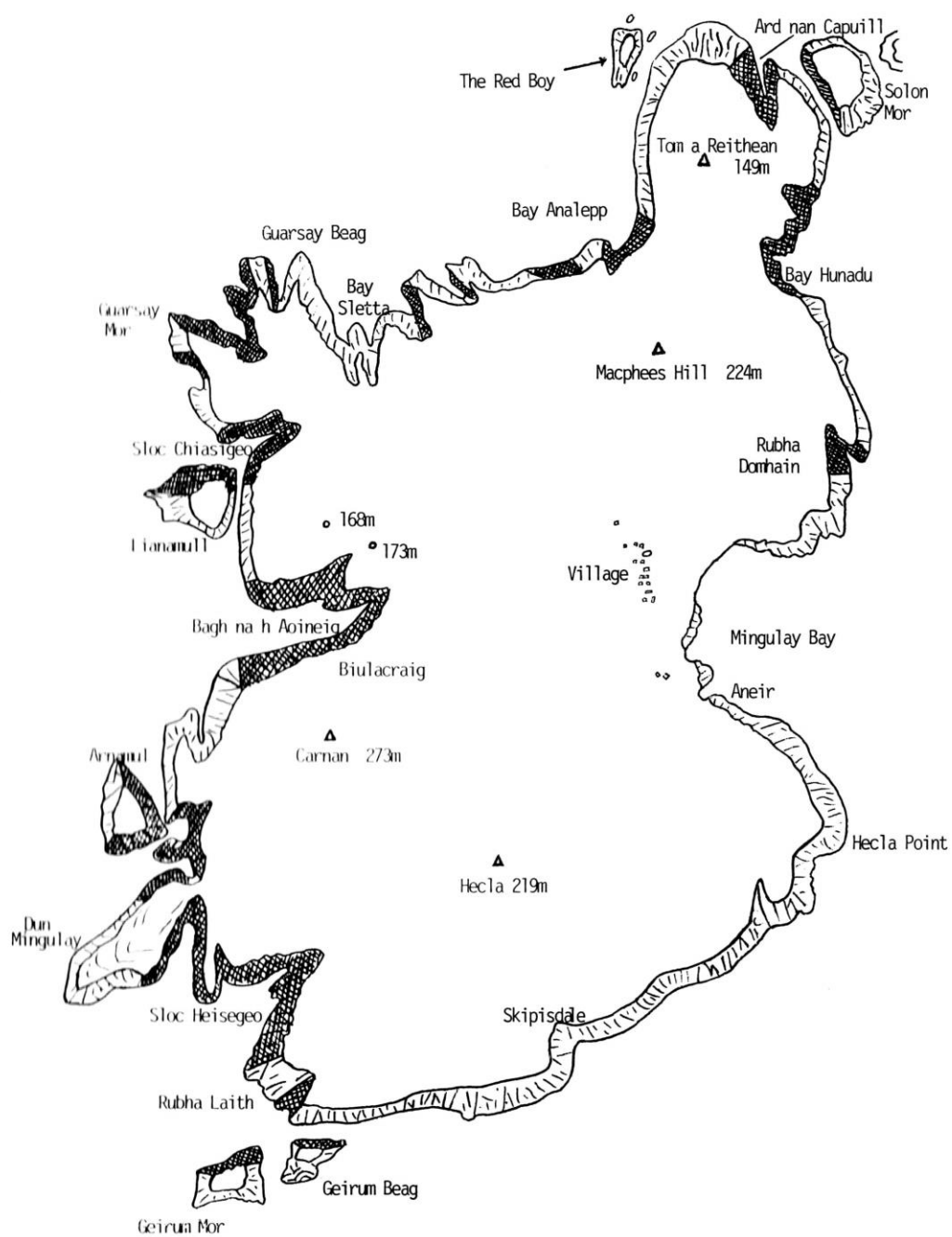
The study plots were photographed to provide a visual reference and small cairns were built at the count points to aid future counts. Copies of the study plot photographs have been deposited in the RAFOS library. In addition, a sixth study plot, not counted in 1979, was assessed as possessing the required attributes and appeared to be a marginal habitat. The south-east face of a rock known as the "Red Boy" formed this additional study plot.

Counting commenced on 27th June when the 1979 count points 1 to 20 were located and re-marked. Initially it was hoped that all count points would be located such that directly comparable counts could be made. The next day the same team led other teams to repeat the counts at those count points while count points 21 to 30 were re-marked. The following day a similar procedure ensued to count at points 1 to 30 and to re-mark points 31 to 51.

Analysis of the results of the first three days and difficulties experienced in locating the count points in colony K (points 37, 38, 39 and 41) brought the validity of the existing system of counting into question. It became clear that several factors were causing large variations in the daily counts of some faces and that determining the exact extent of the 1979 counts in colonies K, L and M would be impossible. A day of heavy rain on 30th June precluded further counts and made it clear that manpower would also become a limiting factor.

Table 6: Grid references of colonies and count points on Mingulay as defined in 1979

Colony A		
Rubha Domhain		
NL57218363-NL57318363	1 NL57208365	2 NL57308370
Colony B	3 NL57098425	4 NL57078429
Bay Hunadu	5 NL57098450	6 NL57178451
NL57208420-NL57258461	5 NL57188456	8 NL57188467
Colony C	9 NL57268483	10 NL57218496
Ard nan Capuill/Solon Mor	11 NL57178499	12 NL57148503
NL57348478-NL57038512	13 NL57138501	14 NL57018511
Colony D		
Bay Analepp	15 NL56638458	16 NL56488447
NL56618461-NL56208444	17 NL56358444	18 NL56248440
Colony E		
Bay Sletta (East)	19 NL55808438	20 NL55758428
NL55908448-NL55818421		
Colony F	21 NL55298445	22 NL55168442
Guarsay Mor/Guarsay Beag	22a NL55138447	23 NL55108439
NL55228438-NL54958417	24 NL55138435	25 NL55018427
	26 NL54978405	
Colony G		
Sloc Chiasigeo	27 NL54998399	28 NL55048398
NL55008391-NL55058372	29 NL55158397	30 NL55128383
Colony H		
Bagh na h'Aoineig	31 NL55308335	31a NL55348337
NL55098331-NL55018311	32 NL55468328	33 NL55258310
Colony J		
Biulacraig	35 NL54868270	36 NL54808285
NL54908299-NL54858296		
Colony K		
Arnamul & Dun Mingulay	37 NL54778283	38 NL54778256
NL54578277-NL54438214	39 NL54818232	41 NL54578225
Colony L	42 NL54658205	43 NL54798206
Sloc dubh an Duine/	44 NL54808191	45 NL54858195
Sloc Heisegeo	46 NL54938199	47 NL55128197
NL54558196-NL54918162	48 NL55058190	49 NL55038183
Colony M		
Rubha Laith	50 NL55008162	
NL55068157-NL54998142		
Colony N		
Geirum Mor/Geirum Beag	51 NL55048146	
NL54808146-NL55168136		



MAP 8: Major seabird colonies on Mingulay countable from land based count points as defined in 1979.

In order to reduce observer error, a standard counting team of B. Withers, J. Veal and J. Parker was appointed and counting reduced to the six study plots listed and described below. The reduction in faces counted was designed to ensure that sufficient coverage could be given to each with a small margin left to accommodate bad weather. All counts continued to be carried out in accordance with the Seabird Group's Auk Census Manual. The only remaining difficulty proved to be the weather which was humid and overcast on most mornings giving mist on the western cliffs. Winds were generally light and never exceeded force 4. The description of the six study plots is followed by a comparison of the census results for 1979 and 1985 for five species of seabird.

Study Plot	Name	Grid References
P	West face of Ard nan Capuill	NL57148508-57118491
Q	East of Bay Sletta	NL55908448-55988432
R	North end of Builacraig	NL55338313-55018311
S	South-east face of Dun Mingulay	NL54558196-54708205
T	South-east face of Sloc Heisegeo	NL54988182-54918162
U	The Red Boy	NL56708518-56628502

Description of Study Plots

P West face of Ard nan Capuill

A very broken face on the eastern side of a north facing geo, extending from the sea to a distinct fault line at the head of the geo. The plot is counted from a rock outcrop on the opposite side at NL57018511 (1979 count point 14).

Q East of Bay Sletta

This study plot comprises the eastern side of a north-west facing geo rising to 60m. Again the plot is counted from the sea on the left to a fault line at the head of the geo. It is counted from a promontory on the opposite side of the geo at NL55808438 (1979 count point 19).

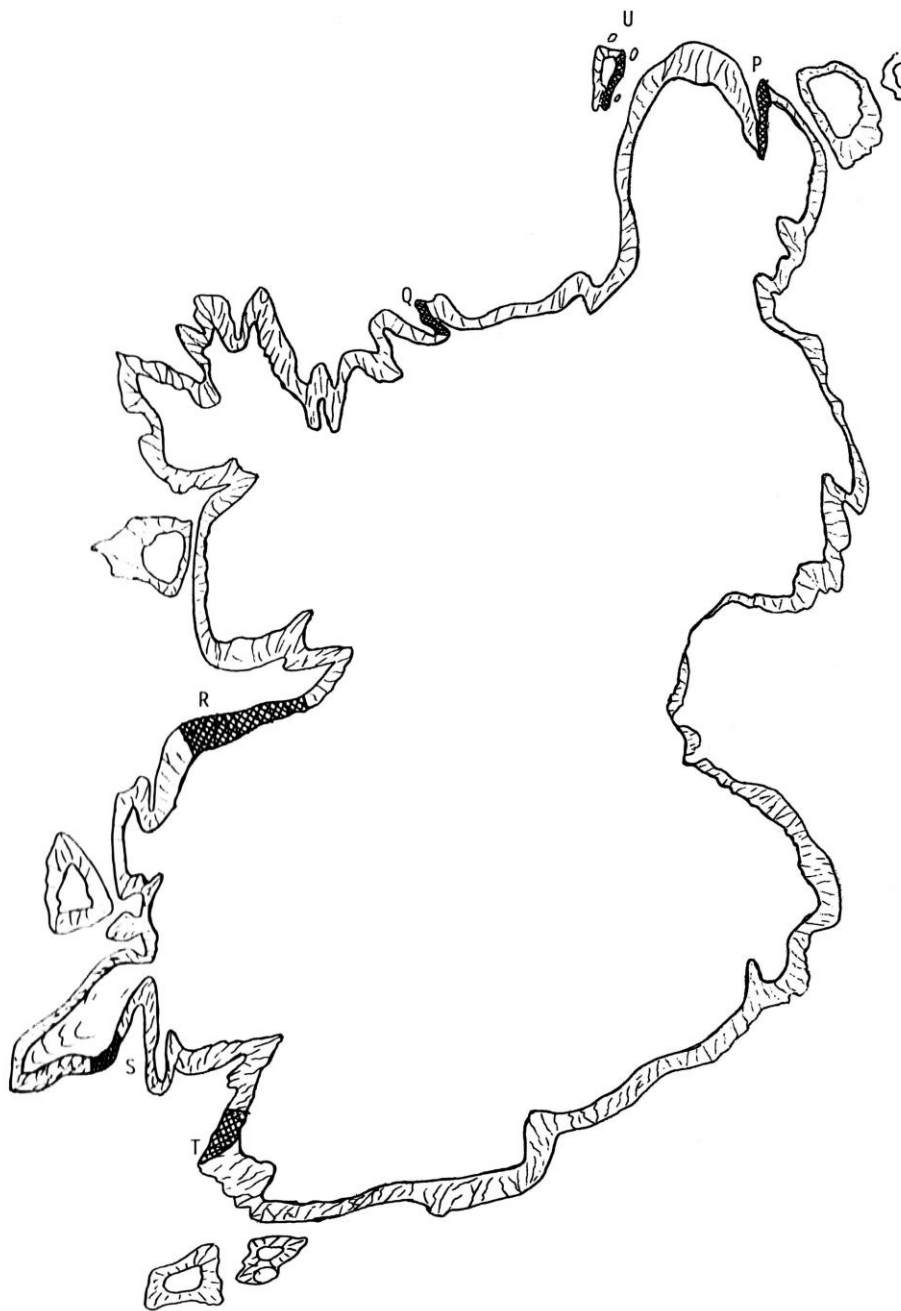
R North end of Biulacraig

A massive cliff in the centre of the west coast of the island rising almost vertically to approximately 230m, of which the north facing northern end forms the study plot.

The cliff has a distinctly sloped strata and has few large ledges or fissures. its middle section is covered with sparse vegetation. Ledges suitable for auks are confined to the very bottom. The plot extends from a vertical fault line at the eastern end until it curves out of sight to the west. It is counted from the cliff opposite at NL55308335 (1979 count point 31).

S South-east face of Dun Mingulay

The plot was so delineated to avoid the very confused formations at the head of Sloc dubh an Duine. The cliff is ideal for seabirds



MAP 9: Distribution of study plots on Mingulay, 1985

with many ledges formed in the horizontal strata. It extends from a large cave in the southwest to a vertical line drawn from the head of a small gully. It is counted from the tip of the Bannish peninsula at NL54808191 (1979 count point no.44).

T South-eastern face of Sloc Heisegeo

This plot exhibits both sheer and broken boulder cliffs rising to 83m and supporting the full range of species studied. It is bounded to the north by a rocky outcrop and to the south by a headland. The plot is counted from the south-east corner of the Bannish peninsula at NL54858195 (1979 count point no.45).

U The Red Boy

This study plot was not counted in 1979 but was selected in 1985 because its extent is easily determined. The whole of its south-east face is visible from the cliffs at NL56738507 and forms the plot. The face rises to a modest 50m and it appears to be a marginal site. Should this prove to be the case, the plot should provide a coarse indicator of population changes.

Results and comparisons with the 1979 counts

Counts of five species of breeding seabirds were made using the following criteria:

- Fulmar - single birds or a pair apparently occupying a suitable nest site.
- Shag - nests containing eggs or young or with an adult in attendance.
- Kittiwake - occupied nests.
- Razorbill - individuals ashore in suitable nesting areas.
- Guillemot - individuals ashore in suitable nesting areas.

The results of counts made on the first three days and those at the six study plots are presented separately to prevent misleading comparisons. The counts of the first three days are summarised in Table 7. Those of the six study plots are discussed below and summarised in Table 8. The mean totals for some species were considered disappointing when compared with the results of the 1979 Expedition. Some observers expressed surprise at the apparent lack of auks on the cliffs and on the surrounding waters; large rafts of auks were not recorded. A brief assessment from a boat on 5th July of the previously unobservable western cliffs did not reveal any colonies of greater density than those counted from the land except for the south-west face of Lianamul which held large numbers of Kittiwakes and Guillemots.

Fulmar

The counts of occupied nest sites in study plots P to T indicated a reduction of 27% from the 1979 results. This decrease is attributable to a large decrease recorded in plot R, the massive cliff of Builacraig. These five plots were studied in some detail in 1985 and, as such, the results are considered to stand comparison with the 1979 counts.

The counting at other colonies in 1985 was much less comprehensive than in 1979 so direct comparisons are not valid. A decrease of 11% was recorded at these additional plots from the 1979 results.

This type of census can be greatly affected by the position of the observer on such cliffs as there are on this island with small variations in position giving rise to possibly significant variations in numbers recorded. Also consistent delineation of the plots by each expedition may not be achieved so giving rise to further differences in results.

Based upon the sample counts undertaken by the 1985 Expedition an estimated nesting population of over 9,000 pairs is indicated. However, in view of the foregoing, this figure is extremely at variance with the 1979 estimate of over 7,500 pairs.

The structure of many of Mingulay's cliffs, particularly the massive western faces, is most suited to occupation by Fulmars being not quite vertical and often covered with sparse vegetation. Fisher (1940) recorded 2,991 pairs along the west coast.

Shag

This species was found at all stages of the breeding cycle from eggs to well developed young away from the nest which made accurate assessment of the population difficult. A further complication was the use of caves at the base of the cliffs for breeding.

Counts in the five study plots P to T indicate an increase of 32% in these plots compared to the 1979 results, mainly due to increases in plots R and T. The reduced counting at the other plots in 1985 indicate virtually no change from 1979. Overall the 1985 and 1979 count results are very similar in mean totals. The 1985 Expedition estimate that the total population of the island is approximately 500 pairs.

Kittiwake

Colonies of this species were found along the west coast of the island where the upper cliffs were suitably precipitous and bare. The largest colony, on the south-west face of Lianamull could not be counted from the land but was estimated at approximately 1,000 pairs.

At the five study plots P to T, a reduction of 41% was recorded over the 1979 results for occupied nests. The remaining plots counted in 1985 with reduced counting showed a reduction of 66% from the 1979 results. In total an overall reduction of 60% for all plots counted in 1985.

Consistency of coverage may be an explanatory factor. For instance a decrease of 80% was recorded from count point 16. In 1979 this point was split into two arcs and separately counted on at least nine occasions whereas in 1985 a single arc is indicated with only a couple of counts.

However, at several other count points no birds were recorded in 1985 as satisfying the criteria whereas a total of 277 occupied nests were recorded in 1979.

Kittiwakes are a relatively easy species to survey so, after due allowances for census variations, a real and significant reduction in the Kittiwake population on Mingulay is indicated. The 1985 Expedition's estimate for the total breeding population of the island is 3,000 to 3,500 pairs. This result should not be directly compared with the 1979 figure. Further work on this species on the island is required.

Razorbill

This species was found to be very difficult to count due to its choice of nest sites, predominantly among the fissures and boulders at the top of most cliff faces. It is considered that any detailed comparison with the 1979 results is impossible due to the probable differences in area counted and that the lack of counting opportunities due to bad weather has contributed to an under-recording of this species.

Based on the 1985 counts the island's breeding population cannot be estimated at more than 5,000 birds. Again this result should not be compared with the estimated 1979 figure of 10,000 birds. Further work is also required on this species.

Guillemot

Observers were surprised by the lack of ledges suitable for this species on many of the large western cliffs. Most colonies were found on ledges at the base of cliffs which were difficult to count because of the height of the count points. Counters were however helped in locating colonies of this species by the characteristic off-white colour of its droppings which drew attention to quite small concentrations.

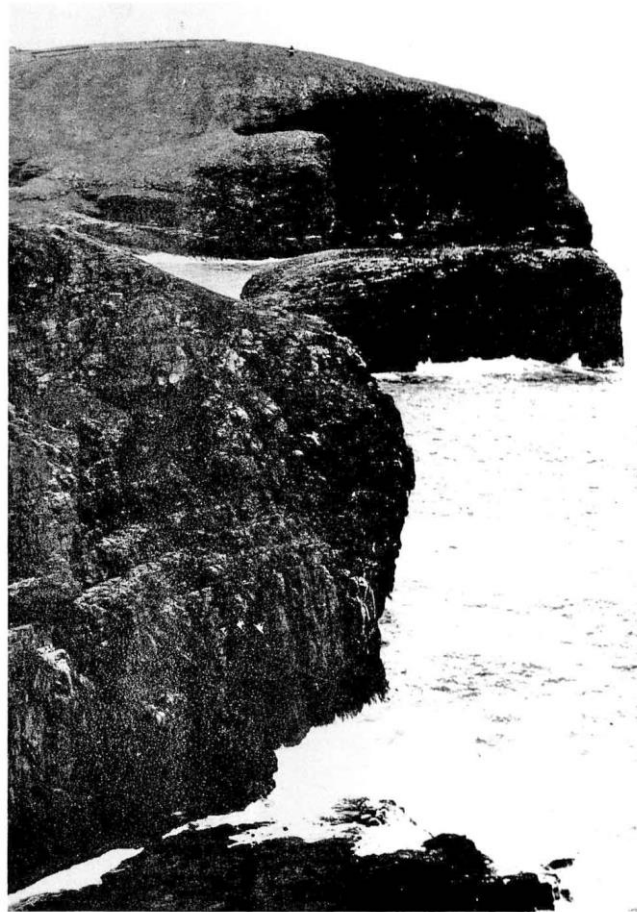
Due to probable differences in areas counted, it is considered that any detailed comparison with the results of the 1979 Expedition for this species is impossible. A broad assessment of all faces counted in 1985 led to an estimate, based on these counts, of a breeding population of 11,000 birds. Along with Kittiwakes and Razorbills, further work on this species on the island is required. It is hoped that the documentation of the study plots will allow more accurate monitoring of population changes in all five species.



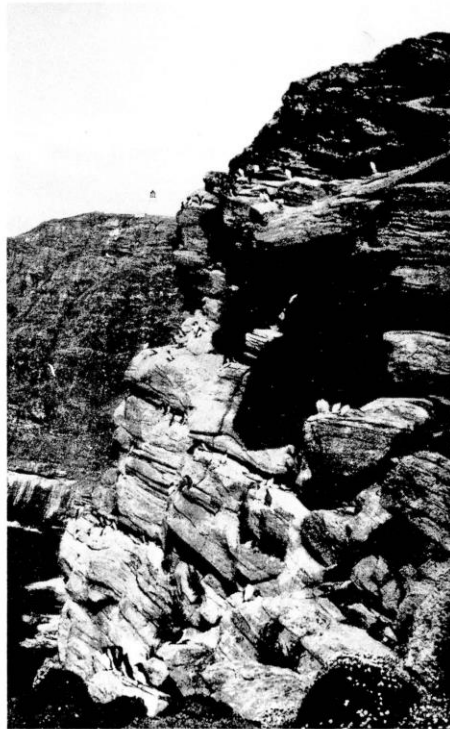
Berneray Team



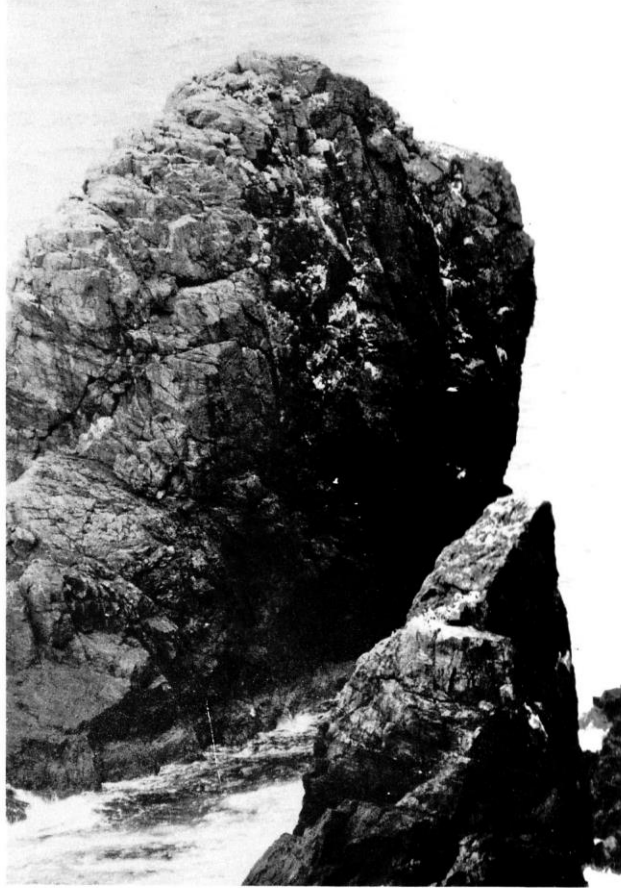
Camp Site - Berneray



Skate Point, Berneray from Mingulay



Typical Razorbill habitat - Berneray



The Red Boy

Table 7: Mean Totals of Seabird Counts on Mingulay in 1979 and 1985

Plot	C.P.	Fulmar		Shag		Kittiwake		Razorbill		Guillemot	
		1985	1979	1985	1979	1985	1979	1985	1979	1985	1979
A	1	43	56	1	7	-	-	12	16	-	-
	2	54	42	-	-	-	-	-	-	-	-
B	3	13	15	6	7	-	-	10	18	-	-
	4	13	3	12	7	-	-	-	-	-	-
	5	29	28	-	4	-	-	-	12	-	22
	6	14	19	6	7	-	-	2	41	-	46
	7	82	80	7	10	-	-	40	51	31	18
	8	11	3	1	1	-	-	15	8	4	26
C	9	30	15	9	15	-	-	13	22	4	17
	10	69	160	5	8	-	-	20	31	16	23
	11	156	145	-	6	-	-	-	27	-	1
	12	13	5	9	-	-	-	9	14	44	39
	13	165	146	2	4	-	-	11	32	1	44
D	15	49	218	-	1	24	56	29	82	177	734
	16	269	467	5	6	329	1644	163	266	877	1628
	17	6	4	1	3	-	2	12	23	27	283
	18	39	64	-	-	25	14	51	85	346	309
E	20	77	79	31	19	205	167	154	302	220	195
F	21	1	2	4	3	-	-	4	54	23	25
	22	3	3	2	1	19	69	29	96	90	142
	23	1	-	10	9	-	-	143	166	116	104
	24	8	5	8	4	-	9	18	79	8	104
	25	150	41	6	2	-	-	243	248	108	73
	26	21	10	-	-	169	189	76	63	253	177
G	27	422	394	1	-	-	58	80	140	35	38
	28	42	44	2	3	-	46	112	258	80	228
	29	11	33	-	1	94	121	38	90	221	237
	30	40	22	2	3	-	111	44	170	145	222
H	32	41	171	-	3	140	455	27	370	115	171
J	35	47	61	-	1	2	-	42	178	75	177
K	37	1350	1425	1	1	-	-	17	222	220	398
	41	275	235	4	-	-	-	34	206	930	1058

The above mean totals are derived from up to 12 separate counts at the above listed count points in 1979 but, in comparison, from only a maximum of three counts in 1985. Sum totals are:

Fulmar		Shag		Kittiwake		Razorbill		Guillemot	
1985	1979	1985	1979	1985	1979	1985	1979	1985	1979
3544	3995	135	136	1007	2941	1448	3370	4116	6539

The above tables do not refer to results obtained from the five study plots, results for which are tabled below.

Table 8: Results of Seabird Counts at Five Study Plots and comparison with 1979 results

Plots (Count Points): P (14); Q (19); R (31); S (44); T (45)

	No.of counts	No.of Days	Mean total 1985	SD	Mean Total 1979	SD
Fulmar						
P	8	5	178	14	151	13
Q	8	4	31	4	35	2
R	7	3	566	43	938	91
S	6	2	24	4	36	4
T	6	2	85	8	54	-
			<u>884</u>		<u>1214</u>	
Shag						
P	8	4	4	1	4	1
Q	8	4	23	5	23	6
R	7	3	4	-	-	-
S	6	2	-	-	1	-
T	6	2	6	1	-	-
			<u>37</u>		<u>28</u>	
Kittiwake						
P	8	4	-	-	-	-
Q	8	4	313	41	410	41
R	7	3	-	-	51	-
S	6	2	126	13	336	37
T	6	2	101	7	120	-
			<u>540</u>		<u>917</u>	
Razorbill						
P	8	5	-	-	-	-
Q	8	4	313	41	410	41
R	7	3	-	-	51	-
S	6	2	126	13	336	37
T	6	2	101	7	120	-
			<u>540</u>		<u>1457</u>	
Guillemot						
P	8	5	-	-	-	-
Q	8	4	641	72	1245	132
R	7	3	115	20	289	10
S	6	2	178	21	833	111
T	6	2	240	37	295	-
			<u>1174</u>		<u>2662</u>	

At study plot 0, "Red Boy", there were 6 counts over 2 days resulting in:

	Fulmar	Shag	Kittiwake	Razorbill	Guillemot
Mean total	2	2	-	64	105
SD	-	1	-	23	11

The authors, both A class ringers, caught and ringed a total of 584 birds of 16 species during the period 12th to 21st June inclusive. They were ably assisted on most afternoons and evenings by P. Triggs. Table 9 gives a breakdown of the ringing totals. Details of the ringing effort and individual techniques employed are given below for each species encountered.

Fulmar

The 12 adults were "fleyged" (see under auks) as they flew along the cliff top.

Petrels

All Storm and Leach's Petrels were mist-netted at night (between midnight and 0300 hrs) using continuous taped songs to lure the birds into the area of the nets. Trapping results are given in Table 10.

Tresivick (NL569799) and Rubh' an t-Sith (NL572803) were the two sites where netting took place during the 1979 expedition; 67 Storm and three Leach's Petrels being caught. Unfortunately, during the 1985 expedition our three visits proved disappointing. However, Tresivick should not be ignored on future occasions because it has a well sheltered boulder beach which is nettable in all weather conditions. Moreover, Leach's Petrels have been consistently trapped in this geo, two in 1979 and two again in 1985.

Not previously worked for Petrels, Leac a' Langich (NL562806) proved an excellent netting site, at least in the calm weather conditions experienced on the two nights that it was used. The site comprises a low rocky shore with a small boulder beach and, in a nearby pasture, a large stone enclosure and the remains of a ruined bothy. The site faces north, directly across the Sound to Mingulay, and lies about 300m west of the jetty. A total of 44 Storm Petrels was caught at this site, two of which were already carrying rings. The first was a control and details are given below in the "recoveries" section. The second, caught on 19th June, was, however, a bird ringed by ourselves at Tresivick (over 1km away on the opposite coast) the previous night. This latter retrap is the first indication that petrels which come ashore at night on Berneray may not be just inter-island wanderers as previously assumed. This attraction to Berneray indicates that breeding cannot be discounted.

Gulls

Good numbers of chicks of the larger gulls were ringed even though, at the majority of the Lesser Black-backed Gull nests examined, eggs or pulli too small to ring were present. Almost all Herring and Great Black-backed Gull nests were further advanced.

Kittiwake nests had eggs or small young during the expedition period but most were inaccessible. The small, 50 pair colony at Sloc an Ime (NL562796) could, however, be safely worked and 24 incubating adults were noosed from the nest. Despite this seemingly rough treatment, the birds were back on their nests within minutes of release and several were repeatedly caught over several days without ill effects.

Auks

As a result of the experience gained by BE during the 1979 expedition and the employment of a hand operated "fleygusting" or fowling net, it was hoped to catch large numbers of auks and Fulmars as they flew along the cliff tops. Unfortunately, despite considerable effort, few birds were caught with the "fleyg" and a daily total of 12 auks was difficult to achieve. The poor catching rate was attributed to unfavourable winds. During the 1979 expedition SW or W winds predominated and caused a constant stream of seabirds to use the up-currents near the net operator on the top of southern cliffs whereas few birds flew within reach during the 1985 visit.

In the latter days of the expedition a chance visit to Sloc Greilligeo (NL560794) demonstrated that adult Razorbills could be "fleyged" as they flew out to sea from their colony across a steep grassed slope. Two enjoyable mornings were spent at this site which considerably boosted the auk ringing total.

In the same geo, a safe route down to a sea-level rock shelf was discovered. The rock shelf was used by a large flock of loafing, non-breeding and sub-adult Guillemots and a good sample was caught using a hand net.

The only safely accessible auk colony was at Sloc an Ime and it was here that all the auk pulli were ringed together with several breeding Guillemots and Razorbills. During the 1979 expedition, nine Guillemots were ringed at this colony and, remarkably, one of these was recaptured by hand, incubating an egg in the same spot on 16th June 1985; a fine example of site tenacity.

Shag

Although many nests were accessible, most contained eggs or young too small to ring. A large colony of over 100 pairs was located in a cavern at the head of Sloc Greilligeo and was safely approachable via the rock shelf mentioned above. Unfortunately, almost all nests contained eggs during our visit on 19th June.

Oystercatcher

A single adult was cage trapped at its nest near the jetty on 20th June.

Buzzard

A brood of three ringed by WC in a nest near the top of the 300m cliffs below the burial ground (NL552801) on 15th June. A further chick was ringed in the nest in Sloc Veacligeo (NL557797) by WC after another climb on 16th June.

Passerines

Daytime mist netting was tried only once and a Starling and four Wheatears were caught in the walled grounds of the lighthouse (NL549803). A late brood of Wheatears found by PT was also ringed.

A male Winchat was caught in the late evening in a mist net erected for Storm Petrels at Leac a' Langich (NL562807). The bird was not seen again after release.

Racing Pigeons

A fresh corpse bearing the racing pigeon ring GB 84 K 29183 was found near the lighthouse on 12th June. It had apparently been killed and eaten by a Peregrine. The bird was from a loft at Newtonabbey, Co. Antrim, Northern Ireland and had been released for a race at Gairloch in the Western Highlands on 8th June. The bird was, therefore, considerably off course to the west.

A pigeon bearing the ring GB 83 T 58725 arrived at the lighthouse in an exhausted state on 12th June. The bird quickly made itself at home around the buildings and was reluctantly left to fend for itself when the expedition departed on 21st June. Subsequent enquiries revealed that this bird was also in the Gairloch race and should have been bound for a loft in Craigavon, Co. Armagh. It is of interest to note that 58725 finally returned to its loft on the morning of 6th August 1985.

Table 9: Ringing Totals - Berneray

Species	Fledgling/ Adult	Nestling	Retrap/ Control	Total
Fulmar	12	-	-	12
Storm Petrel	52	-	1	53
Leach's Petrel	2	-	-	2
Shag	4	15	-	19
Buzzard	-	4	-	4
Oystercatcher	1	3	-	4
Lesser Black-backed Gull	-	38	-	38
Herring Gull	-	94	-	94
Great Black-backed Gull	-	33	-	33
Kittiwake	24	-	-	24
Guillemot	59	1	1	61
Razorbill	193	16	-	209
Puffin	19	-	-	19
Winchat	1	-	-	1
Wheatear	5	5	-	10
Starling	1	-	-	1
16 species	373	209	2	584

Table 10: Petrel Ringing Results

Night	Netting Site	Total caught
11/12 June	Steep bank and ruined bothy near camp	Nil
12/13 June	Tresivick	3 Storm 1 Leach's (escaped)
14/15 June	Rubh' an t-Sith	1 Storm
17/18 June	Leac a' Langich	14 Storm (inc. 1 control)
18/19 June	Tresivick	6 Storm 1 Leach's
19/20 June	Leac a' Langich	30 Storm (1 retrap) 1 Leach's



AUKS

Only two cliff sites were found which were considered safe for both ringers and birds. These were Sloc Chiasigeo (NL552839) and an un-named sloc near Guarsay Mor (NL552843) both on the north-west tip of the island. Each site was readily accessible and involved no risk of jumping by unfledged young. Both Razorbill and Guillemot were nesting in these slocs but Razorbill pulli were more advanced than those of the Guillemot and none of the latter were found suitable for ringing.

Adult Razorbill were caught by Fleyg net at the above sites and at Rubh Liath (NL550814) on the south-west corner of the island.

Razorbill (11 birds)

	Wing	Weight
Range	191-200 mm	500-685 gms
Mean	197.0 mm	607.2 gms
Standard Deviation	3.22 mm	55.1 gms

The almost constant wing made the mist netting of Puffins impracticable. Birds were, however, caught at Rubh' an Droma (NL570833) by Fleyg net and a modified form of flick netting. Neither method proved very successful, only ten birds being caught.

Puffin (7 birds)

	Wing	Weight
Range	156-161 mm	340-385 gms
Mean	158.5 mm	362.1 gms
Standard Deviation	1.9 mm	14.3 gms

PASSERINES

Wheatear were very common around the ruined village and, despite so little time being spent mist netting, 30 birds were processed.

Wheatear (29 birds)

	Wing	Weight
Range	88-98 mm	20.5-29.5 gms
Mean	94.5 mm	24.7 gms
Standard Deviation	2.2mm	1.9 gms

The Mingulay ringing team consisted of four members, two holding A class permits and two trainees. Ringing activities of some kind were undertaken during every day on the island resulting in a total of 384 birds processed. See Table 11 for details.

As in 1979, the main effort was concentrated on ringing seabirds, particularly auk pulli, and, considering the lack of safe cliffs, this met with moderate success. All gull species had young and these were ringed where identification allowed. Many Shag young, in various stages of development, were present and those of a suitable size were ringed.

Comparatively little time was given to mist netting passerines but these efforts were fairly successful when the constant wind, often accompanied by mist or rain, is taken into account.

Petrels

Village The ruined buildings of the old village seemed a likely breeding site for Storm Petrels and an attempt was made on the night of 28th/29th June to trap them using mist nets and tape lures. This attempt proved fruitless, possibly due to moonlight, and no birds were caught or seen.

Skipisdale The conditions on the night of 3rd/4th July were perfect with cloud down to 100ft and no wind. A total of 100ft of mist nets was erected on the point at the south-east end of Skipisdale (NL560814) as close to the shore as possible. Both Storm Petrel and Leach's Petrel tape lures were played continuously resulting in a catch of 52 Storm Petrels between midnight and 0300 hrs. It is perhaps worthy of note that, although Skipisdale Point is separated from the main Petrel ringing site on Berneray by only 1km of water, no birds ringed on Berneray were controlled on Mingulay.

Aneir In conjunction with the Skipisdale operation, a second party near the campsite at Aneir (NL568827) erected a 40ft net and played a Storm Petrel tape lure. This produced a catch of nine Storm Petrels with many others seen round the net.

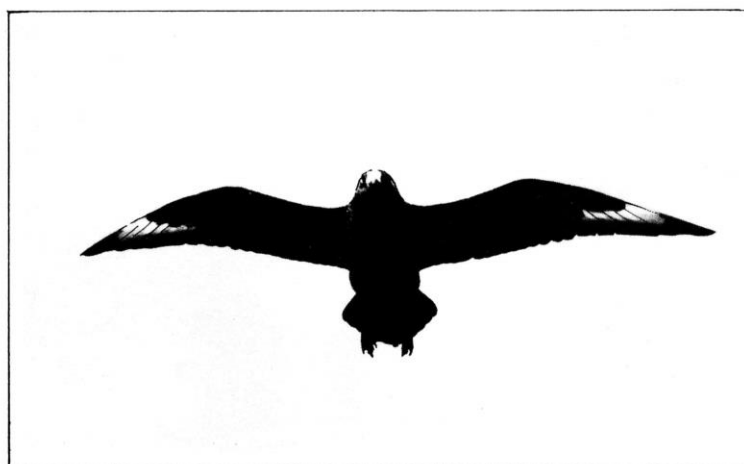
Storm Petrel (61 birds)

Although 31% of the birds processed had brood patches, breeding on Mingulay was not substantiated.

	Wing	Weight
Range	115-127 mm	22.1-29.9 gms
Mean	121.8 mm	25.7 gms
Standard Deviation	2.68 mm	1.79 gms

Table 11: List of Birds Ringed on Mingulay, 1985

Species		Full Grown	Pulli	Total
Storm Petrel	Hydrobates pelagicus	61	-	61
Shag	Phalacrocorax aristotelis	1	29	30
Oystercatcher	Haematopus ostralegus	-	1	1
Great Skua	Caitharacta skua	-	3	3
Common Gull	Larus canus	-	2	2
Lesser Black-backed Gull	Larus fuscus	-	10	10
Herring Gull	Larus argentatus	-	59	59
Great Black-backed Gull	Larus marinus	-	19	19
Razorbill	Alca torda	20	120	140
Puffin	Fratercula arctica	10	-	10
Pied Wagtail	Motacilla alba	2	-	2
Wren	Troglodytes troglodytes	2	-	2
Wheatear	Oenanthe oenanthe	30	-	30
Hooded Crow	Corvus corone cornix	1	-	1
Starling	Sturnus vulgaris	8	4	12
Twite	Acanthis flavirostris	2	-	2
Totals		137	247	384



Great Skua

RECOVERIES OF BIRDS RINGED BY THE
1979 AND 1985 RAFOS OUTER HEBRIDES EXPEDITIONS

B. ETHERIDGE

Details are presented here of 27 birds which were ringed during the 1979 and 1985 RAFOS Outer Hebrides expeditions and for which recovery details are known. It is hoped that more information on recoveries of birds ringed in 1985 will become available in the future when it will be published as an addendum to this report.

THE 1979 EXPEDITION

A total of 686 birds were ringed. Details of eight recoveries were given in the 1979 Expedition report and a further 15 have been notified since its publication. These 23 recoveries, five Storm Petrels, two Herring Gulls, 15 Razorbills and one guillemot are summarised in this section.

The recoveries are arranged by species. Ringing details are given on the first line of each entry (ring number, age, ringing date and locality) and recovery details on the second (manner of recovery, date, locality, distance and bearing from ringing locality). The geographical co-ordinates of the two islands concerned are:

Berneray: 56°47'N 07°38'W (Western Isles)

Mingulay: 56°49'N 08°38'W (Western Isles)

Storm Petrel

2216535	Adult 13. 8.78	St Kilda, 57°49'N 08°34'N (Western Isles)	
	Controlled 19. 6.79	Berneray	128km 154°
2236512	Adult 19. 6.79	Berneray	
	Controlled 26. 6.80	Shiant Isles	
		57°54'N 06°22'W (Western Isles)	145km 031°
2236528	Adult 21. 6.79	Berneray	
	Fresh dead 6. 7.81	Treshnish Is.	
		56°26'N 06°26'W (Strathclyde)	81km 114°
2236707	Adult 19. 6.79	Berneray	
	Controlled 9. 8.79	St Kilda	128km 334°
2236741	Adult 3. 7.79	Mingulay	
	Controlled 8. 8.79	Summer Isles	
		58°02'N 05°26'W (Highland)	189km 044°

These inter island movements are typical of non-breeding "wanderers".

Herring Gull

GJ04073 Nestling 2. 7.79 Mingulay
 Dead 6. 9.81 Troon
 55°32'N 04°44'W (Strathclyde) 232km 128°

GJ04021 Nestling 20.6.79 Berneray
 Dead 4. 4.86 Tiree
 56°31'N 06°50'W (Strathclyde) 57km 121°

Razorbill

M34521 Adult 15. 6.79 Berneray
 Alive-oiled 7. 2.82 Arklow
 52°48'N 06°09'W (Wicklow, Eire) 453km 168°

M34534 Adult 15. 6.79 Berneray
 Dying-oiled 1. 9.80 Tintagel
 50°39'N 04°46'W (Cornwall) 707km 165°

M34601 Adult 16. 6.79 Berneray
 Dead 22. 6.80 St Gildas-de-Rhuis
 47°29'N 02°40'W (Morbihan, France) 1087km 162°

M34605 Adult 16. 6.79 Berneray
 Oil victim 3. 1.82 Brighton
 50°50'N 00°14'W (Sussex) 820km 144°

M34610 Adult 16. 6.79 Berneray
 Oil victim 9. 1.81 Brest
 48°24'N 04°29'W (Finistere, France) 955km 167°

M34621 Adult 17. 6.79 Berneray
 Dead 16. 1.83 Portbail
 49°20'N 01°42'W (Manche, France) 917km 154°

M34628 Adult 17. 6.79 Berneray
 Dead 5. 2.84 West coast
 49°25'N 02°40'W (Guernsey, Channel Islands) 883km 156°

M34653 Adult 18. 6.79 Berneray
 Dead-auk wreck 13. 2.83 Fraserburgh
 57°39'N 02°11'W (Grampian) 342km 074°

M34682 Adult 18. 6.79 Berneray
 Dead 18. 3.81 Brittas Bay
 52°53'N 06°03'W (Wicklow, Eire) 445km 167°

M34701 Adult 18. 6.79 Berneray
 Dead 28.12.83 Piel Island
 54°03'N 03°11'W (Cumbria) 413km 137°

M34705 Adult 18. 6.79 Berneray
 Dead 16. 3.82 Tremadoc Bay
 52°54'N 04°13'W (Gwynedd) 484km 153°

M34746 Adult 18. 6.79 Berneray
 Dead 30. 1.83 Zandvoort
 52°22'N 04°31'E (Noord-Holland, Netherlands) 978km 128°

M34750	Adult	18.	6.79	Berneray			
Dead-awk	wreck	20.	2.83	North Berwick	56°04'N	02°44'W (Lothian)	353km 123"
M34764	Adult	21.	6.79	Berneray			
Oil victim		1.	3.82	Filey Brigg	54°12'N	00°17'W (North Yorkshire)	606km 131"
M34778	Adult	4.	7.79	Mingulay			
Dead		6.	2.84	Plage de Biville	49°37'N	01°49'W (Manche, France)	888km 154"

An interesting scatter of recoveries showing a winter dispersal south through the Irish Sea to Biscay with some birds entering the North Sea, probably via the English Channel, Map 9. the pattern displayed fits very closely that shown by adults from the more southerly Irish Sea colonies (Mead 1974) where few birds move more than 1000km or penetrate the North Sea. Moreover, three of the four North Sea recoveries were part of the infamous auk wreck of early 1983 when 18,000 Razorbills were washed ashore along Britain's east coast (Underwood and Stowe 1984). These three may be atypical and not representative of the normal winter movement of Berneray or Minquary birds.

Regrettably, one third of the recoveries were of birds reported as oiled and this total may be even higher because some birds reported merely as "dead" may also have been oiled.

Berneray's 14 recoveries from a total of 276 adults ringed represents a rate of 5.1%. This is much higher than the 3% average for British birds reported by Lloyd (1974). Mingulay's single recovery of a single adult ringed (100%) supports the popular view among ringers that to get a good recovery it is only necessary to ring one or two birds.

Guillemot

GJ04034 Adult 21. 6.79 Berneray
Controlled 16. 6.85 Berneray - at same colony

THE 1985 EXPEDITION

A total of 968 birds were processed. Details of four recoveries are available so far; a Storm Petrel on Berneray, a Herring Gull chick from Mingulay, a Shag and a Great Black-backed Gull chick from Berneray. The Storm Petrel is particularly interesting in that it had wandered a considerable distance between a southern Irish and a Scottish island.

Storm Petrel

2316074 Adult 8. 8.84 Cape Clear Island, Cork, Eire, 51°26'N 9°31'W
Controlled 17. 6.85 Berneray 607km 012"

Shag

1227002 Adult 13. 6.85 Berneray
Fresh dead 14. 4.86 Vatisker, Isle of Lewis
58°16'N 06°16'W (Western Isles) 184km 026°

Herring Gull

GG36147 Nestling 28.6.85 Mingulay
Dead, not fresh 31.8.85 Daliburgh, S.Uist
57°10'N 07°24'W (Western Isles) 41km 020°

Great Black-backed Gull

HT11677 Nestling 18.6.85 Berneray
Dead 15.1.86 Dundalk
54°01'N 06°24'W (Louth, Eire) 317km 166°



MAP 10: RECOVERIES OF SEABIRDS RINGED BY THE 1979 RAFOS
OUTER HEBRIDES EXPEDITION



Between 19th and 21st June 1985, NAS and Dominic Counsell surveyed the whole of the island of Berneray and attempted to identify all the plant species found. In addition, these species were grouped into the plant communities shown on Map 11. A full list of the 92 species identified appears below, followed by a list of the bryophytes collected by Dr N.E. Buxton on 30th June 1985.

As can be seen from Map 11, the most abundant plant community which formed the moorland, was Acidic Grassland. This community was dominated by such species as Purple Moor Grass, Star Sedge, Sweet Vernal Grass, Tormentil, Common Sedge and Sheep's Sorrel. Amongst the long turf on the south facing slopes above Sloc an Ime, Marsh Pennywort was strangely abundant but not growing on the rocks and walls that it often favours. Around areas of former habitation the dominant grass was Sheep's Fescue with Silverweed, Daisy and Greater Plantain being locally abundant. In wetter areas Yellow Iris and Soft Rush were found, whilst Primrose was found sparingly on dry stone walls and banks.

Where the substrata was poorer stunted forms of Cross-leaved Heath and Common Heather were interspersed with such species as Common Butterwort, Common Lousewort, Sphagnum Mosses, Heath Milkwort, Yorkshire Fog and Purple Moor Grass. The only tree species present was Creeping Willow found in very short turf amongst gneiss boulders.

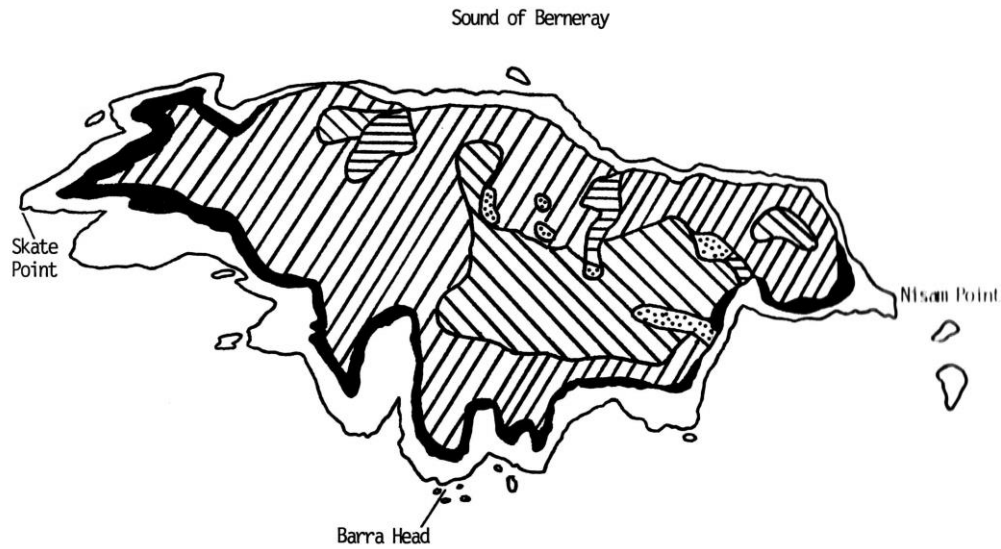
Where the island had been dissected by rivulets, spongy valley bog areas were colonised by Sphagnum Mosses in association with Yorkshire Fog, Common Sedge and Heath Spotted Orchid interspersed with such colourful species as Lousewort and Tormentil.

In other wet areas, which were on level ground and formed the collecting areas for the small rivulets, different species were seen. The dominant species were Purple Moor Grass, Common Cotton Grass and Sphagnum spp. In places such species as Common heather and Creeping Willow appeared.






Common Heather and Creeping Willow were dominant in the plant community described as Dwarf Shrub Heath which covered the areas where gneiss outcropped on the ridge of the Aird. A few peaty pools in this area, which dry up periodically, supported Bog Pondweed and Many-starred Spikerush.

The coastline provided a distinct, thin edge to the island characterised by short turf and steep cliff enriched by the droppings of the thousands of nesting seabirds. Above the cliffs Sheep's Fescue and Sweet Vernal Grass dominated, interspersed with such species as Thrift, Buckshorn Plantain, Sea Plantain and Procumbent Pearlwort. On steeper areas of cliff Roseroot, Sea Mayweed, Sea Campion and Curled Dock surrounded the area frequented by Rabbits and Puffins. Two interesting umbellifer species were Lovage and Wild Angelica. Species such as Common Scurvy Grass, Thrift and Spear Thistle were noted growing among the seashore rocks.

MAP 11: Floral communities on Berneray



KEY

Acadic Grassland	
Dwarf Shrub Heath	
Valley Bog	
Lowland Raised Bog	
Maritime Cliff	

The list of species compiled in the brief three-day period inevitably suffers from the inexperience of the recorders, particularly among the sedges, grasses and lichens. Allowing for changes in nomenclature, around 75% of the 123 species found in the 1930s by W.A. Clark (Clark W.A. and Heslop-Harrison, 1938) were identified during this survey, adding 17 to the 1979 list.

ANNOTATED SYSTEMATIC PLANT LIST

BERNERAY, JUNE 1985

- Sea Spleenwort Asplenium marinum
Collected from buildings at the campsite.
- Narrow Buckler Fern Dryopteris carthusiana
Scarce. Found on old walls above the well. Not previously recorded.
- Meadow Buttercup Ranunculus acris
In wet grasslands and bogs.
- Creeping Buttercup Ranunculus repens
Common in short turf in areas of former cultivation.
- Lesser Spearwort Ranunculus flammula
Found only in the water course alongside the main island track.
- Lesser Celandine Ranunculus ficaria
Found only in the water course.
- Common Scurvy Grass Cochlearia officinalis
Found on shoreline and cliffs. C. scotica was possibly identified at Skate Point.
- Lady's Smock Cardamine pratensis
Scarce in small streamlets.
- Marsh Violet Viola palustris
On wet grassland.
- Common Milkwort Polygala vulgaris
Common on the moors. Ninety-five percent dark blue, the rest dark pink.
- Heath Milkwort Polygala serpyllifolia
Occurred on cliffs but difficult to distinguish from P. vulgaris.
- Sea Campion Silene maritima
Abundant on the cliffs in the north and west.
- Ragged Robin Lychnis flos-cuculi
A few plants near the jetty.
- Dark-green Mouse-ear Chickweed Cerastium diffusum
Common near old dwellings and on the cliffs.

Common Chickweed	<u>Stellaria media</u>
In areas of former cultivation.	
Procumbent Pearlwort	<u>Sagina procumbens</u>
On cliffs and bare rocky places.	
Blinks	<u>Montia fontana</u>
Common in the wet gullies of the cliffs in the north and west.	
Good King Henry	<u>Chenopodium bonus-henricus</u>
A very small, stunted plant, probably of this species, was found in the lighthouse courtyard. Not previously recorded.	
White Clover	<u>Trifolium repens</u>
Recorded in areas of former cultivation.	
Kidney Vetch	<u>Anthyllis vulneraria</u>
Local on cliffs in the east.	
Birdsfoot Trefoil	<u>Lotus corniculatus</u>
On dry grassland.	
Tufted Vetch	<u>Vicia cracca</u>
Uncommon and confined to former cultivated areas.	
Meadow Vetchling	<u>Lathyrus pratensis</u>
On banks and sides of streamlets.	
Meadowsweet	<u>Filipendula ulmaria</u>
Marshy places, particularly near the jetty.	
Silverweed	<u>Potentilla anserina</u>
Abundant in old fields and areas of former habitation.	
Common Tormentil	<u>Potentilla erecta</u>
Common throughout the island.	
Roseroot	<u>Sedum rosea</u>
Abundant on the cliffs.	
English Stonecrop	<u>Sedum anglicum</u>
Common on the rocks near the sea and on the gneiss outcrops.	
Common Sundew	<u>Drosera rotundifolia</u>
Common in the lowland raised bogs.	
Marsh Willowherb	<u>Epilobium palustre</u>
Leaves, probably of this species, found in marshy areas.	

Marsh Pennywort	<u>Hydrocotyle vulgaris</u>
Common throughout the island in longer grass.	
Hemlock Water Dropwort	<u>Oenanthe crocata</u>
A few plants in the streamlets near the campsite. Not previously recorded.	
Lovage	<u>Ligusticum scoticum</u>
Sparingly on cliffs.	
Wild Angelica	<u>Angelica sylvestris</u>
Common, particularly on western cliffs.	
Sheep's Sorrel	<u>Rumex acetosella</u>
In the short turf of the acidic grassland.	
Common Sorrel	<u>Rumex acetosa</u>
Recorded on the seashore turf.	
Curled Dock	<u>Rumex crispus</u>
Recorded on cliffs as well as amongst rocks near the shore.	
Nettle	<u>Urtica dioica</u>
Recorded around areas of former cultivation.	
Creeping Willow	<u>Salix repens</u>
Low individuals growing in association with Common Heather amongst gneiss boulder outcrops.	
Common Heather	<u>Calluna vulgaris</u>
Stunted plants scattered amongst outcrops of gneiss.	
Cross-leaved Heath	<u>Erica tetralix</u>
Found only on the east coast slopes.	
Thrift	<u>Armeria maritima</u>
Common on rocks and cliffs.	
Primrose	<u>Primula vulgaris</u>
Not common. Scattered among old stone walls and banks.	
Bog Pimpernel	<u>Anagallis tenella</u>
Recorded throughout. A white flowered form observed.	
Common Centaury	<u>Centaureum erythraea</u>
Restricted to short turf above Sloc an Ime.	
Early Forget-me-not	<u>Myosotis ramosissima</u>
Only one plant found situated on the main track.	

Lousewort	<u>Pedicularis sylvatica</u>
Common on the wet areas of the moor.	
Eyebright	<u>Euphrasia breviphila</u>
Common on the acidic grassland in the north of the island.	
Common Butterwort	<u>Pinguicula vulgaris</u>
Common in wet areas of the moor.	
Wild Thyme	<u>Thymus drucei</u>
Among short vegetation on the middle, boulder-strewn ridge.	
Self-Heal	<u>Prunella vulgaris</u>
Recorded throughout.	
Rat-tail Plantain	<u>Plantago major</u>
Recorded in areas of former habitation.	
Ribwort Plantain	<u>Plantago lanceolata</u>
Common on the short, maritime turf and in areas of former cultivation.	
Sea Plantain	<u>Plantago maritima</u>
Common amongst short, maritime turf.	
Buckshorn Plantain	<u>Plantago coronopus</u>
Common amongst rocks and short, maritime turf.	
Ivy-leaved Bellflower	<u>Wahlenbergia hederacea</u>
Small, delicate leaves possibly of this species found only in the acidic grassland of Tresivick.	
Devilsbit Scabious	<u>Succisa pratensis</u>
Common throughout the island.	
Marsh Ragwort	<u>Senecio aquaticus</u>
Recorded in marshy flushes.	
Mountain Everlasting	<u>Antennaria dioica</u>
Only three individuals found in short turf among rocky outcrops.	
Yarrow	<u>Achillea millefolium</u>
Common on the track up to the lighthouse by a derelict cottage.	
Daisy	<u>Bellis perennis</u>
Common in previously cultivated areas.	
Sea Mayweed	<u>Matricaria maritimum</u>
Very common on rocky slopes of the north and west cliffs.	

Spear Thistle	<u>Cirsium vulgare</u>
Common in areas of former cultivation.	
Creeping Thistle	<u>Cirsium arvense</u>
Common in areas of former cultivation.	
Prickly Sow Thistle	<u>Sonchus asper</u>
Found around derelict houses and along the edge of the main track.	
Marsh Arrow Grass	<u>Triglochin palustris</u>
Not uncommon in wet places by the side of streamlets.	
Mouse-ear Hawkweed	<u>Hieracium pilosella</u>
Uncommon in short turf on the northern slopes.	
Lesser Dandelion	<u>Taraxacum laevigatum</u>
Found in areas of former cultivation.	
Bog Pondweed	<u>Potamogeton polygonifolius</u>
Common in small peaty pools.	
Bog Asphodel	<u>Narthecium ossifragum</u>
Common in boggy areas.	
Spring Squill	<u>Scilla verna</u>
A few plants found on the southern short turf.	
Soft Rush	<u>Juncus effusus</u>
Common in wet flushes.	
Jointed Rush	<u>Juncus articulatus</u>
A few plants found in wetter parts of the acidic grassland.	
Many-headed Woodrush	<u>Luzula multiflora</u>
Common amongst the short turf of acidic grassland.	
Yellow Flag	<u>Iris pseudacorus</u>
Common in large patches in areas of former cultivation.	
Heath Spotted Orchid	<u>Dactylorhiza maculata</u>
Common on the dwarf shrub heath and valley bog.	
Western Marsh Orchid	<u>Orchis majalis occidentalis</u>
Only four plants near the boathouse. Three inches high with keeled, unspotted, lanceolate, recurved leaves. Deep vinaceous colour, including straight spur. Bracts not extending beyond the greenish-purple flower spike. Wings raised at 45° pointing forwards. Lip not pointed. Labella 3-4 serrations.	

Common Cotton Grass Common on wetter areas of the moor.	<u>Eriophorum angustifolium</u>
Deer Grass Common on the moor.	<u>Trichophorum cespitosum</u>
Many-stemmed Spikerush Common in streamlets.	<u>Eleocharis multicaulis</u>
Common Spikerush Common in central peat bogs.	<u>Eleocharis palustris</u>
Common Sedge Common in wet places.	<u>Carex nigra</u>
Star Sedge Common in wet places.	<u>Carex echinata</u>
Sheep's Fescue Common on higher area of moor. One specimen of <u>F. vivipara</u> also noted.	<u>Festuca ovina</u>
Annual Meadow Grass Recorded in areas of former habitation.	<u>Poa annua</u>
Smooth-stalked Meadow Grass Found in areas of former habitation.	<u>Poa pratensis</u>
Lop Grass Found in areas of former habitation.	<u>Bromus hordeaceus</u>
Sweet Vernal Grass Abundant in acidic grassland.	<u>Anthoxanthum odoratum</u>
Yorkshire Fog Locally common.	<u>Holcus lanatus</u>
Brown Bent Recorded in areas of short turf throughout the island.	<u>Agrostis canina</u>
Reed Common in valley bogs.	<u>Phragmites communis</u>
Purple Moor Grass Common throughout the island.	<u>Molinia caerulea</u>
Mat Grass Locally distributed throughout the island.	<u>Nardus stricta</u>

Specimens of mosses were collected by NEB from habitats throughout the island on 30th June 1985. Whilst every effort was made to collect as many species as possible, no claim is made that this list is anywhere near complete for the island. Identification of the specimens was carried out by Dr P. Pitkin of the Nature Conservancy Council, Edinburgh.

Pseudoscleropodium purum
Rhytidiadelphus squarrosus
Polytrichum commune
Ulota phyllantha
Acrocladium (Calliergon) cuspidatum
Mnium hornum
Hypnum cupressiforme var. *lacunosum*
Hypnum cupressiforme var. *resupinatum*
Hypnum jutlandicum
Thuidium tamarischinum
Sphagnum capillifolium
Sphagnum auriculatum
Frullania germana (= *teneriffae*)
Pellia epiphylla

All species collected were to be expected in such locations. The most notable was *Frullania germana* which is very much a West Coast plant and usually found not far from the sea. However, this specimen was densely tufted which is atypical for the species.

Mingulay, together with Berneray, form the southern-most islands of the Long Island, or the archipelago of the Western Isles. Of the two islands, Mingulay is the larger being approximately 4.5kms long and 2kms broad at its widest point (map 12). Consequently no area is much more than 1km from the coast. The long axis is orientated in a north-east - south-west direction. The underlying rock is Lewisian Gneiss giving a very nutrient poor soil for plant growth. This limitation on plant growth is augmented by peat formation on top of the till and aspects of the climate such as exposure, rainfall, humidity, wind and salt spray. The one obvious source of nutrient in the form of lime is the south-east facing shell-sand beach of Mingulay Bay in the middle of the island.

The vegetation of Mingulay was mapped during the period 26th-29th June 1985 by NEB assisted by R. Bayford and M. Read. A total of 116 species of plants was recorded. These are summarised in an Annotated Systematic List below. This is followed by a list of bryophytes collected on the island.

Groups of species occurred together consistently in noticeable community types. Fifteen main types, a few of which could be sub-divided, were noted and are detailed below:

1. Open shore

The vast majority of the island was surrounded by rocky shores which were often backed by massive cliffs. The only sandy shore was Mingulay Bay itself. Being an exposed soft shore, no vegetation grew upon it.

2. Dunes

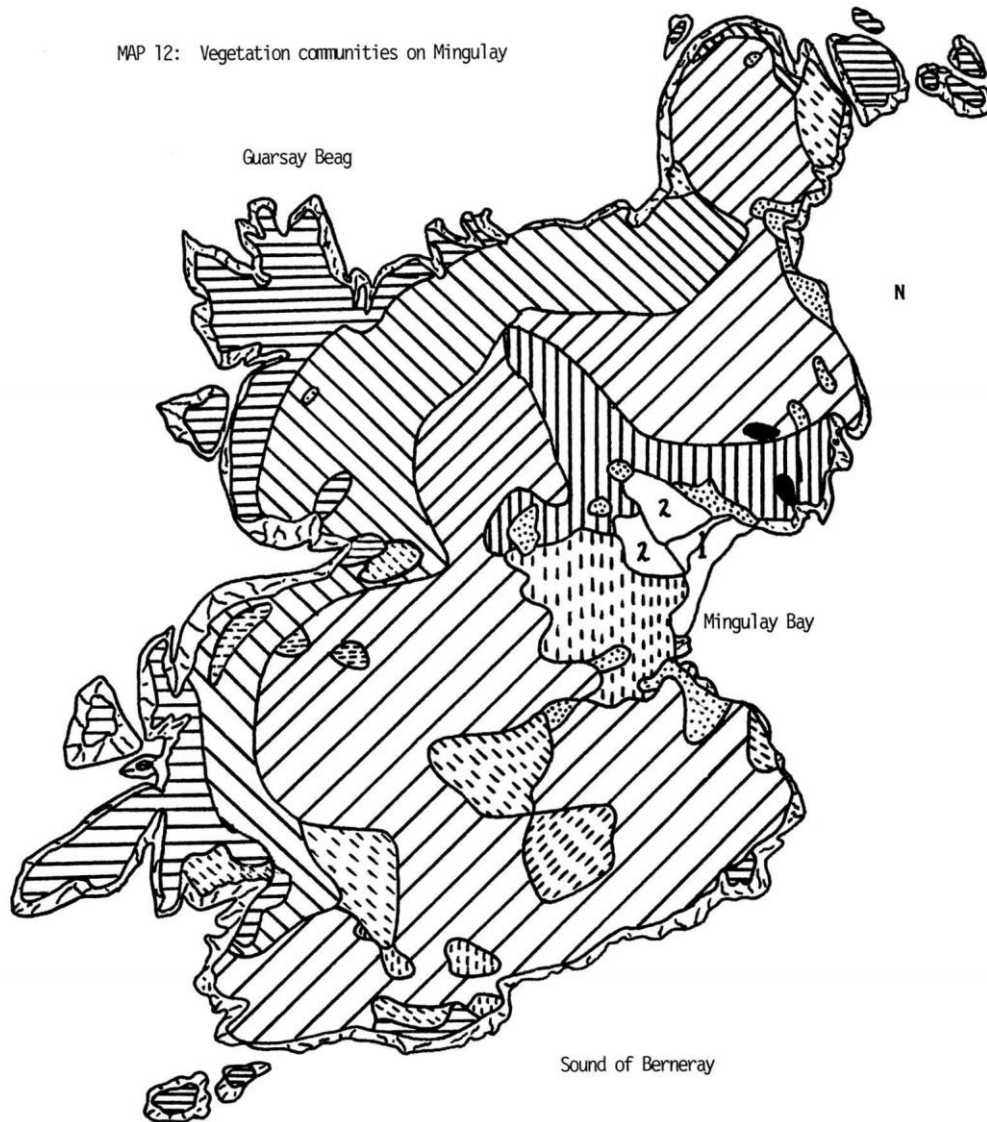
The area of dunes was very small, mainly to the west of Mingulay Bay. Many of the dunes were unstable and incompletely vegetated, especially in the south-west around the old village. Generally, the most abundant dune species was Marram Grass associated with Silver Weed. In contrast, one of the very low fore dunes to the east of the village was dominated by Sand Couch Grass. The dunes inundating the old village showed the signs of previous human occupation and disturbance by the presence of Sticky Mouse-ear, Cleavers, Field Forget-me-not, Field Thistle, Docks and various Umbellifers.

3. Dune Slacks

In the flat areas between the behind the dunes were somewhat poor examples of dune slacks supporting Doves-foot Cranesbill, Bugloss and Common Storks-bill. They were too dry and near the foreshore, hence subject to blowing sand, to be species rich but most notable was the extensive area of Sea Holly in the northern dunes. Unfortunately, at the time of the survey, this had not yet flowered.

Till:- deposit of clay, sand and gravel formed in a glacial valley.
Ed.

MAP 12: Vegetation communities on Mingulay



KEY

Maritime Grassland		Wet Heath	
Dune Grassland		Dry Heath	
Nardus Acid Grassland		Luzula Heath	
Molinia Acid Grassland		Semi-improved Grassland	
Marshy Grassland		Foreshore	
Flush		Dune/Dune Slack	

4. Dune Grassland

The largest area was immediately north of the stream running through the village into Mingulay Bay. The main exposure would appear to be south-easterly winds as the sand influence can be traced to the summit of the village as it has been blown up the gully to the south-west of MacPhee's Hill. This basic grassland also occurred on the lower slopes of MacPhee's Hill to the north of the Bay. At its most easterly extent it "hung" over the cliffs and was extensively burrowed by Puffins. Red Fescue was one of the most abundant grasses in association with Common Mouse-ear, Ladies Bedstraw, Self Heal, Yarrow and Daisies. Wild Thyme, Purging Flax, Ribwort Plantain and Birds-foot Trefoil were also widely distributed.

5. Semi-improved Neutral Grassland

This could be divided into three more or less separate types:

(a) Coastal Neutral Grassland

This was distributed mainly to the south of Mingulay bay, to the east of the path to the School House. The turf was very short and dense amongst which the main species were Red Fescue, Creeping Buttercup, White Clover and Thyme with Black Bog Rush indicating local enrichment. Scabious, Tormentil, Butterwort, Knapweed and sedges were also abundant with several orchid species, including Northern Marsh, Heath Spotted and Early Marsh, by no means rare. Small specimens of the Adders Tongue Fern also grew in the close turf. There was no evidence of any cultivation in this area although it obviously suffered continuous grazing by Blackface Sheep.

(b) Old Cultivated Improved Grassland

This occurred almost entirely immediately south of the burn flowing to the old village from the lower northern slopes of Carnan. Traces of the old croft rigs were still apparent in the relict stone and turf dykes running north/south down the slope. Further east the signs of cultivation were greatly reduced. Freshly dug earth from Rabbit burrows showed that it contained a considerable amount of sand, presumably either carried by man or, more likely, blown from the Bay. However the sand concentration did not appear visually as great as that in the dune grassland to the north. The sward was green and dense with the main grasses present being Creeping Bent, Meadow grasses and Red Fescue. Field Buttercup, White Clover, Self Heal and Common Mouse-ear were common herb species but Ladies Bedstraw was far less abundant than in the dune grassland. Fertiliser application and sheep grazing were almost certainly instrumental in maintaining this community.

(c) Semi-improved Neutral Grassland

This occurred mainly to the east of the School House in Mingulay Bay and in what appeared to be stone and turf walled enclosures in Skipisdale. No evidence was noted that this had been cultivated but it had specialised vegetation possibly due to the activities of stock or past fertiliser treatment.

Rigs:- ridges caused by ploughing constantly in the same direction.
Ed.

Among the common species were Yorkshire Fog, Sweet Vernal Grass and Crested Dogs Tail usually associated with Daisy, Birds-foot Trefoil, White Clover and Wild Thyme. The presence of Daisy suggested heavy grazing pressure but perhaps the most noticeable feature of this community was the considerable local dominance of Silverweed. In Mingulay Bay bryophytes and Purple Moor Grass became more common towards the north-west.

These semi-improved grasslands appeared to be the main strongholds of the large Rabbit population.

6. Acid Grassland

This was one of the most common communities on the island and could be divided into two distinct types:

(a) Nordus Grassland

Relatively few species occurred in this community. The dominants were Mat Grass itself, Purple Moor Grass, Viviparous Fescue and Tormentil generally associated with other acidophilous species such as Flea Sedge, Heath Milkwort and Scabious. Distribution of this community was noticeably western with a marked change to other communities, usually wet heath, once east of the summit ridge running north/south along the island.

(b) Molinia Grassland

This tended to be the wetter of the two acid grassland communities although the transition was not always clear. Additionally, in certain areas Purple Moor Grass was dominant in a very marshy community subtly different from Molinia grassland proper. The damper nature of this second acid grassland type was indicated by the presence of Black Bog Rush, Carnation Sedge, Bog Asphodel, Cross-leaved Heath, Butterwort and Heath Spotted Orchid. Generally this community tended to be a southern and eastern type with Black Bog Rush being most common in the south.

7. Marshy Grassland

This was usually dominated by rank, tussocky Purple Moor Grass but included Ragged Robin, Carnation Sedge, Spike Rush and Common Rush. Occasionally Iris and Meadowsweet were also present.

8. Maritime Grassland

The short turf of this community, although present in small areas on the east coast, was most frequent on the exposed rocky headlands of the west or on the offshore stacks and islets. Red Fescue was often dominant together with Sea Plantain, Buckshorn Plantain, Thrift and Sea Milkwort. Primroses occurred further east as the exposure and saline influence decreased. In the south of the island, Marsh Pennywort occurred in the community.

9. Cliff Flora

This was basically very similar to maritime grassland but, due to the reduced grazing, was longer and ranker. Thrift, Fescue, Roseroot and Scurvy Grass were all obvious while Sea Campion, Angelica, Wild Rose and Honeysuckle occurred much more locally.

Near the cliff-top Birds-foot Trefoil, White Clover and Thyme became more prominent.

10. Flush

The survey was not detailed enough to identify most flushes. Noticeable species were Lesser Spearwort, Carnation Sedge, Low Sedge, Star Sedge, Sundew, Yellow Flag Iris and Bog Pimpernel.

11. Wet Heath

This community was generally distributed in the northern and eastern situation. It appeared to be separable into two types:

(a) Northern Type

This was located north of Mingulay Bay. Long and bushy Common Heath was the dominant species but over 25 other species were associated. Deer Grass, Common Cotton Grass, Carnation Sedge, Purple Moor Grass, Cross-leaved Heath, Mountain Everlasting, Spring Squill, Birds-foot Trefoil, Heath Spotted Orchid and Creeping Willow all occurred in varying amounts. Bog Pimpernel had an interesting distribution in the transition between wet heath and the dune grassland north of Mingulay Bay growing profusely well up the slope into the acid conditions.

(b) Southern Type

This type generally appeared to be much shorter in structure and although this may have been due to past burning practices, it was by no means obvious. The dominant species were Common Heath, Cross-leaved Heath and Purple Moor Grass. Although Tormentil, Lousewort, Heath Milkwort and Creeping Willow occurred, the species diversity was nowhere as great as in the north. The abundance of some maritime species such as Sea Plantain suggested the difference may be due to the degree of exposure.

12. Dry Heath

Only one area, typified by the presence of Bell Heather as opposed to Cross-leaved Heath, occurred on the east slope of Hecla.

13. Luzula Heath

Dense stands of Greater Woodrush were very restricted in extent; the best stands occurring on the west slope of Carnan. Less pure stands occurred on the summits of Carnan and Hecla, very much reminiscent of the oceanic communities on the tops of the hills of St Kilda.

14. Bracken

This was only locally common; occurring in considerable stands to the north of Mingulay Bay. Diversity was greatly restricted within these areas. Probably grasses such as Mat Grass, Sweet Vernal Grass, Purple Moor Grass and Bent Grass were most common but Tormentil, Milkwort, Heath Spotted Orchid and Scabious all occurred.

15. Open Water Bodies

Both running and standing waters were scarce. The largest sources of the former were the two burns emptying into Mingulay Bay; both with a number of waterside species. There were small peaty pools to the south-east of the Bay Sletta and north of Tom a Mhaide. The latter supported a considerable stand of Spikerush and a pondweed (*Potamogeton* sp.).

As with so many offshore islands, exposure to wind and sea spray is of paramount importance in determining plant distribution. In Mingulay it almost certainly underlies the distribution of the acid grassland and heath communities; the westerly acid grassland tolerating a far greater exposure. An even greater tolerance to exposure is demonstrated by the maritime grasslands on prominent headlands and stacks. The lush grasslands are restricted to the relatively sheltered confines of Mingulay Bay where the additional modifying influence of the shell-sand in a lime deficient environment is considerable. However, even in this area the effect of exposure, especially from the south-east, is demonstrated by the progressive inundation of the village and the quantity of sand blown up MacPhee's Hill.

There appeared to be a subtle difference between the grasslands north and south of the Mingulay Bay burn. This is possibly due to the drier nature and reduced humus content of the northern area and also to the fact that it appears to have been cultivated less. The southern area still has the lines of old field rigs and the eastern part of this area was ploughed as a field of potatoes in 1949 (MacGregor, 1971). This was probably the last cultivation on Mingulay. Traces of other cultivation, now completely reclaimed by natural vegetation, were apparent in the long derelict lazy beds in Skipisdale and west of Hecla Point.

Grazing in this type of environment is very important in its effects on the vegetation. No detailed sheep count was made but the flocks were restricted to certain areas noticeably Skipisdale, Mingulay Bay, South Carnan, Dun Mingulay and Tom a' Mhaide. Rough counts suggested the island total to be in excess of 240. This is far lower than the stocking rates of the early post war years. In 1951, when the island was offered for sale, the maximum stocking level on Mingulay was considered to be 800 sheep, although the actual level was somewhat lower.

One plant unlikely to be affected by sheep is Sea Holly. It is restricted to the dune slacks on Mingulay Bay and this may well be the only location for the species in the Western Isles.

Although few scarce plants were discovered on Mingulay during this survey, the complex nature of the distribution of the different communities was revealed. Reasons for these distributions have been tentatively suggested. Further work is now required to establish soil type and structure, exposure to wind and salt spray, seasonal grazing patterns of sheep and rabbits etc., and how these parameters relate to the vegetation.

Lazy beds:- A traditional method of growing potatoes etc in thin soil, where soil is dug from trenches on either side of the bed to cover the roots.

Ed.

Yarrow	<u>Achillea millefolium</u>
Common in the grasslands of Mingulay Bay.	
Sand Couch Grass	<u>Agropyron junceiforme</u>
Restricted to low embryo dunes in Mingulay Bay.	
Creeping Bent Grass	<u>Agrostis stolonifera</u>
Common	
Marram Grass	<u>Ammophila arenaria</u>
Restricted to the dunes in Village Bay.	
Bog Pimpernel	<u>Anagallis tenella</u>
Appeared to be restricted to flushes and the sandy/acid soil interface.	
Angelica	<u>Angelica sylvestris</u>
Mostly in ungrazed situations in Mingulay Bay and on cliffs.	
Mountain Everlasting	<u>Antennaria dioica</u>
Sparsely distributed through the wet heath.	
Sweet Vernal Grass	<u>Anthoxanthum odoratum</u>
Very common.	
Burdock	<u>Arctium lappa</u>
Restricted to the dune areas.	
Thrift	<u>Armeria maritima</u>
Common on exposed headlands and cliffs along with other maritime plants.	
Daisy	<u>Bellis perennis</u>
Widespread in the grasslands.	
Common Heather	<u>Calluna vulgaris</u>
The common heather throughout the heath community.	
Marsh Marigold	<u>Caltha palustris</u>
Occasional in damp places in Mingulay Bay.	
Sand Sedge	<u>Carex arenaria</u>
Noted only in Mingulay Bay.	

Low Sedge Widespread.	<u>Carex demissa</u>
Star Sedge Widespread	<u>Carex echinata</u>
Glaucous Sedge	<u>Carex flacca</u>
Common Sedge Very common.	<u>Carex nigra</u>
Carnation Sedge	<u>Carex panicea</u>
Flea Sedge Widespread	<u>Carex pulicaris</u>
Knapweed Widespread in Mingulay Bay	<u>Centaurea nigra</u>
Common Mouse Ear Widespread in Mingulay Bay.	<u>Cerastium fontanum</u>
Clustered Mouse Ear Widespread in Mingulay Bay.	<u>Cerastium glomeratum</u>
Field Thistle Mainly in the grasslands and past inhabited areas of Mingulay Bay.	<u>Cirsium arvense</u>
Spear Thistle Restricted to semi-improved land.	<u>Cirsium vulgare</u>
Scurvy Grass Among maritime communities on exposed headlands and coasts.	<u>Cochlearia officinalis</u>
Crested Dog's Tail Grass Common	<u>Cynosurus cristatus</u>
Common Spotted Orchid Common in Mingulay Bay.	<u>Dactylorhiza fuchsii</u>
Early Marsh Orchid Uncommon but widespread in the grasslands of Mingulay Bay.	<u>Dactylorhiza incarnata</u>
Northern Marsh Orchid Uncommon but widespread in the grasslands of Mingulay Bay.	<u>Dactylorhiza purpurella</u>

Common Sundew	<u>Drosera rotundifolia</u>
Widely distributed on the acid heathland.	
Marsh Spikerush	<u>Eleocharis palustris</u>
Local in pools and the burn in Mingulay Bay.	
Bell Heather	<u>Erica cinerea</u>
Not particularly common. Mainly on the eastern slopes of Hecla.	
Cross-leaved Heath	<u>Erica tetralix</u>
Common in the wet heaths.	
Common Cotton Grass	<u>Eriophorum angustifolium</u>
Common.	
Hare's Tail Grass	<u>Eriophorum vaginatum</u>
Widely distributed on the acid ground.	
Common Stork's Bill	<u>Erodium cicutarium</u>
Common on the sandy habitats of Mingulay Bay.	
Sea Holly	<u>Eryngium maritimum</u>
Restricted to dry slacks in the dunes. This is possibly the only locality for this species in the Western Isles.	
Eyebright	<u>Euphrasia aggr.</u>
Widespread.	
Sheep's Fescue	<u>Festuca ovina</u>
Very common.	
Red Fescue	<u>Festuca rubra</u>
Very common throughout.	
Viviparous Fescue	<u>Festuca vivipara</u>
Within the wet heath.	
Meadowsweet	<u>Filipendula ulmaria</u>
Very scarce.	
Cleavers	<u>Galium aparine</u>
Restricted to the village area in Mingulay Bay.	
Heath Bedstraw	<u>Galium saxatile</u>
Widespread.	

Ladies Bedstraw Common on the marshier grassland.	<u>Galium verum</u>
Doves Foot Cranesbill Restricted to Mingulay Bay.	<u>Geranium molle</u>
Sea Milkwort Common on exposed maritime areas.	<u>Glaux maritima</u>
Yorkshire Fog Common.	<u>Holcus lanatus</u>
Marsh Pennywort Localised marshy areas especially on the semi-improved ground.	<u>Hydrocotyle vulgaris</u>
Yellow Flag Iris In moist areas largely around Mingulay Bay but relatively scarce compared to many areas in the Western Isles.	<u>Iris pseudacorus</u>
Soft Rush Relatively scarce.	<u>Juncus effusus</u>
Heath Rush Common.	<u>Juncus squarrosus</u>
Yellow Meadow Vetchling Restricted to the vicinity of the burn in Mingulay Bay.	<u>Lathyrus pratensis</u>
Purging Flax Common on the machair.	<u>Linum catharticum</u>
Honeysuckle Restricted to ungrazed cliffs.	<u>Lonicera periclymenum</u>
Bird's Foot Trefoil Fairly common around Mingulay Bay and in the wet heath to the north.	<u>Lotus corniculatus</u>
Field Woodrush	<u>Luzula campestris</u>
Many Flowered Woodrush	<u>Luzula multiflora</u>
Great Woodrush Localised distribution on hill tops and western slopes of Carnan.	<u>Luzula sylvatica</u>
Ragged Robin Scarce.	<u>Lychnis flos-cuculi</u>

Bugloss	<u>Lycopsis arvensis</u>
Restricted to Mingulay Bay.	
Sea Mayweed	<u>Matricaria maritima</u>
In maritime areas.	
Water Mint	<u>Mentha aquatica</u>
Restricted to the burn in Mingulay Bay.	
Purple Moor Grass	<u>Molinia caerulea</u>
Very common.	
Common Forget-me-not	<u>Myosotis arvensis</u>
Restricted to Mingulay Bay, especially near the old village.	
Forget-me-not species	<u>Myosotis sp.</u>
Restricted to Mingulay Bay.	
Mat Grass	<u>Nardus stricta</u>
Very common in acid areas.	
Bog Asphodel	<u>Narthecium ossifragum</u>
Common in acid areas.	
Adder's Tongue Fern	<u>Ophioglossum vulgatum</u>
Restricted to sandy soils in Mingulay Bay.	
Heath Spotted Orchid	<u>Orchis ericetorum</u>
Widely distributed in acid areas.	
Lousewort	<u>Pedicularis sylvatica</u>
Common in acid areas.	
Butterbur	<u>Petasites hybridus</u>
Restricted to the streamside in Mingulay Bay.	
Common Butterwort	<u>Pinguicula vulgaris</u>
Common in acid areas, especially wet heath.	
Bucks Horn Plantain	<u>Plantago coronopus</u>
Mainly in maritime areas on exposed headlands and coasts.	
Ribwort Plantain	<u>Plantago lanceolata</u>
Common.	
Sea Plantain	<u>Plantago maritima</u>
Mainly in maritime areas.	

Annual Meadow Grass	<u>Poa annua</u>
Widespread.	
Heath Milkwort	<u>Polygala serpyllifolia</u>
Throughout the acid areas.	
Common Milkwort	<u>Polygala vulgaris</u>
Within the grasslands of Mingulay Bay.	
Silverweed	<u>Potentilla anserina</u>
Very common in the semi-improved grassland.	
Tormentil	<u>Potentilla erecta</u>
Common.	
Primrose	<u>Primula vulgaris</u>
Locally distributed.	
Selfheal	<u>Prunella vulgaris</u>
Common in the grassland of Mingulay Bay.	
Bracken	<u>Pteridium aquilinum</u>
Mainly restricted to the northern slopes and dunes of Mingulay Bay.	
Meadow Buttercup	<u>Ranunculus acris</u>
Common.	
Bulbous Buttercup	<u>Ranunculus bulbosus</u>
Mainly in the grasslands of Mingulay Bay.	
Lesser Spearwort	<u>Ranunculus flammula</u>
Localised wet areas.	
Creeping Buttercup	<u>Ranunculus repens</u>
Mainly in Mingulay Bay.	
Rose	<u>Rosa sp.</u>
Very scarce on ungrazed cliffs.	
Sorrel	<u>Rumex acetosa</u>
Common on cliffs.	
Curled Dock	<u>Rumex crispus</u>
Restricted mainly to the streamside in Mingulay Bay.	
Broad-leaved Dock	<u>Rumex obtusifolius</u>
Restricted largely to the streamside in Mingulay Bay.	

Procumbent Pearlwort	<u>Sagina procumbens</u>
Restricted to a few areas, notably in Mingulay Bay.	
Creeping Willow	<u>Salix repens</u>
Common in the acid areas.	
Black Bogrush	<u>Schoenus nigricans</u>
Occurs in flushes and areas of slight enrichment.	
Spring Squill	<u>Scilla verna</u>
Fairly widespread in the acid areas.	
English Stonecrop	<u>Sedum anglicum</u>
Fairly widespread on exposed rocks.	
Roseroot	<u>Sedum rosea</u>
Restricted to a few cliff localities.	
Ragwort	<u>Senecio jacobaea</u>
Only on the machair areas of Mingulay Bay.	
Sea Campion	<u>Silene maritima</u>
Very local on cliffs.	
Prickly Sowthistle	<u>Sonchus asper</u>
Restricted to Mingulay Bay.	
Common Sowthistle	<u>Sonchus oleraceus</u>
Restricted to Mingulay Bay.	
Chickweed	<u>Stellaria media</u>
Restricted to areas around old human habitation.	
Devil's Bit Scabious	<u>Succisa pratensis</u>
Widespread.	
Lesser Dandelion	<u>Taraxacum laevigatum</u>
Restricted to Mingulay Bay.	
Wild Thyme	<u>Thymus drucei</u>
Common.	
Deer Grass	<u>Trichophorum cespitosum</u>
Common.	
Red Clover	<u>Trifolium pratense</u>
White Clover	<u>Trifolium repens</u>
Widespread in the semi-improved grasslands.	

Colt's Foot

Tussilago farfara

Restricted to the banks of the stream in Mingulay Bay.

Nettle

Urtica dioica

Mainly around remains of human habitation.

Thyme-Leaved Speedwell

Veronica serpyllifolia

Restricted to Mingulay Bay on the sandy soils.

Tufted Vetch

Vicia cracca

Restricted to the grasslands of Mingulay Bay.

Dog Violet

Viola canina



Marsh Marigold.

Specimens of mosses were collected by NEB from habitats throughout the island during the period 26th to 30th June 1985. Whilst every effort was made to collect as many species as possible, no claim is made that this list is anywhere near complete for the island. Identification of the specimens was carried out by Dr P. Pitkin of the Nature Conservancy Council, Edinburgh.

<i>Campylopus atrovirens</i>	(Mo)
<i>Grimmia</i> (<i>Schistidium</i>) <i>maritima</i>	(Mo)
<i>Ulotia phyllantha</i>	(Mo)
<i>Dicranum auriculatum</i>	(Mo)
<i>Hylocomium splendens</i>	(Mo)
<i>Hypnum jutlandicum</i>	(Mo)
<i>Scorpidium scorpioides</i>	(Mo)
<i>Tortula ruraliformis</i>	(Ma)
<i>Eurhynchium</i> (<i>Rhynchostegium</i>) <i>riparioides</i>	(Ma)
<i>Brachythecium plumosum</i>	(Ma)
<i>Sphagnum papillosum</i>	(Mo)
<i>Sphagnum capillifolium</i>	(Mo)
<i>Sphagnum auriculatum</i>	(Mo)
<i>Sphagnum subnitens</i> (= <i>S. plumulosum</i>)	(Mo)
<i>Campylium chrysophyllum</i>	
<i>Mnium hornum</i>	
<i>Racomitrium fasciculare</i>	
<i>Polytrichum commune</i>	
<i>Pleurozium schreberi</i>	
<i>Diplophyllum albicans</i>	

All species collected were to be expected in such locations.

(Mo) = Moorland
(Ma) = Machair

During Team A's expedition to Berneray between 10th and 22nd June 1985, all observations of mammalian species were noted.

Longworth traps were set in suitable areas to catch small rodents. The traps were laid out near deserted habitation at the following locations:

(a) Sheep Fank

Two traps were set at the sheep fank on 12th June. On 13th June a male Wood Mouse Apodemus sylvaticus was caught.

(b) Camp Site

Two traps were laid out around the ration storage and cooking areas from 14th June, but without success.

(c) Drinking Well

A trap was set in the well compound from 12th to 16th June and from 19th to 21st June. During each of these periods a male Wood Mouse was caught.

(d) Crofter's Cottage

Two traps were set in and around the cottage for the whole period of the Team's stay. On 19th June a male Wood Mouse was trapped.

Details of the mice caught are summarised in Table 12.

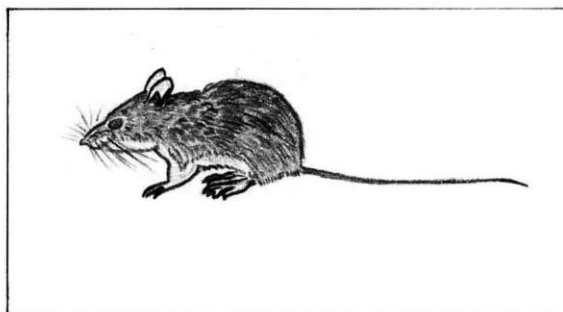
The most numerous mammal species on Berneray, excluding sheep, was the Rabbit Oryctolagus cuniculus; individuals being observed all over the island. The population exhibited a varying degree of colour patterning presumably due to interbreeding with introduced domestic rabbits. No firm evidence of Myxomatosis was seen.

The waters off the island's coastline were inhabited by a herd of Grey Seals which were observed every day, mainly off the south coast. A total of 87 was seen off Nisam Point on one occasion. During the Team's stay on the island, it was possible to distinguish two separate bulls.

Finally, a small party of Common Porpoises Phocoena phocoena was seen off Dun Briste on 15th June heading north-west.

Table 12: Wood Mouse Data

Date	Location	Sex	Length cms	Tail cms	Weight gms	Hind foot cms	Ear cms
13 Jun	Sheep Fank	m	16.2	-	18.5	-	-
16 Jun	Drinking well	m	escaped prior to measuring				
19 Jun	Cottage	m	17.4	9.2	28.6	2.5	1.3
20 Jun	Drinking well	m	16.5	8.5	27.9	2.1	1.0



Grey Seal

Halichoerus grypus

Grey Seals were seen daily off the north, east and south coasts of the island. The maximum number in any one herd was 15 seen in Bay Sletta and also off Solon Beag. There were very few sightings of Grey Seals off the precipitous western cliffs.

Rabbit

Oryctolagus cuniculus

Rabbits were numerous in all parts of the island. An attempt was made to establish the proportion of individuals showing coloured markings, presumed to be a relic of the once domestic population, by recording all sightings of the species. The statistics gathered proved impossible to interpret logically, possibly because a relatively small and highly variable portion of the total population was being recorded.

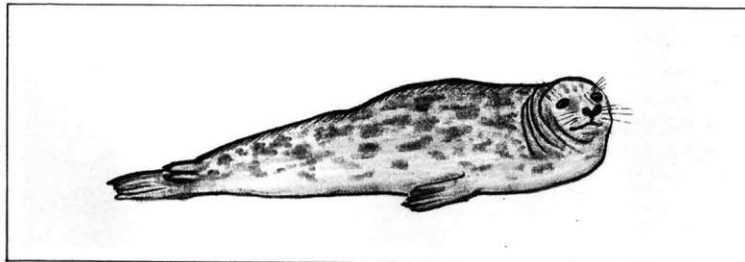
Wood Mouse

Apodemus silvaticus

The major mammal project carried out by the Team was a study of the Wood Mouse population around the ruined village and the camp site. Between four and seven Longworth traps were baited with cheese and biscuit and set daily in crevices in dry stone walls. The majority of specimens were caught in the boundary wall of the school house paddock. Details of all mice caught are given.

All traps were checked regularly throughout the day between 0700 hrs and 2100 hrs but all catches, with the exception of three at around 1100 hrs on 29th June, were made overnight. All mice caught were weighed and marked with indelible markers but, as no retraps were apparent, the effectiveness of this technique is in doubt.

The average weight of the specimens measured was 36.12 gms for males ($n=13$, $s=3.1$) and 32.79 gms for females ($n=7$, $s=4.3$). These results are similar to the averages of 39.6 gms and 31.3 gms respectively found by the Huntington School (York) Expedition of 1979 and much larger than the 28 gms average quoted for males in the 1975 Schools Hedrean Society report of 1975.



LIST OF WOOD MICE CAUGHT ON MINGULAY, 1985

Date	Location	Sex	Weight (gms)	Mark
27 Jun	South wall	m	37.0	Red between shoulders
27 Jun	South wall	f	32.0	Red above tail
27 Jun	Wall 250m above & NW of village	m	35.5	Red right hind leg
28 Jun	South wall west end	f	35.5	Green above tail
28 Jun	South Wall east end	m	36.0	Green middle of back
28 Jun	North wall entrance	m	37.5	Green left thigh
28 Jun	North wall of house	m	34.0	Green right thigh
29 Jun	East wall centre	m	36.0	Black above tail
29 Jun	East wall north end	m	40.0	Black right thigh
29 Jun	North wall west end	f	37.0	Black right thigh
29 Jun	North wall west end	f	30.0	Black middle of back
29 Jun	South wall east end	f	38.5	Black left thigh
29 Jun	North wall west end	m	33.5	Black middle of back
30 Jun	East wall south end	m	33.5	Pink belly & mid tail
30 Jun	South wall west of entrance	m	35.5	Pink chest and root of tail
1 Jul	East wall south end	m	44.0	Blue belly & tail tip
1 Jul	South wall west of entrance	m	32.5	Blue centre tail
3 Jul	South wall west of entrance	f	29.0	Black belly and root of tail
4 Jul	South wall east of entrance	f	27.5	Purple rear half of tail
4 Jul	North wall of house	m	34.5	Purple root half of tail

Note: Where unqualified, the walls referred to are the walls of the paddock around the ruined school house at Aneir.

Butterflies were seen daily on the island. The majority of sightings were from the area of the ruined village and Mingulay Bay with the occasional sighting elsewhere. Expertise in species recognition varied greatly within the Team and only those species positively identified are listed below.

Small Tortoiseshell

Aglais urticae

Seen daily after 1st July.

Painted Lady

Vanessa cardui

On 5th July, a calm and sunny day, 20 individuals of this species were seen.

Meadow Brown

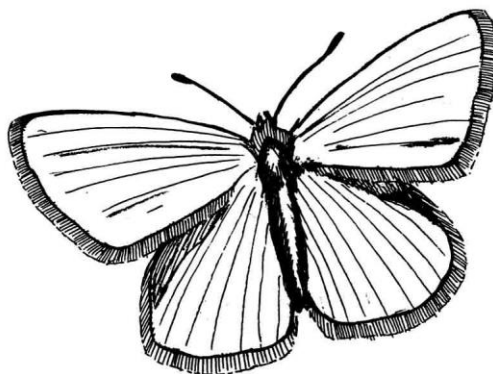
Maniola jurtina

Seen daily.

Common Blue

Polyommatus icarus

Seen daily, mostly in pairs.



Common Blue



Sea cliffs - Berneray



ADVICE TO CONTRIBUTORS TO THE RAFOS JOURNAL

Articles on any aspect of ornithology are acceptable, but preference will be given to original work from areas, especially overseas, where RAF personnel are or have been stationed, and to that which has some positive connection with the Royal Air Force.

The number of articles and therefore the variety presented in each issue of the Journal will depend on the length of each article. As the length of the Journal has to be limited to between 10,000 and 13,000 words, a more balanced issue can be produced if the length of articles is between 1,500 and 3,000 words. Please try to keep to this as much as possible but do not withhold your article because it is above or below this figure. The number of words should be marked at the end of the article with due allowance for space not filled when tables or systematic lists are used.

When possible, submit material in typescript top copy please, not a carbon, with double spacing and on one side only. If a typewriter is not used, manuscript should be clearly written and well spaced.

Authors should consult 'British Birds' or the 'Ibis' for style and presentation, especially of systematic lists, references and tables.

English names of species should have capital initials for each word, except after a hyphen (e.g. Lesser Black-backed Gull) but group terms and names of other animals or families should not (e.g. pipits). Scientific names should have a capital initial only for the first word and should be underlined, and should appear immediately after the first mention of the English name or in a systematic list at the end. Both English and scientific names and the sequence should follow the 'List of Recent Holarctic Bird Species' by K.H. Voous (1977) or the 'British Birds List of Birds of the Western Palearctic' (1978) where applicable, or the standard local work elsewhere. For headings, such as are required in a systematic list, the following style is preferred:

Short-eared Owl Asio flammeus

Numerals of quantity one to ten should be written in full and all others in digits. Dates should be written in full, e.g. from 23rd to 25th September 1981, but can be abbreviated where space does not allow this in full.

Reference lists should be checked for accuracy and should be in the following style:

NICHOLSON, E.M. and FERGUSON-LEES, I.J. 1962. The Hastings Rarities. British Birds, 55: 299-384.

- Editor

✉ Editor

