

THE FLORA OF BERNERAY, MINGULAY AND PABBAY,
OUTER HEBRIDES, IN 1964

By

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Oxford

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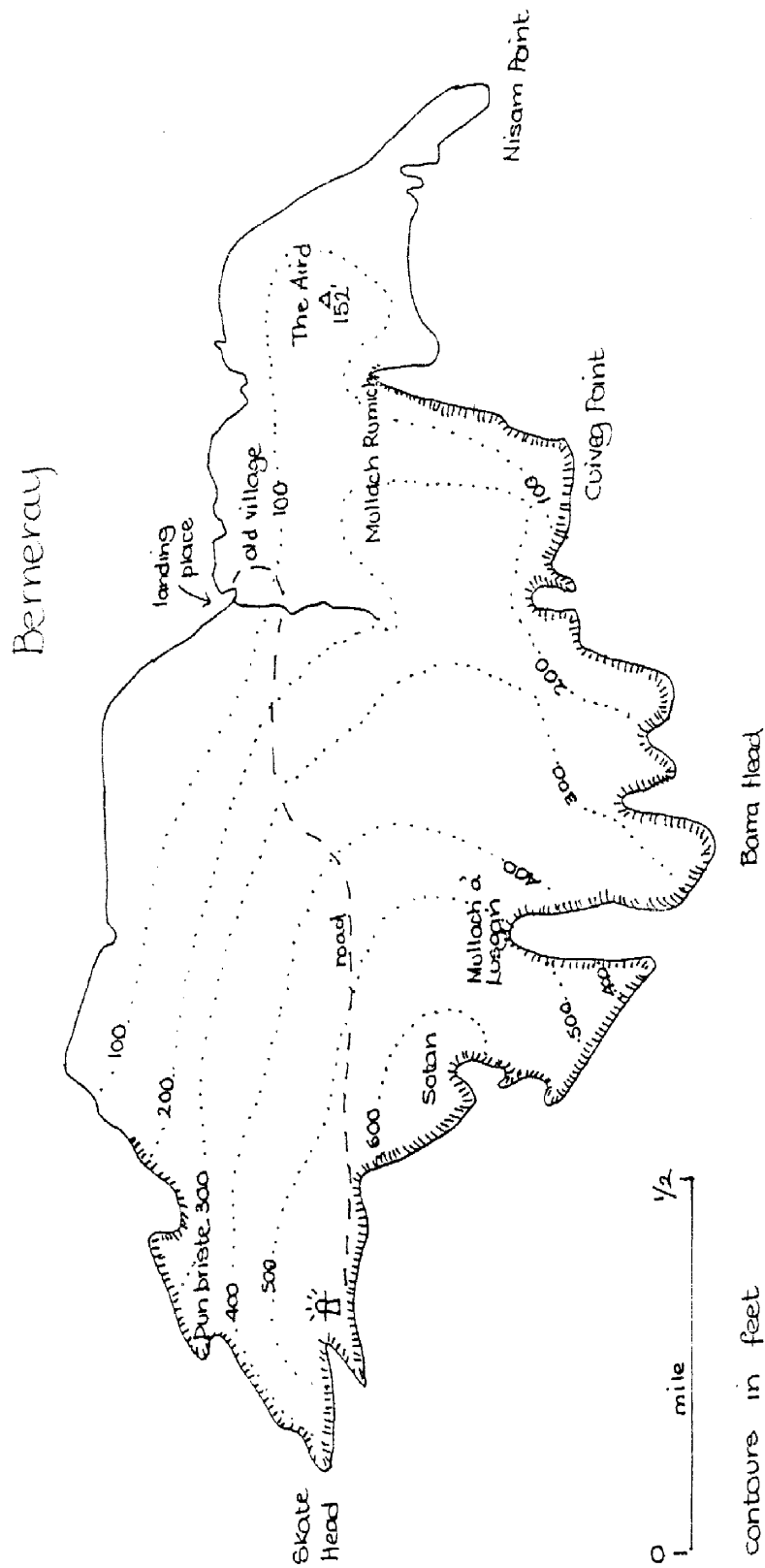
Introduction

In spite of the number of expeditions to the southern islands of the Outer Hebrides within recent years, by Diamond, Douthwaite and Indge (1965) in June 1964, Child (1964) in August 1964, Mawby (1964) in August 1964, Huxham (1967) in September 1967, Williams (1976) in August 1971, Dobbs (1975) in July 1975, Deeley (1975a, 1975b) in July/August 1975, Braund (1979) in May 1979, and the R.A.F. Ornithological Society (1979) in June/July 1979, almost nothing has been published on the botany of Berneray, Pabbay and Mingulay since the visits of Clark (1938) in 1937 and Heslop-Harrison (1941) (see Currie 1979). Since these visits the flora of the islands has undergone change, more particularly amongst the plants of formerly cultivated areas.

In June 1964 an expedition from Cambridge University (Diamond *et al.* 1965) visited all three islands, whilst Child (1964) and Mawby (1964) visited only Mingulay. Although mainly an ornithological expedition, two members of the Cambridge expedition studied the flora on all three islands; A.S.C. recorded the vascular plants and A.C. Hamilton the bryophytes. Only vascular plants are dealt with here.

Unlike the bird survey (Diamond *et al.* 1965), the results of the 1964 botanical investigations, although considered, were never submitted for publication, and the original manuscript has only recently been examined by T.M.R. It was felt that the results certainly merited being placed on permanent record, even although the investigations took place over twenty years ago. This paper therefore gives details of the flora of each of the islands (by A.S.C.), along with notes of species status on subsequent expeditions, and a brief comparison with the floras of some other islands in the British Isles with similar histories (by T.M.R.).

The history, geography and general vegetation of Berneray and Mingulay have been described by Clark (1938). In 1964 the islands were much the same as they were in the 1930s; the



lighthouse on Berneray was still manned and Mingulay had been uninhabited for a further 27 years, making 50 years altogether since the village had moved to the island of Vatersay. The gamekeeper and two shepherds who lived there in 1937 left during the war. In 1964 all three islands were used for sheep grazing by the Barra Sheepstock Holding Company, and were, and are, periodically visited for shearing, dipping, and collecting lambs for sale. There were Rabbits *Oryctolagus cuniculus* on Mingulay and Berneray, but not on Pabbay. Heslop-Harrison (1939,1941) gave Pabbay somewhat inadequate treatment in papers in which several other islands, including Barra, were covered.

Only the more conspicuous and abundant Gramineae were identified in addition to the rest of flora, which was identified on the spot using Clapham, Tutin and Warburg (1962).

Vegetational Analysis of the Islands

BERNERAY

Berneray is the smallest and most southerly of the three islands, and is composed of Lewisian Gneiss, which forms cliffs rising to 628 feet (190m) at the west end. The cliffs on the south side of the island are high along most of the coast, and taper slowly into a rocky shore in the east. Along the northern coast the cliffs are low, and are almost absent east of the old village. Inland the ground rises from the east to the Barrahead cliffs in the west. There is a small amount of boulder clay, which is exposed along parts of the north coast as eroding sandy cliffs.

The vegetation of Berneray is the simplest and least varied of the group, and may be divided into three major zones, two of which intergrade. Unlike Mingulay, the moorland and areas of old cultivation running east to west across the island lack a defined boundary. Along the southern cliffs the moor is separated from the cliff zone by a sheep fence. The moorland which covered most of the island was dominated by *Molinia caerulea* and *Carex echinata*; *Salix repens* was very common, forming a carpet in some areas. *Eriophorum angustifolium*, *Eleocharis multicaulis* and *Juncus effusus* were common in the numerous damp patches. There are no real streams on the island, apart from a ditch running down beside the road, but the moors were dotted with wet flushes holding *Sphagnum* associations, including *Drosera rotundifolia*, *Narthecium ossifragum*, *Pinguicula vulgaris* and *Viola palustris*. Rock outcrops in the moors were often fringed by *Sedum anglicum* and *Thymus drucei*. Throughout the moorland area *Anagallis tenella*, *Pedicularis sylvatica* and *Potentilla erecta* were abundant; *Dactylorhiza*

ericetorum was widespread. *Primula vulgaris* and *Blechnum spicant* were conspicuous on banks and sheltered places. The remarkably scarcity of *Calluna vulgaris* was commented on by Clark (1938). Small short-term pools were a feature of the south-east of the island, and *Littorella uniflora* and *Eleocharis multicaulis* were common in these. The short streamlets leading out of the flushes often held *Potamogeton* spp. and *Montia fontana*; deeper pools had *Callitriche stagnalis*.

The old grazed and arable areas on the northern slope of the island were dominated by *Festuca ovina*, with an admixture of other grasses. Some areas of old arable land were dominated by *Potentilla anserina*, almost to the exclusion of anything else. Throughout the grassland *Scilla verna*, *Polygala vulgaris*, *P. serpyllifolia*, *Succisa pratensis* and *Carex nigra* were common. Wet areas on the slope held *Triglochin palustris* and *Hydrocotyle vulgaris*; marshy patches nearer sea-level contained *Iris pseudacorus*, *Lychnis flos-cuculi*, *Filipendula ulmaria* and *Senecio aquaticus*. Two plants of *Dactylorhiza majalis* still survived in the marsh by the landing place, and the leaves of another species (possibly *D. purpurella*) were found. *Carex ovalis* was very common along ditches and in the marsh by the landing place; it was not found on the other islands. *Echium vulgare* was recorded in August 1964 (Mawby 1964).

The weed flora associated with the old village is more fully discussed later.

The third zone was the cliff zone. Soil just inland of exposed rocks on the cliff was usually covered with dense patches of *Armeria maritima* and stunted, close-growing, *Plantago maritima*. *P. coronopus* and *Sagina procumbens* were also common there. The high cliffs in the south supported large breeding colonies of seabirds, mostly auks Alcidae. Their droppings greatly enhanced the otherwise nutrient-poor status of the sparse rock debris soil on the ledges. Here there were luxuriant growths of *A. maritima*, *Silene maritima*, *Tripleurospermum maritimum* and *Rumex crispus*. The height of the latter two meant that, in some areas, Puffins *Fratercula arctica* standing at the entrance to their holes were almost hidden. All round the island crevices in the cliffs provided a habitat for *Asplenium marinum*, *Lingusticum scoticum*, *Angelica sylvestris* and *Sedum rosea*. Clark (1938) found *Silene acaulis* to be not uncommon near the lighthouse, but the 1964 expedition failed to find any. *Cerastium atrovirens*, not recorded by Clark, was common on high ground everywhere, especially on cliff edges.

There is a small round stone burial mound, 12 feet across (3.70m) and six feet (1.80m) high, beside the road close to the lighthouse gates. In it was a cultivated form of *Gladiolus*, and also *Ranunculus ficaria*, likewise probably planted.

MINGULAY

Mingulay is dominated by two hills, Carnan (891ft; 270m) and MacPhee's (735ft; 304m) and the ridge that joins them, running south-west to north-east. To the south-east of Carnan is a third hill, Hecla (700ft; 212m). To the north-west of Carnan is the second highest seacliff in Scotland, which drops 735 feet (228m) into the sea. The whole of the west of the island consists of high cliffs, which give way to a low rocky shore in the south, but continue round the north end and down the east nearly to the bay. The centre of the east coast consists of a long sandy beach, inland of which are sand dunes, the remains of the old village, and the sheltered valley which was formerly heavily cultivated. Like Berneray, Mingulay also consists of Lewisian Gneiss. In addition, boulder clay deposits in the valley reach 15-20ft (5-6.5m) in thickness at the south side of the bay.

Most of the island consisted of the same very poor moorland as on Berneray, but there were also several additional habitats. The various vegetation types influenced by the dunes in the bay were the most striking of these. Inland of the beach were unstable dunes being colonized by *Ammophila arenaria* and *Eryngium maritimum*. Further inland towards the chapel the sand was slowly advancing over former cultivated areas, and these had a flora that was growing up through the accreting sand. Nearest the beach, *Sedum anglicum*, *Erodium cicutarium* and *Galium verum* were common, and still dominant in 1979 (Braund 1979) but gave way inland to close rabbit-cropped *Festuca ovina* grassland in which *Selaginella selaginoides* formed a kind of under-storey. *Ophioglossum vulgatum*, *Stellaria media*, *Euphrasia* spp., *Polygala vulgaris*, *Veronica arvensis* and *Prunella vulgaris* were common. By 1979 *Polygala serpyllifolia* had increased at the expense of *P. vulgaris* (Braund 1979), but the *Prunella* (in two colours) was still common (R.A.F.O.S. 1979). Inland of this area was a grassy slope covered with *Pteridium aquilinum*; *P. aquilinum* had also spread up the slope to the north of the bay. The short turf around the chapel and in the drier fields nearby was very like that lower down, but lacked *Ophioglossum*, gaining *Trifolium repens* and *Polygala serpyllifolia*. In spring 1979 *Ranunculus ficaria* was common in this area (Braund 1979).

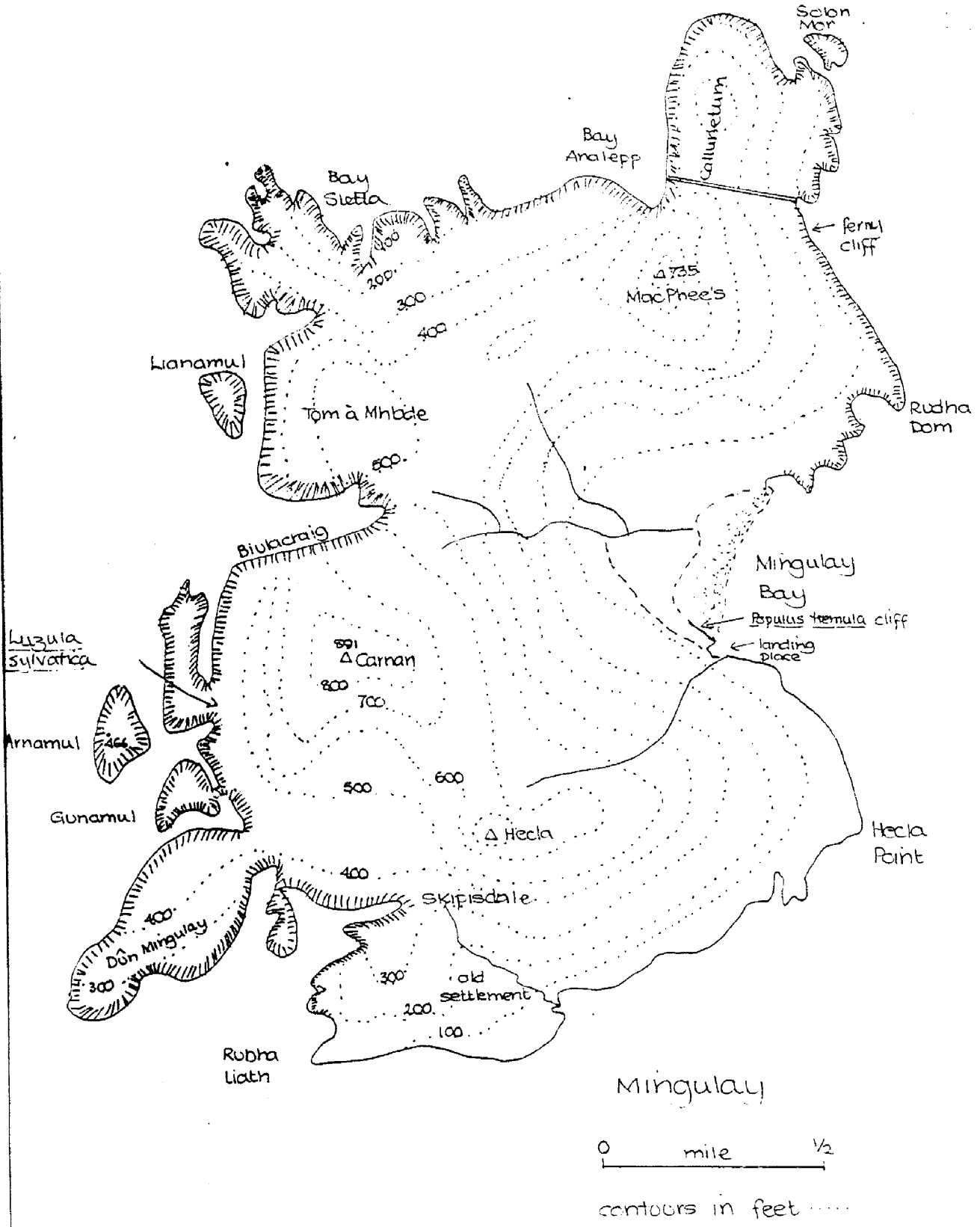
Slightly to the south lay the main part of the ruined

village, into which sand was also encroaching. Rabbits were contributing to the destruction of buildings and stone walls by undermining; the graveyard where Clark described standing crosses and gravestones had become a warren, with the bones of the former inhabitants liberally scattered. The flora of this area, in which *Urtica dioica* and the two thistles *Cirsium arvense* and *C. vulgare* predominated, is more fully discussed later. By 1979 *Geranium columbinum*, *Erodium cicutarium*, *Lotus corniculatus* and *Potentilla anserina* had spread into this area (R.A.F.O.S. 1979). The marshlands near the old village were more extensive, containing a richer flora than on Berneray. They were fed by three streams running down from the ridge joining Carnan and MacPhee's. Two of these joined just before reaching the beach. The most southerly of the streams had carved a sheltered gorge in which grew *Lonicera periclymenum* and *Osmunda regalis*, before draining into the sea near the landing place. Here in a small marsh *Hypericum pulchrum*, *Lycopus europaeus* and *Epilobium palustre* were found; all were still present in 1975 (Dobbs 1975). Although frequent on Berneray, *Cardamine pratensis* was confined to this marsh and was still found there in 1979 (Braund 1979) along with *Cochlearia officinalis*. The other two streams drained into the village, cutting down through the sand as they passed through it. The sandy banks were favoured by *Equisetum arvense* and *Tussilago farfara*. *Caltha palustris* and *Iris pseudacorus* lined the sides of the streams. The northernmost stream, as it passed the chapel, supported some stunted *Phragmites communis*, among which grew *Epilobium palustre*, *E. parviflorum* and *Oenanthe crocata*.

Also in the valley was a microcosm of what was probably the most interesting community on the islands. On a sheltered boulder clay cliff (the 'Aspen cliff') at the southern end of the bay, facing the sea, grew several plants of Aspen *Populus tremula*, semi-prostrate and never more than two feet (0.6m) high. Among these straggled Ivy *Hedera helix*. By 1979 the Ivy had vanished, although there was still some Aspen (Braund 1979). Two or three plants of a *Rosa*, called 'glaucophylla' by Clark, were also there; Braund (1979) identified these as *R. rubiginosa*. Several other species were confined to this cliff: *Succisa pratensis*, *Hieracium anglicum* and *Taraxacum officinale*. *Thalictrum minus* was much commoner here than elsewhere. Clark (1938) suggested that this area contained what remained of a former woodland association, and his find of *Equisetum sylvaticum* there, now vanished, tends to confirm this view. If there was such a community it is strange that a *Betula* or *Pinus sylvestris* was not the tree species to survive; nevertheless the presence of both Ivy and Aspen is symptomatic of a more

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genial climate sometime in the past, even if they were the result of chance invasions. The Aspen, at least, is propagating itself successfully, since a large number of young suckers were found.

In the old settlement in the extreme south-east the few houses had broken walls 1 - 2 feet high still harbouring *Urtica dioica*. The fields had not been completely overrun by the *Molinia/Carex echinata* of the moorland. The remaining areas of old cultivation or enclosed grazing on the island were very like those on Berneray. In addition to *Dactylorhiza maculata* which was abundant in 1964, *D. fuchsii* was also found to be common over much of the island in 1975 (Dobbs 1975) and 1979 (Braund 1979).

The moorland differed from that of Berneray only in its extent, except in two areas.

In the south-west a fence ran from Dun Mingulay to Builacraig several yards inland of the cliff edge. Over the greater part of this ungrazed area *Luzula sylvatica*, apparently absent in 1979 (Braund 1979), was dominant and would spread over a much larger area if not kept down by the sheep grazing inside the fence. *Vaccinium vitis-idaea* was common here and on MacPhees's in 1979 (R.A.F.O.S. 1979), and *V. oxycoccus* was recorded in 1964 (Mawby 1964).

The scarcity of *Calluna vulgaris* on the moorland has been mentioned before, and this applies equally to most of Mingulay. At the extreme north of the island, however, undiscovered by Clark, there were some 25 acres (10 ha) of pure Callunetum, interrupted only by sheep hollows around which grew *Blechnum spicant*, *Dryopteris dilatata* and *Senecio jacobaea*. The Callunetum was still present in 1975 (Dobbs 1975). The reason for this distinct type of vegetation on just one part of the moorland was not at all clear.

On Dun Mingulay, the flat promontary in the south-west, the presence of a gull *Larus* spp. colony provided conditions normally found only on the adjacent cliffs. *Rumex crispus*, *Tripleurospermum maritimum* and *Silene maritima* were abundant and *Chenopodium album*, lost as a weed in the village, grew between the gulls' nests. Sheep had no access to Dun Mingulay, nor were there any Rabbits.

In the north-east of the island there was a very sheltered cliff (the 'ferny cliff'), fed by a small stream. Ferns, elsewhere stunted and scarce, grew here in profusion, reaching heights of two feet (60cm) or more. *Athyrium filix-femina*, *Dryopteris dilatata*, *Blechnum spicant*, *Pteridium aquilinum* and *Osmunda regalis* were all common. *Salix aurita*, which was only

found here, was also frequent, as was *Lonicera periclymenum*, found otherwise, like *Osmunda*, only by the southernmost stream in the valley. *Solidago virgaurea* was confined to this cliff.

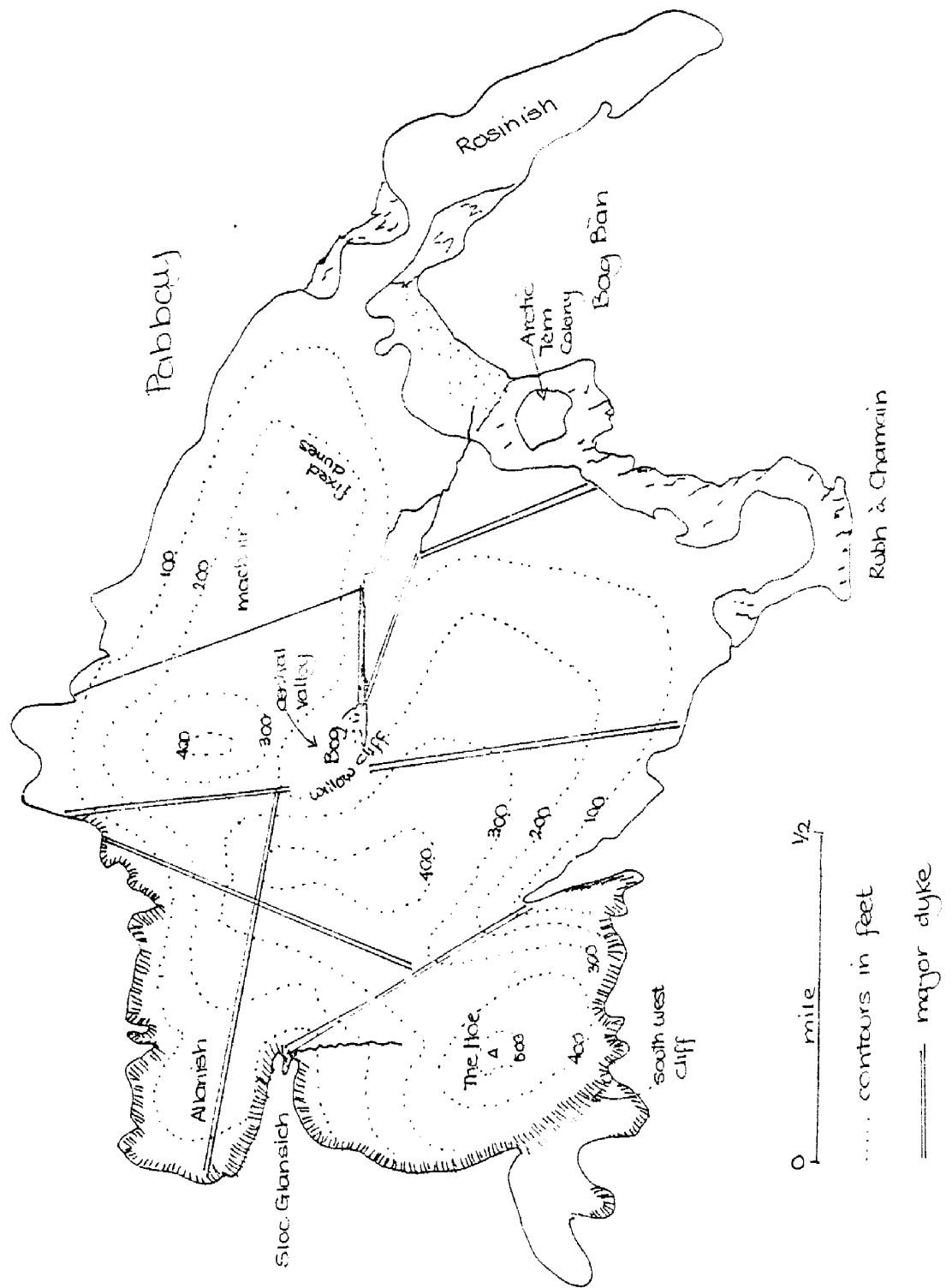
As on Berneray, *Silene acaulis* was absent; one of the party did find *Oxyria digyna*, Clark's other 'nunatak' species, but could not remember its exact location. Both species would now be interpreted as early post-glacial relics (Meldris 1953, Currie 1979).

Glaux maritima, the presence of which was commented on by Clark, was most abundant among the rocks of a large gull colony at the south end but also occurred where Clark found it, in another gull colony, at the top of a 100ft (33m) cliff in Bay Sletta. It may be that it needs high nutrient status as well as salt spray in order to grow outside saltmarshes.

PABBAY

Although much smaller than Mingulay, Pabbay is more varied. The highest point on the island (564ft; 171m) is just above the high cliff at the south-west of the island. Below this cliff is a raised beach, absent from the other islands. Cliffs extend along the west coast, diminishing northwards; these are seldom sheer and the raised beach persists for some way along them. In the south the cliffs come down rapidly to shore level, terminating in a large sweeping sandy bay, much larger than on Mingulay. Where the bay meets the north-east coast there is a low promontory, almost cut off from the main part of the island and inaccessible to sheep. Behind the beach is a large area of dunes. The old village is situated at the south-west end of the bay, inland of the dunes. Pabbay is crossed by a number of intrusive igneous dykes which have eroded away more rapidly than the surrounding gneiss, resulting in a series of channels with vertical sides cutting through the surface of the island. In the centre of the island several dykes intersect to form a large sheltered depression. In its centre there is a one acre (0.4ha) peat bog, the only one on the three islands. The bog is shallow and fairly eutrophic, being fed by streams running along the dykes.

Menyanthes trifoliata carpeted much of the bog, although there were areas of pure *Sphagnum*. *Pedicularis palustris* replaced *P. sylvatica* towards the centre of the bog. *Ranunculus flammula*, *Senecio aquaticus*, *Pinguicula lusitanica*, *Triglochin palustris*, *Carex echinata*, *C. panicea*, and *C. pulicaris* were particularly common. Another striking feature of the central valley was its sheltered south-western wall with a dense growth of *Salix aurita* up to four feet (1.2m) high (the 'Willow cliff'). *Vicia sepium*, *Pteridium aquilinum* and *Dryopteris*



dilatata were both common on, and confined to, this area. *Lonicera periclymenum* and *Filipendula ulmaria* were luxuriant.

The south-western cliffs differ from the big cliffs on the other two islands in lacking seabirds. This was almost certainly due to their being fringed by a raised beach. The lack of bird droppings and sea-spray had produced a distinctive cliff flora. *Sedum rosea*, *Silene maritima* and *Angelica sylvestris* were as common as elsewhere, but *Tripleurospermum maritimum* was a little scarcer, and *Rumex crispus*, *Asplenium marinum* and *Ligusticum scoticum* a lot scarcer, than on equivalent cliffs on Berneray and Mingulay. *Juniperus communis* and a *Rosa* were growing on the cliff, the former being plentiful.

Immediately above the cliff, around the triangulation point, was the most exposed area found on any of the three islands; this was reflected in the vegetation. There was very little ground cover, much of the area being exposed rock with peaty pools full of *Littorella uniflora*. The only common land plant was *Juniperus communis* ssp. *nana*, which locally formed extensive mats. The local abundance of this species is interesting, given its absence from the other islands.

The remainder of the moorland was similar to that on the other islands, but was characterised by *Erica cinerea*, elsewhere absent. Both *E. cinerea* and *E. tetralix*, and *Calluna vulgaris*, were particularly common along the edges of the gullies formed by the dykes. These were also favoured by *Lonicera periclymenum* and *Athyrium filix-femina*. *Erica cinerea* also occurred over the open moorland with *E. tetralix*.

The abundance of *Pinguicula lusitanica* on parts of Pabbay, compared with its apparent scarcity on the other islands, was perhaps due to its flowering time. *P. lusitanica* flowers when *P. vulgaris* has nearly finished; prior to this both species are difficult to distinguish by leaves alone. *P. lusitanica* became more 'common' during the expedition's stay on Pabbay as more plants came into flower. There were very few surviving flowers of *P. vulgaris*, whereas they had been common on the other islands during the previous two weeks. The more sheltered situations available on Pabbay may also favour *P. lusitanica*.

The flora of the old fields and the marsh near the old village was very similar to that of comparable areas on Mingulay. The marsh had a thriving little *Phragmites* reed-bed. Several plants of a cultivated mint (*Mentha*) were also there, growing with *M. aquatica* and many other species also found on the other islands.

Pabbay had a far larger area of stable and semi-stable dunes than had Mingulay, and a well developed machair community. On the stable dunes, furthest from the sea, the dominant *Festuca ovina* was closely cropped by sheep. *Trifolium repens*, *Thymus drucei*, *Polygala serpyllifolia* and *Prunella vulgaris* were also common. On the younger dunes *Ammophila arenaria* persisted, with other grasses and many other plants typical of machair; some of these were rare or absent on Mingulay but were common here: e.g. *Anthyllis vulneraria*, *Rhinanthus minor*, *Daucus carota*, *Heracleum sphondylium* and *Centaureum erythraea*. The unstable dunes were colonized by *Ammophila arenaria* and *Eryngium maritimum*. *Chenopodium album* was found on bare sand on the beach. Where the two streams from the central valley had cut through the dunes, the banks were covered with *Tussilago farfara* and *Equisetum arvense*, and along the water's edge were *Carex otrubae* and *Scirpus maritimus*. A wet patch on the isolated dune holding an Arctic Tern *Sterna paradisaea* colony was full of *Juncus acutiflorus*.

The northern promontory on Pabbay, like Dun Mingulay, is inaccessible to sheep and had a gull colony. The vegetation was similar, with the addition of *Glaux maritima*.

When one compares the relative abundance of pairs of similar species which live in similar localities, there can be very marked differences among the three islands. For any given pair, one species may be more common on one island, less common on another island, or both species may be equally common (see Table 1).

The Flora of Old Cultivated Land and Villages

Clark (1938) listed 53 species, 31 of which were confined to Mingulay, which could be considered to be either weeds of cultivation or plants connected in some way with human occupation of the islands. Many of these records were confined to only one or two plants in a single locality. In the quarter century between Clark's visit and the 1964 survey there was a very considerable net decrease on both Mingulay and Berneray (see Tables 2 and 3).

Clark pointed out that Mingulay had more weed species for two reasons: (1) Mingulay had been inhabited more recently; many of the weeds Clark recorded were found only in the garden of the house where the gamekeeper then still lived. The lighthouse area on Berneray did not seem to provide any weeds. (2) Cultivation was more intensive over a much larger and more favourable area, i.e. the sheltered valley.

Between 1938 and 1964 both islands tended to lose the

Table 1

The relative abundance of closely related species
on the islands in 1964

Species Pair	Species Commoner on:		
	BERNERAY	MINGULAY	PABBAY
<i>Ranunculus</i> <i>acris/repens</i>	<i>repens</i>	<i>acris</i>	<i>acris</i>
<i>Polygala</i> <i>vulg./serpyll.</i>	<i>vulgaris</i>	<i>vulgaris</i>	<i>serpyllifolia</i>
<i>Trifolium</i> <i>pratense/repens</i>	<i>pratense</i>	<i>repens</i>	both
<i>Erica</i> <i>tetralix/cinerea</i>	<i>tetralix</i>	<i>tetralix</i>	both
<i>Myosotis</i> <i>arv./versicolor</i>	-	<i>versicolor</i>	<i>arvensis</i>
<i>Rumex</i> <i>acetosa/ac'illa</i>	both	<i>acetosella</i>	<i>acetosa</i>
<i>Carex</i> <i>nigra/flacca</i>	<i>nigra</i>	<i>flacca</i>	*

* the absence of both *Carex nigra* and *C. flacca*
(and *Schoenus nigricans*) is surprising

Table 2

(a) Number of Weed Species, 1937 and 1964

	BERNERAY	MINGULAY	PABBAY
1937	23	53	
1964	13	31	23

(b) Changes in Weed Species, 1937 to 1964

	BERNERAY	MINGULAY
Lost	10	24
Decreased	1	5
Same	11	17
Increased	1	7
New	-	2

tall-herb element of the weed flora. *Daucus carota*, *Heracleum sphondylium*, and *Sonchus oleraceus* had vanished, as had *Cirsium arvense* on Berneray. *Sinapis arvensis*, *Anthriscus sylvestris*, *Artemisia vulgaris* and *Rumex obtusifolius* never were on Berneray and had disappeared from Mingulay. This may have been due to loss of shelter as buildings deteriorated, or to a climatic change. *Arctium* sp. and *Sonchus asper*, which had actually increased on Mingulay, were confined to the shelter of old buildings in the ruined village. There was much less shelter from buildings on Berneray since the ruins were in a far worse state.

On Mingulay a significant proportion of the change was due to small annuals, the loss of typical garden weeds such as *Senecio vulgaris*, *Fumaria officinalis*, *Capsella bursa-pastoris* and *Veronica persica*. Only one of these, *Capsella*, had been recorded on Berneray in 1937. The continued reduction of disturbed ground with grassland encroachment may have led to the decline of small annuals, but one would have expected this to be offset by bare soil continuously exposed by Rabbits in the village. Some species in this category had disappeared as ruderals but remained in natural habitats, for example *Tripleurospermum maritimum* and *Chenopodium album*; neither occurred any longer in the village. *Senecio jacobaea* was common in sheltered parts of the north end of the island, but only one plant was found in the village.

Of the remaining species, several were not purely weeds, but were plants which also commonly occupied niches in more or less natural habitats. The Nettle *Urtica dioica* thrived in the vicinity of old buildings and Rabbit warrens on Mingulay, but had survived in only one patch on Berneray; its relative *U. urens* had disappeared from Mingulay. All nettles were stunted, their height depending on the amount of shelter they had. *Bellis perennis*, *Taraxacum laevigatum*, *Trifolium pratense*, *T. repens*, *Ranunculus acris* and *R. repens* are all species often associated with the presence of Man but can survive without him especially if long grass is grazed by sheep or Rabbits. The two Sorrels *Rumex acetosa* and *acetosella* are similar; *R. alpinus* appeared in 1979 (R.A.F.O.S. 1979). *Trifolium pratense*, however, had decreased on Mingulay, while *Ranunculus acris* appeared to have spread into the old cultivated areas from the cliffs. *R. repens* was the commoner of the two Buttercups on Berneray, whereas this species was relatively scarce on Mingulay. In some fields on both Berneray and Mingulay *Potentilla anserina* still formed the nearly pure associations mentioned by Clark.

Three species had increased strikingly on Mingulay:

Table 3
Changes of Status in Weed Species 1937-1964

BERNERAY

MINGULAY

Lost:

Capsella bursa-pastoris
Vicia cracca
Heracleum sphondylium
Daucus carota
Cirsium arvense
Centaurea nigra
Sonchus oleraceus
S. asper
Odontites verna
Plantago major

Ranunculus bulbosus
Fumaria officinalis
Sinapis arvensis
Capsella bursa-pastoris
Arenaria serpyllifolia
Spergula arvensis
Anthriscus sylvestris
Heracleum sphondylium
Daucus carota
Matricaria suaveolens
Tripleurospermum maritimum
Artemisia vulgaris
Senecio vulgaris
Sonchus oleraceus
Veronica persica
Odontites verna
Rhinanthus minor
Mentha arvensis
Galeopsis tetrahit
Chenopodium album
Polygonum aviculare
P. persicaria
Rumex obtusifolius
Urtica urens

Decreased:

Urtica dioica

Trifolium pratense
Vicia cracca
Senecio jacobaea
Anagallis arvensis
Plantago major

Table 3 (continued)

Changes of Status in Weed Species 1937-1964

BERNERAY

MINGULAY

No Change:

<i>Ranunculus acris</i>	<i>Ranunculus repens</i>
<i>Cerastium holosteoides</i>	<i>Cerastium holosteoides</i>
<i>Stellaria media</i>	<i>Stellaria media</i>
<i>Trifolium pratense</i>	<i>Potentilla anserina</i>
<i>T. repens</i>	<i>Bellis perennis</i>
<i>Potentilla anserina</i>	<i>Cirsium vulgare</i>
<i>Bellis perennis</i>	<i>C. arvense</i>
<i>Cirsium vulgare</i>	<i>Centaurea nigra</i>
<i>Taraxacum laevigatum</i>	<i>Taraxacum laevigatum</i>
<i>Rumex acetosa</i>	<i>Sonchus arvensis</i>
<i>R. acetosella</i>	<i>Lycopsis arvensis</i>
	<i>Myosotis arvensis</i>
	<i>Veronica arvensis</i>
	<i>Lamium cf. hybridum</i>
	<i>Urtica dioica</i>
	<i>Rumex acetosa</i>
	<i>R. acetosella</i>

Increased:

<i>Ranunculus repens</i>	<i>Ranunculus acris</i>
	<i>Geranium molle</i>
	<i>Trifolium repens</i>
	<i>Galium aparine</i>
	<i>Arctium sp.</i>
	<i>Sonchus asper</i>
	<i>Myosotis versicolor</i>

New (reported since 1964):

<i>Rumex alpinus</i>	<i>Sedum acre</i>
	<i>Taraxacum officinale</i>

