

PART TWO

GEOGRAPHY PROJECT: Mealista and Uig Hills area.

The 1:10,000 map of Uig Hills West of easting 0 was used for this project but only the map of 1:50,000 scale was available otherwise. This scale was enlarged onto drawing paper at 1:10,000

We found the Uig Hills and surrounding areas to be made up of gneiss which is a highly metamorphosed Precambrian rock containing quartzite, feldspar and mica. We saw from field observations that much of the rock was foliated and deduced that this was caused by immense compression. There were magma intrusions forming dykes and we guessed that these were dolerite because of the pink colouration of the rock. We recognised the intrusions as being slightly softer rock than the gneiss because they formed shallow trenches which could be most clearly seen at the coastline where caves and long inlets had formed. We saw an example of such an inlet at Stacagea (GR 994225). We mapped the dykes in the field by observation at 1:10,000 scale and reduced on tracing paper to 1:50,000 incorporating the most important morphological features.

It seems that the glacial period has had a very pronounced effect on the area, as evidence of corries, erratics, moraines, striations in the rock etc. were common. A particularly well developed feature is found at Upper Loch Uladale (GR 018234) where part of the back wall of the corrie, forms an overhang.

We deduced from the striations in the rock that the ice had formed in a Southwest and Northwest direction, and through reference books discovered that the ice had spread out in a north-westerly direction from the mainland.

It was interesting to note that there were few raised beaches and the one at grid reference 992235 was raised by only 25'. It is possible that the lack of raised beaches could be explained as the enormous pressure of the ice during the glacial period depressed the land and drowned the coastline. By comparison we found that the raised beach at Ullapool varied between 50 and 100' in height.

Another factor notable was the apparent lack of machair in the area, the only example found being at GR 991245.

The village of Breanish was used for the sociological survey. We found the village to be a linear settlement probably centered around the bridging or fording point of the river (CR992256). The houses are found in a slight

hollow and are sheltered from the strong east winds by the Uig hills. We discovered that for the 28 crofts there are only 14 crofting families; clearly the community is suffering from a lack of opportunity and young people are moving out to seek better employment. The village has few amenities, the nearest shop being ten miles away, although most provisions have to come 38 miles from Stornoway. Crofters subsidize their incomes by taking other occupations for example weaving, fishing, metal working, road mending, and work on the mainland; but they still remain largely self-supporting. The doctor lives in Timsgarry and visits regularly, but Breanish children travel to Stornoway by bus.

The community is close knit and religious, and showed extreme hospitality to us as strangers. There are local land improvement schemes going on for improved local grazing and the crofters are involved in fertilizing the land with sand and seaweed. The land at Mealista is the most fertile in the area and up until the second world war there was a thriving farm there. This was occupied by the American Army, but deserted after the war; since when the crofters have shared out the good land and it is now used as good grazing and as land for growing root crops.

Elise Wiggins.

THE ROCKS AND MINERALS OF LEWIS.

Lewis has quite a large selection of rocks and minerals to offer those willing to take the time to look for them. Gneiss (pronounced 'nice') is probably the most common, but there are also outcrops of feldspar and quartz.

There are also some semi-precious stones such as smoky quartz, white chalcedony and serpentine. The Serpentine that I found was common or massive serpentine, which ranges in colour from white through all shades of green to black.

At the small lay-by on the road to Timsgarry there is a small vein of Biotite which is a black mica containing magnesium and iron. It is a very flaky rock which is usually black but can be dark green or dark brown.

The feldspar in the area is mostly orthoclase, which is either pink or white or yellow. The particular piece which I found was pink orthoclase. It is a potash feldspar which in other varieties has the potassium replaced by barium or sodium.

Hornblende gneiss is a metamorphosed rock and very hard. It is much darker than biotite gneiss, which otherwise looks similar. Talc can also be found at the Butt of Lewis.

David Wilkinson.

BIRD REPORT LEWIS UIG SAND:-'76

Fantastic! How else can one describe Paul Caffery's sighting of an Ostrich on the top of Teinnasval, and Martin Cook's claim to have seen 63 different species of bird when the rest of the expedition only managed 52 between them all.

Most impressive however of all the sightings was a reported glimpse of an Arctic Urnu by Martin and Jason. A very rare visitor to the Western isles, they were lucky to catch even a glimpse of it, but with Paul's sighting as well, Jamie O'Brien our watcher/artist managed to piece together a fairly accurate impression.

Of the more orthodox Hebridean birds, some of our exciting 'spots' were seen at the Ullapool ferry rather than at camp Kittiwakes, Gannets, Fulmars and Manx Shearwaters flew very close to the boat and we were lucky to see both Arctic and Great Skuas attacking the gulls and catching the food they dropped. Once at camp, several trips were made to Eilean Molach which appeared to be a major fulmar nesting area as well as providing feeding for a number of Cormorants, Gannets and Herring gulls. More interestingly Black Guillemots, with their typical brilliant scarlet legs and white wing markings, were nesting on the cliff face among the fulmars.

We completed a BTO site register for the island site which we hope will be of some use.

On inland trips we saw birds ranging from the huge Golden Eagle to the tiny Goldcrest, which we found in the only tiny area of woodland within striking distance of camp.

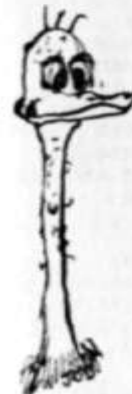
For the Southerners on the expedition. Buzzards, Ravens, and Hooded Crows were exciting new sightings, as were the Twite and migrating Sanderling that landed in large flocks just 200 yards from our camp one evening. Uig Sands proved an excellent site for waders and our only Dunlin and Greenshank were seen there whilst feeding. Common terns, Kittiwakes, Curlew and Herons were also frequent visitors there.

During the last few days of the expedition our tired legs converted us from 'leggers' to 'arsers' and we took the opportunity to dissect buzzard and Eagle pellets collected on trips. Apart from large amounts of hair and bristles, they contained, many teeth, claws and bone fragments, showing a diet of rabbit and other small vermin. Pellets discovered closer to the camp containing snail shells and sand were probably from oystercatchers.

In all, the 10 boys to take part in the birdwatching were lucky to see so much and joined the elitist Urnu-spotters.

SIGHTINGS OF BIRDS LEWIS '76

1	2-5	5+
Manx shearwater	Heron	Fulmar
Urnu	Ringed Plover	Gannet
Merlin	Comic tern (Ouch Ed)	Eider
Kestrel	Black Guillemot	Buzzard
Golden plover	Songthrush	Golden Eagle
Greenshank	Robin	Oystercatcher
Dunlin		Lapwing
Sanderling		Snipe
Arctic Skua		Curlew
Dipper		Redshank
Windchat		Gt Black Backed gull
Goldcrest		Lssr Black Backed gull
Rock pipit		Herring gull
Great Skua		Black headed gull
Ostrich		Kittiwake
Swan		Hooded crow
		Carrion Crow
		Wren
		Black bird
		Wheatear
		Stonechat
		Meadow pipit
		Pied wagtail
		Starling
		Twite
		House sparrow
		Black throated diver
		Rock Dove
		Hen



David Davies.

COLONSAY ORNITHOLOGICAL REPORT

The expedition to Colonsay provided some varied bird-watching and during our time there, the five of us were able to record a total of 60 species.

Colonsay is a small island about 8 miles long by 3 miles wide and has a number of different habitats. Birds of prey were found but we had hoped for better views of the Golden Eagles which nest in the north of the island. We did see a pair but they were well over the sea between Colonsay and Mull. A Peregrine and Merlin were observed and a Sparrow hawk was seen twice. Kestrels were seen on most days.

Cliff watching was a popular pastime and gave some very rewarding views of Kittiwakes with their young. A Gannet and a Great Skua were spotted and Arctic Skuas were seen mobbing some of the many Kittiwakes there.

A small flock of Canada geese were seen on Loch Sgoltair and Mallard and little Grebe were observed on Loch Fada. Large numbers of waders were to be found in the sandy bays and the strand between Colonsay and Oronsay. These included Ringed Plover, Dunlin and three migrating Sanderlings. Redshank and Greenshank were also observed. Further inland, migrating wheatears, stonechats, blackbirds and songthrushes were also seen.

Below follows a detailed list of the species seen.

Little Grebe (1)	Common Scoter (5)	Kestrel (2)
Fulmar	Eider	Oystercatcher
Gannet (2)	Canada Goose	Lapwing
Cormorant	Buzzard (5)	Ringed Plover
Shag	Sparrow Hawk (1)	Snipe
Heron (pr)	Golden Eagle (pr)	Curlew
Mallard (3)	Peregrine (1)	Redshank
Teal (5)	Merlin (1)	Greenshank
Dunlin	Rock Dove (10)	Hedge Sparrow
Sanderling (3)	Wood Pigeon (2)	Meadow pipit
(poss. migrant)		
Arctic skua (4)	Skylark	Rock pipit
Great skua (1)	Swallow	Pied wagtail
G Black backed gull	House martin	Grey wagtail (1)
L Black backed gull	Raven (2)	Starling
Herring gull	Hooded crow	Linnet
Common gull	Jackdaw	Twite
Black headed gull	Magpie (1)	Chaffinch
Kittiwake	Wren	Reed bunting (1)
Arctic tern	Songthrush	House Sparrow
Blackbird	Wheatear	Black Guillemot
Stonechat	Robin	Urnu (3)

Report David Nichols, Mike Parffrey,
Jason Williams, R Brerton, R Butler.

JURA 1977 BIRD PROJECT

Due to the nature of the underlying rock Jura is bleaker than the surrounding islands and as a result the number of breeding species is lower. However the number and variety of birds is still large enough to make Jura a good place for bird watching.

Birds seen	Site
Black throated diver	Loch Tarbert
Red throated diver	Loch Tarbert
Cormorant	Loch Tarbert
Shag	Loch Tarbert
Grey heron	Small heronry at Standing
Mallard	Stones chapel
Wigeon	Loch Righ Meadhonach
Eider	Loch Tarbert
Shelduck	Loch Tarbert
Mute swan	Craighouse
Golden Eagle	Paps of Jura
Buzzard	
Hen harrier	
Merlin	
Peregrine	Coast near Ruantallin
Wood Pigeon	Woods on East Coast
Snipe	Gleann Dorch
Redshank	Around Loch Tarbert
Greenshank	Around Loch Tarbert
Oystercatcher	Around Loch Tarbert
Curlew	Around Loch Tarbert
Ringed plover	Glenpatrick
Lapwing	
Arctic skua (mainly dark phase)	Ardlussa
Black guillemot	Loch Tarbert
Greater black-backed gull	
Lesser black-backed gull	
Herring gull	
Common gull	
Black headed gull	
Arctic tern	Islands in Loch Tarbert
Little tern (?)	Craighouse
Red grouse	
Sky lark	
Swift	Craighouse
House martin	Craighouse
Starling	
Great tit	Wood near Ardlussa
Blue tit	Wood near Ardlussa
Blackbird	
Song thrush	
Wheatear	
Stonechat	

BIRD REPORT FOR LOCH SHIEL

The bird life on the Loch Shiel expedition was rather disappointing. At least we were not hampered by bad weather and the ornithologists were out most days.

On the loch itself we saw adult and juvenile Red-throated Diver, which was surprising as it is usually the Black-throat that prefers the deep and large lochs such as Loch Shiel. We were also visited by a family of Red breasted Mergansers, on one or two occasions.

The birds of prey are also worth mentioning. Two pairs of Golden Eagle are said to breed on the estates around Glenaladale, and we saw one pair of adults on Beinn an t-Samhainn and one juvenile flew up twenty feet in front of a party walking the peaks behind Scamodale. A Merlin was seen near Glenfinnan and a Peregrine at Gaskan. Up to four buzzards were seen over the campsite.

Goldcrests were heard calling in the coniferous woods at Scamodale. Great, Blue and Coat tits were seen, all with broods at the deciduous woods at Gaskan and flocks of long-tailed tits were seen on the bivvies at Polloch and Loch Ailort.

Many birds were seen in fewer numbers than was expected, such as Ptarmigan, Ring Ouzel and Wheatear, the latter two can be accounted for by migration. One pleasant surprise was a Redstart which was seen at Glenfinnan.

It was also surprising that we saw no Twite, which one might have expected up on the Sheilings. Red Grouse were strangely absent. The most common bird by far was the Meadow pipit, which was seen at sea level and up to 3000'. Willow warblers were also very numerous at the start of the expedition but had all migrated south at the end.

Tawny Owls were heard most nights from around the camp and on the last day we saw a Collared Dove flying around the trees behind camp.

In total 52 species were observed on the expedition, yet we were surprised not to see Cuckoo, Short-eared Owl, Whinchat and Urnu.

(A full list of the birds seen and their frequency is stored in the SHS Project files, as there is unfortunately insufficient room for it here. -Ed.)

Graham Kramer.

Whinchat	Glenbatrick
Robin	
Willow warbler	Near Cruib Lodge
Meadow pipit	
Rock pipit	
Pied wagtail	Craighouse
Bullfinch	
Chaffinch	
Goldfinch	
Greenfinch	Wood near Ardlussa
House sparrow	
Dunnock	
Hooded crow	
Raven	

Mark Schofield

ORNITHOLOGY ON LEWIS (MEALISTA)

The following list of species is provided by Richard Jukes of the Mealista expedition 1977. Records of sightings were kept for 18 days during observations in different habitats.

Habitats

- Day 1 Coast between camp and East Tamana (012198)
- Day 2 Walk inland bewteen camp and Aird Griamanish (994208)
- Day 3 Road between camp and Uig (029322) with cliffs at (997295)
- Day 5&6 Circuit of 12 peaks in Uig Hills. Bivvy at (050270).
- Day 7 Road between Islivig and camp.
- Day 8 Coast to bivvy in Glen Tamanisdale (032 238).
- Day 9 Up Glan Tamanisdale. to north end and back to camp.
- Day 10 & 11 Uig Sands and back (048329).
- Day 12-14 Strong winds and rain (No time for bird watching!)
- Day 15 Calm again. Canoe from Camp (990246) to Mealista
- Day 16 Day spent entirely at, camp.
- Day 17 Travelled into Stornoway across Lewis at midday.
- Day 18 Boat back to mainland.

Key to list

- X observed
- H Heard but not seen
- C seen from camp
- B seen from boat Stornoway - Ullapool
- S seen in Stornoway

Duration of study

The observations were made from 13th - 29th August 1977. Day one corresponded to the 13th, and Day 18 to the 29th.

List of Observations

SPECIES	DAYS																	
	1	2	3	4	5	6	7	8	9	10	11	12	15	16	17	18		
Gt N. Diver		C																
Manx Shearwater	B																	
Fulmar	B	C		x	x		x	x	C	x	x	x	C	C	C			
Gannet	B	C	C	C	x	C	x	x	C	x	x	C	C	C	C			
Cormorant	B	C	x	x	x	C	x	x		x	x	C	C					
Shag	B	C		x	x		x							x				
Heron		x																
Urnu	B	x	x	x	x	x		x		x			x	C				
Mallard			C															
Eider				x														
Buzzard	x			x														
Golden Eagle					2	3	4						x					
Merlin		x																
Red grouse					x						x							
Oystercatcher	B	x	x	x	x		x	x	C	x	x		C	C	C			
Lapwing		C			C	x	x	x	x	x	x	C	x	C	x			
Ringed plover				x						x	x	C	C	C	C			
Golden plover				x	C	x	x		x	x	x	C	C	C				
Snipe						x		C				x						
Curlew		C		x										C				
Whimbrel										x	x							
Com Sandpiper			C											x				
Redshank				x														
Greenshank										x	x							
Dunlin				x														
Gtr. BB Gull	B	C	x	x	x	x	x		x	x	x	x	C	C	C			

SPECIES	DAYS																	
	1	2	3	4	5	6	7	8	9	10	11	12	15	16	17	18		
Ler BB Gull	B	C	C	x	x	x	x		x	x	x	x	C	C	C			
Herring gull	B	C	C	x	x	C	x	x	C	x	x	x	C	C	C			
Common gull	B	C	x	x		C		x				x	C		x			
Kittiwake	B				x								C	C				
Common tern	x								x									
Arctic tern	x								x									
Razor bill	B																	
Guillemot	B																	
Puffin	B																	
Collard Dove																S		
Swallow					x					x	x	x				C		
Sand Martin		x																
Raven		x		x	x	H	x	x	x	x	x	x	x	x				
Hooded crow				x	x	x			x	x			x	x		S		
Wren		x	x						x				x	x				
Dipper	x																	
Blackbird		x	x						x				x					
Wheatear		x			x	C	x	x	x	x	x	x	x	x				
Meadow pipit				x	x	x	x	x	x	x			x	x	C	x		
Rock pipit							x							C	C			
Pied wagtail																S		
Starling		C	C	C				x	x				x	C		C		
Twite					x			x	x				x	x				
House sparrow		x							x							S		
Red th. diver							H			x		H	H	x	x	H		
Blk th. diver								H				H	H		x	H		
Rock dove								C						x	x	C		
Great skua	B																	
Bullfinch														x	x			

FLOWERS, BIRDS, TICKS AND DIVERSITY INDICES ON
KNOYDART

In the late 1780's George Don, a nurseryman, explored the Scottish Highlands to the extent that he traversed more of the Caledonian Alps than any other botanist has ever done. In Raven and Walter's Mountain Flowers we learn that he "searched the vast range of mountains that stretch about 60 miles through the district of Knoydart, a region which had never before, nor has since, been examined with the botanical eye." Gavin Maxwell looked across to the peaks of Knoydart like Ladhar Beinn and John Hillaby journeying through Britain, passes the saltmarsh at Camusroary that Craig Simon and I reached after a mammoth walk to inspect a potential campsite.

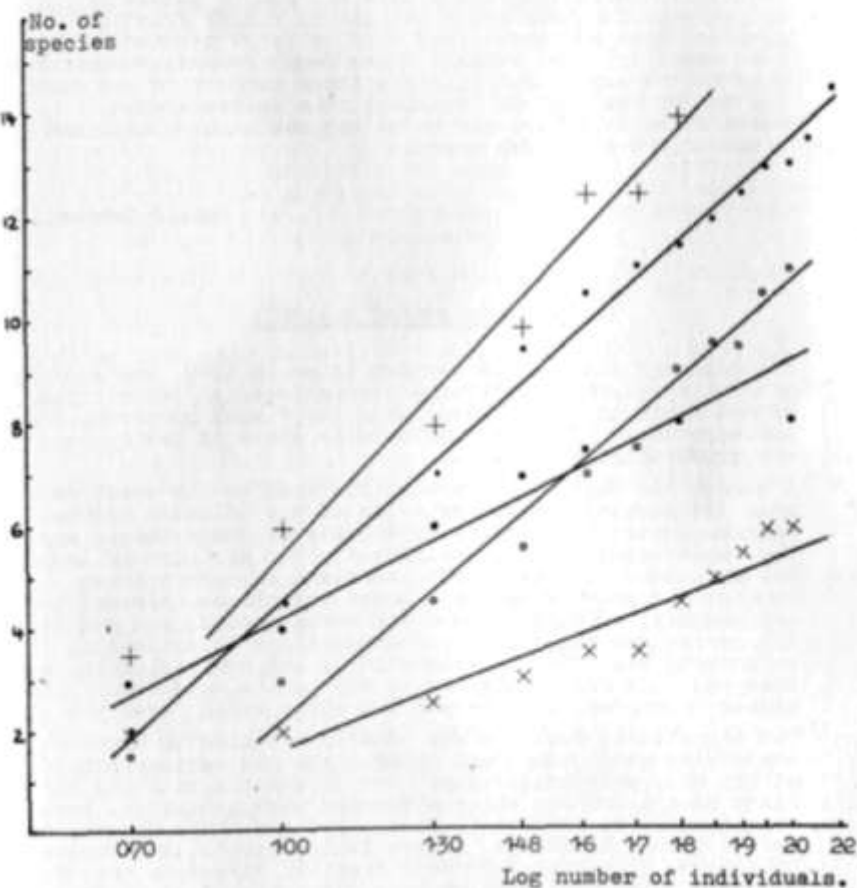
On the whole however, Knoydart appears to have been neglected and botanically I'm not surprised, for all the vegetation was very acid-loving, and I had to search for miles for even a little grass of Parnassus, found very little Roseroot, and even Parsley fern and starry Saxifrage were very scarce except near the summit of Ladhar Beinn, where they were joined by a lot of Sea Pink. Lovely bog communities were easily found and on Beinn na Cailliche one had the typical open community of high altitudes with wind-trimmed ling, least willow and dwarf cudweed. It was Ptarmigan country at only 500m and Ptarmigan were there, although from the BTO Atlas it was not obvious that their presence was known. In other respects, it was clear that the Atlas Survey of breeding birds had been carried out most effectively.

I was mainly concerned with birds not flowers, and with common birds not with the Golden Eagle that lured people from their cricket. My main objective was to study the diversity of species in different habitats, such as bracken slopes, grassy slopes at low altitude, the coast, the steep birch wood under Meall na Coille Duibhe, and on all land above 300m above the bracken and birch. In each case I counted the number of individuals 'contacted' in a given time and recorded the number of species identified among a sample of individuals 'contacted'. A diversity index was prepared by plotting number of species against log of the number of individuals, and hoping that a straight line would result. The figures plotted are the average of two surveys in each habitat, and the steeper the line: the more diverse the population. A highly diverse index may not indicate a high population density so there is a separate table of contacts for hours and the dominant species for the different habitats.

Habitat	Contacts/hours	Dominant species
Coast	106	Herring gull 30% Oystercatcher 18%
Birchwood	30	Longtailed tit 20% Robin 13% Wren 11%
Bracken	20	Meadow pipit 35% Willow warbler 14%
Grassy slopes	10	Meadow pipit 80% Skylark 12% Wheatear 3%
Above 300m	10	Meadow pipit 56% Wheatear 10% Skylark 9%

Diversity Index For Various Habitats on Knoydart

- + + Birchwood (below Meall na Coille Duibhe)
- • • Coast (including Abhainne Inbhir Ghuiserein estuary)
- • • All habitats above 300m
- • • Bracken dominated slopes
- x x Grassy slopes



Apart from birds, I also attempted a survey of ticks which became conspicuous on my ankles (and other parts of my anatomy) on the 29th July. A peak for the camp as a whole was reached on the 30th but as only nine returns to a questionnaire were received, attempts to correlate tick attacks with hairiness, reaction to sun or other exciting variables were inconclusive. A second camp peak on 7th August occurred, as had the earlier peak, three days after heavy rain: this was just about the only vaguely suggestive fact to emerge. There were certainly great individual variations which were not due to nature of activity or footwear and I was one to suffer from the greatest tick concentrations with up to 50 unattached on some days. In every respect these hardy parasites contributed less to the expedition than the large numbers of red deer (up to 200 individuals together), the Scotch Argus butterflies that were new to me and the usual plants and birds of the Hebridean coast.

Donald Campbell

THE FLORA AROUND MEALISTA

King James V visited the Western Isles in 1540, and shortly after his return to Edinburgh commissioned a 'Description of the Scottish Isles' presumably for fiscal purposes. The surveyor wrote of Lewis "There is na woods in Lewis, but one great wilderness..."

I wonder how many of us thought the same as the coach raced over the seemingly unending miles of the island's plateau peat bog, with the distant blue hills of North Harris and Uig shimmering in the heat. But the Uig district of Lewis has mountains and sea cliffs, sand and shingle beaches, heather and grass moorlands, lochs and rivers, blanket bog and machair, cultivated land and waste ground, and has been the centre for many botanical expeditions investigating its relatively rich flora. Perhaps it is not surprising therefore that we found no new species to add to the extensive flora already recorded, despite all the short walks 'over the hill'.

The campsite at Mealista was ideally situated on Machair behind the sandy beach and brought all the various habitats within easy walking distance, but it was the rich and colourful flora of the machair which attracted most attention. Here were Eyebright, Tormentil, Tansy, red and white Clover, Ragwort, Tufted vetch, Dandelion, Daisy, Yellow Rattle, and Harebell, Buttercup, Milkwort, Birdsfoot trefoil. Forget me not, Selfheal, and Wild thyme, all growing in a tight rich turf of Meadow grasses, Yorkshire Fog, Crested Dog's Tail, Rye grass, and plantains, with Silverweed and rushes in wetter parts. The area was formerly cultivated, and still bears the scars of the old lazy beds.

The sand dunes in the neighbouring bay were anchored by Marram grass and Sand Couch grass, with Silverweed, Birds-foot trefoil. Ragwort, Curled Dock and Sea rocket, invading the dunes from the rich established machair turf behind. Over the headlands between the bays and on the sea cliffs a tight turf of Red fescue. Viviparous Fescue, Scurvy Grass, Thrift, Clovers and Plantains clung, while nearer the sea Stonecrop and scentless Mayweed were noted. Cultivated ground by the former Army Camp was mostly under potatoes, but had the usual weeds amongst it. Alongside this were areas of waste ground which were rich in nettles, brambles, umbellifers, willowherb and dockens, together with thistles. Nettles were also commonly seen widely over the hills at shellings and other sites of former habitation.

The grassmoor varied widely in quality but dominated the interior of the peninsular. The influence of the blown sand was clearly seen as the quality of the turf deteriorated inland, with the rising pH of the soil. Most of the grassmoor was poorly drained and had tussocks of Ling, among deer grass, Cotton grass. Bog Asphodel, Mat Grass, and Viviparous fescue, the better drained areas had more Ling and Cross leaved heath and purple moor grass in comparison, and these areas tended to be confined to the higher slopes.

The grasses on the tops of mountains and ridges consisted of a turf containing Sheep's fescue and purple Moor grass, which was closely cropped by sheep.

Heather moor grew on most of the better drained slopes of the mountains and consisted predominantly of ling with bell heather, both white and purple, together with wavy hair grass, purple moor grass and tormentil. Above this, heather was often found in the lee of rocks or in sheltered spots and it was in such localities that Bilberry and yellow mountain Saxifrage. Primrose and Bluebell were seen but alas no Alpine flowers.

Hill lochs were numerous amongst the Uig Hills and most of them were surrounded by rushes and sedges and several had pondweed, water lobelia, water forget me not, and water lilies. The burns and rivers draining them were often fast flowing but colonies of water crowfoot were recorded. Blanket bog extended to the north and west of Mealisval and unfortunately after two almost dry months was very firm. Cotton grass. Deer grass, Moor grass and bog Myrtle were all widespread amongst sphagnum, and after so much. dry weather, ling was growing along the tops of old peat cuttings quite vigorously. This summary of the environment of Meallista illustrates the diversity of the flora of the area, and in the near future I hope to compile a full list of the species present for the SHS files.

Ken Hunter

THE MACHAIR OF ARDROIL; A BOTANICAL STUDY

The Lewis expedition in 1976 camped on the machair at Ardroil, on the south margin of Uig Sands on the West Coast of Lewis. I proposed to make a study of the plant life of the machair, and my observations are contained in the following report.

The Uig Sands area seems to consist of alluvial deposits laid down by several burns and rivers draining into an inlet of the sea (Camus Uig). The Ardroil machair is an area of sand now stabilised by the growth of vegetation, although the turf has recently suffered considerable erosion at its seaward edge and work is now underway to halt this process by building a retaining wall.

The predominantly sandy nature of the soil presents several problems to plant growth; firstly the leaching of nutrients out of the soil by rainfall; secondly, the tendency of the soil to become dehydrated in dry weather; and thirdly, the physical instability of a finely granular soil, penetrated only shallowly by plant roots. At Ardroil the dehydration problem is not severe, since the water table is not far below the surface.

Rather than just listing the species, I decided to set out to collect quantitative data as well as qualitative; i.e. not only to establish which species were present but also to estimate what proportion of the ground was occupied by each species. My method was to distinguish the natural topographical divisions of the ground (i.e. edge of the machair, meadow area, dunes area.) and to study each of these divisions in turn. In each. of these areas I measured out a square yard within that area and then estimated the percentage of the ground within that square yard, that each species covered.

Using this process I hoped to obtain meaningful information about the vegetation patterns within my area of study.

The following is a list of species found on the machair. It does not pretend to be complete, since I did not have time to quarter the ground meticulously, but it should contain all the common species.

- | | |
|---------------------------|---------------------|
| 1. Achillas millefolium | Yarrow, milfoil |
| 2. Agrostis stolonifera | Creeping bent grass |
| 3. Ammophila arenaria | Marram grass |
| 4. Anthoxanthum odoratum | Sweet vernal grass |
| 5. Algeria maritima | Sea pink |
| 6. Arrhenathera elatius | Oat grass |
| 7. Bellis perennis | Daisy |
| 8. Campanula rotundifolia | Harebell |

- | | |
|---------------------------|----------------------------------------------|
| 9 Cynodorus cristatus | Crested dog's tail grass |
| 10 Daucus carota | Wild carrot |
| 11 Euphrasia nemorosa | Common Eyebright (E. officinalis agg. ? Ed.) |
| 12 Festuca ovina | Sheep's fescue grass |
| 13 Galium verum | Lady's Bedstraw |
| 14 Gentianella campestris | Field Gentian |
| 15 Heracleum sphondylium | Hogweed |
| 16 Holcus lanatus | Yorkshire fog |
| 17 Koeleria cristata | Crested hair grass |
| 18 Leontodon autumnalis | Smooth hawkbit |
| 19 Lotus corniculatus | Bird's foot trefoil |
| 20 Molinia caerulea | Purple moor grass |
| 21 Plantago lanceolata | Ribwort plantain |
| 22 Plantago maritima | Sea plantain |
| 23 Prunella vulgaris | Self heal |
| 24 Ranunculus acris , | Common meadow buttercup |
| 25 Rhinanthus minor | Hay rattle |
| 26 Senecio jacobaea | Ragwort |
| 27 Stellaria graminea | Leaser stitchwort |
| 28 Thalictrum arenarium | Sand meadow rue |
| 29 Succisa pratensis | Devil's bit scabious |
| 30 Thymus drucei | Common wild thyme |
| 31 Trifolium pratense | Red clover |
| 32 Vicia cracca | Tufted vetch |

The nature of the soil and climate, and the action of grazing by cattle all modify plant growth in one main respect in this area. Most of the plants are stunted in stature and do not reach the state of maturity here that they do under more hospitable conditions. This modification of flora can make identification of species difficult (especially to inexperienced botanists such as myself). Species numbers 2,17,&27 are of less positive identification than the others.

If we now consider the three main areas, and taking the machair edge firstly. This area of ground is a strip of land whose vegetation is dominated, at the western edge by Marram grass growing in large tussocks and occupying about 25% of the ground. Other grasses present are Yorkshire fog 15%, sheep's fescue 15% and oat grass 7% Other species are Lady's Bedstraw 18%, ribwort plantain 8%, Yarrow 1%, Hogweed 8% and Red Clover 3%

Moving eastwards, away from the dunes and towards the river, the Marram tussocks become more scattered and less dense; about one third of the way along. Marram occupies only 10%, Lady's bedstraw 23%, Clover 22% Bird's foot trefoil 15%, Sheep's fescue 10% and Yorkshire fog 8%. By half way along this strip the comparatively luxuriant vegetation gives way to a closely cropped turf of sheep's fescue and other grasses.

Looking further inland (south) towards the Morrison's Croft, the second area can be distinguished - the Machair Meadowland. The species here are Purple moor grass 22%, Sheep's fescue 20%, Yorkshire fog 15%, Crested dog's tail 10%, Sweet vernal grass 5%, Eyebright 5% Ribwort plantain 5%, as well as bird's foot trefoil, sea plantain, wild carrot, and tufted vetch all at about 2%. Smooth Hawksbit, Hay rattle, and Devil's bit scabious are also present at 0.1% and finally field gentian appears at about 0.04%.

At the western edge of the machair, there lies the dunes. The vegetation here consists of large numbers of small Marram grass tufts covering 7%, interspersed with Bedstraw 17%, Yorkshire fog 13%, Sheep's fescue 13%. Wild carrot 10%, Ribwort plantain 8% Red clover 6%, Oat grass 5%, Hogweed 4% Crested dog's tail 4%, Hay rattle 3%, Eyebright 2%, Devil's bit scabious 0.1% and common wild thyme 0.6%. In addition the following species were common and widespread: Harebel 5%, Meadow buttercup 2%, Crested hair grass 2%, Lesser Stichwort 1% and sand meadow rue which is common everywhere except in the meadow.

The machair is essentially a grassland habitat and grasses tend to dominate, although occasionally plants such as Red Clover and Lady's Bedstraw seem to compete successfully and attain quite a high cover. The importance of Marram grass in the ecology and development of the machair cannot be overestimated. Without it action as a coloniser of shifting sands, other plants could not establish themselves. As however: the marram allows colonisation by other species, the pure sand develops in to a richer soil and attracts other species better fitted to the changed soil. Mr. Morrison told us that Marram had been planted purposefully at Ardrol to stabilise the dunes and protect the grass. The local crofters take great care to see that the turf is not over grazed, but an equal or possibly greater threat to the stability of the machair is erosion by man. Human feet, motor tyres and the SHS all wear out the delicate grass, and within a short time of our arrival it was obvious that the machair would be marked by our presence.

Ian Colquhoun.

OBSERVATIONS ON MACHAIR

Visitors to the Hebrides are all familiar with the Machair. Like any ecological zone however, it is not clear exactly how it should be described, as it varies from site to site. However a low lying, grassy plain, on well drained soil containing a high proportion of shell sand in a coastal position is a pretty good description which will cover most locations. In addition to these physical factors machair is typified by a group of species of plants and (to a lesser extent) animals. (See adjacent study) The word itself is Irish Gaelic and its root 'Magh' means 'palm of the hand'. That seems a pretty good definition to me.

Most ecologists confidently call machair a plagio-climax; what they are saying is that the bare sand has been colonised by plants and has reached a steady state. They suggest that no new species will arrive (trees or shrubs for example) and that the same plants that make up the turf will remain until some natural disaster occurs.

Now most ordinary grassland will quickly become wooded if left to its own devices. Why doesn't this happen to Machair? Why doesn't it turn into the climax community of plants which we expect? The answer is always assumed to be grazing. It is suggested that grazing by rabbits and insects and more lately man's domesticated sheep and cattle, prevents the succession of the grass land to heath or moor. The hard evidence for this assumption is not easy to uncover, and if a certain amount of grazing is necessary to maintain the machair it is surprising that some of the less grazed machairs show no sign of further colonisation.

Two factors do however distinguish machair grass from pasture. Firstly, at certain times of the year, and for several months at a time, rainfall is low and the plants are water stressed. Secondly nutrients, especially nitrates are limitations to plant size. These factors are likely (I believe) to be at least as important as the presence of grazing in the maintenance of the machair ecosystem.

One of the effects of grazing however is clear. Overgrazing will destroy any machair. In addition, even slight amounts of 'visitor pressure' can have the same effect. The local grazing councils are well aware of this danger however and the farmers are careful in their use of the machair. The public however care less, and through ignorance or laziness we are destroying an amenity which has formed over several centuries. The SHS has a good record in this respect, I think, and a survey of visitor pressure on Luskenytre, Harris was presented to the NCC in 1976. There, effects were not yet severe, at Uig Sands things are different, and unless cars are restricted from the sensitive machair, then it is easy to foresee, the erosion of the turf with the subsequent loss of the valuable machair.

Nicholas Deeley

TERRITORIAL DRAGONFLIES

Between the campsite in Glenaladale and the shores of Loch Shiel there is an area of tussocky grass and boggy depressions, where large numbers of Dragonflies and Damselflies breed each year. Four species were seen often: Sympetrum danae - smaller dragonfly (45mm long), males black, females yellow on dorsal surface with dark markings underneath.

Leucorrhinia dubia - small (40mm) black and red dragon-flies with straight, squared-off abdomens contrasting with the genus Sympetrum.

Aeshna Juncea - large (90mm) with blue and black marks and pale blue and brown eyes. Two small yellow marks on the thorax.

Cordulegaster boltonii - large (90mm) with unmistakable yellow and black stripes, reminiscent of a wasp, and with green eyes.

The first two species spend most of their time resting on vegetation near the water's edge, even on sunny days when dragonflies are most active. The second two however settle only occasionally whilst in sunshine and hawk up and down stretches of water looking for food and mates.

Cordulegaster boltonii and Aeshna juncea were chosen for this study because of their larger size and ease of identification, and because they are more active. The project set out to investigate the basis of their activity and to discover whether or not they are territorial insects. The method used in the study was simple observation and recording of events by the pond and stream, although some observations were made unexpectedly whilst photographing at the site or fishing. In some cases, a single fly was observed for several minutes on end, and its flightpath recorded over an outline of the habitat.

Observations

It quickly became obvious that the preferred habitat of the black and yellow Cordulegasterid was the stream,

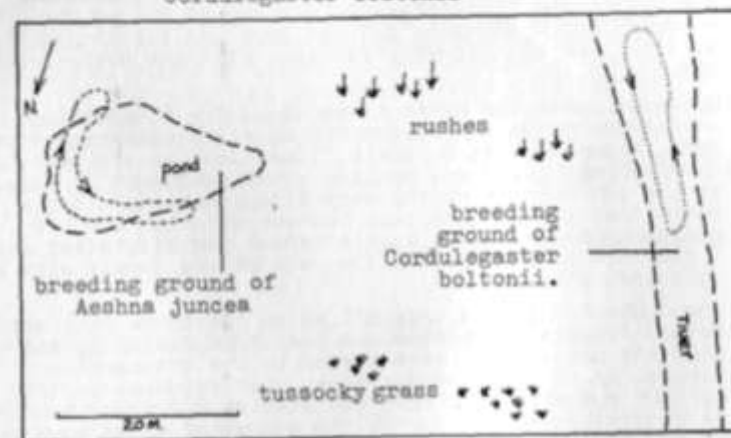
While the blue Aeshnid was found most often over the pond. Textbooks agreed with this and informed us that the black and yellow bred in running water and the blues in still water. At this point we expected to have two projects - one on each species, but the interactions between the two turned out to be the most interesting part of the project.

On sunny days several blue dragonflies could be seen at one time close to the pond. Each insect would fly up and down a particular stretch of the bank searching for food in the form of small flies, mostly within 50cm of the water surface.

Loch Shiel Dragonfly project

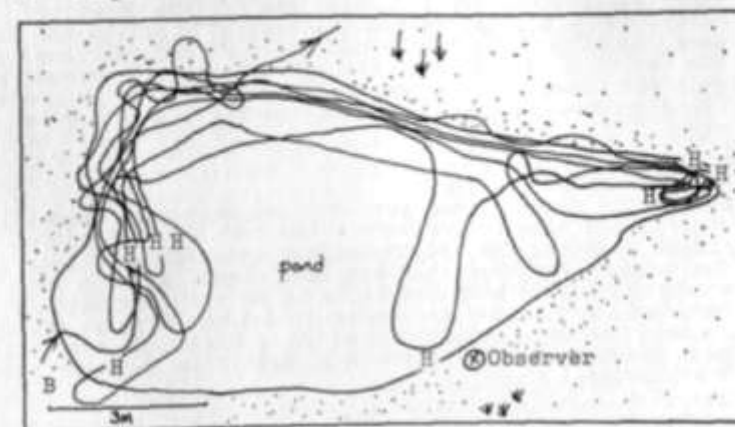
Typical hawking (feeding) flight path of:

----- Aeshna juncea
 ----- Cordulegaster boltonii



Flightpath of one dragonfly (Aeshna juncea) over a period of five minutes on an overcast afternoon, 25.8.77

H = stops to hover B = darts at a butterfly



Occasionally a dart would be made at a larger insect, such as butterfly, but these were never caught (though there is no doubt that a dragonfly could if it wished). Each insect kept to its particular beat and would hawk up and down it all day if the weather remained good. Since we did not mark individual insects we could not tell if they retained the same beats from day to day.

It seems to be the males alone which fly 'beats' in restricted areas at the water's edge, females move from pond to pond. When a female flies close to the beat of a male, he will pursue her and usually attempt to mate. We did not observe mating very often - it lasts for a short time in this species. However we often saw the smaller species flying in the tandem position after mating - the male still grasping the neck of the female with his abdominal pincers.

The black and yellow dragonflies on the other hand were more difficult to observe, as they flew faster up and down the streams and were shaded by the overhanging vegetation at the stream's edge. What evidence we did collect suggests that they too hawk up and down beats as do the blues, feeding on the swarms of flies that gather in the shade of the banks of the stream.

Of all the observations made, by far the most significant, we believe, were those of fights between the species. The first took place over a pond when a yellow and black dragonfly crossed the beat of a blue. The blue rushed out and caught the yellow and black and they struggled on the surface of the pond. The blue won by holding the other underwater until it drowned, or so we think. The second fight we observed occurred under exactly the opposite conditions - a blue crossed the beat of a yellow and black over the river. The yellow and black seized the blue, and the two fell in the river struggling, the blue seemed to gain the upper hand, escaped and flew off. The yellow and black drifted into the bank and crawled out to dry its wings.

Conclusions.

The fights seen between species show that each dragonfly does indeed have a territory - the beat it will patrol whilst feeding, and defend against other dragonflies. The reasons for this are less clear, but the one which would seem most likely is to do with competition for food. Protecting a feeding ground has obvious advantages in this respect, whilst possession of distinct territories on a stretch of water stops that area from becoming too overcrowded.

But this cannot be the only explanation, since large areas of grass which swarm with insects surround the stream. So if food were their only consideration in forming territories, it would be to their advantage to form them further afield. A likely second reason for defending a territory is competition f. It is therefore an advantage for individuals to defend as large an area as they can manage, and to select the best or females who wander from pond to pond. Mating takes place over water and the stream or pond is the home for the developing nymphs areas of the stream - so ensuring the maximum number of matings and the best chances of survival for the offspring. All our observations suggests that these theories are correct for the pond, but as observation is more difficult over the stream, more lengthy observations will be needed to show this here.

Paul Lemkes and Chris Bukley

LEWIS UIG SANDS 1977 BUTTERFLY SURVEY

During the expedition, I decided to carry out a survey of butterflies, covering two contrasting habit close to the camp site.

The first area was a low lying meadow near the sea, containing many species of flowering plants and grasses. The contrasting habitat was of an area of rough highland, often boggy, containing heather, bracken, sundew and bog cottongrass.

In the meadow, a number of common Blues were caught and recorded; Small Heaths were also seen. By far the most abundant species however, was the Meadow Brown. Large White were also caught and the Wall Brown was present in small numbers.

In the heathland. Graylings were seen in small numbers but again it was the Meadow Brown which was most abundant. A very abundant daytime moth was also seen. It was slightly smaller than the Magpie moth, with similar markings but a positive identification was not possible.

The reasons why the Meadow Brown was the commonest species in both habitats was not clear, but it may be because the butterfly is very hardy and feeds of a variety of grasses found in both locations. The Common Blue is also hardy and feeds on the commonly found birds foot trefoil. If more woodland was planted on Lewis, Fritillaries would probably be found; and although none were found, a thorough search would probably reveal the Green Hairstreak.

Richard Bissell.

BUTTERFLIES AND MOTHS ON LEWIS 1976

While staying at Uig Sands on Lewis, I found several species of butterflies and moths, and the following is a list of these:

Butterflies

family Nymphalidae

1. Red Admiral (*Vanessa atalanta*)

This was seen quite regularly, but not in large numbers. The reason for the Red Admiral being so common could be that the hot weather this year has enabled the butterfly to spread further north than usual. The caterpillar feeds on stinging nettles.

2. Small Tortoiseshell (*Aglais urticae*)

Only one small tortoiseshell was seen* The caterpillar also feeds on stinging nettles.

family Pieridae

1. Large white (*Pieris brassicae*)

One large white was seen, the caterpillar feeds on any of the members of the cabbage family.

2. Small white (*Pieris rapae*)

One small white was seen. It is possible that it was a greenveined white, as I was unable to catch it and check, however it looked more like a small white.

family Satyridae

1. Gatekeeper (*Pyronia tithonus*)

One gatekeeper was caught. The caterpillar feeds on grasses.

2. Meadow Brown (*Maniola jurtina*)

This was the most common butterfly seen. It was found mainly in grassy areas, as the caterpillar feeds on grasses.

family Lycaenidae

1. Common blue (*Polyommatus icarus*)

I caught one female of this species and saw a male blue which was almost certainly a common blue. The caterpillars feed on Birds foot trefoil and other members of the pea family.

Moths

Family Noctuidae

1. White line dart (*Euxoa tritici*)

This moth was common and most easily found feeding on the flowers of Ragwort. The caterpillar feeds on most low growing plants of sandy soils.

2. Large Yellow Underwing (*Noctua pronuba*)

This moth was less common than the White Line Dart, but several were seen usually feeding on Ragwort flowers. The caterpillar feeds on grasses.

3. The Antler moth (*Cerapteryx graminis*)

The Antler moth was quite common, although most feed on Ragwort, I did see one feeding on Devil's Bit Scabious. The caterpillar feeds on grasses.

4. Deep Brown Dart (*Aporophyla lutulenta*)

Two Deep Brown Darts were found feeding on Ragwort at night. They were both of the form *luneburgensia*, which is almost black and quite common in Scotland. The caterpillar feeds on various low growing plants.

5. Common Rustic (*Apamea secalis*)

Several specimens were found on Ragwort. The caterpillar feeds on stems of certain grasses.

6. Pale Mottled Willow (*Caradrina clavipalpis*)

One specimen was found feeding on Ragwort.

7. Ear moths (*Hydraecia* sp.)

Ear moths are a group of very closely related moths, which are very difficult to tell apart. They were very common all around the camp site, and as far as I could tell they were the Saltern Ear sp *paludis*, whose caterpillars feed among grasses

Family Geometridae

1. Purple Bar (*Lyncometra ocellata*)

Only one specimen of the common Scottish species was caught. Its caterpillar feeds on Bedstraw.

2. The Common Carpet (*Epirhoe altemata*)

This moth was very common. The specimens were of the Hebridean subspecies *obscurata*. The caterpillar also feeds on Bedstraw.

Altogether 16 species were found.

Martin Harvey

MICROBIOLOGY AT LOCH SHIEL

A small pond (15m x 25m) which lies between the campsite and Loch Shiel was chosen for this study. It lies in a long depression which represents one of the former courses of the stream which runs down Glen Aladale, and is now flooded intermittently in the winter months. The pond lasts all year round and has a well established community of aquatic plants. This is in contrast with other ponds further down the depression which contains more submerged terrestrial plants than aquatic ones.

The pond is surrounded by sphagnum bog which graduates 'into the surrounding tussocky grass. The water's edge however is sharply defined, and the sphagnum drops away almost vertically into ½m of water, which is perhaps deeper in the middle of the pond. The pond is dominated by water Milfoil (underwater) with a patch of Potamogeton and rushes. Bladderwort is found dispersed throughout the pond.

Water samples were taken from one spot at the edge of the pond and examined under a microscope for algae and protozoa.

Altogether 16 species of algae were seen and 10 different protozoans - though this list is obviously not complete. By examining the types and frequency of the micro-organisms, conclusions may be drawn about the conditions in the pond water - nutrient supply etc.

The most noticeable feature of the flora of the pond is absence of diatoms, usually frequent in soft water. It is likely that insufficient silica was present in the water - diatoms use silica to make their enclosing shells. In support of this, it is interesting to note that the stream close by, runs over relatively insoluble metamorphic rocks containing little silica.

The green filamentous algae were well represented, as were the desmids - the genus Closterium in particular. The group which stood out as most abundant however, was the Blue-green algae. These 'primitive' group are characterised by their unusual bluish colour and the fact that their cells contain no nuclei. Blue greens are usually most common in hard water (rich in Ca salts) but there is a group which is found in soft, acid water, and these were found in great numbers.

The unusual diversity and richness of the pond is probably explained by elevated nutrient levels, and these probably arise as fertilizers are leached out from the soils of the young conifer plantation just above the campsite.

Chris Buckley.

LEWIS MEALISTA MARINE BIOLOGY PROJECT

The project was divided into two main sections, a barnacle count and a cross section or transect (north to south). The study took place on a rocky headland bay (grid reference 989243)

The cross section took two days to complete; 16.8.77 and 27.8.77 and between these times there was a storm for three days which could have changed the contents of the rock pools. There were five small rock pools in the survey, which were in the middle shore, and although five lists were made, shortage of space means that one combined list will be reproduced:

Limpet (*Patella vulgata*.) **Rough wrinkle** (*Littorina saxatilis*) **Acorn barnacle** (*Balanus balanoides*) **Sea grasses** (*Enteromorpha compressa*, *E. intestinalis*) **Channel wrack** (*Felvetia canaliculata*) **Red sea-weed** (*Gelidium corneum*) **Coralline Periwinkle** (*Littorina sp.*) **Green weed** (*Scytosiphon lomentarius*) **Green seaweed** (*Cladophora rupestris*)

For the barnacle count the same beach was used, but from west to east. All the barnacles found were **Acorn Barnacles** (*Balanus balanoides*)

Distance in m from sea level	position of barnacles on rock	No. /25cm ²
0	Top	75
1	Top	50
2	Seaward	60
3	Seaward	150
4	Seaward	20
5	Top	50
6	Seaward	200
7	Seaward	150
8	Top	60
9	Seaward	300
10	Seaward	250
11	Top	150
12	Seaward	300
13	Seaward	60
14	Seaward	40
15	Seaward	50
20	Top	1
25	Sheltered	0
30	Sheltered	0
35	Sheltered	0

These results give some indication of the position of barnacles on a beach. A better idea of their position could have been obtained by measuring height of each site above sea level, rather than distance from the tide.

Helen Robinson.

NATURAL HISTORY PROJECT - up the valley behind Cruib Lodge.

<u>Plants</u>	<u>Birds</u>	<u>Other animals</u>	<u>Length m.</u>
Tormentil	Pied Wagtail		0 - 300m
Euphrasia sp. Sphagnum	Stonechat Meadow Pipit	Adder Cranefly Horsefly Wart biter grasshopper Frog grasshopper Meadow Brown Tiger moth Sheep tick Black ants Yellow Ladybird	0 - 300m +
Bracken Molinia sp. Ling Crossleaved heath Heath bedstraw Woodsia White clover Tutsan Devil's Bit Scabious		Mountain Hare Red Deer Common frog	300m +
Common Sundew Buttercup			400m
Liverwort Bilberry			400m +
Rowan	Rock Pipit	Emperor Dragon fly Mayfly	450m +
Silver birch (Hurray - Ed) Sessile Oak Polytrichum sp. Hawkweed sp. Sorrel sp.		Caddis larvae Water Cricket Dor Beetle Short eared owl (pallet)	
Marsh Willowherb Oak Fern Hard Fern Lichen sp (foliose) Honeysuckle Juncus sp Foxglove			450m
Trailing St John's wort.		Chrysonella aenea	600m

<u>Plants</u>	<u>Birds</u>	<u>Other animals</u>	<u>Length m.</u>
Hawksbeard		Small heath	650m
	Wheatear		650m
	Yellowhammer		750m+
	Wren Raven	Large black slug Pond Skater	900m+
Cotton grass Water lily		Marsh Fritillary	1000m
	Herring gull Lesser b.b. gull	Dragonfly sp. Geometrid catterpillar Zabrus tenebrioides (Ground beetle)	1000m+
	Merlin		1200m

Dave Harding,

"Highland Flora" Derek Ratcliffe HIDB 1977 at £ 5.50

This is the fourth title in the highly successful 'Highland Life' series published by the Highlands and Islands Development Board. Incidentally the first book in the series, 'Highland Birds', now into its third edition was written by Desmond Nethersole-Thompson, an Adviser to the Society.

'Highland Flora' lives up well to its predecessor. The photographs are superb, many in colour. Dr Ratcliffe combines his experience as Chief Scientist of the Nature Conservancy Council with a most attractive style of writing - a rare attribute - and the reader is left feeling he has received an authoritative and accurate summary.

From our viewpoint the only disappointment is that less than 20% of the space is given to the Hebrides. However, much of what is written about the west coast is applicable to our islands, and botanists especially will find exhaustive lists of plants, mosses, lichens and seaweeds. Most satisfying of all is the way Dr Ratcliffe surveys the landscape from an ecological viewpoint - we learn how rock type, soil, climate, animals and man all influence the flora. A book to recommend, not least for the pleasure of looking through the 71 illustrations on wet winter evenings.

Roger Weatherly

"Hebridean Connection - A view of the highlands and islands." by Derek Cooper, Pub. Routledge & Kegan Paul; 1977; £4.95

The books which are personal reflections and reminiscences about the Hebrides, ranging from the banal to the scholarly would fill many shelves. Host of us have felt that about the Islands which draws pen to paper - and have resisted the pull because of the risk of coming up with something like Lilian Beckwith.

Derek Cooper has put pen to print, and the result is a well balanced book which decisively avoids that for which he criticises Lilian Beckwith....."I don't like any book which depict the Islander as some kind of elevenpence-ha'penny-in-the-shilling loony" (p104). This is a most refreshing and realistic look by one whose 'Hebridean Connection' means that he is no outsider. But it is also sympathetic and shows great understanding of the problems and joys of the Highlands and Islands. We might remind ourselves that places like the Outer Skerries (where?) and Fair Isle also come under HIBD oversight.

This is a book into which those of us who know the Hebrides can easily imagine ourselves. I found myself becoming angry - once again - when reading the chapter on Raasay and the notorious Dr. Green; and enjoying meeting in these pages people I have already met in the islands:- Calum Macleod (and the road), John Fersuson[g? ed] the postman on Raasay; Peter Wormell on Rhum; Lord Strathcona.

But I think that for those who do not know the Isles, this would be an excellent introduction. It conveys atmosphere as well as facts; critical assessment with insight as well as a healthy sentiment which lacks romantic fantasy. The Hebrides are neither a desolate and hopeless outpost of culture; nor are they a quaint outdoor playground - it is a rich area, full of possibility, that has had history against it.

The photographs are excellent. Unfortunately the labelling is appalling - a numbered list at the front of the book refers to two sets of un-numbered photographs in the middle of the book. You will find yourself using three fingers or more to keep different pages open at once. By contrast the index is a good one.

It is a pity that Mr Cooper's examination of the use of the Hebrides for outdoor recreation and 'adventure' is more or less limited to a slightly cynical glimpse of John Ridgeway's 'West Highland School of Adventure' at Ardmore. A serious look at what people like ourselves aim to do might have been useful in a book like this.

One more thing: He describes Fladday as a place "as desolate as Rockall" (p 26); but then my memories of that little isle are too green. As he writes on page 4; "Very dangerous things, memories".

Peter S Forsaith

PAST EXPEDITIONS OF THE SHS

Expedition	Year	Leader
Geometra	1962	John Abbott
Rhum	1963	John Abbott
Geometra	1963	Tim Wilcocks
Mingulay	1964	Martin Child
South Rona	1964	John Abbott
Raasay	1964	Richard Fountaine
Geometra	1964	James Emerson
Harris	1965	John Abbott
Jura	1965	Johnny Ker
Raasay	1965	Clifford Fountaine
Morvern	1965	Jim Hardy
Lewis	1966	Roger Dennien
Harris	1966	Alan Bateman
Jura	1966	Andrew Wilson
Colonsay	1966	Chris Dawson
Dingle	1966	John Houghton
Mingulay	1967	Kenneth Huxham
Rhum	1967	John Dobinson
Harris	1967	Andrew Wilson
Lewis	1967	John Abbott
Colonsay	1967	John Jackson
Vatersay	1968	Phil Renold
Lewis	1968	David Cullingford
South Rona	1968	Chris Hart
South Uist	1968	John Cullingford
Colonsay	1968	Alan Bateman
Shetlands	1969	Chris Dawson
South Uist	1969	John Cullingford
Lewis	1969	John Hutchison
Rhum	1969	Chris Hart
Colonsay	1969	Roger Trafford
South Uist	1970	Geoffrey David
Shetlands	1970	David Vigar
Fladday	1970	Mike Baker
Lewis	1970	Alan Howard

North Uist	1970	Phil Renold
Ulva	1970	Alan Fowler
South Rona	1971	Roger Weatherly
Rhum	1971	Phil Renold
Jura	1971	Charles Hooper
Colonsay	1971	Alan Howard
Mingulay	1971	Hugh Williams
Muckle Roe	1972	Ray Winter
South Uist	1972	Alan Fowler
Lewis	1972	Gavin Macpherson
Raasay	1972	Paul Caffery
North Uist	1972	Roger Weatherly
Harris	1973	Phil Renold
South Uist	1973	Alan Fowler
South Rona	1973	Jim Turner
Rhum	1973	Mark Rayne
Jura	1973	Dave Bradshaw
Colonsay	1973	Alan Howard
South Uist	1973	Jim Turner
Raasay	1974	Peter Carslile
Harris	1974	John Hutchison
North Uist	1974	John Cullingford
Outer Isles	1974	Paul Caffery
Colonsay	1975	Phil Renold
Jura	1975	Lawrence Hall
South Uist	1975	Alan Evison
Raasay	1975	Gavin Macpherson
Mingulay I	1975	Nick Deeley
Mingulay II	1975	Nick Deeley
Lewis	1976	Paul Caffery
Harris	1976	John Bromley
South Uist	1976	Mike Hayward
North Uist	1976	Alan Fowler
Rhum	1976	Roger Weatherly
Lewis Uig Sands	1977	Nick Deeley
Jura	1977	Dave Harding
Colonsay	1977	David Leonard-Jones
Lewis Meallista	1977	Phil Renold
Knoydart	1977	Graig Rennie
Loch Shiel	1977	Peter Liver

