

## Vegetation and 'site florulas' of islands in West Loch Roag, Outer Hebrides

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### ABSTRACT

Four small, uninhabited islands in West Loch Roag, a sea loch in the west of the island of Lewis, Outer Hebrides, were visited in early July 2008, two grazed – Flodaigh and Campaigh, and two ungrazed – Bearasaigh and Seana Cnoc. The habitats present and the interesting species are discussed, and the limited florulas ('florulas') of each island are described, with full species lists. The species recorded for Campaigh are compared with a visit to the same island 30 years earlier.

### INTRODUCTION

There are many small islands in Loch Roag, a series of sea lochs in the west of Lewis, Outer Hebrides at approx 58° 16'N 6° 54'W (NB14 on the British National Grid). In spite of the draw of islands for visitors, they have only rarely been visited in the history of botanical recording in the Outer Hebrides, if at all. Currie (1981) reports a visit in 1977, when several islands were circumnavigated, but a landing was made only on Campaigh (Campay), NB1442. A list of the plant species was made, and this gives us a baseline with which to compare.

On 3 July 2008 as part of recording for a projected tetrad (2km×2km square) flora of the Outer Hebrides a visit was made to several of the islands – Flodaigh (NB1241), Bearasaigh (NB1243), Seana Cnoc (Old Hill) (NB1143) and Campaigh (NB1442). It proved impossible to land on two smaller islets, Hairsgeir (NB14A) and Mas Sgeir (NB1443).

#### *The islands and their vegetation*

Two of the four islands visited, Flodaigh and Campaigh are low-lying with relatively easy access, and therefore used for sheep grazing. They have short, well-cropped turf, but there are a few refugia on less sheep-friendly habitat (coast, rocks, pebbles) where plants less tolerant of grazing (for example *Aster tripolium* (sea aster) on Flodaigh) can grow. Bearasaigh and Seana Cnoc, by contrast, have steep rocky sides; they are grazed, but only by geese (which in places make paths) and therefore at a much lower intensity than the sheep, and in consequence they have well-developed tussocks and hummocks, with some *Armeria maritima* (thrift) tussocks becoming very large (Fig. 1). They also have much more cliff habitat and therefore some different species.



**Fig. 1.** Large *Armeria maritima* (thrift) tussocks on the NW plateau of Bearasaigh.

There are three broad communities on the four islands visited. Much of the flatter surfaces of the tops is covered by a plantain sward, containing *Plantago coronopus*, *P. lanceolata* and *P. maritima* (buck's-horn, ribwort and sea plantain respectively), and also with varying amounts of *Armeria maritima* and grasses. On the sheep-grazed islands the sward is grazed very short, but otherwise it grows into tussocks and forms a maritime peat. In this habitat there are also occasional species such as *Ophioglossum vulgatum* (adder's-tongue fern) (Flodaigh), and where there is no grazing *Silene uniflora* (sea campion) (Bearasaigh and Seana Cnoc). Seana Cnoc has an area dominated by *Rumex acetosa* (sheep's sorrel) forming a turf.

The sides of the islands, whether steep cliffs or smaller, sloping rocks have a different community, with *Aster tripolium*, *Ligusticum scoticum* (Scots lovage), *Silene uniflora*, and *Tripleurospermum maritimum* (sea mayweed).

Flodaigh and Bearasaigh both have small, permanently wet depressions. On Bearasaigh the edge of the depression has *Ophioglossum vulgatum*, and on Flodaigh there is a small amount of *Apium inundatum* (lesser marshwort). Both these islands also have *Ranunculus flammula* (lesser spearwort) in the damp areas, but on Bearasaigh there is also the small variety of this species with very round leaves, *R. flammula* ssp *minimus* which is characteristic of damp patches in very exposed situations near the sea.

The most interesting species, abundant on all four of the visited islands, was *Lychnis flos-cuculi* (ragged robin), which was scattered throughout the turf. This is a much shorter variety than the usual one of marshy areas, with the flowers forming a dense cluster at the top of the short stem and with wide petals, and it is unclear what the appropriate name for this variety is (although it may be forma *pygmaea* Ostenf., see Jonsell 2001, p178). It is known from other islands in the Sound of Harris (Heslop Harrison 1954, 1956). On Seana Cnoc there were two colour forms – most specimens the usual deep pink, with a few much paler (but not quite white).

The rocks round Flodaigh, Bearasaigh and Seana Cnoc all have *Aster tripolium* (sea aster), as var *condensatus*, a fleshy-leaved plant of rocky places which looks quite different from the more usual var *tripolium* on salt marshes. On Flodaigh it occurs in small quantity, on coastal rocks where there is protection from grazing. On Bearasaigh the absence of sheep has allowed the *Aster* to thrive away from the rocks, and it has colonised in bare peaty pools and hollows, so it is common on the top of the islands as well as round their coasts.

#### Site Floras

The Botanical Society of the British Isles has been suggesting the concept of *site floras*, a description of the plants for relatively small, well-defined sites that can be visited regularly with a reasonable degree of coverage (Lockton 2007). It is generally difficult to define such sites in the Outer Hebrides away from habitation, but islands form natural sites, though with small floras ('florula'). They will generally be covered by only a single visit, but these visits are much more likely to be recorded than visits to mainland sites of comparable size. Since it is sensible to follow up existing site descriptions, we provide a site florula for Campaigh, and we also give initial descriptions for the other islands visited as a baseline for future visits. Summary information is given in Table 1.

#### Site florula for Campaigh

Campaigh is approximately 500m long and 250m across at its widest, and rises to just over 30m above sea level at its highest. It runs roughly from SW to NE, with the SW end being lower and shelving to low rocky sides; the NE end is separated from the rest of the island by a natural arch, and has some cliffs. The underlying rock is gneiss (Fettes *et al.* 1992), although the arch is presumably formed by erosion of a softer dyke. The island is turf-covered away from the rocky and cliffy edges, and grazed throughout by sheep. The cliff parts are used by nesting seabirds, and there is some evidence of eutrophication from their use of the island. There is no standing water.

A list was published for Campaigh by Currie (1981) from a visit of "an hour or two" on the evening of 23 June 1977, apparently for bird counting as well as botany. The authors of the present paper visited for one hour on 3 July 2008, a very similar time of the year to the previous visit, and our attentions were more exclusively botanical. Currie commented that some

species could be added to his list, and although we have made a nearly complete list, it is likely that a few species still lurk undetected.

The taxa recorded on 3 July 2008 are listed in Table 2, with a \* denoting that they were also recorded by Currie

Nine species were recorded in 2008 but not seen during the visit in 1977; they are generally less conspicuous species such as the *Euphrasia* (eyebright) which was in small quantity as non-flowering plants, and *Sagina maritima* (sea pearlwort) which is an annual of bare peaty patches near the sea. The most obvious of the species present in 2008 but not recorded in 1977 was *Spergularia rubra* (sand spurrey), which was abundant in barer patches at the western end of the island. It is interesting to speculate that both the bare patches and presence of *Spergularia* are connected with the sheep grazing, although Currie noted grazing in 1977 too.

Currie additionally recorded *Aira praecox* (early hair-grass), *Asplenium marinum* (sea spleenwort), *Carex panicea* (carnation sedge), *Festuca ovina* (sheep's fescue) and *Tripleurospermum maritimum*. Any of these could still be present and overlooked, but particularly *Tripleurospermum* is very obvious and it seems likely that this has declined.

#### Site florula for Bearasaigh

Bearasaigh (Fig. 2) is a steep-sided island with cliffs most of the way round. Its summit is 58m, and the top of island forms a plateau, sloping down slightly to the north-west, sloping more steeply to around 30m in the east. Its longest axis runs roughly NW to SE, about 400m long, and it is about 250m wide at its widest. There is a stac to the SW, Stac an Tuill, but this was not visited. The underlying rock is gneiss (Fettes *et al.* 1992). The NW part of the island consists of a tussocky maritime heath, with very large *Armeria* tussocks (Fig. 1), and a few boulders, many with temporary pools at their bases. The SE part is more grassy, with one permanent pool.



**Fig. 2.** Bearasaigh looking at the NW end, with Stac an Tuill to the right, and Flodaigh the lower island behind the Stac.

Bearasaigh was visited on 3 July 2008 for 1½ hours; coverage was good at the western end where we landed, but more rushed at the eastern end, and it is likely that additional searching will turn up a few extra species here too. 49 taxa were recorded (see Table 2)

Island	Maximum Dimensions (length × breadth × height) (m)	Approx area (ha)	Time spent recording (hrs)	Grazing	Taxa recorded	Taxon density (taxa ha <sup>-1</sup> )
Bearasaigh	400 × 250 × 58	9.8	1½	geese (v light grazing)	49	5.0
Campaigh	500 × 250 × 30	10.2	1	sheep (heavy grazing)	34	3.3
Flodaigh	450 × 400 × 22	18.6	¾	sheep (heavy grazing)	66	3.5
Seana Cnoc	600 × 300 × 90	11.1	1¼	geese (v light grazing)	28	2.5

**Table 1.** Summary information on islands visited on 3 July 2008.

#### *Site florula for Seana Cnoc*

Seana Cnoc (Fig. 3) is another steep-sided island, basically a long ridge running almost E to W, its edges a combination of cliffs and very steep vegetated slopes. It is about 600m long, and 300m wide and is the tallest of the islands visited, with a summit just over 90m. The underlying rock is gneiss (Fettes *et al.* 1992). Seana Cnoc is a dry island without standing water, and without the peaty pools found on Bearasaigh. It is predominantly grassy with a mainly *Festuca rubra* (red fescue) turf, with abundant *Lychnis flos-cuculi* and *Silene uniflora*.



**Fig. 3.** Seana Cnoc, looking at the South side.

Seana Cnoc was visited on 3 July for 1¼ hours. Since the variety of habitats was smaller than on the other islands visited, it is likely that a reasonably comprehensive list was obtained. 28 taxa were recorded (see Table 2).

#### *Site florula for Flodaigh*

Flodaigh (Fig. 2) is a low-lying, sheep-grazed island, with a variety of habitats. It has an irregular outline with several geos, and at its largest is about 450m long and 400m wide. The bay on the south side that faces the islet of Tamna was formed by a pebble beach, partly vegetated, and there was a small permanent pool in the peatier ground some way to the north of this. Much of the turf was damp and peaty. The underlying rock is gneiss (Fettes *et al.* 1992).

We had a short visit of only ¾ hour to Flodaigh on 3 July 2009. This was therefore the least well covered of the islands discussed here, with nearly all the effort on the eastern part, and it is likely that several additions could be made to the species list with a longer visit. Nevertheless it had the greatest diversity of the islands visited, with 66 taxa recorded (see Table 2).

#### DISCUSSION

The limited number of habitats on small islands means that the numbers of species found was small relative to the main islands of the Outer Hebrides. 20 species were common to all four islands, all of them common and widespread in exposed coastal habitats in the Outer Hebrides. Additional species are found according to the different habitats present, and presumably their occurrence is also affected by how easily seeds can reach isolated islands. Some species are likely to have come in with sheep as they are moved to and from the grazed islands, and *Spergularia rubra* may be an example of this type of translocation.

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Species	Campaign	Bearasaigh	Seana Cnoc	Flodaigh
<i>Agrostis stolonifera</i>	✓*	✓	✓	✓
<i>Aira praecox</i>			✓	✓
<i>Alopecurus geniculatus</i>		✓		
<i>Anagallis tenella</i>				✓
<i>Angelica sylvestris</i>		✓		
<i>Anthoxanthum odoratum</i>				✓
<i>Apium inundatum</i>				✓
<i>Armeria maritima</i>	✓*	✓	✓	✓
<i>Aster tripolium</i> var <i>condensatus</i>		✓	✓	✓
<i>Atriplex</i> sp.	✓*	✓	✓	✓
<i>Bellis perennis</i>				✓
<i>Callitriche</i> sp.		✓		
<i>Calluna vulgaris</i>				✓
<i>Cardamine pratensis</i>				✓
<i>Carex flacca</i>		✓		✓
<i>C. nigra</i>	✓	✓		✓
<i>C. ovalis</i>				✓
<i>C. viridula</i> ssp <i>oedocarpa</i>				✓
<i>C. viridula</i> ssp <i>viridula</i>	✓*	✓		✓
<i>Cerastium diffusum</i>		✓		
<i>Cerastium fontanum</i>	✓*	✓	✓	✓
<i>Cirsium vulgare</i>				✓
<i>Cochlearia officinalis</i> s.l.	✓*	✓	✓	✓
<i>Dactylorhiza maculata</i>		✓		✓
<i>Dactylis glomerata</i>		✓		
<i>Danthonia decumbens</i>	✓			✓
<i>Deschampsia cespitosa</i>		✓		
<i>Eleocharis palustris</i>				✓
<i>Empetrum nigrum</i>		✓		
<i>Erica cinerea</i>				✓
<i>Eriophorum angustifolium</i>		✓		✓
<i>Euphrasia foulaensis</i>				✓
<i>Euphrasia officinalis</i> agg.	✓	✓		✓
<i>Festuca rubra</i> s.l.	✓*	✓	✓	✓
<i>Galium aparine</i>				✓
<i>Glaux maritima</i>	✓*			✓
<i>Holcus lanatus</i>	✓*	✓	✓	✓
<i>Hydrocotyle vulgaris</i>	✓*	✓		✓
<i>Juncus articulatus</i>		✓		✓
<i>Juncus bufonius</i> s.s.	✓	✓		✓
<i>Juncus bulbosus</i>		✓		
<i>Leontodon autumnalis</i>	✓*		✓	✓
<i>Leontodon autumnalis</i> var <i>autumnalis</i>		✓		
<i>Ligusticum scoticum</i>		✓	✓	✓
<i>Lotus corniculatus</i>	✓*	✓	✓	✓
<i>Luzula multiflora</i> ssp <i>multiflora</i>				✓
<i>Lychnis flos-cuculi</i>	✓*	✓	✓	✓
<i>Montia fontana</i> ssp <i>fontana</i>			✓	✓
<i>Nardus stricta</i>				✓
<i>Ophioglossum vulgatum</i>		✓		✓
<i>Plantago coronopus</i>	✓*	✓	✓	✓
<i>Plantago lanceolata</i>	✓*	✓	✓	✓
<i>Plantago maritima</i>	✓*	✓	✓	✓
<i>Poa annua</i>	✓			
<i>Poa humilis</i>	✓*	✓	✓	✓
<i>Poa trivialis</i>				✓
<i>Potentilla anserina</i>				✓
<i>Potentilla erecta</i>				✓
<i>Primula vulgaris</i>				✓
<i>Prunella vulgaris</i>		✓		✓
<i>Puccinellia maritima</i>	✓	✓	✓	✓
<i>Ranunculus acris</i>	✓*	✓	✓	✓

<i>Ranunculus ficaria</i> ssp <i>ficaria</i>		✓	✓	✓
<i>Ranunculus flammula</i>		✓		✓
<i>Ranunculus flammula</i> ssp <i>minimus</i>		✓		
<i>Rumex acetosa</i>	✓*	✓	✓	✓
<i>Rumex crispus</i>	✓*	✓		✓
<i>Sagina maritima</i>	✓			
<i>Sagina procumbens</i>	✓*	✓	✓	✓
<i>Sedum rosea</i>		✓	✓	
<i>Selaginella selaginoides</i>				✓
<i>Silene uniflora</i>	✓*	✓	✓	✓
<i>Spergularia rubra</i>	✓			
<i>Stellaria media</i>	✓*		✓	✓
<i>Succisa pratensis</i>		✓		✓
<i>Thymus polytrichus</i>	✓*	✓		✓
<i>Trifolium repens</i>	✓*	✓	✓	✓
<i>Triglochin maritimum</i>	✓			
<i>Tripleurospermum maritimum</i>		✓	✓	✓
<i>Urtica dioica</i>				✓
<i>Viola riviniana</i>				✓

**Table 2.** Species recorded in the four islands on 3 July 2008; \* denotes species also recorded for Campaign by Currie (1981).

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