INSTITUTE OF TERRESTRIAL ECOLOGY

(NATURAL ENVIRONMENT RESEARCH COUNCIL)

REPORT TO THE NATURE CONSERVANCY COUNCIL

ON

THE INVERTEBRATE FAUNA OF DUNE AND MACHAIR SITES IN SCOTLAND

Vol II Part (1)

The Outer Hebrides

Site Dossiers

NCC/NERC Contract No. F3/03/62 : ITE Project No. 469

Monks Wood Experimental Station

Abbots Ripton

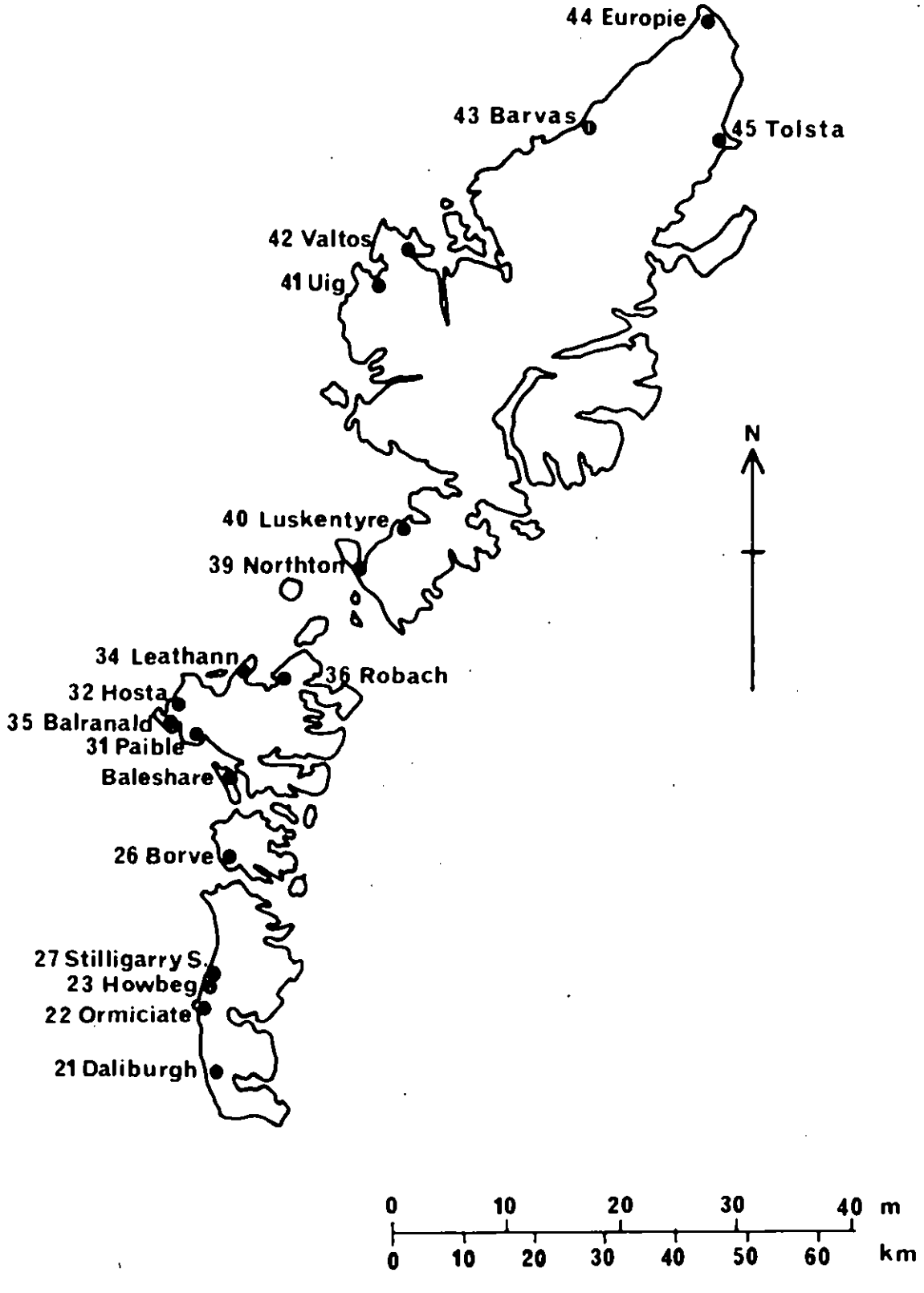
Huntingdon

Cambs

February 1979

Map 1

Outer Hebrides



SITES SURVEYED

The sites selected for survey are listed in Table 1 in numerical order. The numbering and names used for the sites follow those adopted by the personnel of ITE Project 340 "Survey of sand-dune and machair sites in Scotland" in agreement with the Nature Conservancy Council. The geographical position of each site is shown in Map 1. The site reports in this volume are arranged in numerical order, as in Table 1. Each site report has separate page numbers.

Table 1 - List of sites surveyed

Site number	Site name	Island
21	DALIBURGH	South Uist
22	ORMICLATE	South Uist
23	HOWBEG	South Uist
26	BORVE	Benbecula
27	STILLIGARRY (SOUTH)	South Uist
28	BALESHARE	North Uist
31	PAIBLE	North Uist
32	HOSTA	North Uist
34	LEATHANN	North Uist
35	BALRANALD	North Uist
36	ROBACH	North Uist
39	NORTHTON	Harris
40	LUSKENTYRE	Harris
41	UIG	Lewis
42	VALTOS	Lewis
43	BARVAS	Lewis
44	EOROPIE	Lewis
45	TOLSTA	Lewis

SELECTION OF SITES

Twenty-nine sites in the Outer Hebrides (Numbers 18-46 inclusive) were listed by the Nature Conservancy Council and were covered by the botanical survey made by ITE staff as part of ITE Project 340.

The programme of the survey of invertebrates was determined by the estimated functional life of the battery-powered light traps i.e. 7 or 8 nights in mid

summer. It was possible to establish traps at only a selected number of sites where access could be made easily and which could be visited within the time available between the sailings of the inter-island ferries. The following sites were therefore not sampled:

18 - 20 Vatersay and West and North Barra. Ferry and air schedules were such that to visit these sites would have resulted in many wasted days.

24 & 25 Stilligarry (North) and Loch Bee. Both these sites included areas used as Army Firing Ranges. Access was normally only at weekends and it was feared that, even if traps were installed, there was no guarantee that they could be recovered on the required dates.

29 & 30 Kirkibost and Monach Isles. Access only by special arrangements with local fishermen which would necessitate spending a week at a time on the Monachs with no guarantee of sailing on given dates.

33 Vallay. Access was by a two-mile causeway at low tide, the dates of which could not be fitted in with the overall sampling programme.

37 & 38 Berneray and Pabbay. A foot ferry operates irregularly twice a day to Berneray and access to Pabby via the same ferry has to be negotiated with the ferryman. Thus, an additional day would have been required to sample these two sites.

41 Uig. It was originally hoped that traps could be installed at both Uig Sands and Mangersta Sands. A suitable area for sampling was found at Uig Sands, but the dunes at Mangersta were too exposed for trapping to have been worthwhile.

46 Tong. No suitable sampling site could be found on the peninsula to the west of the estuary, whilst the eastern peninsula was too close to Stornoway airport for the use of a light trap to be advisable.

The selection of sites was made by the participants of the first field trip - Dr R.C. Welch and M.J.L. Skelton. Prior to this survey, Dr Welch had visited the Uists briefly en route to and from St. Kilda in 1969 and he was familiar with the general topography, more especially on South Uist. Between arriving at Lochboisdale and commencement of trapping, two days were allocated

for assembling equipment and reconnaissance of the unknown sites on North Uist. In this way, an overall assessment of the range of variation in the Uist sites was obtained before the final selection of sampling sites was made. The sites on Harris and Lewis were not known before they were visited for the placing of the traps, but only one site (46) had to be omitted because no area suitable for trapping was available.

SAMPLING PERIODS

Sampling was by means of a light trap and eight pitfall traps at each site (for descriptions of this equipment see following section). A single light trap operated for eight nights at each site during sampling periods 1 and 3 only (see Table 2). At site 32, the light trap was not installed during period 3 following a nil catch during the first period. The pitfall traps operated continuously during all three sampling periods. At sites 39-45, the pitfall traps operated for a fourth period (Table 3). Records of Coleoptera from this fourth period are included under the "Additional Species" section of the relevant site reports.

Table 2 - Dates of sampling periods

Sites 21, 22, 23, 26, 27 and 28

Sampling Period	Dates
(1)	14.6 - 22.6.76
(2)	22.6 - 19.7.76
(3)	19.7 - 27.7.76

Sites 31, 32, 34, 35 and 36

Sampling Period	Dates
(1)	15.6 - 23.6.76
(2)	23.6 - 20.7.76
(3)	20.7 - 28.7.76

Sites 39, 40 and 45

Sampling Period	Dates
(1)	17.6 - 25.6.76
(2)	25.6 - 22.7.76
(3)	22.7 - 30.7.76

Table 2 - continued

Sites 41, 42, 43 and 44

Sampling Period	Dates
(1)	18.6 - 26.6.76
(2)	26.6 - 23.7.76
(3)	23.7 - 31.7.76

Table 3 - Dates of fourth sampling period

Sites 39 and 40

30.7 - 21.8.76

Site 41

30.7 - 22.8.76

Site 44

31.7 - 19.8.76

Site 43 and 45

31.7 - 23.8.76

DESCRIPTION OF TRAPPING EQUIPMENT

Light trap

The specially-designed, portable, ultra-violet light trap was powered by a 12 volt, rechargeable lead/acid battery. The light was automatically controlled by a solar switch set to turn the light on at dusk and off at dawn. The catch of moths was killed inside the trap by vapours from "Mafu" strips and collected only at the end of the sampling period. One light trap was placed at each site.

Pitfall traps

A pitfall trap consisted of a conical plastic beaker of the following approximate internal dimensions: diameter of mouth 75 mm, diameter of base 55 mm, height 105 mm. Three small drainage holes were made 30 mm from the mouth of the beaker to facilitate the run-off of any excess rainwater that might accumulate in the trap. Each trap was charged with approximately 10 cl. of commercial grade 1, 2 Ethanediol (Ethylene Glycol) as a preservative and killing agent at the beginning of each sampling period. Each pitfall trap

was placed in a hole in the ground so that the lip of the beaker was flush with the soil surface. Eight pitfall traps, arranged in pairs, were placed at each site. It was customary for pairs of traps to be 10 metres apart, with 5 metres between the individual traps of a pair.

SITE VEGETATION

The description of the vegetation at each site was made at the time of the site selection, i.e. during the first sampling period in the second half of June. By the end of July, at the time of the second visit, not only were different species in flower, but the whole structure and height of the vegetation had altered significantly. The short grazed turf had frequently been replaced by a lush meadow. Plants which had not been obvious during June were recorded and these are incorporated in the site report. However, estimates of the extent of bare ground only relate to the first trapping period (and presumably part of the second) and had become considerably overgrown and reduced by the third period.

PERSONNEL

ITE Nominated Officer:	Dr M.G. Morris
Project leader:	Dr E.A.G. Duffey
Identification	
Lepidoptera:	J.N. Greatorex-Davies
Coleoptera:Carabidae:	P.E. Jones, P.T. Harding, Dr R.C. Welch.
:Hydrophilidae to Scolytidae:	Dr R.C. Welch
Aranaea:	R.G. Snazell
Mollusca:	D. Green[1]
Diplopoda:	A.J.B. Beaumont[2] and J.G. Blower[3]
Terrestrial Isopoda:	P.T. Harding
Field work	
1st Trip:	Dr R.C. Welch and M.J.L. Skelton
2nd Trip:	M.J.L. Skelton and J.N. Greatorex-Davies

Site reports

Editor:	P.T. Harding
General Introduction:	Dr R.C. Welch and P.T. Harding
Description and siting:	Dr R.C. Welch
Lepidoptera:	J.N. Greatorex-Davies
Coleoptera:Carabidae	Dr R.C. Welch
:Hydrophilidae to Scolytidae:	Dr R.C. Welch
Aranaea:	R.G. Sanzell
Mollusca:	P.T. Harding and Dr R.A.D. Cameron(4)
Diplopoda:	P.T. Harding
Terrestrial Isopoda:	P.T. Harding
Additional species:	Dr R.C. Welch
Maps:	R.A. Plant, Miss H.A. Brundle and Miss S. Knight(5)
Appendix:	Dr R.C. Welch
Data handling:	G.J. Moller and J.N. Greatorex-Davies
General assistance:	R.A. Plant and Miss H.A. Brundle

Pitfall trap catches

Sorting:	R.A. Plant, J.N. Greatorex-Davies, P.E. Jones, Mrs M.L. King, Miss H.A. Brundle, W.E. Rispin.
Maintenance of material:	R.A. Plant

Equipment

Equipment supervision:	W.E. Rispin
Light trap manufacture:	T.E. Hughes (Entech Services)(6)
Special adviser on light trap:	J. Heath
Transport of equipment:	P.T. Harding, G.J. Moller and S. Porter(7)
Secretarial assistance:	Mrs D.S. Plant and Mrs G. Sanderson

Notes:-

(1): Sandwich course student, Trent Polytechnic.

(2): Undergraduate student, Manchester University.

(3): Zoology Department, Manchester University.

(4): Department of Extramural studies, Birmingham University.

(5): Sandwich course student, Luton College of Higher Education.

(6): Entech Services, 46 Mersey View, Liverpool.

(7): Sandwich course student, Brunel University.

ACKNOWLEDGEMENTS

Storage and maintenance facilities for equipment were generously provided by the Scottish Marine Biological Association at their Dunstaffnage Marine Research Laboratory, Oban and by the Nature Conservancy Council at Grogarry, South Uist. Special thanks are due to W.H. Gillebertus and G.C. Brown respectively for making possible the provision of these facilities.

Our colleagues engaged on ITE Project 340 have given invaluable help over information about sites, maps and data handling.

Professor J.A. Owen kindly provided records for Site 37, Berneray.

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Site 21 Daliburgh

Site 21 Daliburgh

0 500 Metres
0 500 Yards

Light trap & pitfall traps

SITE 21

DALIBURGH

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The sandy beach was backed by a low sand "cliff" (1-2 metres high) along the edge of a ridge of closely vegetated machair. This ridge is the Hebridean equivalent of a fixed dune system, although Ammophila arenaria is often only present at very low densities. At this site, the machair ridge was up to 400 metres wide. On the eastern side, the machair develops into a marshy transition zone beside the fresh-water loch.

1.2 Vegetation

The traps were placed in an undulating area. The lightly grazed vegetation contained very little Ammophila arenaria and there was little bare sand. The vegetation surrounding the pitfall traps consisted of the following species: Bellis perennis, Senecio jacobaea, Lotus corniculatus, Plantago sp. and Ranunculus sp., and a little Ammophila arenaria.

There was 50% bare ground around pitfall trap pair 3 and two rabbit burrows were within 1 metre of the traps, with other burrows nearby to the west.

Other species of plant which were recorded from the sampling site included Galium spp., Prunella vulgaris, Campanula rotundifolia, Achillea millefolium, Dactylorchis fuchsii, Euphrasia spp., Linum catharticum, Polygala sp., Odontites verna, Viola tricolor, Trifolium repens and T. pratense.

1.3 Disturbance

Rabbit burrows were fairly common throughout the area although very few were close to the sampling area. Evidence of grazing or use by livestock was limited. A pathway, probably formed by livestock, ran to the south-east of pitfall trap pair 1. Some straw was scattered about the area, probably the remains of a bale used for feeding stock. A very old sheep skull was found. No dung was seen.

1.4 Distance from sea

The pitfall traps were in a line about 250 metres from the shore. The light trap was placed a further 5 metres inland.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The traps were situated as far from human habitation as possible, in depressions within the most extensive area of "fixed dunes". The light trap was sited in a small depression within the main depression providing as much shelter from the wind as possible. Marker posts were placed in a north-south line, 10 metres apart, parallel to the coast. Paired pitfall traps were placed 2.5 metres either side of the line, with 5 metres between the traps in each pair and 10 metres between pairs.

Pair 1 was the most southerly, with pair 4 only 10 metres from the top of the rim of the depression. The light trap was placed to the east of a point midway between traps 2B and 3B.

2.2 Damage or malfunction

The light trap operated from 14 - 22.6.76 and was believed to be still operating on the last day of this period. It operated from 19 - 27.7.76 and was still functioning on 27th. At the end of the first period, a large number of live Forficula auricularia (Dermaptera) were found in the light trap. These possibly had been eating Lepidoptera in the trap. Many Diptera and Trichoptera were stuck to the bottom of the light trap, probably due to rain splashing of the gauze off the drainage funnel. The pitfall traps were all functional during the whole of each of the periods 16 - 22.6.76, 22.6 - 19.7.76 and 19 - 27.7.76.

2.3 Colour slides available

Box 1, 1 - 5

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Xanthorhoe munitata	0	1	1
Epirrhoe alternata	0	4	4
Cosmorhoe ocellata	1	9	10

	JUNE	JULY	TOTAL
Eupithecia centauriata	0	14	14
Arctia caja	0	10	10
Euxoa tritici	0	50	50
Agrotis vestigialis	0	11	11
Noctua pronuba	0	13	13
Lycophotia porphyrea	0	1	1
Cerapteryx graminis	0	33	33
Blepharita adusta	1	0	1
Apamea monoglypha	0	47	47
Mesapamea secalis	0	203	203
Luperina testacea	0	38	38
Amphipoea lucens	0	2	2
Caradrina clavipalpis	0	1	1
Diachrysia chrysitis	0	1	1
Plusia festucae	0	1	1
TOTAL	2	439	441

This site produced a good species list and a very high total catch compared with other Hebridean sites. Mesapamea secalis (46%) was the most abundant species. It occurred widely on the Scottish coasts during the survey, but was apparently most abundant in the Hebrides.

One sand dune species, Agrotis vestigialis, was taken. It was trapped widely at many other sites, often in reasonable numbers, especially on the North Coast.

Luperina testacea occurred here and at a number of Hebridean and East Coast sites, but not on the North Coast or Moray Firth. Arctia caja also occurred at three other Uist sites and the one site on Benbecula (26), but not on Harris or Lewis. It was trapped at many mainland sites except those on the north-west coast.

A few species were scarce elsewhere. For example Xanthorhoe munitata only occurred at four mainland Sites, 65, 68, 81 and 84 and Amphipoea lucens at Sites 53, 65, 82 and 83. Plusia festucae was taken only as single specimens at two other sites on the Hebrides, 26 and 34, and three sites on the mainland, 61, 65 and 67. It feed on sedges, coarse grasses, Sparganium erectum, Iris pseudacorus and Alisma plantago-aquatica.

A few species are restricted to a limited range of larval food plants. Epirrhoe alternata and Cosmorhoe ocellata both feed on Galium spp.; Lycophotia porphyrea on Calluna vulgaris and Erica spp. Diachrysia chrysitis feeds on Urtica dioica and a few other common species.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Carabus granulatus	0	3	0	3
Loricera pilicornis	0	1	0	1
Calathus fuscipes	38	348	22	408
Calathus melanocephalus	1	13	0	14
Calathus mollis	2	0	0	2
Synuchus nivalis	0	1	0	1
Amara aenea	0	1	0	1
Amara bifrons	0	5	0	5
Amara familiaris	0	1	0	1
Amara tibialis	0	0	1	1
TOTAL	41	373	23	437

The catch of carabids at this site was dominated by Calathus fuscipes (93%). Of the four species of Amara recorded, three, A. aenea, A. bifrons and A. tibialis are characteristic of sandy soils. Carabus granulatus and Loricera pilicornis are more hygrophilous species. The single Synuchus nivalis is of interest in probably being the first record for this species from the Outer Hebrides. This record was inadvertantly omitted from the list of Waterston et al (in press). Four Amara sp. larvae were taken during the last two trapping periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	1	70	34	105
Leiodes dubia/obesa	1	0	1	2
Nicrophorus investigator	0	0	1	1
Stenichnus collaris	0	0	1	1
Bledius longulus	2	1	1	4
Stenus brunnipes	0	6	4	10
Stenus clavicornis	0	0	3	3
Stenus nanus	5	15	22	42
Gyrohypnus angustatus	0	1	0	1
Xantholinus glabratus	1	17	4	22

	JUNE	JN/JL	JULY	TOTAL
Xantholinus linearis	2	1	3	6
Philonthus varius	0	3	1	4
Staphylinus aeneocephalus	1	0	1	2
Staphylinus melanarius	0	2	0	2
Quedius fuliginosus	0	3	1	4
Quedius semiaeneus	0	1	0	1
Tachyporus chrysomelinus	5	10	2	17
Tachyporus pusillus	0	1	1	2
Amischa cavifrons	2	5	1	8
Atheta fungi	3	88	45	136
Atheta exigua	0	0	1	1
Geotrupes vernalis	25	48	15	88
Serica brunnea	0	437	17	454
Byrrhus fasciatus	2	15	1	18
Agriotes obscurus	2	11	0	13
Longitarsus jacobaeae	0	5	16	21
Crepidodera ferruginea	3	6	9	18
Apion dichroum	1	30	4	35
Philopedon plagiatus	11	11	0	22
Sitona lepidus	2	8	2	12
Sitona lineellus	0	0	1	1
Ceuthorhynchidius troglodytes	0	1	0	1
Rhinoncus pericarpius	0	51	0	51
TOTAL	69	847	192	1108

Although Serica brunnea was by far the most abundant species trapped (41%), the majority of specimens were caught at the time of peak emergence during the second trapping period. Other psammophilous species trapped in small numbers include Philopedon plagiatus, Leiodes dubia, Atheta exigua, Bledius longulus and Quedius semiaeneus.

Atheta fungi and Megasternum obscurum, two species which were abundant during the latter two sampling periods, can occur in dung but are more usually associated with decaying vegetable matter. Geotrupes vernalis was particularly numerous throughout all three periods. Other dung frequenting species include Gyrohypnus angustatus, Philonthus varius and the two Xantholinus spp. The single Nicrophorus investigator is indicative of the presence of carrion in the vicinity. Neither dung nor carrion were observed near the trapping area.

Among the phytophagous species, Apion dichroum and the two species of Sitona feed on Trifolium spp., Longitarsus jacobaeae and Senecio jacobaea, Rhinoncus pericarpius on Rumex spp., Ceuthorhynchidius troglodytes on Plantago spp. and the adults of Crepidodera ferruginea occur on Urtica spp. and Cirsium spp., whilst its larvae are believed to feed on the roots of various Gramineae.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	4	3	0	7
Clubiona diversa	1	0	0	1
Xysticus cristatus	33	37	2	72
Pardosa monticola	90	130	6	226
Pardosa palustris	18	36	7	61
Pardosa pullata	1	2	0	3
Arctosa perita	0	1	0	1
Pachygnatha degeeri	0	1	0	1
Walckenaera antica	0	1	0	1
Dicymbium brevisetosum	1	1	1	3
Tiso vagans	2	2	1	5
Erigone promiscua	0	3	2	5
Agyneta decora	1	0	0	1
Bathyphantes gracilis	0	0	1	1
Lepthyphantes tenuis	0	0	1	1
Lepthyphantes ericaeus	1	0	0	1
TOTAL	152	217	21	390

The vegetation at this site was not heavily grazed and there was bare ground. These conditions may account for the very high proportion of Pardosa monticola (58%) caught. This spider is usually associated with short grassland on a dry substrate. During the survey, it was not recorded north of the Uists on the west coast, or Coul Links on the east coast. The very common thomisid, Xysticus cristatus, was present in large numbers. This species was plentiful at most Hebridean sites. This contrasts with the mainland sites, where, although often present, it represented a small part of the total catch of spiders. Pardosa palustris and P. pullata are common species. The former seems to be rather more widespread in the north than the south. Arctosa perita, a lycosid, is restricted to dry sandy areas such as sand dunes and some heaths. The linyphiid spider, Agyneta decora is taken infrequently in

mossy grassland and has a rather northern distribution. This was the only site where the erigonine, Dicymbium brevisetosum occurred. It is probably fairly common in grass and heather, but the species has only recently been recognised as being distinct from D. nigrum and there are few records. All the other species are generally common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	139	40	179
Cochlicopa lubricella	14	81	1	96
Vallonia excentrica	0	3	5	8
Vitrina pellucida	0	63	9	72
Oxychilus alliarius	0	1	0	1
Helicella itala	53	274	63	390
Cochlicella acuta	419	2504	56	2979
TOTAL	486	3065	174	3725

The assemblage of five species typical of the Hebridean and North Coast sites and characteristics of machair and grassy dune areas, occurred here, but 80% of the total catch was of one of three species - Cochlicella acuta. The two additional species - Oxychilus alliarius and Vallonia excentrica, are associated with grassy, usually grazed turf. This was the second largest catch of the survey.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	0	1	0	1

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Pieridae

Pieris napi

Lycaenidae

Polyommatus icarus

Nymphalidae

Aglais urticae

Argynnis aglaja

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch by hand collecting and sweeping:

Hydrophilidae

Cercyon littoralis, 27.7.76, under seaweed on the shore.

Staphylinidae

Micropeplus fulvus, 22.6.76, sweeping near the loch.

Omalium laeviusculum, 27.7.76, under seaweed on the shore.

O. riparium, 27.7.76, under seaweed on the shore.

Cafius xantholoma, 27.7.76, under seaweed on the shore.

Creophilus maxillosus, 27.7.76, under seaweed on the shore.

Halobrecta algae, 27.7.76, under seaweed on the shore.

Aleochara algarum, 27.7.76, under seaweed on the shore.

Nitidulidae

Meligethes aeneus, 22.6.76, sweeping near the loch.

Chrysomelidae

Prasocuris phellandrii, 22.6.76, sweeping near the Loch.

4.3 Hymenoptera : Formicidae

Myrmica ruginodis was recorded commonly on 22.6.76 by Dr R.C. Welch by sweeping near the loch.

Site 22 Ormiclate

Site 22 Ormiclate

0 500 Metres
0 500 Yards

Light trap & pitfall traps

I.T.E. (N.E.R.C.) Bangor

SITE 22

ORMICLATE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

This site was on the gently sloping landward side of a coastal ridge, with a gradual rise further to the east.

1.2 Vegetation

The whole area around the traps was covered with a dense sward of Bellis perennis. The vegetation surrounding the pitfall traps was as follows:

Pair 1: short grazed turf with Ranunculus spp. and no bare ground.

Pair 2: short grazed turf with Ranunculus spp. and 10% bare ground. There were several rabbit burrows between traps 2A and 3A.

Pair 3: longer vegetation with Plantago spp., Senecio jacobaea, Trifolium spp. and Ranunculus spp., and 5% bare ground.

Pair 4: shorter, more dense turf with Plantago spp., Ranunculus spp. and Lotus corniculatus, and with no bare ground.

Lotus corniculatus became more dense between pairs 3 and 4, and increased to the west beyond the pitfall traps. Prunella vulgaris and Achillea millefolium were also noted in the area of the pitfall traps.

1.3 Disturbance

Numerous rabbit burrows and some very old cow dung were present. The area south of the site was more heavily grazed.

1.4 Distance from sea

The pitfall traps in pair 4 were on a "fixed dune" ridge less than 50 metres from the shore. The pairs of traps were placed in a transect which ran inland, so that the traps in pair 1 were 80 metres from the shore. The light trap was about 75 metres from the coast.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The traps were placed at the northern end of an area of gently undulating rough machair which was quite exposed. The pitfall traps were in a line at right-angles to the coast. The light trap was mid-way between

traps 1A and 2A, about half a metre to the south of the traps.

2.2 Damage or malfunction

The light trap operated from 14 - 22.6.76, but was not functioning on the 22nd, when tested. Similarly it was not functioning at the end of the second period, 19 - 27.7.76. The pitfall traps were all functional during the first two periods, 14 - 22.6.76 and 22.6 - 19.7.76, but no catch was recorded for trap 2B during the third period, 19 - 27.7.76, although the other traps were all functional.

2.3 Colour slides available

Box 1, 6 - 10

3. THE FAUNA

Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	1	1
Eupithecia centauriata	0	6	6
Arctia caja	0	11	11
Euxoa tritici	0	3	3
Agrotis vestigialis	0	10	10
Noctua pronuba	0	38	38
Hada nana	1	0	1
Cerapteryx graminis	0	2	2
Apamea monoglypha	0	149	149
Apamea remissa	0	1	1
Mesapamea secalis	0	49	49
Luperina testacea	0	1	1
Diachrysia chrysitis	0	2	2
Autographa pulchrina	0	2	2
TOTAL	1	275	276

This site produced a good species list and total catch compared with other Hebridean sites. Apamea monoglypha (54%) was the most abundant species. It was also the most widely trapped species of the survey.

One sand dune species, Agrotis vestigialis, was recorded. It was trapped widely at many other sites, often in reasonable numbers, especially on the North Coast.

Luperina testacea was recorded at a number of other Hebridean and East Coast sites, but not on the North Coast or Moray Firth. Arctia caja was trapped at three other Uist sites and on the one site on Benbecula (26), but not on Harris or Lewis. It was trapped at many mainland sites except those on the north-west coast.

Two stenophagous species were collected. Epirrhoe alternata feeds on Galium spp. and Diachrysia chrysitis on Urtica dioica and a few other common species.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	0	3	0	3
Notiophilus aquaticus	1	5	1	7
Notiophilus substriatus	0	1	0	1
Loricera pilicornis	1	20	12	33
Dyschirius globosus	6	19	1	26
Trechus obtusus	0	1	0	1
Calathus fuscipes	8	57	23	88
Calathus melanocephalus	17	62	18	97
Calathus mollis	2	7	0	9
Laemostenus terricola	0	0	2	2
Amara aenea	6	7	0	13
Amara aulica	0	1	0	1
Amara bifrons	1	3	7	11
Amara familiaris	3	10	0	13
TOTAL	45	196	64	305

The rich carabid fauna taken at this site was dominated by Calathus fuscipes and C. melanocephalus. The next most numerous pair of species was Loricera pilicornis and Dyschirius globosus. Both species, particularly L. pilicornis, are usually associated with more moist soils. Three species of Amara form another group with A. aenea and A. bifrons being indicative of dry sandy soils, whereas A. familiaris occurs in all types of open country. Laemostenus terricola is usually recorded from cellars etc., and is recorded by Lindroth (1974) as "rather rare outdoors under bark". Its true outdoor habitat appears to be in rabbit burrows and this is assumed to be the origin of this species here and at Sites 40 and 42. One larva of Notiophilus substriatus and three of Loricera pilicornis were taken in the second sampling period, whilst during this and the last period 67 Amara sp. larvae were caught.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	0	53	14	67
Leiodes dubia/obesa	22	150	47	219
Choleva glauca	0	1	0	1
Catops morio	0	0	1	1
Micropeplus staphylinoides	1	2	1	4
Omalium excavatum	0	0	1	1
Stenus brunnipes	1	1	0	2
Stenus nanus	0	6	4	10
Gyrohypnus angustatus	0	0	1	1
Xantholinus glabratus	0	12	9	21
Xantholinus linearis	1	3	1	5
Philonthus cognatus	0	0	5	5
Philonthus laminatus	3	0	8	11
Philonthus succicola	0	123	1	124
Philonthus varius	4	9	4	17
Quedius boops	7	0	0	7
Quedius fuliginosus	0	1	1	2
Quedius semiaeneus	0	3	0	3
Tachyporus chrysomelinus	26	83	2	111
Tachyporus hypnorum	27	50	1	78
Tachyporus pusillus	12	139	45	196
Tachinus signatus	0	0	1	1
Amischa cavifrons	0	3	0	3
Atheta elongatula	0	1	0	1
Atheta gagatina	0	1	0	1
Atheta fungi	0	2	0	2
Atheta exigua	0	38	23	61
Tinotus morion	0	0	1	1
Aleochara sparsa	0	1	0	1
Serica brunnea	0	420	256	676
Simplocaria semistriata	0	1	0	1
Meligethes aeneus	0	1	0	1
Atomaria lewisi	0	1	0	1
Atomaria nitidula	15	175	49	239
Coccinella undecimpunctata	1	0	0	1
Corticaria crenulata	0	5	0	5

	JUNE	JN/JL	JULY	TOTAL
Corticarina fuscula	4	0	3	7
Longitarsus jacobaeae	0	3	2	5
Longitarsus luridus	1	0	0	1
Apion loti	1	1	0	2
Apion dichroum	0	1	0	1
Otiorhynchus atroapterus	2	2	1	5
Philopedon plagiatus	1	8	1	10
Sitona lepidus	16	33	5	54
Sitona lineellus	8	17	3	28
Hypera postica	0	2	0	2
TOTAL	153	1352	491	1996

This site produced the largest number of Coleoptera trapped at any site during the survey, with 1996 specimens of forty-seven species. This abundance was at least partly due to the fact that during the last two trapping periods the largest number of Serica brunnea caught at any site was recorded. Several other species were also particularly abundant, including Atomaria nitidula, three species of Tachyporus, Philonthus succicola and Megasternum obscurum, all of which are usually characteristic of decaying vegetable matter.

In addition to S. brunnea, other psammophilous species included Leiodes dubia (only exceeded in numbers at Site 44), Atheta exigua, Philopedon plagiatus, Otiorhynchus atroapterus, Quedius semiaeneus and Corticaria crenulata.

Of the phytophagous species the two Sitona spp., Apion dichroum and Hypera postica all feed on Trifolium spp. (and other Papilionaceae), A. loti on Lotus corniculatus, Longitarsus jacobaeae on Senecio spp., L. luridus on Plantago spp. and Cirsium spp. and Meligethes aeneus on various Cruciferae.

Large numbers of larval Philonthus and Tachyporus spp. were trapped during the last two sampling periods, with smaller numbers of Xantholinus spp. and larval Lathridiidae being taken in the middle period.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	3	3	0	6
Pardosa purbeckensis	8	5	0	13
Pardosa palustris	0	1	0	1

	JUNE	JN/JL	JULY	TOTAL
Arctosa perita	0	1	0	1
Oedothorax fuscus	7	10	1	18
Oedothorax retusus	1	1	1	3
Tiso vagans	1	0	0	1
Erigone atra	0	5	12	17
Erigone promiscua	39	79	77	195
Erigone arctica	6	8	13	27
Lepthyphantes tenuis	0	1	0	1
TOTAL	65	114	104	283

The catch at this site was dominated by Erigone promiscua (68.9%), probably due to the very short vegetation, together with areas of bare ground. This species is generally less common that E. atra and E. dentipalpis, but is often common on more exposed, disturbed habitats such as at this site. Erigone arctica was taken in reasonable numbers, both here and on some of the North Coast sites. This species is restricted in the south to drift lines on beaches and salt marshes. However, catches during this survey suggest that E. arctica may spread rather further into coastal grassland in the north-west of Britain as is the case in continental Europe. Pardosa purbeckensis was the most abundant lycosid at this site. It is usually associated with mudflats or estuarine shores and its presence, on dunes or machair at six Uist sites is rather unexpected. The sand dune lycosid, Arctosa perita, was present, as were two species of Oedothorax which are often found in pioneer habitats. Oedothorax fuscus was by far the most common of the two here and at nearly all the Hebridean sites, contrasting with the mainland sites where O. retusus was the more plentiful species. The remaining species are found commonly in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Helicella itala	4	78	24	106
Cochlicella acuta	9	266	72	347
TOTAL	13	344	96	453

Helicella itala and Cochlicella acuta were the most plentiful species caught at most Hebridean sites and are characteristic of machair grassland, usually with bare ground.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	3	12	1	16

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Nymphalidae

Aglais urticae

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria - larvae

4.2 Coleoptera

The following species were recorded by Dr R.C.Welch by hand collecting on 22.6.76:

Hydrophilidae

Cercyon littoralis, in seaweed on shore.

Silphidae

Thanatophilus rugosus, in dead gull at top of beach.

Staphylinidae

Omalium laeviusculum, in seaweed on shore.

O. riparium, in seaweed on shore.

Anotylus maritimus, in seaweed on shore.

Cafius xantholoma, in seaweed on shore.

Site 23 Howbeg

Site 23 Howbeg

0 500 Metres

0 500 Yards

Light trap & pitfall traps

SITE 23

HOWBEG

1. DESCRIPTION OS SAMPLE SITE

1.1 Topography

The site was fairly flat and very exposed, with only a low coastal ridge. The whole area was pitted with numerous rabbit burrows.

1.2 Vegetation

Ranunculus spp. and Bellis perennis were the most abundant flowering plants over the whole site. The vegetation surrounding the pitfall traps consisted of the following additional species.

Pair 1: 20% bare sand with Trifolium repens, Geranium sp. and Cerastium sp..

Pair 2: 30% bare sand with Potentilla anserina, Geranium sp., Sedum sp., T. repens and Senecio jacobaea.

Pair 3: 10% bare sand with the same species as at pair 2.

Pair 4: there was no bare ground around the traps, but there was a large eroded area of sand 2-3 metres to the north. The vegetation was mainly Lotus corniculatus, P. anserina, T. repens, Viola tricolor, Geranium sp. and Plantago spp..

Achillea millefolium, Prunella vulgaris, Euphrasia sp. and Galium sp. were also noted in the area of the traps.

1.3 Disturbance

There was considerable evidence of rabbits in the area, but the turf was not excessively grazed, and the present population may be lower than the number of burrows would suggest. Some very old cow dung was present. Some campers had just pitched a tent 50 metres to the north of the sampling site when it was revisited on 22.6.76. It is unlikely that this site is used regularly for camping.

1.4 Distance from sea

The light trap was about 70 metres from the shore, and the transect of pitfall traps was placed some 50 to 70 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

Compared with other sites on South Uist, there was little suitable habitat because the site was so exposed. The pitfall trap pairs were placed in a transect running south-east to north-west, with 8 metres between pairs 1 and 2 and pairs 2 and 3, and 10 metres between pairs 3 and 4. Pair 4 was nearest to the shore. The light trap was placed about 2 metres to the south of pitfall trap 2A.

2.2 Damage or malfunction

The light trap operated from 14 - 22.6.76, but was not functioning on 22nd, when tested. It was also not functioning at the end of the second period, 19 - 27.7.76, and the trap had obviously been disturbed. The pitfall traps were all functional during the whole of each of the three periods 14 - 22.6.76, 22.6. - 19.7.76 and 19 - 27.7.76.

2.3 Colour slides available

Box 1, 11-15

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Arctia caja	0	8	8
Agrotis vestigialis	0	3	3
Noctua pronuba	0	3	3
Cerapteryx graminis	0	1	1
Apamea monoglypha	0	20	20
Mesapamea secalis	0	3	3
TOTAL	0	38	38

The trap failed to function properly during both trapping periods. No moths were collected during the first period and only a few in the second so that the species list is short, and the total catch is low compared with other Hebridean sites.

A few specimens of Agrotis vestigialis were taken. It is a common sand dune species which was trapped widely at many other sites, often in reasonable numbers, especially on the North Coast.

Arctia caja also occurred at three other Uist sites and the site on

Benbecula (26), but not on Harris or Lewis. It was trapped at many mainland sites except those on the north-west coast.

Apamea monoglypha was the most widely trapped species of the survey.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Carabus granulatus	1	0	0	1
Nebria brevicollis	3	5	0	8
Loricera pilicornis	1	2	3	6
Calathus fuscipes	101	748	88	937
Calathus melanocephalus	8	38	6	52
Calathus mollis	0	3	0	3
Amara aenea	6	0	0	6
Amara aulica	0	3	0	3
Amara bifrons	0	1	1	2
Amara familiaris	0	4	0	4
Amara tibialis	3	3	0	6
TOTAL	123	807	98	1028

The catch of Carabidae was dominated by Calathus fuscipes (91%), only exceeded in numbers at one other Hebridean site (32), although this was still less than half the numbers caught at the Morrich More Sites (70A and 70B). C. melanocephalus constitutes the other major element of the fauna. The genus Amara is particularly well represented although only A. aenea, A. bifrons and A. tibialis are characteristic of dry sandy habitats. Amara sp. larvae were also numerous with 46 and 5 specimens in the samples from the second and last trapping periods respectively. Two Notiophilus substriatus larvae were also trapped in the middle period.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Cercyon atomarius	0	2	0	2
Megasternum obscurum	7	126	54	187
Leiodes dubia/obesa	11	57	25	93
Catops morio	3	21	3	27
Silpha tyrolensis	1	30	4	35
Bledius longulus	3	10	3	16
Stenus clavicornis	0	0	1	1
Stenus nanus	3	24	11	38
Xantholinus glabratus	0	12	5	17

	JUNE	JN/JL	JULY	TOTAL
Xantholinus laevigatus	0	17	2	19
Xantholinus linearis	6	0	3	9
Philonthus laminatus	2	0	6	8
Philonthus succicola	0	62	0	62
Philonthus varius	5	22	5	32
Quedius fuliginosus	0	0	1	1
Quedius semiaeneus	1	2	0	3
Quedius tristis	1	0	0	1
Tachyporus chrysomelinus	17	47	2	66
Tachyporus hypnorum	1	0	0	1
Tachyporus pusillus	1	5	4	10
Amischa cavifrons	0	1	0	1
Atheta fungi	2	0	0	2
Atheta exigua	0	2	0	2
Geotrupes stercorarius	0	0	8	8
Serica brunnea	0	192	28	220
Simplocaria semistriata	5	4	0	9
Byrrhus fasciatus	5	4	1	10
Cryptophagus intermedius	0	1	0	1
Atomaria atricapilla	0	0	1	1
Atomaria nitidula	6	21	5	32
Corticaria crenulata	0	2	0	2
Longitarsus jacobaeae	3	7	17	27
Crepidodera ferruginea	0	11	2	13
Apion loti	1	0	0	1
Apion apricans	1	8	0	9
Apion dichroum	27	42	15	84
Philopedon plagiatus	2	1	0	3
Sitona lineellus	6	8	2	16
TOTAL	120	741	208	1069

Serica brunnea was marginally the most numerous species, whilst, with the exception of Leiodes dubia, other coastal/psammophilous species, such as Philopedon plagiatus, Corticaria crenulata, Atheta exigua, Bledius longulus and Quedius semiaeneus were present only in small numbers.

Of the remaining species, Megasternum obscurum, Atomaria nitidula, Tachyporus chrysomelinus, Stenus nanus, Silpha tyrolensis and

Philonthus succicola, in particular, are indicative of the presence of a moist litter layer with decaying vegetable matter. Geotrupes stercorarius, Cercyon atomarius, Philonthus laminatus and P. varius are characteristic of dung.

Apion dichroum was the most numerous phytophagous species. This species, together with A. apricans and Sitona lineellus, feeds on Trifolium spp.. Longitarsus jacobaeae feeds on Senecio jacobaea, and Crepidodera ferruginea feeds on the roots of Gramineae as a larva but the adult occurs on Urtica spp. and Cirsium spp..

Tachyporus sp. larvae were very common in the samples from the middle trapping period. During the same period Xantholinus sp. larvae were fairly common and a single larval Bledius (? longulus) was trapped. Five larvae of Silpha tyrolensis occurred in the catch from the final period.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	7	3	1	11
Pardosa purbeckensis	0	3	0	3
Arctosa perita	6	1	0	7
Pachygnatha degeeri	4	7	1	12
Oedothorax fuscus	53	40	4	97
Oedothorax retusus	0	1	0	1
Tiso vagans	0	1	0	1
Typhocrestus digitatus	1	0	0	1
Erigone atra	0	1	1	2
Erigone promiscua	16	93	72	181
Erigone arctica	0	2	3	5
Bathyphantes gracilis	0	2	2	4
Lepthyphantes tenuis	0	1	0	1
TOTAL	87	155	84	326

Erigone promiscua was the most abundant species (55.5%), as was the case at many other exposed Hebridean machair sites, Oedothorax fuscus, a spider of pioneer habitats, was also present in large numbers probably due to the relatively high degree of disturbance and bare sand. O. retusus was also present but as at nearly all the Hebridean sites, in smaller numbers than O. fuscus.

Pardosa purbeckensis, a salt marsh and mudflat species, was present in small numbers as was the sand dune lycosid Arctosa perita. The erigonid, Typhocrestus digitatus, is fairly widespread in Britain but is very often associated with sand dunes and sandy places. Erigone arctica, normally a drift line species occurred only in small numbers. All other species are common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	9	2	11
Cochlicopa lubricella	3	15	0	18
Vitrina pellucida	5	0	0	5
Helicella itala	77	395	120	592
Cochlicella acuta	289	1828	318	2435
TOTAL	374	2247	440	3061

The five species recorded here were typical of the Hebridean and North Coast sites and are characteristic of machair and grassy dune areas. However, 79.5% of the total catch was Cochlicella acuta, and Helicella itala represented a further 19.3%. This was the third largest catch of the survey.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	3	17	1	21

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Satyridae

Maniola jurtina

Caenonympha pamphilus

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch, by hand collecting on 22.6.76:

Carabidae

Carabus arvensis, crawling across turf near pitfall trap 4A.

Broscus cephalotes, under logs and in seaweed on shore (a & l).

Hydrophilidae

Cercyon littoralis, in seaweed on shore.

Ptiliidae

Ptenidium punctatum, at base of dune cliff.

Staphylinidae

Omalium laeviusculum, in seaweed on shore.

O. riparium, in seaweed on shore.

Anotylus maritimus, in seaweed on shore.

Gyrohypnus fracticornis, at base of dune cliff.

Cafius xantholoma, in seaweed on shore.

Atheta vestita, in seaweed on shore.

Halobrecta flavipes, in seaweed on shore.

Aleochara obsurella, in seaweed on shore.

Cryptophagidae

Atomaria ruficornis, at base of dune cliff.

Lathridiidae

Corticarina fuscula, at base of dune cliff.

Curculionidae

Otiorhynchus atroapterus, at base of dune cliff.

Strophosomus sus, at base of dune cliff.

4.3 Hymenoptera

The following species were collected by Dr R.C. Welch on 22.6.76, by sweeping among the vegetation of the site (det. G.J. Moller).

Tenthrinidae

Dolerus aeneus

Monophadnus pallescens

Pachynematus clitellatus

4.4 Terrestrial Isopoda

Porcellio scaber was collected by Dr R.C. Welch on 22.6.76 from the base of the dune cliff.

Site 26 Borve

Site 26 Borve

0 500 Metres
0 500 Yards

Light trap & pitfall traps

SITE 26

BORVE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The site was on the landward slope to the north-east of the coastal ridge of "fixed dunes". A slight rise inland provided limited additional shelter from the north and east.

1.2 Vegetation

The whole area around the traps was covered with tussocky Ammophila arenaria interspersed with fairly lush, apparently ungrazed, vegetation. A. arenaria was more abundant towards the seaward side of the line of pitfall traps, with a corresponding increase in flowering herbs on the landward side of the traps. There was an extensive area of bare sand running from the coastal ridge towards the pitfall traps. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 5% bare ground with Lotus corniculatus, Trifolium sp., Ranunculus sp..

Pair 2: less than 5% bare ground with a more lush flora including Trifolium sp. and some Senecio jacobaea and Galium sp.

Pair 3: in an area with 40% bare sand, with A. arenaria tussocks and L. corniculatus, and some Plantago sp. colonising the bare ground.

Pair 4: 5% bare ground with A. arenaria, Trifolium sp. and some L. corniculatus.

Other species of plant which were noted at the sampling site included Daucus carota, Achillea millefolium, Anthylis vulneraria and Thalictrum sp..

1.3 Disturbance

There were no signs of the presence of rabbits, but some very old cow dung was present, suggesting that the area was used periodically for grazing.

1.4 Distance from sea

The line of pitfall traps was about 100 metres from the coast. The

light trap was a further 10 metres inland.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The traps were placed in possibly the only area which provided some protection from the elements and also where they would be partially obscured from public view. The pitfall traps were arranged in a straight line running north-east to south-west, parallel to the coastal ridge with 10 metres between pairs and 5 metres between the traps in each pair. The light trap was positioned inland (south) of a point midway between pitfall traps 2B and 3B.

2.2 Damage or Malfunction

The light trap operated from 14 - 22.6.76 and was believed to be still functioning on the last day of this period. It operated from 19 - 27.7.76 and was still functioning on the 27th. The pitfall traps were all functional during the whole of each of the first two periods 14 - 22.6.76, 22.6 - 19.7.76. However, no sample was obtained from trap 3A at the end of the final period, 19 - 27.7.76.

2.3 Colour slides available

Box 1, 16-21

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	1	1
Perizoma blandiata	0	7	7
Perizoma albulata	0	3	3
Eupithecia centauriata	0	1	1
Arctia caja	0	49	49
Euxoa tritici	0	2	2
Agrotis vestigialis	0	1	1
Noctua pronuba	0	14	14
Lacanobia oleracea	0	1	1
Cerapteryx graminis	0	6	6
Mythimna impura	0	11	11
Blepharita adusta	2	0	2
Apamea monoglypha	0	142	142

	JUNE	JULY	TOTAL
Apamea remissa	0	2	2
Mesapamea secalis	0	446	446
Luperina testacea	0	4	4
Caradrina clavipalpis	0	2	2
Plusia festucae	0	1	1
Autographa pulchrina	0	1	1
TOTAL	2	694	696

This site produced the largest species list and total catch of the Hebridean sites, with 19 species and 696 specimens. The catch was dominated by Mesapamea secalis (64%), a species which occurred widely during the survey but was apparently more abundant in the Hebrides. Apamea monoglypha (20%) was the most widely trapped species of the survey.

The species composition was similar to that caught at other Hebridean sites with the exception of Lacanobia oleracea, which occurred at a number of the mainland sites but nowhere else in the Hebrides. This is the only known record from the Outer Hebrides apart from St. Kilda.

One sand dune species, Agrotis vestigialis was taken. It was trapped widely at many other sites, often in reasonable numbers, especially on the North Coast.

Luperina testacea occurred at a number of Hebridean and East Coast sites but not on the North Coast or Moray Firth. Arctia caja was taken here in good numbers and also occurred at four of the Uist sites but not on Harris or Lewis. It was trapped at many mainland sites except those on the north-west coast. Plusia festucae was taken only as single specimens at two other Hebridean Sites, 21 and 26, and three mainland Sites 61, 65 and 67. It feeds on sedges, coarse grasses, Sparganium erectum, Iris pseudacorus and Alisma plantago-aquatica.

Several species are confined to a limited range of larval food plants. Epirrhoe alternata feeds on Galium spp.. Perizoma blandiata feeds on the flowers of Euphrasia spp.; it occurred at several Hebridean sites but only at Site 67 on the mainland. Perizoma albulata feeds on the seeds of Rhinanthus minor.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	0	1	0	1
Loricera pilicornis	1	11	1	13
Dyschirius globosus	1	1	0	2
Trechus obtusus	1	3	6	10
Pterostichus niger	0	0	1	1
Calathus fuscipes	2	11	1	14
Calathus melanocephalus	36	185	45	266
Calathus mollis	3	1	0	4
Amara aenea	1	0	0	1
Amara aulica	0	0	1	1
Amara bifrons	0	4	9	13
Amara familiaris	0	0	1	1
TOTAL	45	217	65	327

The Carabid fauna caught at this site was unusual among the Hebridean sites in that Calathus melanocephalus was the dominant species with C. fuscipes present in small numbers. The only other species attaining double figures were the xerophilous Amara bifrons, Loricera pilicornis, a hygrophilous species, and the eurytopic Trechus obtusus. Single larvae were collected; of L. pilicornis, during the middle period and of Notiophilus substriatus in the first sampling period. This last species was not recorded as an adult from the site.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	15	170	113	298
Acrotrichus atomaria	0	1	0	1
Leiodes dubia/obesa	1	18	12	31
Silpha tyrolensis	73	212	32	317
Micropeplus porcatus	0	1	0	1
Micropeplus staphylinoides	0	3	1	4
Bledius longulus	3	8	2	13
Anotylus nitidulus	0	1	0	1
Anotylus sculpturatus	1	0	0	1
Stenus clavicornis	0	1	0	1
Gyrohypnus angustatus	1	0	0	1
Xantholinus glabratus	1	24	21	46
Xantholinus laevigatus	0	2	0	2

	JUNE	JN/JL	JULY	TOTAL
Xantholinus linearis	2	0	3	5
Philonthus cognatus	6	23	2	31
Philonthus varius	1	0	2	3
Quedius boops	0	1	0	1
Quedius fuliginosus	0	13	9	22
Quedius semiaeneus	4	1	0	5
Tachyporus chrysomelinus	25	64	13	102
Tachyporus hypnorum	0	25	3	28
Tachyporus pusillus	1	4	1	6
Amischa cavifrons	9	1	1	11
Atheta elongatula	0	1	0	1
Atheta fungi	9	1	0	10
Atheta exigua	0	10	26	36
Aleochara obscurella	1	0	0	1
Serica brunnea	0	326	155	481
Byrrhus fasciatus	1	0	0	1
Micrambe villosus	1	0	0	1
Atomaria nitidula	6	26	21	53
Nephus redtenbacheri	4	0	0	4
Corticarina fuscula	0	1	0	1
Crepidodera ferruginea	2	1	3	6
Apion loti	14	16	0	30
Apion dichroum	16	21	3	40
Otiorhynchus atroapterus	3	1	7	11
Philopedon plagiatus	17	19	1	37
Sitona lepidus	15	14	2	31
Sitona lineellus	7	11	0	18
TOTAL	239	1021	433	1693

Although the psammophile Serica brunnea was the most abundant species at this site, Silpha tyrolensis and Megasternum obscurum were also especially numerous and just under three hundred larval S. tyrolensis were trapped throughout the three sampling periods. Both these species are more characteristic of moister habitats such as decaying vegetable material, as are Tachyporus chrysomelinus, Atomaria nitidula and Xantholinus glabratus.

Coastal/psammophile species which were present include Philopedon plagiatus, Otiorhynchus atroapterus, Atheta exigua, Bledius longulus

and Quedius semiaeneus. Aleochara obscurella inhabits decaying seaweed and carrion on sandy shores, and although common throughout the Outer Hebrides, this was the only specimen trapped during the survey.

Apion dichroum and the two Sitona spp. feed on Trifolium spp., A. loti on Lotus corniculatus, Micrambe villosus on Ulex spp. or Sarothamnus scoparius. Crepidodera ferruginea occurs on Urtica spp. and Cirsium spp. as an adult but feeds at the roots if various Gramineae as a larva. This is the only Hebridean site at which Longitarsus jacobaeae was not collected.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	2	2	0	4
Xysticus cristatus	13	9	0	22
Pardosa purbeckensis	12	21	0	33
Pardosa monticola	11	2	1	14
Pardosa palustris	29	13	0	42
Pardosa pullata	1	5	0	6
Pardosa nigriceps	0	3	0	3
Pachygnatha degeeri	0	1	0	1
Ceratinella brevipes	1	1	0	2
Hypomma bituberculatum	0	1	0	1
Tiso vagans	1	1	0	2
Erigone atra	1	3	0	4
Erigone promiscua	17	34	8	59
Erigone arctica	3	8	0	11
Bathyphantes gracilis	0	0	1	1
Lepthyphantes tenuis	0	1	0	1
TOTAL	91	105	10	206

The rather more diverse nature of this site compared with most other Hebridean sites, probably accounts for the slightly higher number of species and also for the relatively low numbers of Erigone promiscua, there being little grazing and few bare areas. E. arctica was taken, mostly in the third pair of traps where the amount of bare sand was greatest.

There were five species of Pardosa present, again probably due to the more diverse nature of the site. P. purbeckensis, the salt marsh and mudflat species was taken in reasonable numbers as was P. monticola a species usually associated with areas of dry, short grassland such as

chalk downland. P. palustris and P. pullata two of the most common and widespread spiders in Britain both show a slight preference for damper situations whereas P. nigriceps is usually found associated with longer vegetation.

The erigonine species Hypomma bituberculatum is generally common and fairly widespread and is often associated with sand dune habitats. Xysticus cristatus was present in fairly large numbers, as it was at most of the Hebridean sites. The remaining species are all common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	10	2	12
Cochlicopa lubricella	0	2	0	2
Helicella itala	17	133	117	267
Cochlicella acuta	5	96	64	165
Trichia striolata	0	2	0	2
Trichia hispida	2	10	3	15
TOTAL	24	253	186	463

Four of the five species typical of the Hebridean and North Coast sites, and characteristic of machair and grassy dune areas, occurred here. Vitrina pellucida was not recorded. The Trichia species occur in more grassy terrain. T. striolata is sparsely recorded in western Scotland. T. hispida was not recorded in samples from any other Hebridean site.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	5	5	5	15

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch on 22.6.1976:

Hydrophilidae

Cercyon littoralis, in seaweed on shore.

Staphylinidae

Omalium riparium, in seaweed on shore.

Anotylus maritimus, in seaweed on shore.

Cafius fucicola, in seaweed on shore.

Creophilus maxillosus, in seaweed on shore.

Atheta vestita, in seaweed on shore.

Halobrecta flavipes, in seaweed on shore.

Nitidulidae

Meligethes aeneus, sweeping around sampling site.

Site 27 Stilligarry (South)

Site 27 Stilligarry (South)

Light trap & pitfall traps

I.T.E. (N.E.R.C.) Sangar

SITE 27

STILLIGARRY (SOUTH).

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The sampled area was at the southern end of the site, to the north of Howmore River and only 550 metres north of Site 23. The area was in a depression running between the very low coastal ridge and the inland machair plateau. The turf in the bottom of the depression was more dense than that on the sides which were also extensively eroded by rabbits.

1.2 Vegetation

The turf was fairly lush in the depression, with Ammophila arenaria clumps on the slopes and ridges. An area of flat machair, with closely grazed turf, lay to the landward (north-east) of the sampled area. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 5% bare ground with Bellis perennis, Trifolium repens, Potentilla anserina, Galium spp., Geranium spp. and Ranunculus spp., with A. arenaria on a slight rise to the north of trap 1B.

Pair 2: similar vegetation to that around pair 1, but without bare ground and with little A. arenaria.

Pair 3: 20% bare ground with fairly thick A. arenaria around trap 3B and between pairs 3 and 4 and with B. perennis, Ranunculus spp., Plantago spp., Cirsium spp. and Senecio jacobaea.

Pair 4: there was no bare ground near trap 4A, but a large eroded patch lay to the north and south of trap 4B giving about 15% bare ground. B. perennis, Ranunculus spp, Cirsium spp. and Senecio jacobaea were present.

Euphrasia spp. and Odontites verna were also noted in the sampled area.

1.3 Disturbance

There was much evidence of rabbits at the site and to the east there were a number of old skins, complete with heads, where rabbits had been skinned where they were caught. Numerous old cow pats were seen, especially adjacent to pair 2, particularly trap 2B.

1.4 Distance from sea

The light trap was about 100 metres from the shore, with the pitfall traps approximately 15 metres further inland.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The site was in a sheltered depression open to the south, and was close to where the botanists' caravan was parked thereby giving some additional safeguard against interference. Pitfall trap pair 1 was the most southerly and nearest to the coastal track. The pitfall trap pairs were placed 10 metres apart and 2.5 metres either side of line of marker stakes along a south-west north-east axis. The light trap was further up the depression, 5 metres north-west of a point between traps 2A and 3A.

2.2 Damage or malfunction

The light trap operated from 14 - 22.6.76 and was believed to be still functioning on the last day of this period. It operated from 19 - 27.7.76 but was not functioning on the 27th when tested. The pitfall traps were all functional during the whole of each of the three periods 14 - 22.6.76, 22.6. - 19.7.76 and 19 - 27.7.76.

2.3 Colour slides available

Box 1, 22-26

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Xanthorhoe fluctuata	1	0	1
Epirrhoe alternata	1	0	1
Hada nana	2	0	2
TOTAL	4	0	4

No moths were caught during the second trapping period, because the light trap apparently failed early in the week, probably at the beginning of the first night. As a result, the only catch consisted of 4 specimens of 3 species taken during the first period. This was the lowest catch of the survey, other than at Site 32 where there were

no moths taken in the light trap.

One of the three species taken, Xanthorhoe fluctuata occurred at only two other Sites, 68 and 74, both in the Moray Firth. This moth is generally distributed throughout the British Isles and feeds on various Cruciferae.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Notiophilus aquaticus	0	0	1	1
Loricera pilicornis	0	5	5	10
Broscus cephalotes	0	1	0	1
Bembidion pallidipenne	0	1	0	1
Pterostichus strenuus	0	1	0	1
Calathus fuscipes	7	306	27	340
Calathus melanocephalus	1	20	8	29
Calathus mollis	1	6	0	7
Amara aulica	3	0	0	3
Amara bifrons	0	0	6	6
Amara familiaris	2	12	0	14
Amara tibialis	1	0	0	1
TOTAL	15	352	47	414

Calathus fuscipes made up 82% of the carabid fauna caught at this site, with C. melanocephalus numerically a poor second. Two species, Broscus cephalotes and Bembidion pallidipenne, are more characteristic of bare sand on the shore. Amara familiaris is a species of open country, whereas A. aenea and A. bifrons are xerophilous species. Amara sp. larvae (14 + 5 specimens) were caught in the middle and last trapping periods. Single larvae of Notiophilus substriatus, a species not recorded as an adult at this site, were trapped in all three sampling periods, with eight Loricera pilicornis larvae from the middle period samples.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Sphaeridium scarabaeoides	0	1	0	1
Cercyon atomarius	1	0	0	1
Cercyon haemorrhoidalis	0	1	0	1
Megasternum obscurum	1	74	33	108
Leiodes dubia/obesa	10	26	15	51

	JUNE	JN/JL	JULY	TOTAL
Thanatophilus sinuatus	0	1	0	1
Silpha tyrolensis	2	40	3	45
Micropeplus staphylinoides	0	2	2	4
Bledius longulus	2	6	0	8
Stenus brunnipes	0	1	0	1
Stenus clavicornis	0	1	0	1
Stenus nanus	14	10	11	35
Gyrohypnus angustatus	0	1	0	1
Xantholinus glabratus	0	1	0	1
Xantholinus linearis	1	0	0	1
Philonthus cognatus	1	3	4	8
Philonthus laminatus	0	17	1	18
Philonthus varius	5	19	6	30
Quedius fuliginosus	0	0	2	2
Tachyporus chrysomelinus	2	15	3	20
Tachyporus hypnorum	0	0	1	1
Tachyporus pusillus	1	3	2	6
Amischa cavifrons	2	1	0	3
Atheta fungi	4	1	3	8
Atheta exigua	0	1	7	8
Geotrupes stercorarius	0	1	0	1
Aphodius fimetarius	0	1	0	1
Aphodius sphacelatus	1	0	0	1
Serica brunnea	0	63	12	75
Simplocaria semistriata	2	2	0	4
Byrrhus fasciatus	11	9	3	23
Atomaria atricapilla	0	3	0	3
Atomaria nitidula	10	51	21	82
Coccinella undecimpunctata	0	2	0	2
Corticarina fuscula	2	3	0	5
Longitarsus jacobaeae	0	2	5	7
Crepidodera ferruginea	0	1	1	2
Psylliodes marcida	1	0	0	1
Apion cruentatum	0	1	0	1
Apion loti	0	0	1	1
Apion dichroum	0	1	0	1
Philopedon plagiatus	2	2	0	4

	JUNE	JN/JL	JULY	TOTAL
Sitona lineellus	2	1	0	3
Ceutorhynchus contractus	2	1	1	4
TOTAL	79	369	137	585

At this site the eurytopic species, Megasternum obscurum, outnumbered the psammophile, Serica brunnea. With the exception of Leiodes dubia other psammophilous species such as Philopedon plagiatus, Bledius longulus and Atheta exigua were poorly represented. Byrrhus fasciatus, although widely distributed, has a tendency to be more numerous in sandy areas. Similarly Coccinella undecimpunctata is occasionally abundant on coastal dunes.

The M. obscurum, Atomaria nitidula, Stenus nanus, Tachyporus chrysomelinus and Silpha tyrolensis commonly frequent decaying vegetable matter. Geotrupes stercorarius, Sphaeridium scarabaeoides, the Aphodius, Xantholinus, Philonthus and Cercyon species are all indicative of the presence of dung.

Phytophagous species were well represented, but only in small numbers. Psylliodes marcida is a coastal species feeding on Cakile maritima, Apion dichroum and Sitona lineellus feed on Trifolium spp., Longitarsus jacobaeae on Senecio spp., A. loti on Lotus corniculatus, A. cruentatum on Rumex spp., especially R. acetosa, Ceutorhynchus contractus on various Cruciferae and Crepidodera ferruginea on grass roots as a larva, and on Urtica spp. and Cirsium spp. as an adult.

Larvae of Silpha tyrolensis, Philonthus spp. and Tachyporus spp. were particularly numerous in samples from the middle period.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	1	0	0	1
Xysticus cristatus	26	15	1	42
Pardosa palustris	0	5	1	6
Arctosa perita	1	7	5	13
Pachygnatha degeeri	6	10	1	17
Oedothorax fuscus	10	10	0	20
Tiso vagans	1	0	0	1
Typhocrestus digitatus	2	0	0	2
Erigone atra	0	4	0	4
Erigone promiscua	23	67	57	147

	JUNE	JN/JL	JULY	TOTAL
Erigone arctica	2	2	2	6
Lepthphantes tenuis	0	2	0	2
TOTAL	72	122	67	261

As at most of the Hebridean sites, the erigonine Erigone promiscua (56.3%) was the most abundant species. The vegetation at this site was typical of the very short turf with a fairly high percentage of bare ground where high numbers of E. promiscua frequently occur.

The thomisid Xysticus cristatus was the second most abundant species here. This species never formed such a large proportion of the spider fauna at the mainland sites. The only lycosid species to occur were Pardosa palustris, which is more widespread in the north than the south, and Arctosa perita, which is restricted to sand dunes and dry sandy places. Oedothorax fuscus, a species which is common in pioneer habitats, occurred in some numbers although its congener O. retusus, always the more abundant of the pair on the mainland, was not recorded. The erigonine Typhocrestus digitatus is often found on sand dunes and dry sandy places. Erigone arctica was taken some 100 metres from the drift line. Its usual habitat in the south is the shore and drift line. All the other species taken are common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	13	2	15
Cochlicopa lubricella	1	3	0	4
Vitrina pellucida	0	61	11	72
Helicella itala	37	212	328	577
Cochlicella acuta	381	2257	603	3241
TOTAL	419	2546	944	3909

The catch was composed of the five species which occurred typically at most Hebridean and North Coast sites and which are characteristic of machair and fixed dune areas. Cochlicella acuta made up 82.9% of the catch, with Helicella itala forming a further 14.8%. This was the largest catch of snails recorded during the survey.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	5	18	3	26

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch, unless otherwise stated:

Carabidae

Carabus granulatus, 13.5.69, two under drift-wood at top of beach.

Hydrophilidae

Cercyon depressus, A.R.W.

C. littoralis, A.R.W.

Cryptopleurum minutum, 13.5.69, in cow dung.

Silphidae

Thanatophilus rugosus, 22.6.76, on dry rabbit skins (adults and larvae).

Staphylinidae

Omalium riparium, 22.6.76, on dry rabbit skins (adults and larvae).

Anotylus rugosus, A.R.W.

A. sculpturatus, A.R.W.

Xantholinus laevigatus, 13.5.69, under drift-wood at top of beach.

Philonthus fimetarius, 13.5.69, under drift-wood at top of beach.

P. sordidus, 22.6.76, on dry rabbit skins.

Creophilus maxillosus, 13.5.69, in dead lamb.

Atheta atramentaria, 13.5.69, in sheep dung.
22.6.76, on dry rabbit skins.

A. longicornis, 22.6.76, on dry rabbit skins.

Aleochara bipustulata, 22.6.76, sweeping around sampling site.

A. cuniculorum, 22.6.76, on dry rabbit skins.

A. lanuginosa, 13.5.69, in cow dung.

A. grisea, 22.6.76, on dry rabbit skins.

A. sparsa, 22.6.76, on dry rabbit skins.

Scarabaeidae

Aphodius ater, 13.5.69, in cow dung.

A. depressus, 13.5.69, in sheep dung.

A. sphacelatus, 13.5.69, in cow dung.

Nitidulidae

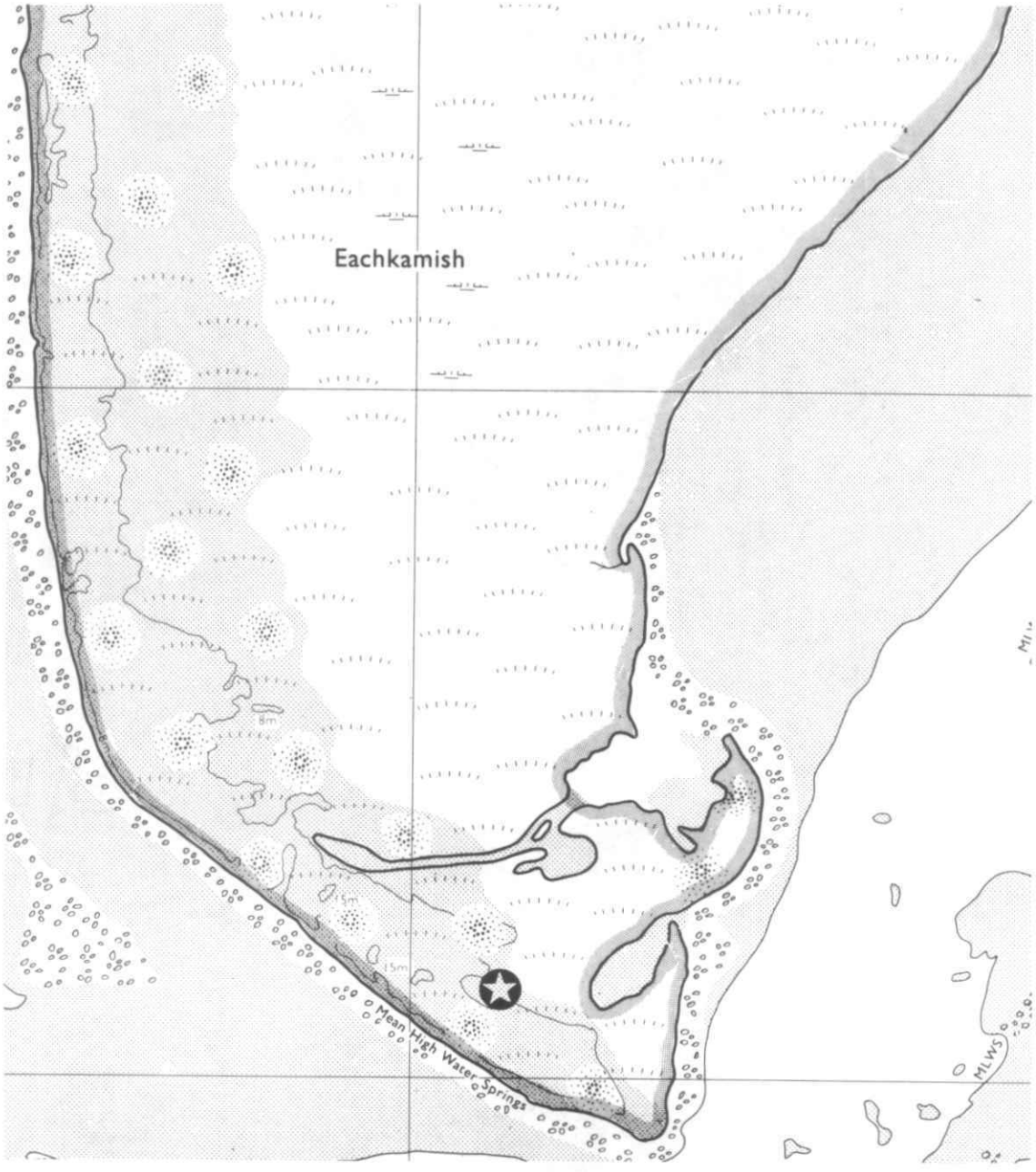
Meligethes aeneus, 22.6.76, sweeping around sampling site.

M. viridescens, 22.6.76, sweeping around sampling site.

Records of four species marked A.R.W. were supplied by A.R. Waterston, these species were collected from an old strand line.

Site 28 Baleshare

Site 28 Baleshare



0 500Metres
0 500Yards

Light trap & pitfall traps

SITE 28

BALESHARE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The site was on the sheltered eastern side of the fixed dune ridge, near the southern point of the island. To the east, the land undulated very gently and was very exposed.

1.2 Vegetation

The whole site was fairly closely grazed. There were small tufts of Ammophila arenaria throughout, becoming rather more dense on the slightly raised areas. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 40% bare sand with Bellis perennis, Senecio jacobaea and Viola spp..

Pair 2: 10% bare sand with Ranunculus spp., Trifolium spp., Viola spp., B. perennis and Galium spp..

Pair 3: less than 5% bare sand with B. perennis, Ranunculus spp. and Senecio jacobaea.

Pair 4: no bare sand and very closely grazed, with B. perennis and Ranunculus spp..

Other species of plant which were recorded from the sampling site included Achillea millefolium and Athyllis vulneraria.

1.3 Disturbance

Cattle were ranging freely over the peninsula and dung of all ages was present. A large cow pat was seen near pitfall trap 1B at the start of sampling, and more fresh dung was present when the traps were emptied at the end of the first period. Cattle had used the marker stakes as rubbing posts and had broken one off. The guy lines of the light traps were slack, possibly due to cattle "tripping" over them. There was some rabbit activity in the area, with burrows around the pitfall trap pair 3. Pitfall trap 3A was dug out, presumably by rabbits, during the first trapping period. Some sheep dung was also present. There was a small area of fenced agricultural land about 100 metres north-east of the trapping area.

1.4 Distance from sea

The light trap was about 125 metres from the shore, and the pitfall traps were placed in a line running from between 135 and 165 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The only easy access to the peninsula was via the foreshore but there were very few places where one could drive back onto the machair from the shore. The light trap was placed in one of the very few depressions. This provided some protection other than from the west. The pitfall traps were in a line from south-west to north-east with the light trap 10 metres south-west of pair 1. The pitfall traps were placed with 10 metres between pairs and 5 metres between traps within each pair.

2.2 Damage or malfunction

The light trap operated from 14 - 22.6.76, but was not functioning on the last day of this period when tested. It operated from 19 - 27.6.76 and was still functioning on the 27th. Pitfall trap 3A had been dug out (presumably by rabbits) at the end of the first period. Apart from that the pitfall traps were all functional during the whole of each of the three periods 14 - 22.6.76, 22.6 - 19.7.76 and 19 - 27.7.76.

2.3 Colour slides available

Box 1, 27-33

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	4	4
Perizoma albulata	0	1	1
Arctia caja	0	27	27
Euxoa tritici	0	6	6
Agrotis vestigialis	0	53	53
Agrotis ipsilon	0	1	1
Noctua pronuba	0	6	6
Cerapteryx graminis	0	4	4

	JUNE	JULY	TOTAL
Mythimna impura	0	4	4
Apamea monoglypha	0	6	6
Apamea remissa	0	1	1
Mesapamea secalis	0	90	90
Luperina testacea	0	5	5
Autographa pulchrina	0	2	2
TOTAL	0	210	210

The trap failed to operate properly during the first trapping period and no moths were taken. Despite this, the site produced a good species list and total catch compared with other Hebridean sites. Mesapamea secalis (43%) was the most abundant species. Although it occurred widely throughout the survey, it was apparently more abundant in the Hebrides. The common sand dune species Agrotis vestigialis (25%) was also fairly plentiful. It was trapped extensively and often commonly at many other sites, especially on the North Coast.

Agrotis ipsilon, a migrant, was recorded elsewhere only at Site 81 on the East Coast. This is the most northerly Hebridean site at which Arctia caja was trapped. It also occurred at three South Uist sites and on Benbecula. It was trapped at many mainland sites except those on the north-west coast. Luperina testacea occurred at a number of the Hebridean and East Coast sites but was not taken on the North Coast or Moray Firth.

Two species are confined to a limited range of larval food plants. Epirrhoe alternata feeds on Galium spp., and Perizoma albulata on the seeds of Rhinanthus minor.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Notiophilus aquaticus	0	1	1	2
Loricera pilicornis	0	1	0	1
Dyschirius globosus	0	3	0	3
Calathus fuscipes	14	56	43	113
Calathus melanocephalus	0	10	11	21
Calathus mollis	1	0	0	1
Amara aenea	1	9	0	10
Amara familiaris	12	3	0	15
Amara tibialis	0	6	2	8
TOTAL	28	89	57	174

Calathus fuscipes was the most abundant carabid caught at this site, with C.melanocephalus trapped in smaller numbers only during the last two sampling periods. Amara familiaris, a general open-country species, and the most abundant member of the genus in the catch, was only taken in the June samples. The xerophilous A. aenea and A. tibialis were trapped mainly in the middle period. Large numbers of Amara sp. larvae were taken particularly in the later samples (3 + 70 + 28). Five Loricera pilicornis larvae were collected during the first two periods and twelve Notiophilus substriatus, a species not recorded as an adult, in the first samples.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	1	4	6	11
Leiodes dubia/obesa	2	10	16	28
Catops chrysomeloides	0	1	0	1
Silpha tyrolensis	57	0	0	57
Bledius longulus	0	0	1	1
Xantholinus linearis	2	0	0	2
Philonthus varius	0	1	0	1
Quedius fuliginosus	1	0	0	1
Atheta fungi	1	1	0	2
Oxypoda haemorrhoa	0	1	0	1
Serica brunnea	0	0	2	2
Simplocaria semistriata	1	7	0	8
Byrrhus fasciatus	1	14	3	18
Atomaria nitidula	7	0	0	7
Coccinella undecimpunctata	0	4	3	7
Corticaria crenulata	3	0	0	3
Corticarina fuscula	0	3	0	3
Longitarsus jacobaeae	0	0	3	3
Apion loti	0	2	1	3
Apion dichroum	3	16	1	20
Otiorhynchus atroapterus	0	3	0	3
Philopedon plagiatus	52	67	1	120
Sitona lepidus	2	11	2	15
Sitona lineellus	9	12	1	22
Hypera postica	0	0	1	1
Mecinus pyraster	1	1	0	2
TOTAL	143	158	41	342

This site was notable for the fact that only two specimens of Serica brunnea were trapped whilst Philopedon plagiatus was more numerous than at any other Hebridean site, and indeed the numbers of the latter species were exceeded elsewhere only at Site 75. Silpha tyrolensis, the second most abundant species, is known from widely scattered localities in Britain, and is locally abundant on the machair. On the Continent it is regarded as an alpine species. Other coastal or psammophilous species include Otiorhynchus atroapterus, Leiodes dubia, Corticaria crenulata, Bledius longulus and possibly Byrrhus fasciatus and Coccinella undecimpunctata.

Among the phytophagous species Apion dichroum, Hypera postica and the two species of Sitona feed on Trifolium spp., A. loti on Lotus corniculatus, Rhinoncus pericarpius on Rumex spp., Mecinus pyraster on Plantago spp., and Longitarsus jacobaeae on Senecio spp..

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	0	1	0	1
Xysticus cristatus	29	54	2	85
Pardosa purbeckensis	3	0	1	4
Pardosa monticola	6	9	1	16
Pardosa palustris	1	0	0	1
Pardosa pullata	1	0	0	1
Arctosa perita	1	7	76	84
Walckenaera vigilax	1	0	0	1
Oedothorax fuscus	0	12	9	21
Tiso vagans	1	1	0	2
Typhocrestus digitatus	1	1	0	2
Erigone atra	0	3	3	6
Erigone promiscua	11	114	130	255
TOTAL	55	202	222	479

Erigone promiscua was the most abundant species with 53.2% of the total catch of spiders, indicating the highly grazed and exposed nature of the site. However, although some bare sand was present, E. arctica was not taken. This is usually associated with drift lines in Britain, but was taken considerably further inland at many Hebridean and some North Coast sites. The common grassland thomisid, Xysticus cristatus, occurred here in larger numbers than elsewhere. The four species of Pardosa present

were dominated by P. monticola, the dry grassland species. P. purbeckensis, a species of salt marshes and mudflats was present in only small numbers. The sand dune lycosid, Arctosa perita, was more abundant here than at any other site in the Hebrides.

Of the erigonine species, Walckenaera vigilax is taken only infrequently and usually in rather wetter habitats. Oedothorax fuscus, a spider often found in pioneer habitats, was present in reasonable numbers, and Typhocrestus digitatus, which is widespread but is often taken on sand dunes, also occurred.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Vitrina pellucida	0	48	14	62
Helicella itala	11	64	28	103
Cochlicella acuta	80	513	148	741
TOTAL	91	625	190	906

Vitrina pellucida, Helicella itala and Cochlicella acuta were the species caught most plentifully at the Hebridean sites. They are characteristic of machiar grassland, usually with bare ground.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	12	54	8	74

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were collected at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

Hydrophilidae

Cercyon haemorrhoidalis, 22.6.76, in seaweed on shore.

C. littoralis, 22.6.76, on sheep dung.

C. melanocephalus, 22.6.76, on sheep dung.

Staphylinidae

Omalium riparium, 22.6.76, in seaweed on shore.

Anotylus maritimus, 22.6.76, in seaweed on shore.

Cafius xantholoma, 22.6.76, in seaweed on shore.

Creophilus maxillosus, 22.6.76, in seaweed on shore.

Quedius fumatus, 13 - 14.6.76, in empty pitfall trap.

Atheta atramentaria, 22.6.76, on sheep dung.

A. puncticollis, 22.6.76, on sheep dung.

A. vestita, 22.6.76, in seaweed on shore.

Halobrecta flavipes, 22.6.76, in seaweed on shore.

Aleochara lanuginosa, 22.6.76, in sheep and cow dung.

Scarabaeidae

Aphodius ater, 22.6.76, in sheep dung.

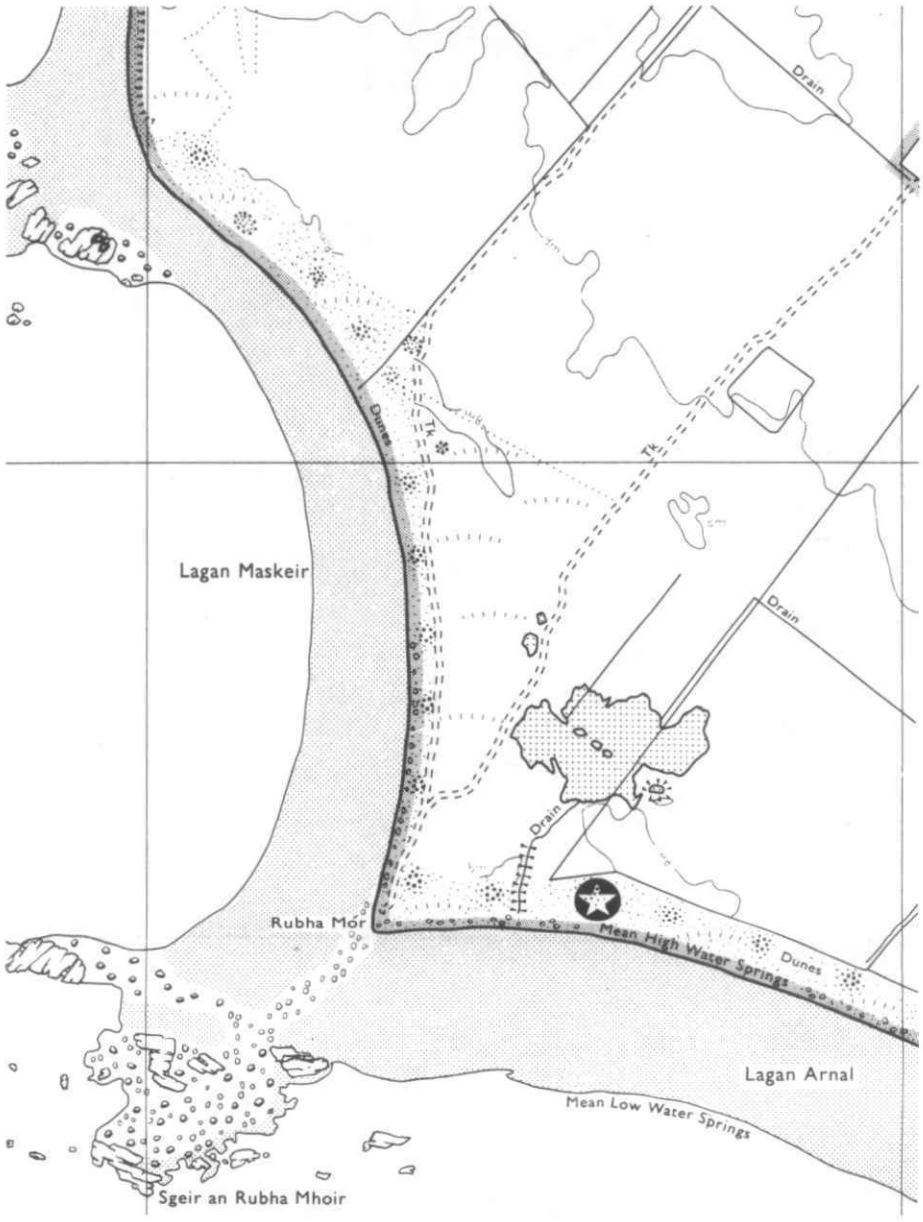
A. rufus, 22.6.76, in sheep dung.

Chrysomelidae

Psylliodes marcida, 22.6.76, at base of dune cliff.

Site 31 Paible

Site 31 Paible



0 500 Metres
0 500 Yards

Light trap & pitfall traps

SITE 31

PAIBLE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The sampled site was in a depression between the edge of an area of flat cultivated machair to the north, and the low dune coastal ridge to the south. There were larger areas of sandy blow-outs in the dunes to the east of the site.

1.2 Vegetation

The vegetation varied from a well vegetated depression to an area dissected by patches of bare sand and more closely grazed "island" areas. Amounts of Ammophila arenaria were variable throughout the sampled site. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 20% bare sand with Bellis perennis, Ranunculus spp., Senecio jacobaea and Trifolium spp..

Pair 2: 5% bare sand, with a dense sward of Trifolium spp., B. perennis, Ranunculus spp. and some Plantago spp. and Heracleum spondylium.

Pair 3: 15% bare sand with a large eroded area to the north-west of trap 3A, with Plantago spp., Galium spp., Senecio jacobaea, Trifolium spp. and Ranunculus spp..

Pair 4: 25% bare sand, mainly in the form of a large blow-out to the east of the site with B. perennis, Ranunculus spp. and Senecio jacobaea on the more heavily grazed area.

Other species of plant recorded from the sampling site included Anthyllis vulneraria, Daucus carota, Rumex spp., Euphrasia spp., Thalictrum spp. and Cakile maritima.

1.3 Disturbance

Rabbits were present, but there was evidence of only very light grazing. Some old cow dung was also present, suggesting that the area was used periodically for grazing.

1.4 Distance from sea

The light trap was about 60 metres from the shore. The pitfall traps were placed approximately 50 metres from the shore.

2. SITING OF LIGHT TRAPS AND PITFALL TRAPS

2.1 Selection of site

The area marked as "dunes" on the map of the coastline north of Rubha Mor consisted of a low Ammophila arenaria covered ridge with no sheltered site suitable for a light trap. The site chosen therefore represented probably the only area which provided shelter and had extensive vegetation cover. All the other depressions had too much bare sand. The pitfall traps ran in a line north-west to south-east from the light trap along a depression at the back of the dunes, with pair 1 some 15 metres from the light trap. The remaining traps were at 10 metre intervals with 5 metres between the traps in each pair. Pairs 3 and 4 were just into the area of broken ground which contained large pockets of bare sand.

2.2 Damage or malfunction

The light trap operated from 15 - 23.6.76 and was believed to be still functional at the end of the period. It operated from 20 - 28.7.76 but was not functioning on the 28th when tested. The first period of pitfall trapping was from 15 - 23.6.76 but an incomplete sample for trap 1A was obtained because there was no preservative left in the trap on the 23rd. The second period ran from 23.6. - 20.7.76 and no sample was obtained from trap 1B. All the pitfall traps were functional during the third trapping period, 20 - 28.7.76.

2.3 Colour slides available

Box 1, 34-40

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Agrotis vestigialis	0	1	1
Noctua pronuba	0	2	2
Apamea monoglypha	0	1	1
Mesapamea secalis	0	1	1
Caradrina morpheus	2	0	2
TOTAL	2	5	7

This site produced a short species list and very low total catch compared with other Hebridean sites.

One sand dune species, Agrotis vestigialis, was taken. It was trapped extensively and often commonly at many other sites especially on the North Coast.

Caradrina morpheus, was recorded elsewhere only on the East Coast.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	2	0	0	2
Loricera pilicornis	0	2	3	5
Dyschirius globosus	4	5	5	14
Broscus cephalotes	0	1	3	4
Calathus fuscipes	70	288	48	406
Calathus melanocephalus	23	245	55	323
Calathus mollis	12	35	5	52
Amara aenea	1	1	0	2
Amara aulica	1	4	3	8
Amara bifrons	0	6	4	10
Amara familiaris	0	5	0	5
Amara tibialis	0	0	1	1
TOTAL	113	592	127	832

The carabid fauna caught at this site was dominated by relatively equal numbers of Calathus fuscipes and C. melanocephalus, with C. mollis, the more characteristic species of sandy coastal areas, the next most numerous species. The genus Amara was well represented but only A. bifrons, A. aenea and A. tibialis are indicative of dry, sandy habitats. Broscus cephalotes is a species of barren sandy coasts whereas Dyschirius globosus is a eurytopic species of open, moist ground. Five Amara sp. larvae were collected during the last two trapping periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	3	24	4	31
Leiodes dubia/obesa	4	56	84	144
Agathidium laevigatum	0	2	0	2
Silpha tyrolensis	0	294	46	340
Micropeplus staphylinoides	0	3	0	3
Bledius longulus	4	19	12	35
Stenus nanus	0	0	1	1

	JUNE	JN/JL	JULY	TOTAL
Gyrohypnus angustatus	2	2	0	4
Xantholinus glabratus	0	1	0	1
Xantholinus linearis	0	2	0	2
Philonthus cognatus	0	2	0	2
Philonthus laminatus	0	0	1	1
Philonthus succicola	6	15	0	21
Philonthus varius	1	7	1	9
Quedius fuliginosus	0	1	0	1
Tachyporus chrysomelinus	100	277	11	388
Tachyporus hypnorum	1	12	0	13
Tachyporus pusillus	1	2	0	3
Atheta elongatula	0	1	0	1
Atheta exigua	0	4	2	6
Serica brunnea	0	117	54	171
Byrrhus fasciatus	2	1	1	4
Cryptophagus scanicus	0	1	0	1
Micrambe villosus	2	1	1	4
Atomaria nitidula	0	65	20	85
Corticarina fuscula	6	13	3	22
Longitarsus jacobaeae	0	4	12	16
Apion apricans	7	9	0	16
Apion dichroum	27	65	13	105
Otiorhynchus atroapterus	9	38	4	51
Philopedon plagiatus	10	27	3	40
Sitona lepidus	4	28	7	39
Sitona lineellus	13	49	21	83
Rhinoncus pericarpius	1	1	0	2
Mecinus pyraster	0	4	0	4
TOTAL	203	1147	301	1651

The catch at this site was unusual in having Tachyporus chrysomelinus and Silpha tyrolensis co-dominant although the latter species was only present in the catch from the last two periods whereas T. chrysomelinus was more abundant during the first two periods. The larvae of both these species were particularly numerous in the middle sampling period. Although both adult and larval Tachyporus climb up into herb layer to predate other small invertebrates, both species are thought to require a fairly well developed litter layer containing decaying vegetable material.

Serica brunnea and Leiodes dubia were the next most abundant pair of species, whilst other psammophilous species present included Bledius longulus, Otiorhynchus atroapterus, Philopedon plagiatus and Atheta exigua. Other litter layer species included Megasternum obscurum, Atomaria nitidula, Philonthus succicola, and Corticarina fuscula.

Among the phytophagous species Apion dichroum, A. apricans and the two Sitona spp. feed on Trifolium spp., Longitarsus jacobaeae on Senecio spp., Mecinus pyraster on Plantago spp., Rhinoncus pericarpius on Rumex spp., and Micrambe villosus on Ulex spp. and Sarothamnus scoparius.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	5	3	0	8
Pardosa purbeckensis	1	0	0	1
Pardosa palustris	1	0	0	1
Arctosa perita	1	1	19	21
Oedothorax fuscus	4	4	0	8
Tiso vagans	0	0	1	1
Erigone atra	0	0	1	1
Erigone promiscua	2	47	39	88
Erigone arctica	38	79	28	145
Bathyphantes gracilis	0	2	0	2
TOTAL	52	136	88	276

The fact that the site was within 50 metres of the shore, had extensive areas of bare sand and was generally lightly grazed probably accounts for the abundance of two erigonines Erigone arctica (52.4%) and E. promiscua, and Arctosa perita, the sand dune and sandy heath lycosid. Even at 50 metres from the shore, E. arctica occurred further inland here than would be expected in England. The vegetation was rather longer than at many sites and this probably accounts for why E. promiscua was somewhat less abundant. Pardosa purbeckensis which is normally confined to salt marshes and mudflats, was recorded. The remaining species are commonly taken in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Candidula intersecta	0	1	3	4
Helicella itala	0	6	11	17
Cochlicella acuta	1	14	9	24
TOTAL	1	21	23	45

This was a small catch compared with most other Hebridean sites. The three species are characteristic of machair grassland with bare ground. Candidula intersecta was recorded at only one other Hebridean site (No. 35). It is believed to have been introduced to the British Isles in Roman times, or later.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	17	44	16	77

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch

Hydrophilidae

Cercyon littoralis, 23.6.76, in seaweed on shore.

Staphilinidae

Omalium riparium, 23.6.76, in seaweed on shore.

Quedius tristis, 23.6.76, under wheel near Site 1.

Atheta fungi, 23.6.76, sweeping around sampling site.

A. vestita, 23.6.76, under drift refuse on beach.

Halobrecta flavipes, 23.6.76, under drift refuse on beach.

Aleochara algarum, 23.6.76, under drift refuse on beach.

A. grisea, 23.6.76, under drift refuse on beach.

Cryptophagidae

Atomaria apicalis, 13 - 15.6.76, in empty pitfall trap.

Chrysomelidae

Psylliodes marcida, 23.6.76, at base of dune cliff.

Curculionidae

Sitona suturalis, 13 - 15.6.76, in empty pitfall trap.

Site 32 Hosta

Site 32 Hosta

0 500 Metres

0 500 Yards

Light trap & pitfall traps

SITE 32

HOSTA

1. DESCRIPTION OF THE SAMPLED SITE

1.1 Topography

The sampled site consisted of a flat depression some 40 metres across with steeply sloping boundaries on all sides except the north-west. To the south-west, immediately beyond pitfall trap pair 4, a large, steep-sided blow-out led up to the boundary fence beyond which was agricultural land. The site was rolling machair with a few deeper depressions with eroded sides, but there were no real dunes.

1.2 Vegetation

Ammophila arenaria was virtually absent from the sampling site, with just a few plants on the ridge above pitfall trap pair 1. The vegetation surrounding the pitfall traps was a fairly uniform short, dense grazed turf and consisted mainly of the following species:

Pair 1: 5% bare sand with Bellis perennis, Ranunculus spp., Plantago spp. and Lotus corniculatus.

Pair 2: 5% bare sand, similar to pair 1, but with more B. perennis.

Pair 3: no bare ground; B. perennis, Trifolium spp., Ranunculus spp. and Plantago spp..

Pair 4: 10% bare sand with a large blow-out 2 metres to the south-west; B. perennis, Ranunculus spp. and Thalictrum spp..

Other species of plant which was recorded from the sampling site included Euphrasia spp., Prunella vulgaris, Centaurea nigra, Achillea millefolium and Heracleum spondylium.

1.3 Disturbance

The whole area was well used by the public as a recreation and picnic area and during July the North Uist Highland Games were held here. Vehicle tracks were evident over most of the site. Rubbish and a few abandoned vehicles had been dumped in the deeper depressions. This site was clearly disturbed and, because there was no catch in the light trap in the June sampling period, a light trap was not placed here during the July sampling period. Rabbits were present, with many burrows on the sloping sides of the depressions. Some old sheep and cow dung was present.

1.4 Distance from sea

The light trap was about 170 metres from the shore. The pitfall traps were about 150 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The site chosen offered the only fairly sheltered area which was least likely to suffer from human interference. The pitfall traps were in a line running north-east to south-west across a depression with pair 1 halfway up the slope and pair 2 at the base of the slope, 10 metres away. Pairs 2 and 3 were 19 metres apart with pair 4 a further 10 metres away. The light trap was some 20 metres to the south-east of the line of pitfall traps.

2.2 Damage or malfunction

The light trap operated from 15 - 23.6.76 but was not functioning on the 23rd when tested. A light trap was not installed at this site for a second sampling period. The pitfall traps were all functional during the whole of each of the three periods 15 - 23.6.76, 23.6. - 20.7.76 and 20 - 28.7.76.

2.3 Colour slides available

Box 1, 41-46

3. THE FAUNA

3.1 Lepidoptera

No light trap was placed on this site during the second trapping period. The replacement of light traps that had malfunctioned during the first period meant that, because insufficient spare traps were available, one site had to be omitted during the second period. Of the sites which produced no catch during the first trapping period, this looked the least favourable for further study, particularly because there was a large flat area on the site used by the local people for various events.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	0	0	1	1
Notiophilus aquaticus	0	3	1	4
Notiophilus biguttatus	1	0	0	1

	JUNE	JN/JL	JULY	TOTAL
Loricera pilicornis	0	1	0	1
Dyschirius globosus	51	91	34	176
Trechus obtusus	0	1	0	1
Pterostichus niger	0	3	2	5
Pterostichus strenuus	0	1	0	1
Calathus fuscipes	50	826	72	948
Calathus melanocephalus	16	146	29	191
Calathus mollis	4	4	1	9
Amara aulica	1	1	0	2
Amara bifrons	7	26	11	44
Amara familiaris	0	1	0	1
Amara tibialis	0	1	0	1
TOTAL	130	1105	151	1386

The carabid fauna caught at this site was unusual in that not only was the highest catch of Calathus fuscipes in the Hebrides recorded, but numbers of Dyschirius globosus, a eurytopic species of moist open ground, were equivalent to those for C. melanocephalus, a species of open, moderately dry soils. The xerophilous species, Amara bifrons, was taken in larger numbers at only one other Hebridean site (39). Five Notiophilus substriatus larvae were trapped in the middle sampling period, but no adults of this species were taken.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Cercyon melanocephalus	0	1	0	1
Megasternum obscurum	17	350	156	523
Leiodes dubia/obesa	14	45	50	109
Thanatophilus sinuatus	0	0	1	1
Silpha tyrolensis	21	86	11	118
Micropeplus porcatus	1	0	0	1
Micropeplus staphylinoides	3	17	3	23
Stenus brunnipes	2	9	3	14
Stenus nanus	30	71	58	159
Gyrohypnus angustatus	1	0	0	1
Xantholinus glabratus	0	26	5	31
Xantholinus linearia	13	13	4	30
Philonthus laminatus	0	6	0	6
Philonthus succicola	1	0	0	1

	JUNE	JN/JL	JULY	TOTAL
Philonthus varius	10	32	5	47
Staphylinus aeneocephalus	0	1	0	1
Quedius fuliginosus	0	1	0	1
Quedius semiaeneus	0	0	4	4
Tachyporus chrysomelinus	26	180	14	220
Tachyporus hypnorum	0	10	2	12
Tachyporus pusillus	25	62	12	99
Amischa cavifrons	0	4	5	9
Atheta elongatula	0	0	2	2
Tinotus morion	0	2	0	2
Aleochara bipustulata	0	2	0	2
Serica brunnea	0	20	3	23
Simplocaria semistriata	1	5	0	6
Byrrhus fasciatus	2	2	1	5
Meligethes aeneus	1	1	0	2
Epuraea aestiva	1	0	0	1
Atomaria atricapilla	0	1	0	1
Atomaria nitidula	2	36	21	59
Corticarina fuscula	0	1	0	1
Longitarsus jacobaeae	0	12	14	26
Longitarsus luridus	0	5	17	22
Crepidodera ferruginea	0	3	0	3
Apion loti	0	1	0	1
Apion apricans	15	21	1	37
Apion dichroum	2	0	0	2
Philopedon plagiatus	4	6	0	10
Sitona lineellus	4	3	2	9
Hypera postica	3	2	0	5
Ceutorhynchus contractus	1	1	3	5
Rhinoncus pericarpius	4	9	1	14
Mecinus pyraster	1	5	0	6
TOTAL	205	1052	398	1655

Megasternum obscurum, a eurytopic species more usually associated with decomposing vegetable matter, was by far the most abundant species caught at this site, with Tachyporus chrysomelinus, Stenus nanus, Silpha tyrolensis and T. pusillus, all with similar habitat requirements, also particularly numerous in all the samples. The only other species trapped in similar numbers was the psammophile Leiodes dubia.

Philopedon plagiatus, Quedius semiaeneus and Serica brunnea, the only other species characteristic of sandy or coastal areas, were present in very low numbers.

Of the remaining species Cercyon melanocephalus, Tinotus morion, Philonthus varius, P. laminatus and the Xantholinus spp. are indicative of the presence of dung at the site. Thanatophilus sinuatus is associated with carrion and Epuraea aestiva in the nests of bumble bees and moles.

Phytophagous species were well represented with Apion apricans, A. dichroum, Sitona lineellus and Hypera postica which feed on Trifolium spp., Longitarsus jacobaeae feeds on Senecio spp., L. luridus on Plantago spp., and Cirsium spp.. Meligethes aeneus and Ceutorhynchus contractus feed on various Cruciferae, Mecinus pyraster on Plantago spp. and Rhinoncus pericarpius on Rumex spp.. Crepidodera ferruginea occurs on Urtica spp. and Cirsium spp. as an adult but the larva feeds on the roots of various Gramineae.

Larvae of Silpha tyrolensis were particularly numerous in all samples. Xantholinus sp. larvae, although less numerous, occurred in all three periods whereas Philonthus sp. larvae were restricted to the last two.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	1	6	0	7
Oedothorax fuscus	7	4	2	13
Erigone atra	0	1	0	1
Erigone promiscua	65	188	75	328
Erigone arctica	2	2	0	4
Bathyphantes gracilis	0	1	0	1
Lepthyphantes tenuis	0	0	1	1
TOTAL	75	202	78	355

Only seven species were recorded at this site. This is probably due to the short, heavily grazed and disturbed turf and the absence of proper dunes. Erigone promiscua (92.4%) was, as one would expect in this habitat, very much the most abundant species. E. arctica, a species usually found in drift lines in England was again trapped some distance inland (170 metres) and Oedothorax fuscus, a species of pioneer habitats, was also present although only in small numbers. All other species are found commonly in grassland. Apart from

Erigone arctica, no species that are characteristic of sand dunes were taken here.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	64	2	66
Cochlicopa lubricella	0	1	0	1
Vertigo pygmaea	0	1	0	1
Vallonia excentrica	0	1	2	3
Vitrina pellucida	7	94	11	112
Helicella itala	1	66	13	80
Cochlicella acuta	104	744	193	1041
TOTAL	112	971	221	1304

The catch was composed of the five species which occurred typically at most Hebridean and North Coast sites, and which are characteristic of machair and fixed dune areas. Two additional species, Vertigo pygmaea and Vallonia excentrica, are more typical of grazed turf on machair. Cochlicella acuta made up 79.8% of the total catch of snails at this site.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	10	77	26	113

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Nymphalidae

Aglais urticae

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch on 23.6.76:

Carabidae

Amara fulva, under stone on dune.

Hydrophilidae

Cercyon littoralis, in human faeces.

Staphylinidae

Omalium laeviusculum, in seaweed on shore.

O. riparium, in seaweed on shore.

Anotylus maritimus, in seaweed on shore.

Creophilus maxillosus, in seaweed on shore.

Phytosus balticus, in seaweed on shore.

Atheta fungi, under stone on dune.

A. atramentaria, in human faeces.

Aleochara lanuginosa, in human faeces.

A. obscurella, in seaweed on shore.

Scarabaeidae

Aphodius fimetarius, in human faeces.

Site 34 Leathann

Site 34 Leathann

0 500 Metres

0 500 Yards

Light trap & pitfall traps

SITE 34

LEATHANN

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The sampled site was within an area of low, undulating, "fixed dune" type machair, with a fair amount of bare sand on the slopes.

1.2 Vegetation

The centre of the site had a fairly dense vegetation, becoming more sparse towards the sloping sides of a depression. Ammophila arenaria was quite abundant on the ridges but very sparse elsewhere. Lotus corniculatus was present and tended to form discrete clumps. There was a short, grazed turf, where mosses were dominant, on some parts of the drier slopes.

The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: Trifolium spp., Bellis perennis, L. corniculatus, Galium spp., Plantago spp., A. arenaria and mosses, with no bare ground.

Pair 2: 10% bare ground with a very thin cover of mosses, B. perennis, Trifolium spp. and Senecio jacobaea.

Pair 3: up to 25% bare sand beside 3B with B. perennis, Trifolium spp., Ranunculus spp., L. corniculatus, S. jacobaea and Viola spp..

Pair 4: Trifolium spp., L. corniculatus, A. arenaria and, near trap 4A, Primula vulgaris, with no bare sand.

Daucus carota was also noted in the area of the traps.

1.3 Disturbance

The area appeared to be regularly used by campers. There were signs of a tent having been pitched between the light trap and pitfall trap 3B. The remains of an old camp fire were in a neighbouring hollow and campers were seen further inland on 13.6.76. Some old cow and sheep dung was observed. An old dead rabbit was found near the light trap, and several rabbit burrows were seen, particularly around the sides of the depression.

1.4 Distance from sea

The light trap and pitfall traps were all about 100 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The site was the most suitable found in the south-western area of "fixed dunes". The less accessible dunes further up the peninsula were not examined. The pitfall traps were in a line running north-east to south-west with 10 metres between pairs and 5 metres between the traps in each pair, with the exception of pair 2 where the light trap was situated 6 metres north-east of the marker post for site 3. The marker post for pair 2 was 6 metres south-east of the light trap with traps 2A and 2B to the north-east and south-west of it parallel to the line of other marker posts.

2.2 Damage or malfunction

The light trap operated from 15 - 23.6.76 and was still functional on the 23rd. It operated from 20 - 28.7.76 but was not functioning on the 28th when tested. The pitfall traps were all functional during the whole of each of the three periods 15 - 23.6.76, 23.6 - 20.7.76 and 20 - 28.7.76, with the exception of trap 3A during the second period.

2.3 Colour slides available

Box 1, 47-54

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	2	2
Perizoma blandiata	0	2	2
Eupithecia centauriata	0	2	2
Euxoa tritici	0	1	1
Agrotis vestigialis	0	11	11
Noctua pronuba	0	8	8
Hada nana	1	0	1
Cerapteryx graminis	0	2	2
Mythimna impura	0	3	3

	JUNE	JULY	TOTAL
Apamea monoglypha	0	31	31
Mesapamea secalis	0	150	150
Luperina testacea	0	6	6
Caradrina clavipalpis	0	1	1
Plusia festucae	0	1	1
TOTAL	1	220	221

This site produced a good species list and total catch compared with other Hebridean sites. Mesapamea secalis (68%) was the most abundant species. Although it occurred widely throughout the survey it was apparently most abundant on the Hebridean sites.

One sand dune species, Agrotis vestigialis, was taken. It was trapped extensively at many other sites, often in reasonable numbers, especially on the North Coast.

Luperina testacea occurred here and at a number of the Hebridean and East Coast sites but not on the North Coast or Moray Firth. Plusia festucae was taken only as single specimens at two other Hebridean Sites, 21 and 26, and three mainland Sites 61, 65 and 67. It feeds on sedges, coarse grasses, Sparganium erectum, Iris pseudacorus and Alisma plantago-aquatica.

A few species have a limited range of larval food plants. Epirrhoe alternata feeds on Galium spp. and Perizoma blandiata feeds on the flowers of Euphrasia spp. The latter species occurred at several Hebridean sites but only at Site 67 on the mainland.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Loricera pilicornis	1	1	5	7
Dyschirius globosus	1	1	0	2
Calathus fuscipes	31	27	130	188
Calathus melanocephalus	2	13	19	34
Calathus mollis	1	1	5	7
Amara aenea	5	1	0	6
Amara bifrons	0	0	2	2
Amara familiaris	2	0	0	2
Amara tibialis	0	2	0	2
TOTAL	43	46	161	250

The carabid fauna caught at this site was dominated by Calathus fuscipes, and to a lesser extent C. melanocephalus, together with the xerophilous species, C. mollis, Amara aenea, A. bifrons and A. tibialis, which are characteristic of sandy coastal areas. Eight larvae of Amara sp. and two Loricera pilicornis larvae were collected in the last two sampling periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	0	0	1	1
Leiodes dubia/obesa	10	8	28	46
Silpha tyrolensis	1	2	3	6
Bledius longulus	3	7	7	17
Xantholinus linearis	3	1	0	4
Philonthus cognatus	0	1	0	1
Quedius semiaeneus	0	1	0	1
Tachyporus chrysomelinus	8	3	2	13
Tachyporus hypnorum	6	3	0	9
Atheta elongatula	0	1	0	1
Atheta exigua	0	0	2	2
Aphodius fimetarius	1	0	0	1
Serica brunnea	0	1	1	2
Simplocaria semistriata	1	0	1	2
Byrrhus fasciatus	7	9	2	18
Atomaria nitidula	3	5	2	10
Longitarsus jacobaeae	0	0	14	14
Longitarsus luridus	0	0	1	1
Crepidodera ferruginea	0	5	10	15
Apion loti	1	1	0	2
Apion apricans	1	0	0	1
Apion dichroum	2	3	0	5
Otiorhynchus atroapterus	1	0	1	2
Philopedon plagiatus	11	3	0	14
Sitona lineellus	2	2	0	4
Ceutorhynchus quadridens	0	1	0	1
Rhinoncus pericarpius	1	0	0	1
Mecinus pyraster	8	1	0	9
TOTAL	70	58	75	203

The catch at this site contained the lowest number of specimens recorded at any Hebridean site. Approximately half the species trapped are phytophagous. These included Longitarsus jacobaeae which feeds on Senecio spp., and Crepidodera ferruginea which feeds on the roots of Gramineae as a larvae and on Urtica spp. and Cirsium as an adult. Apion dichroum, A. apricans and Sitona lineellus feed on Trifolium spp., and A. loti on Lotus corniculatus. Mecinus pyraster and L. luridus feed on Plantago spp., Rhinoncus pericarpius on Rumex spp. and Ceutorhynchus quadridens on various Cruciferae.

Leiodes dubia was the most numerous species in the catch, and other psammophilous or coastal species included Philopedon plagiatus, Bledius longulus, Otiorhynchus atroapterus, Atheta exigua, Quedius semiaeneus and Serica brunnea. All except the first two species were trapped in very low numbers at this site.

Aphodius fimetarius, and to a lesser extent, Xantholinus linearis and Philonthus cognatus indicate the presence of dung.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	1	0	0	1
Xysticus cristatus	24	12	0	36
Pardosa palustris	4	1	0	5
Arctosa perita	0	0	1	1
Pachygnatha degeeri	1	0	0	1
Oedothorax fuscus	5	1	1	7
Typhocrestus digitatus	1	1	0	2
Erigone promiscua	26	19	62	107
Erigone arctica	8	50	41	99
TOTAL	70	84	105	259

The catch at this site was dominated by two species of Erigone. Erigone promiscua (41.3%) which occurs in short, grazed vegetation, was slightly more abundant than E. arctica (38.2%). This latter species, which is normally found in the drift line on beaches and salt marshes, seems to be found further inland on the coast of the Hebrides and northern Scotland. The traps were situated 100 metres from the shore at this site. Xysticus cristatus, a common grassland thomisid, formed a significant part of the catch. This species was typical of many Hebridean sites but occurred only infrequently on the mainland. The presence of the

two lycosids, Pardosa palustris and Arctosa perita, have rather different habitat requirements. P. palustris occurs in open grassland, but may be more widespread in northern Britain. A. perita is typically associated with areas of sparse vegetation on sand dunes and sandy heaths. Typhocrestus digitatus is a widespread species that is very often found on sand dunes. Oedothorax fuscus is common in pioneer habitats. The remaining species are commonly taken in grassy areas.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Vitrina pellucida	0	2	5	7
Helicella itala	11	39	19	69
Cochlicella acuta	114	434	377	925
TOTAL	125	475	401	1001

Vitrina pellucida, Helicella itala and Cochlicella acuta were the species caught most plentifully at most Hebridean sites. They are characteristic of machair grassland, usually with bare ground.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	10	29	7	46

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

	JUNE	JN/JL	JULY	TOTAL
Porcellio scaber	0	2	2	4

Porcellio scaber is found widely on dry sandy soils in Britain.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

Carabidae

Nebria brevicollis, 23.6.76, under drift-wood in dunes.

Amara communis, 13 - 15.6.76, in empty pitfall trap

Hydrophilidae

Cercyon haemorrhoidalis, 23.6.76, at base of dune cliff.

C. melanocephalus, 23.6.76, in dead sheep in dunes.

Staphylinidae

Philonthus marginatus, 23.6.76, in dead sheep in dunes.

Quedius fuliginosus, 23.6.76, in dead sheep in dunes.

Aloconota gregaria, 23.6.76, at base of dune cliff.

Atheta divisa, 23.6.76, in dead sheep in dunes.

A. fungi, 23.6.76, at base of dune cliff.

A. atramentaria, 23.6.76, in dead sheep in dunes.

A. vestita, 23.6.76, in dead sheep in dunes.

Aleochara grisea, 23.6.76, in dead sheep in dunes.

A. lanuginosa, 23.6.76, in dead sheep in dunes and at base of dune cliff.

Scarabaeidae

Aphodius sphacelatus, 23.6.76, in dead sheep in dunes.

Cryptophagidae

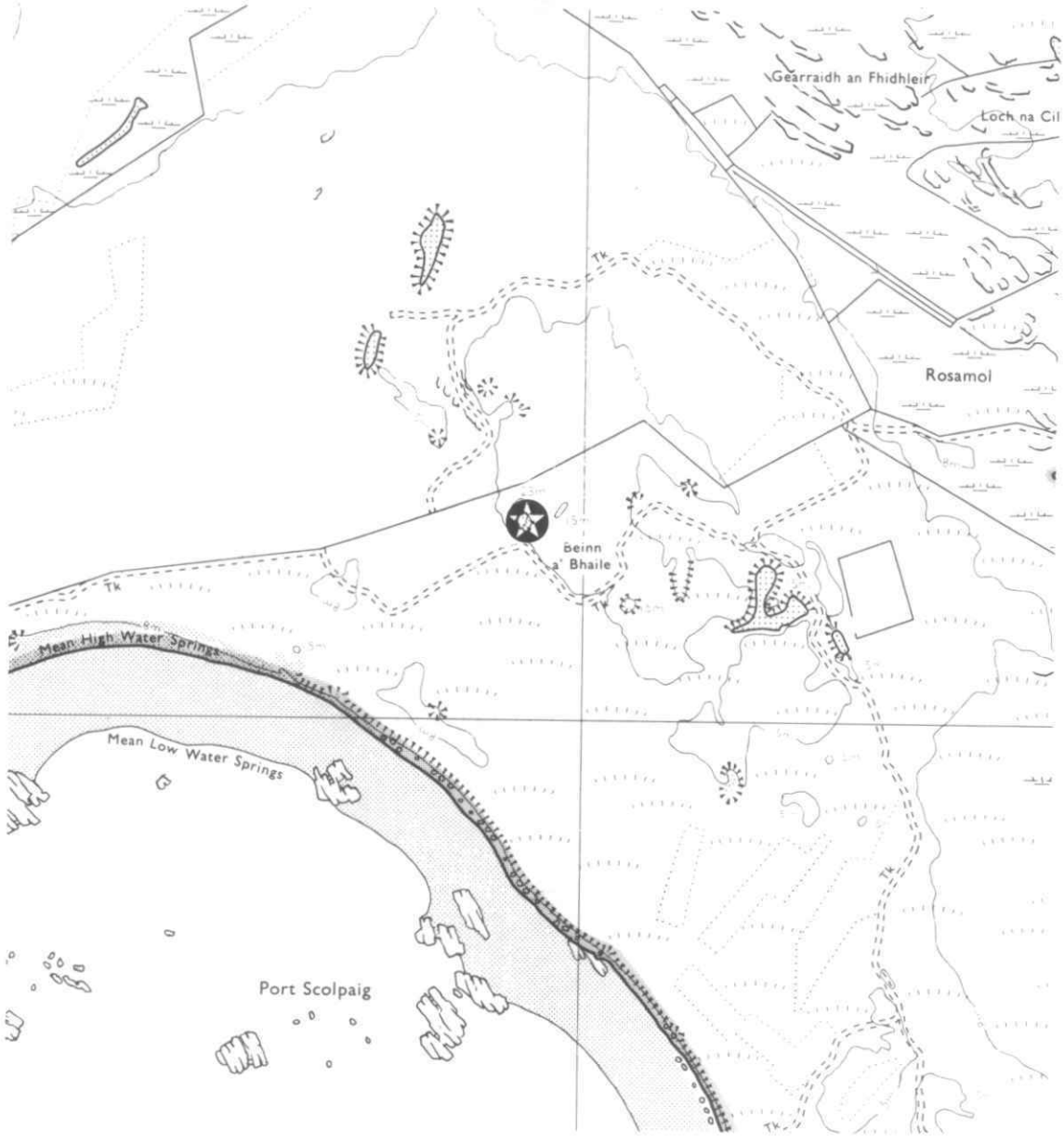
Atomaria apicalis, 13 - 15.6.76, in empty pitfall trap.

Nitidulidae

Meligethes aeneus, 23.6.76, in dead sheep in dunes.

Site 35 Balranald

Site 35 Balranald



Light trap & pitfall traps

SITE 35

BALRANALD

1. DESCRIPTION OF THE SAMPLED SITE

1.1 Topography

Apart from some minor undulations in the machair, the area of Beinn a' Bhaile was the only part of this site which bore any resemblance to fixed dunes, and was the only area which contained large depressions. The area to the north of the sampled site, including a strip south of the fence had been ploughed in the recent past.

1.2 Vegetation

The base of the depression was filled with a dense stand of Heracleum spondylium. The north-western and southern sides of the depression were floristically the most rich. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: less than 5% bare sand with Heracleum spondylium, Ranunculus spp. and Bellis perennis.

Pair 2: 10% bare sand, mostly to the east of trap 2B; H. spondylium and Ranunculus spp..

Pair 3: B. perennis, Trifolium spp., Plantago spp., Lotus corniculatus and Ranunculus spp., with no bare ground.

Pair 4: B. perennis, L. corniculatus, Trifolium spp., Ranunculus spp., mosses, a single Dactylorchis fuchsii and sparse Ammophila arenaria, with no bare ground.

Other species of plant which were recorded from the sampling site included Thalictrum sp., Anthyllis vulneraria, Rhinanthus minor, Crepis capillaris, Euphrasia spp., Viola spp., Coeloglossum viride and Campanula rotundifolia.

1.3 Disturbance

Some old cow dung was present when the sampling site was selected. At the end of the first trapping period, cattle had been into the area, and had snapped off all the marker posts and had left a plentiful supply of fresh dung. Rabbits were present, and there were a few burrows in the area, mainly near trap 1B.

1.4 Distance from sea

The light trap was about 375 metres from the shore with the pitfall traps on either side running from 350 to 390 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The site that was chosen was fairly protected in all directions. Other similar sites contained household rubbish, whilst others provided less shelter from the wind. The line of pitfall traps ran north-east to south-west along axis of a depression with pitfall trap pair 1 near the centre of the depression, pair 4 on the coastal rim and pairs 2 and 3 at 10 metre intervals in between. Individual traps in pitfall pairs were 5 metres apart and the light trap was 2 metres beyond a point midway between traps 2A and 3A.

2.2 Damage or malfunction

The light trap operated from 15 - 23.6.76 but was not functional on the 23rd when tested. It operated from 20 - 28.7.76, but again was not functional on the last day of the period, when tested, and had been disturbed presumably by cattle. The pitfall traps were all functional during the whole of each of the three periods 15 - 23.6.76, 23.6. - 20.7.76 and 20 - 28.7.76.

2.3 Colour slides available

Box 1, 55-60

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Cosmorhoe ocellata	0	1	1
Perizoma blandiata	0	10	10
Perizoma albulata	0	8	8
Noctua pronuba	0	5	5
Apamea monoglypha	0	33	33
Mesapamea secalis	0	34	34
Luperina testacea	0	2	2
Caradrina clavipalpis	0	2	2
Diachrysia chrysitis	0	2	2
TOTAL	0	97	97

The total number of species caught was about average but the catch was low compared with other Hebridean sites.

Luperina testacea also occurred at several Hebridean and East Coast sites but was not taken on the North Coast or Moray Firth.

Several species are confined to a limited range of larval food plants. Perizoma blandiata feeds on the flowers of Euphrasia spp., and Perizoma albulata on the seeds of Rhinanthus minor. Cosmorhoe ocellata feeds on Galium spp., and Diachrysia chrysitis on Urtica dioica and a few other common species of plants.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Carabus granulatus	0	0	1	1
Nebria brevicollis	3	0	0	3
Notiophilus aquaticus	0	0	1	1
Notiophilus biguttatus	2	0	0	2
Notiophilus substriatus	0	1	0	1
Loricera pilicornis	1	3	5	9
Dyschirius globosus	0	2	1	3
Pterostichus niger	0	13	1	14
Calathus fuscipes	60	480	99	639
Calathus melanocephalus	1	16	6	23
Calathus mollis	0	1	0	1
Amara aenea	1	0	0	1
Amara aulica	0	2	0	2
Amara bifrons	0	0	2	2
Amara familiaris	0	1	2	3
Amara tibialis	0	0	1	1
TOTAL	68	519	119	706

The sampling area at this site was further from the shore than at any other Hebridean site. However, the carabid fauna was still dominated by Calathus fuscipes although a greater number of species was recorded than at any other Hebridean site. These included five species of Amara, including the more xerophilous A. aenea, A. bifrons and A. tibialis, and three species of Notiophilus with N. aquaticus and N. substriatus being more characteristic of dry open areas. Pterostichus niger favours less dry habitats whilst Loricera pilicornis more typically inhabits moister, more shady areas. Four N. substriatus larvae were trapped

throughout the three sampling periods. Six larvae of L. pilicornis occurred in the last two periods and two Carabus granulatus and one Amara sp. larvae were taken in the middle period samples.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Cercyon haemorrhoidalis	0	1	2	3
Cercyon melanocephalus	0	1	0	1
Megasternum obscurum	1	59	17	77
Acrotrichus atomaria	0	4	5	9
Leiodes dubia/obesa	2	11	10	23
Agathidium laevigatum	1	4	4	9
Choleva glauca	0	1	0	1
Catops morio	1	1	0	2
Nicrophorus investigator	0	1	0	1
Thanatophilus sinuatus	0	0	1	1
Silpha tyrolensis	12	70	12	94
Micropeplus porcatus	0	1	0	1
Micropeplus staphylinoides	13	290	113	416
Anotylus rugosus	1	0	0	1
Stenus brunnipes	1	11	8	20
Stenus nanus	9	35	44	88
Stenus picipes	0	1	1	2
Gyrohypnus angustatus	0	1	0	1
Xantholinus glabratus	0	1	10	11
Xantholinus linearis	1	11	0	12
Philonthus cognatus	0	1	1	2
Philonthus fimetarius	0	3	0	3
Philonthus laminatus	0	54	5	59
Philonthus marginatus	1	2	0	3
Philonthus succicola	19	0	0	19
Philonthus varius	4	14	1	19
Staphylinus aeneocephalus	0	0	1	1
Quedius fuliginosus	0	0	1	1
Quedius semiaeneus	0	1	0	1
Tachyporus chrysomelinus	7	33	15	55
Tachyporus hypnorum	0	2	0	2
Tachyporus pusillus	4	5	1	10
Tachinus signatus	1	21	3	25
Amischa cavifrons	2	4	3	9

	JUNE	JN/JL	JULY	TOTAL
Atheta fungi	1	4	25	30
Atheta aterrima	0	1	0	1
Atheta exigua	0	12	1	13
Oxypoda opaca	0	1	0	1
Aleochara cuniculorum	1	0	0	1
Geotrupes stercorarius	1	0	0	1
Geotrupes vernalis	8	9	1	18
Aphodius depressus	0	1	0	1
Aphodius fimetarius	0	1	1	2
Aphodius sphacelatus	0	1	0	1
Serica brunnea	0	0	1	1
Simplocaria semistriata	1	0	0	1
Meligethes aeneus	1	0	0	1
Epuraea aestiva	1	3	0	4
Atomaria nitidula	5	28	24	57
Longitarsus jacobaeae	0	2	6	8
Longitarsus luridus	0	0	2	2
Longitarsus succineus	1	0	0	1
Apion apricans	25	75	18	118
Apion dichroum	4	20	6	30
Philopedon plagiatus	3	5	0	8
Sitona lineellus	1	1	0	2
Hypera postica	2	3	0	5
Ceutorhynchus contractus	1	9	0	10
Rhinoncus pericarpius	0	1	0	1
TOTAL	136	821	343	1300

This site produced a larger number of species than any other Hebridean site sampled, with Micropeplus staphylinoides being by far the most abundant. This species is associated with decaying vegetable matter, as are Megasternum obscurum, Atomaria nitidula, Stenus nanus, Philonthus succicola, Atheta fungi, and the Tachyporus spp..

The Geotrupes spp., Aphodius spp., Xantholinus spp., and Cercyon spp., together with the remaining species of Philonthus, are characteristic of dung. Nicrophorus investigator, Thanatophilus sinuatus and Atheta aterrima are indicative of the presence of carrion.

Only a single specimen of Serica brunnea was taken and other psammophile

or coastal species such as Leiodes dubia, Philopedon plagiatus, Atheta exigua and Quedius semiaeneus were present only in low numbers. Aleochara cuniculorum inhabits the burrows of rabbits and other large mammals and, as a consequence, is frequently found associated with lighter, more easily drained, soils. Epuraea aestiva is known from the nests of bumble bees and moles.

Apion apricans was more numerous here than at any other site sampled. Like A. dichroum, Hypera postica, and Sitona lineatus it feeds on Trifolium spp.. Ceutorhynchus contractus and Meligethes aeneus feed on a variety of Cruciferae, Longitarsus jacobaeae on Senecio spp., L. luridus on Plantago spp. and Cirsium arvense, L. succineus on various Compositae, and Rhinoncus pericarpius on Rumex spp..

Although adults of Silpha tyrolensis were not so numerous at this site, 302 larvae, more that at any other site sampled, were collected throughout the three sampling periods.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	3	1	0	4
Xysticus cristatus	15	9	2	26
Pardosa purbeckensis	8	8	0	16
Pardosa palustris	8	21	0	29
Pardosa nigriceps	1	1	0	2
Pachygnatha degeeri	3	1	0	4
Dicymbium nigrum	1	0	0	1
Oedothorax fuscus	9	4	1	14
Tiso vagans	3	1	1	5
Erigone atra	1	1	1	3
Erigone promiscua	26	181	105	312
Bathyphantes gracilis	0	0	2	2
TOTAL	78	228	112	418

The catch of spiders at this site was dominated, as at many of the Hebridean sites, by Erigone promiscua (74.6%). The short, grazed and rather exposed vegetation with some disturbance by rabbits etc. seems to be suitable for this species on the coast of the Hebrides. In England it is usually associated with disturbed areas with sparse vegetation such as burnt heathland. Three species of Pardosa were present in the catch. P. purbeckensis, is normally associated with

salt marshes and mudflats in England, but was present in reasonable numbers although P. palustris was rather more numerous. The latter species could be regarded as more typical of open grassland. P. nigriceps was also present, probably due to the presence of some areas of long vegetation. The common thomisid, Xysticus cristatus, formed a significant part of the catch. This species was typical of many Hebridean sites but occurred only infrequently on the mainland. Oedothorax fuscus is commonly taken in pioneer habitats. The remaining species are all widespread and are taken commonly in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	51	14	65
Cochlicopa lubricella	2	40	1	43
Lauria cylindracea	0	3	0	3
Vallonia excentrica	0	1	0	1
Vitrina pellucida	0	12	1	13
Nesovitrea hammonis	0	1	0	1
Oxychilus alliarius	0	2	0	2
Candidula intersecta	0	34	11	45
Helicella itala	106	310	85	501
Cochlicella acuta	107	441	111	659
Trichia striolata	1	0	0	1
TOTAL	216	895	223	1334

The greatest number of species caught at any site in the survey was recorded here. The assemblage of five species - Vitrina pellucida, Helicella itala, Cochlicella acuta and the two Cochlicopa species, which occurred typically at most Hebridean and North Coast sites, and which is characteristic of machair and fixed dune areas, made up 96% of the catch. The remaining 6 species are characteristic of more vegetated grassland, except for Candidula intersecta, which usually occurs on semi-fixed dunes, with bare sand. Candidula intersecta occurred at only one other Hebridean site (31). It is believed to have been introduced to the British Isles in Roman times, or later. Trichia striolata is sparsely recorded in western Scotland.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	2	14	3	19

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were trapped at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

Carabidae

Amara eurynota, 23.6.76, under drift-wood in blow-out.

Hydrophilidae

Cercyon littoralis, 23.6.76, in dead porpoise on shore.
20.7.76, in seaweed on shore.

Leiodidae

Choleva agilis, 13 - 15.6.76, in empty pitfall trap.

Silphidae

Thanatophilus rugosus, 23.6.76, in dead porpoise on shore.

Staphylinidae

Omalium laeviusculum, 20.7.76, in seaweed on shore.
O. riparium, 23.6.76, in dead porpoise on shore.
20.7.76, in seaweed on shore.
Bledius longulus, 13 - 15.6.76, in empty pitfall trap.
Anotylus maritimus, 20.7.76, in seaweed on shore.
Lathrobium fulvipenne, 23.6.76, under drift-wood in blow-out.
Gyrohypnus fracticornis, 23.6.76, under drift-wood in blow-out.
Cafius xantholoma, 20.7.76, in seaweed on shore. (adults and larvae).

Creophilus maxillosus, 23.6.76, in seaweed on shore (adults and larvae).

Quedius tristis, 23.6.76, under drift-wood in blow-out.

Atheta vestita, 23.6.76, in dead porpoise on shore.

20.7.76, in seaweed on shore.

Aleochara algarum, 20.7.76, in seaweed on shore.

A. obscurella, 20.7.76, in seaweed on shore.

Curculionidae

Otiorhynchus atroapterus, 23.6.76, under drift-wood in blow-out.

4.3 Hymenoptera : Tenthredinidae

The following species was recorded by Dr R.C. Welch on the 23rd June 1976: (det. G.J.Moller).

Dolerus aeneus, on Coeloglossum viride.

4.4 Terrestrial Isopoda

The following species were collected by Dr R.C. Welch in June 1976:

Oniscidae

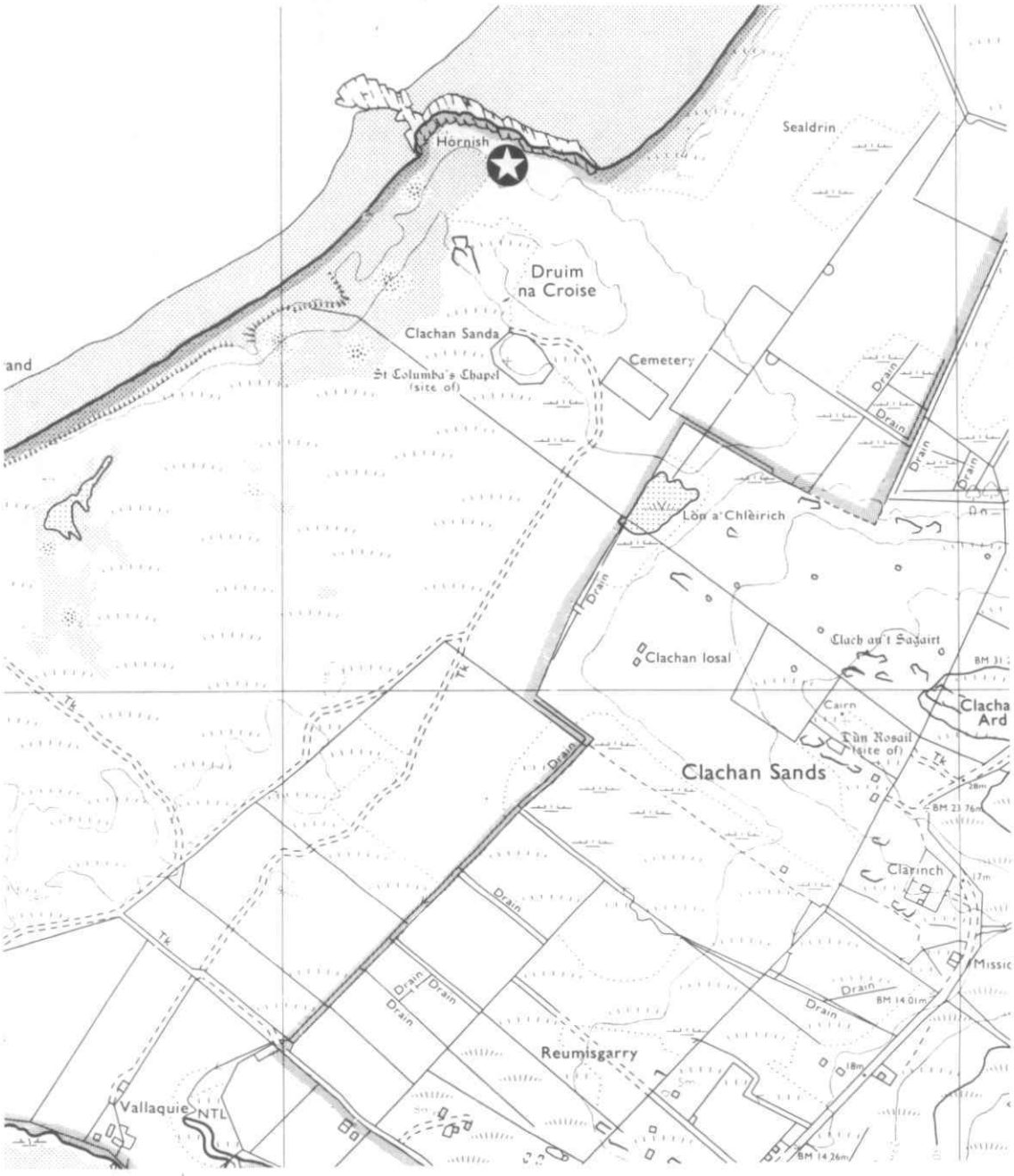
Oniscus asellus

Porcellionidae

Porcello scaber

Site 36 Robach

Site 36 Robach



Light trap & pitfall traps

SITE 36

ROBACH

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

This was physically the most distinct of all the Hebridean sites, with a loamy soil and having little or no similarity to the sandy "fixed dune" type of machair at all the other sites. It was a rather bleak, exposed area with very little shelter except immediately adjacent to the cemeteries. There were numerous rocky outcrops. There was a very slight ridge parallel to the line of pitfall traps which might have provided some slight deflection of wind from the sea.

1.2 Vegetation

The whole sampled area was covered with a dense, short turf except for the occasional rock outcrop, and a rabbit burrow near pitfall trap 3B. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: Heracleum spondylium, Plantago spp., Ranunculus spp., Rumex spp. and Lotus corniculatus; the vegetation was more lush around pair 1 than around the other traps.

Pair 2: Bellis perennis, Plantago spp., H. spondylium and Ranunculus spp..

Pair 3: B. perennis, Plantago spp. and Trifolium spp..

Pair 4: B. perennis, Trifolium spp., Plantago spp., Galium spp. and Ranunculus spp..

Other species of plant which were recorded from the sampling area included Rhinanthus minor, Thalictrum sp., Centaurea nigra, Campanula rotundifolia, Prunella vulgaris and Euphrasia spp.. The last three species were in a relatively ungrazed area by pitfall trap 4A.

1.3 Disturbance

The area did not seem to have been intensively grazed and the short turf was probably more a reflection of the exposed nature of the site rather than being due to grazing. Some rabbits were present.

1.4 Distance from sea

The light trap was about 100 metres from the shore. The pitfall traps were between 100 metres (pair 1) and 80 metres (pair 4) from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

It was decided not to place the traps adjacent to the cemeteries, since not only would they be more liable to interference, but their presence might offend the local people. The line of pitfall traps was established across the slope of the site in a south west to north east direction, with 10 metres between pairs and 5 metres between the traps in each pair, with the exception of pair 2. In order to place the light trap in the least exposed position, pitfall trap 2A was put midway between traps 1A and 3A but 2B was moved to 2.5 metres to the seaward of trap 2A.

2.2 Damage or malfunction

The light trap operated from 15 - 23.6.76 and was still functional at the end of that period, it was however not functional at the end of the other trapping period, 20 - 28.7.76. The pitfall traps were all functional during the whole of each of the three periods, 15 - 23.6.76, 23.6. - 20.7.76 and 20 - 28.7.76.

2.3 Colour slides available

Box 1, 61-67

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Hepialus fusconebulosa	1	0	1
Perizoma blandiata	0	2	2
Perizoma albulata	1	9	10
Rhyacia simulans	0	1	1
Cerapteryx graminis	0	1	1
Blepharita adusta	1	0	1
Apamea monoglypha	0	2	2
Mesapamea secalis	0	2	2

	JUNE	JULY	TOTAL
Diachrysia chrysitis	0	1	1
Abrostola triplasia	1	0	1
TOTAL	4	18	22

The site produced a slightly larger species list than average but the total catch was low.

Rhyacia simulans was represented by a single specimen and was recorded elsewhere only at Site 39 on Harris. The few recent Scottish records for this species are widespread but mainly coastal.

Several species are confined to a limited range of larval food plants. Hepialus fusconebulosa, which occurred at many sites, feeds on the roots of Pteridium aquilinum. Perizoma blandiata feeds on the flowers of Euphrasia spp. and Perizoma albulata on the seeds of Rhinanthus minor. Abrostola triplasia feeds on Urtica dioica, as does Diachrysia chrysitis which also feeds on a few other common species.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	11	7	0	18
Notiophilus aquaticus	0	0	1	1
Loricera pilicornis	2	5	1	8
Pterostichus niger	0	4	5	9
Calathus fuscipes	11	129	11	151
Calathus melanocephalus	5	14	5	24
Amara aulica	0	0	1	1
Amara bifrons	5	5	1	11
TOTAL	34	164	25	223

Calathus fuscipes and C. melanocephalus were the most plentiful Carabidae in the catch at this site. A comparatively large number of Nebria brevicollis was caught; this is a very eurytopic species of both woods and open country. The genus Amara was poorly represented, but A. bifrons is indicative of sparsely vegetated sandy habitats. A total of eleven Notiophilus substriatus larvae were taken throughout the three trapping periods, but this species was not taken as an adult on this site. Twelve Loricera pilicornis larvae were caught only in the middle and later periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Cercyon melanocephalus	0	1	0	1
Megasternum obscurum	16	191	72	279
Acrotrichus atomaria	0	2	18	20
Leiodes dubia/obesa	11	75	37	123
Silpha tyrolensis	19	33	0	52
Micropeplus staphylinoides	4	72	35	111
Bledius longulus	37	55	2	94
Stenus brunnipes	4	8	9	21
Stenus clavicornis	1	6	1	8
Stenus impressus	0	1	0	1
Stenus nanus	14	22	13	49
Stenus picipes	1	0	0	1
Gyrohypnus angustatus	1	0	0	1
Xantholinus glabratus	0	8	16	24
Xantholinus linearis	0	2	0	2
Philonthus cognatus	0	1	0	1
Philonthus laminatus	7	46	0	53
Philonthus marginatus	0	1	0	1
Philonthus varius	2	4	1	7
Quedius fuliginosus	0	1	2	3
Quedius scintillans	0	4	2	6
Quedius semiaeneus	0	1	0	1
Quedius tristis	2	0	0	2
Tachyporus chrysomelinus	25	40	7	72
Tachyporus hypnorum	4	5	0	9
Tachyporus pusillus	13	27	8	48
Tachinus laticollis	4	76	6	86
Tachinus signatus	20	163	8	191
Amischa cavifrons	7	4	5	16
Geostiba circellaris	2	0	0	2
Atheta amicula	0	2	0	2
Atheta fungi	1	38	25	64
Atheta exigua	2	2	1	5
Atheta celata	0	0	1	1
Atheta triangulum	0	3	0	3
Simplocaria semistriata	0	1	0	1
Byrrhus fasciatus	0	1	1	2

	JUNE	JN/JL	JULY	TOTAL
Hypnoides riparius	16	53	7	76
Micrambe vini	1	0	0	1
Atomaria nitidula	2	18	6	26
Longitarsus jacobaeae	0	2	24	26
Longitarsus luridus	0	0	11	11
Crepidodera ferruginea	0	2	2	4
Apion apricans	24	60	13	97
Apion dichroum	0	3	0	3
Philopedon plagiatus	0	5	0	5
Sitona lepidus	0	1	0	1
Hypera postica	2	6	0	8
Rhinoncus pericarpius	4	4	0	8
TOTAL	246	1050	333	1629

The catch at this site included a large and varied fauna. Most of the more numerous species, such as Megasternum obscurum, Tachinus signatus (and T. laticollis), Micropeplus staphylinoides, Tachyporus chrysomelinus and Atheta fungi, require a relatively damp environment of decomposing vegetable matter. A few coastal/psammophile species such as Leiodes dubia, Bledius longulus and Hypnoides riparius were also fairly numerous although Philopedon plagiatus, Atheta exigua, Byrrhus fasciatus and Quedius semiaeneus were present in only very low numbers and no adult Serica brunnea were taken although two larvae were taken in the middle trapping period. Joy (1932) records H. riparius "chiefly on the coast" although during this survey it was only trapped elsewhere at Sites 62 (25 specimens) and 63 (single specimen).

The occurrence of Cercyon melanocephalus together with the Philonthus and Xantholinus spp. are indicative of the presence of dung at the site. Most of the other non-phytophagous species, especially Acrotrichis atomaria, the Stenus spp. and other Atheta spp. indicate that the site was moist or at least had a dense and lush vegetative cover.

Of the phytophagous species Hypera postica, Sitona lepidus and the two Apion spp. feed on Trifolium spp., Rhinoncus pericarpius on Rumex spp., Longitarsus jacobaeae on Senecio spp., L. luridus on Plantago spp. and Cirsium spp., Crepidodera ferruginea on Cirsium spp. and Urtica spp. as an adult but with its larvae feeding on the roots of various Gramineae, and Micrambe vini on Ulex spp. and Sarothamnus scoparius.

Larva of S. tyrolensis were more numerous than adults and Tachinus spp. larvae were common, particularly in the middle sampling period.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	10	10	0	20
Pardosa monticola	2	2	0	4
Pardosa palustris	0	1	1	2
Ceratinella brevipes	0	2	0	2
Oedothorax fuscus	1	0	0	1
Tiso vagans	6	3	0	9
Erigone atra	2	3	1	6
Erigone promiscua	26	30	10	66
Agyneta decora	2	0	0	2
Bathyphantes gracilis	0	1	3	4
Lepthyphantes tenuis	0	1	0	1
TOTAL	49	53	15	117

This site was somewhat different to most other Hebridean sites, being on a loamy soil rather than sand, but the dense, very short turf was still suitable for Erigone promiscua, which was the most abundant species (56.4%). This species is usually associated with very open habitats such as burnt heathland etc. in England, but was plentiful at many Hebridean sites. The common thomisid spider, Xysticus cristatus was the second most abundant species. It occurred commonly in the Hebrides, but only infrequently at sites on the mainland. Pardosa monticola is typical of dry short grassland such as chalk downs in England and P. palustris is usually found in more general open grassland although it may be even more widespread in northern Britain. Oedothorax fuscus is often taken in pioneer habitats, and Agyneta decora occurs in grassy and mossy areas and has a rather northern distribution. The erigonine Ceratinella brevipes was taken at only nine sites most of which were of a more typically grassland nature than true machair. Oedothorax fuscus is often associated with pioneer habitats. All the other species are common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	185	28	213
Cochlicopa lubricella	6	56	0	62
Vertigo pygmaea	1	0	0	1

	JUNE	JN/JL	JULY	TOTAL
Vallonia excentrica	0	1	0	1
Vitrina pellucida	7	73	14	94
Oxychilus alliarius	0	2	0	2
Helicella itala	6	34	16	56
Cochlicella acuta	26	177	39	242
TOTAL	46	528	97	671

The catch was composed of the five species which occurred typically at most Hebridean and North Coast sites, and which are characteristic of machair and fixed dune areas. The additional species Vertigo pygmaea Vallonia excentrica and Oxychilus alliarius, are more typical of grazed turf on machair.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Polydesmus inconstans	0	1	0	1
Cylindroiulus latestriatus	3	12	2	17
TOTAL	3	13	2	18

Cylindroiulus latestriatus is common on sandy coasts throughout Britain. Polydesmus inconstans rarely occurs in large numbers, but appears to be recorded from a wide variety of habitat types. It was not recorded in samples from any other Hebridean sites.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch

Carabidae

Notiophilus biguttatus, 13 - 15.6.76, in empty pitfall trap (1 larva).

N. palustris, 23.6.76, at base of dune cliff (1 larva).

Amara communis, 13 - 15.6.76, in empty pitfall trap.

Hydrophilidae

Cercyon littoralis, 23.6.76, in seaweed on shore.

Ptilliidae

Ptenidium punctatum, 23.6.76, at base of dune cliff.

Staphylinidae

Omalium laeviusculum, 23.6.76, in seaweed on shore.

O. riparium, 23.6.76, in seaweed on shore.

Anotylus maritimus, 23.6.76, in seaweed on shore.

Cafius xantholoma, 23.6.76, in seaweed on shore.

Creophilus maxillosus, 23.6.76, in seaweed on shore.

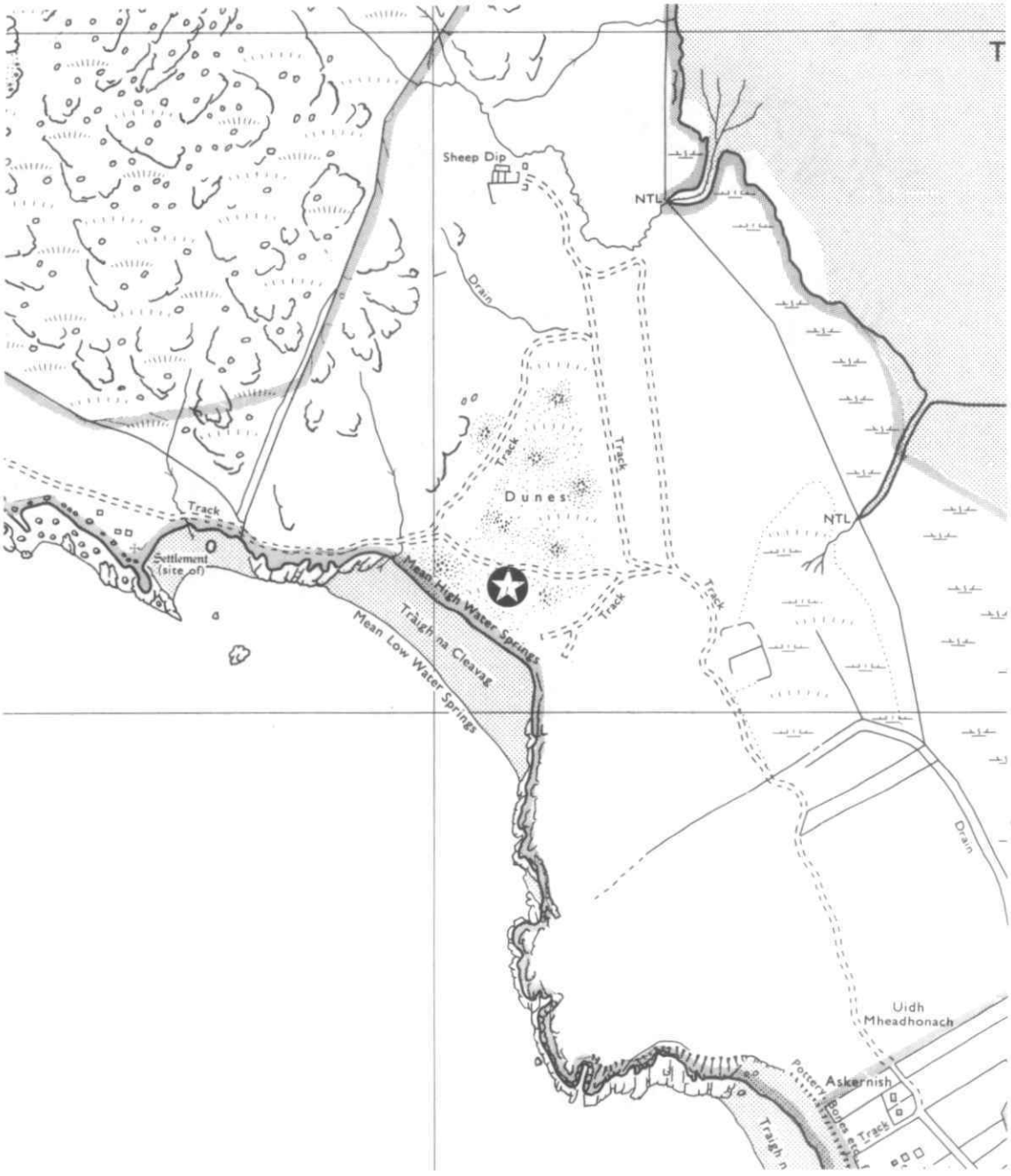
Tachyporus atriceps, 23.6.76, at base of dune cliff.

Atheta vestita, 23.6.76, in seaweed on shore.

Aleochara obscurella, 23.6.76, at base of dune cliff.

Site 39 Northton

Site 39 Northton



Light trap & pitfall traps

SITE 39

NORTHTON

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The site chosen for sampling was on the isthmus between Chaiparal and the village of Northton, on the south-west slopes in the hill. Numerous rocky outcrops and eroded areas of bare sand occurred in this area.

1.2 Vegetation

The plant cover over most of the area was not dense and there was much bare sand in places, with scattered small plants of Ammophila arenaria throughout. The vegetation surrounding the pitfall traps consisted of the following:

Pair 1: 30% bare sand, with a short sparse cover of Bellis perennis, Ranunculus spp., Lotus corniculatus, Plantago spp. and mosses.

Pair 2: 50% bare sand, sparsely vegetated with B. perennis, Plantago spp. and Trifolium spp..

Pair 3: 10% bare sand, with L. corniculatus, Ranunculus spp., B. perennis, Senecio jacobaea, Galium spp. and Stellaria spp..

Pair 4: 40% bare sand and rocky outcrops, with B. perennis, Ranunculus spp. and Trifolium spp..

Other species of plant which were recorded from the sampling area included Thalictrum sp., Daucus carota, Prunella vulgaris, Coeloglossum viride, Gentianella amarella and Rumex spp..

1.3 Disturbance

Rabbits were present in fairly low numbers and some old sheep dung was seen scattered throughout the area. A solitary tent was pitched to the west of the sampling area on 17.6.76. There was a rabbit burrow fairly close to pitfall trap 3A.

1.4 Distance from sea

The light trap was about 300 metres from the shore with the pitfall traps extending at least 20 metres further inland.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The traps were placed in a line running south-west to north-east along a slight depression in the undulating, dune-like area. The pitfall traps were placed with 10 metres between pairs and 5 metres separating the traps in each pair. However the presence of rocky outcrops meant that pair 4 were placed 13 metres to the north-east of pair 3, with trap 4B 3 metres from the central marker post.

2.2 Damage or malfunction

The light trap operated from 17 - 25.6.76 and 22-30.7.76, but was not functional at the end of either period, when tested. The pitfall traps were all functional during the whole of each of the three periods 17 - 25.6.76, 25.6 - 22.7.76 and 22 - 30.7.76.

2.3 Colour slides available

Box 1, 68-74.

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	3	3
Perizoma blandiata	0	2	2
Perizoma albulata	0	16	16
Euxoa tritici	0	2	2
Agrotis vestigialis	0	19	19
Rhyacia simulans	0	2	2
Noctua pronuba	0	29	29
Lycophotia porphyrea	0	1	1
Cerapteryx graminis	0	1	1
Apamea monoglypha	0	9	9
Mesapamea secalis	0	9	9
Luperina testacea	0	1	1
Diachrysia chrysitis	0	1	1
Autographa pulchrina	0	1	1
TOTAL	0	96	96

This site produced the largest species list for Harris and Lewis, but the total catch was below average compared with other Hebridean sites.

Agrotis vestigialis, a common sand dune species, was trapped extensively and often commonly at many other sites, especially on the North Coast.

Rhyacia simulans was recorded elsewhere only as a single specimen at Site 36 on North Uist. The few recent Scottish records for this species are mainly coastal, but widespread. Luperina testacea was taken at a number of Hebridean and East Coast sites, but not on the North Coast or the Moray Firth.

Several species are confined to a limited range of larval food plants. Epirrhoe alternata feeds on Galium spp.. Perizoma blandiata feeds on the flowers of Euphrasia spp., and Perizoma albulata on the seeds of Rhinanthus minor. Lycophotia porphyrea feeds on Calluna vulgaris and Erica spp., Diachrysia chrysitis feeds on Urtica dioica and a few other common species.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Loricera pilicornis	0	1	0	1
Dyschirius globosus	40	65	13	118
Dyschirius politus	0	1	0	1
Calathus fuscipes	15	53	6	74
Calathus melanocephalus	8	50	6	64
Calathus mollis	2	3	0	5
Amara aulica	0	5	0	5
Amara bifrons	3	37	21	61
Amara familiaris	0	7	1	8
TOTAL	68	222	47	337

The carabid fauna at this site was unusual for the abundance of the eurytopic species, Dyschirius globosus, compared with the Calathus sp., together with a corresponding increase in the numbers of the xerophilous Amara bifrons. Seven Amara sp. larvae were taken during the latter two sampling periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	3	28	13	44
Leiodes dubia/obesa	9	84	29	122
Bledius longulus	11	13	3	27
Gyrohypnus angustatus	1	0	0	1
Xantholinus laevigatus	0	18	3	21

	JUNE	JN/JL	JULY	TOTAL
Xantholinus linearis	4	11	3	18
Philonthus varius	1	1	0	2
Quedius fuliginosus	0	3	0	3
Quedius semiaeneus	0	2	0	2
Tachyporus chrysomelinus	12	10	4	26
Tachyporus pusillus	9	5	0	14
Tachinus signatus	0	3	0	3
Amischa cavifrons	0	4	3	7
Atheta fungi	10	0	0	10
Atheta exigua	0	6	10	16
Serica brunnea	0	7	15	22
Simplocaria semistriata	0	2	0	2
Byrrhus fasciatus	1	4	2	7
Atomaria nitidula	5	27	0	32
Longitarsus jacobaeae	0	0	11	11
Apion loti	0	1	0	1
Apion apricans	1	0	0	1
Apion dichroum	4	8	1	13
Philopedon plagiatus	8	6	0	14
Sitona lineellus	6	0	0	6
TOTAL	85	243	97	425

The catch was of a fairly limited fauna, with the more numerous species falling mainly into two broad categories. A coastal/psammophile group is represented by Leiodes dubia, the most numerous species, Bledius longulus, Serica brunnea, Atheta exigua, Philopedon plagiatus and Quedius semiaeneus. A second group, including such species as Megasternum obscurum, Atomaria nitidula, the Tachyporus spp. and Xantholinus spp. and Atheta fungi are all indicative of more moist conditions associated with longer vegetation and a decaying litter layer.

Phytophagous species included Apion dichroum, A. apricans and Sitona lineellus which feed on Trifolium. Longitarsus jacobaeae feeds on Senecio spp. and Apion loti on Lotus corniculatus.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	1	0	0	1
Arctosa perita	0	2	0	2
Erigone atra	0	0	1	1

	JUNE	JN/JL	JULY	TOTAL
Erigone promiscua	6	5	5	16
Erigone arctica	14	4	2	20
TOTAL	21	11	8	40

The catch at this site was the smallest, both in numbers of individuals and of species, taken during this survey. The very sparse vegetation with large areas of bare sand and rock probably accounts for the abundance of E. promiscua and of the drift line species Erigone arctica. Erigone promiscua is a species of open disturbed habitats, such as burnt heathland in England. E. arctica is rarely found away from the drift line on beaches and salt marshes in the rest of Britain but seems to occur further inland on the coast of north west Scotland. The lycosid, Arctosa perita, occurs on sand dunes and sandy heaths where there are large amounts of bare sand. The remaining species are common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	4	0	4
Cochlicopa lubricella	0	1	0	1
Helicella itala	0	4	1	5
Cochlicella acuta	4	61	10	75
TOTAL	4	70	11	85

Four of the five species typical of the Hebridean and North Coast sites, and characteristic of machair and grassy dune areas, occurred here. Vitrina pellucida was not recorded. The catch was small compared with that at most other Hebridean sites.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	32	120	33	185

Cylindroiulus latestriatus is common on sandy coasts throughout Britain. The numbers of this species were noticeably high in the catches from the two sites on Harris.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

Curculionidae

Otiorhynchus atroapterus, at base of dune cliff.

Sitona lepidus, 30.7. - 21.8.76, in pitfall trap.

4.3 Terrestrial Isopoda

The following species were recorded by Dr R.C. Welch:

Oniscidae

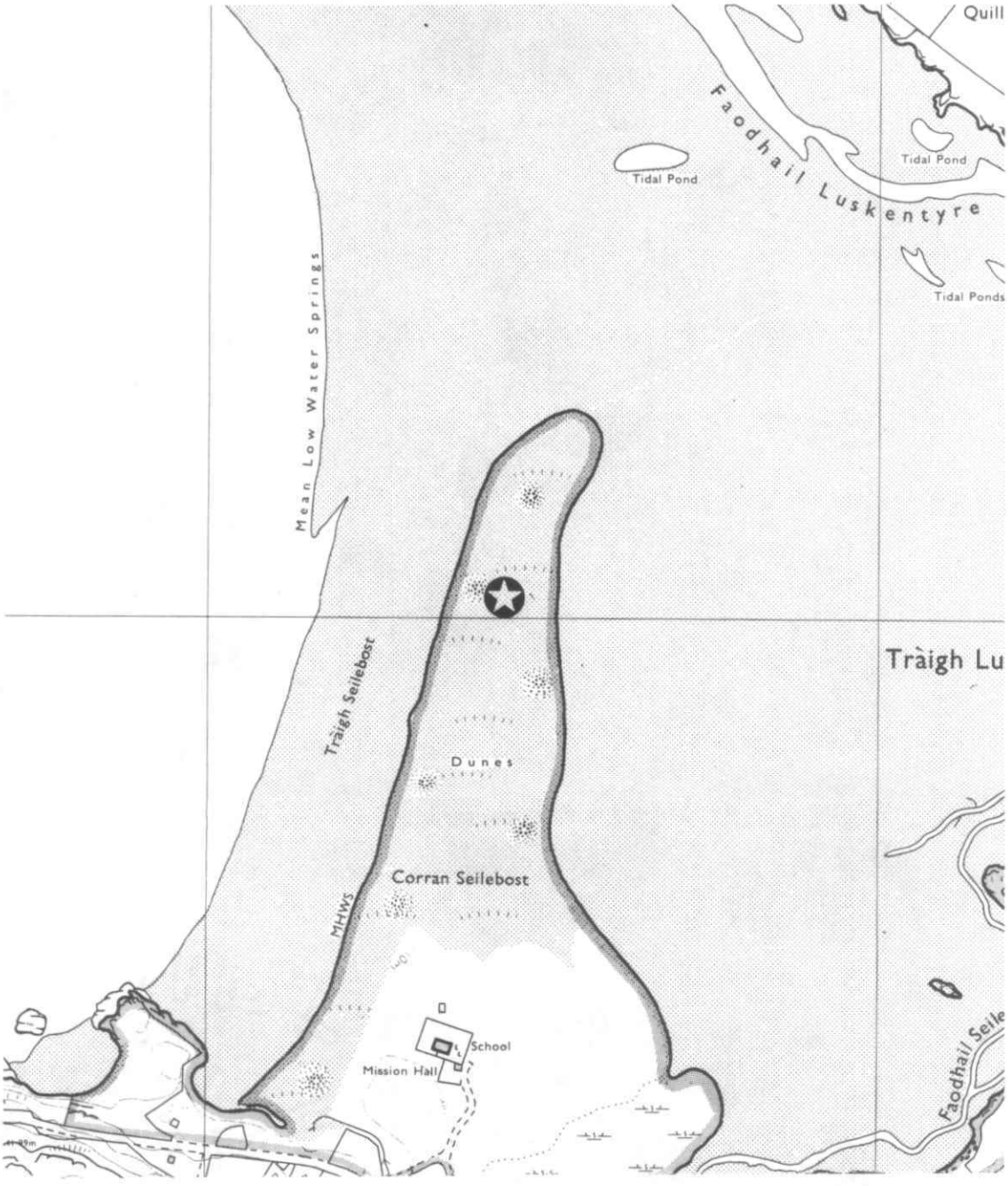
Oniscus asellus, 25.6.76, by hand collecting.

Porcellionidae

Porcellio scaber, 25.6.76, by hand collecting.
30.7. - 21.8.76, in pitfall trap.

Site 40 Luskentyre

Site 40 Luskentyre



0 500 Metres
0 500 Yards

★ · Light trap & pitfall traps

SITE 40

LUSKENTYRE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

A sandy bar separates Traigh Seilebost from Traigh Luskentyre forming the low peninsula of Corran Seilebost. The peninsula has a wave cut perimeter with marginal "fixed dunes" and an undulating, low lying area in the centre. The northern tip of the peninsula has a small area of yellow dunes.

1.2 Vegetation

The whole of the sampled site was covered with a dense mossy cushion and short grazed turf with small area of bare sand mainly to the west of the sampling site. Sparse Ammophila arenaria was mainly on raised areas, particularly around pitfall trap pairs 3 and 4. Bellis perennis was noticeably infrequent compared with other Hebridean sites. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: Lotus corniculatus, Senecio jacobaea, Ranunculus spp. and Stellaria spp..

Pair 2: 10% bare ground to the west of the pair; S. jacobaea L. corniculatus and Plantago spp..

Pair 3: S. jacobaea, Ranunculus spp. and Trifolium repens

Pair 4: Ranunculus spp., Primula vulgaris, Bellis perennis and Geranium sp..

Other species of plant which were recorded from the sampling area included Euphrasia spp.,Prunella vulgaris, Achillea millefolium and Thymus drucei.

1.3 Disturbance

There was considerable use made of the area by the public. Children from the school at the southern end of the peninsula obviously roam freely over the area. Three caravans appear to be parked permanently amid the dunes, and a group of Girl Guides were camped in a hollow of the dunes near the sampling area on 17.6.76. Rabbits were present in moderate numbers, and some old sheep dung was seen, especially towards the southern end of the peninsula.

1.4 Distance from sea

The light trap was about 400 metres from both the east and west shores of the peninsula, and some 1500 metres south of the northern tip. The pitfall traps were placed about 20 metres either side of the light trap at right angles to the axis of the peninsula.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The large yellow dunes at Luskentyre Banks are probably better developed than at any other Hebridean site and as a result are well known and much frequented by the general public and are even illustrated on picture postcards. Corran Seilebost was already known to be an interesting site for Lepidoptera (E.C. Pelham-Clinton pers. comm.) and vehicular access was possible. Therefore the traps were placed on the peninsula of Corran Seilebost.

The pitfall traps were placed in a line running roughly west to east, with 10 metres between pair 1 and 2, 15 metres between 2 and 3 and 10 metres between 3 and 4. The light trap was placed between traps 2A and 3A.

2.2 Damage or malfunction

The light trap operated from 17 - 25.6.76 and 22 - 30.7.76 but was not functional at the end of either period, when tested. There was over 1 centimetre of water in the bottom of the trap on 30.7.76. The pitfall traps were all functional during the whole of the three periods 17 - 26.6.76, 25.6. - 22.7.76 and 22 - 30.7.76.

2.3 Colour slides available

Box 1, 75-81.

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	0	2	2
Euxoa tritici	0	1	1
Noctua pronuba	0	1	1
Cerapteryx graminis	0	3	3
Blepharita adusta	1	0	1

	JUNE	JULY	TOTAL
Apamea monoglypha	0	10	10
Mesapamea secalis	0	47	47
Luperina testacea	0	2	2
TOTAL	1	66	67

There was a low total catch, and the species list was slightly smaller than average for the Hebridean sites. The most numerous species here was Mesapamea secalis. It was taken widely at many sites throughout the survey but appeared to be more abundant on the Hebrides than elsewhere.

Luperina testacea was also taken at a number of Hebridean and East Coast sites, but not on the North Coast or Moray Firth.

Epirrhoe alternata, which feeds on Galium spp., was the only stenophagous species collected.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Notiophilus substriatus	0	1	1	2
Dyschirius globosus	83	96	19	198
Calathus fuscipes	80	90	116	286
Calathus melanocephalus	28	29	21	78
Calathus mollis	0	1	1	2
Amara bifrons	11	8	11	30
Amara familiaris	0	3	0	3
TOTAL	202	228	169	599

The catch of carabids was unusual in that Calathus fuscipes and Dyschirius globosus were present in virtually equal numbers in the first two samples, with D. globosus only being outnumbered, albeit overwhelming, in the last sampling period. Amara bifrons, a xerophilous species of sparsely vegetated sandy soils and C. melanocephalus make up the majority of the remaining specimens in this rather poor carabid fauna. A single Dyschirius larva was taken in the last sampling period. Five Notiophilus substriatus larvae were taken during the first two periods, and five Amara sp. larvae in the last two periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	23	46	15	84
Acrotrichus atomaria	0	8	0	8

	JUNE	JN/JL	JULY	TOTAL
Leiodes dubia/obesa	1	4	4	9
Bledius longulus	16	30	9	55
Anotylus sculpturatus	1	0	1	2
Stenus nanus	22	37	7	66
Gyrohypnus angustatus	1	0	0	1
Xantholinus glabratus	0	2	1	3
Xantholinus linearis	3	5	3	11
Philonthus varius	10	19	4	33
Quedius semiaeneus	0	0	2	2
Tachyporus chrysomelinus	5	10	13	28
Tachyporus pusillus	5	11	1	17
Amischa cavifrons	3	1	0	4
Serica brunnea	0	91	13	104
Simplocaria semistriata	15	5	0	20
Byrrhus fasciatus	0	1	0	1
Athous haemorrhoidalis	0	1	0	1
Meligethes aeneus	1	0	0	1
Longitarsus jacobaeae	0	29	69	98
Longitarsus succineus	26	375	184	585
Apion dichroum	0	2	0	2
Philopedon plagiatus	5	3	0	8
Sitona lepidus	3	2	0	5
Sitona lineellus	0	2	2	4
Hypera postica	0	1	0	1
TOTAL	140	685	328	1153

The relatively poor catch at this site was dominated by Longitarsus succineus (51%). The numbers of this species caught here were much greater than at any other site during this survey. L. succineus feeds on a wide range of Compositae. Among the coastal and psammophile species only Serica brunnea and Bledius longulus were at all numerous and only small numbers of Philopedon plagiatus, Leiodes dubia and Quedius semiaeneus were collected. Of the other phytophagous species Longitarsus jacobaeae feeds on Senecio spp., Apion dichroum, Hypera postica and the two Sitona spp. on Trifolium spp. and Meligethes aeneus on a variety of Cruciferae.

Most of the remaining species are characteristic of a more moist habitat with decomposing vegetable matter. Some of these also frequent dung.

Larvae of Xantholinus spp. were fairly common throughout all sampling periods whilst larvae of Philonthus spp. were more numerous during the second two periods.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	5	2	0	7
Pardosa palustris	5	11	0	16
Pachygnatha degeeri	1	0	0	1
Ceratinella brevipes	5	0	0	5
Walckenaera antica	1	2	0	3
Dicymbium nigrum	1	1	0	2
Oedothroax fuscus	5	12	2	19
Tiso vagans	12	22	4	38
Typhocrestus digitatus	2	7	0	9
Erigone dentipalpis	1	0	0	1
Erigone atra	43	88	28	159
Erigone promiscua	28	72	15	115
Lepthyphantes ericaeus	0	0	1	1
TOTAL	109	217	50	376

An unusual aspect of the catch at this site was the abundance of Erigone atra (42.3%). This very common, widespread species occurred at thirty sites in the survey, but usually in small numbers. Only at this site was it plentiful. E. promiscua was also present in large numbers (30.6%), not unexpectedly considering the open nature of the vegetation. This was the only site in the Hebrides where E. dentipalpus was taken. This species was often the most common Erigone on the East Coast. Pardosa palustris, a rather common grassland species was the only lycosid taken. This is perhaps surprising as the habitat seemed suitable for the sand dune and sandy heath species, Arctosa perita. The erigonine Tiso vagans is widespread and common in grassy areas but is not generally thought of as a sand dune species. Typhocrestus digitatus, however, is very often taken on sand dunes but is also widespread in other habitat types. Oedothorax fuscus, is taken commonly in pioneer habitats. All the other species are found commonly in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	84	36	120
Cochlicopa lubricella	6	12	0	18
Vertigo pygmaea	1	0	0	1
Vallonia costata	0	5	0	5
Vitrina pellucida	29	41	21	91
Helicella itala	79	248	112	439
Cochlicella acuta	120	423	140	683
TOTAL	235	813	309	1357

The catch was composed of the five species which occurred typically at most Hebridean and North Coast sites, and which are characteristic of machair and fixed dune areas. The two additional species, Vertigo pygmaea and Vallonia costata, are more typical of grazed turf on machair. Vallonia costata was not recorded at any other Hebridean site and is sparsely recorded in Scotland.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	116	264	53	433

Cylindroiulus latestriatus is common on sandy coasts throughout Britain. The largest number of specimens of this species to be caught in the survey was at this site.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera : Geometridae

The following species was observed in the field during the course of the survey:

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

L = Luskentyre Banks 08/062996 S = Scilebost Peninsula 08/064980

Carabidae

Loricera pilicornis, S. 30.7. - 21.8.76, in pitfall trap.

Laemostenus terricola, S. 30.7. - 21.8.76, in pitfall trap.

Hydrophilidae

Cercyon littoralis, L. 20.6.76, in seaweed on shore.
S. 25.6.76, in dead gull on beach.

Staphylinidae

Omalium laeviusculum, L. 20.6.76, in seaweed on shore.
O. riparium, L. 20.6.76, in seaweed on shore.
S. 25.6.76, in dead gull on beach.
O. rugulipenne, L. 20.6.76, in seaweed on shore.
Anotylus maritimus, L. 20.6.76, in seaweed on shore.
S. 25.6.76, under drift-wood.
Stenus brunnipes, S. 30.7. - 21.8.76, in pitfall trap.
Staphylinus olens, S. 25.6.76, crawling in dunes.
Quedius fuliginosus, S. 30.7. - 21.8.76, in pitfall trap.
Tachinus elongatus, L. 20.6.76, at base of dune cliff.
S. 25.6.76, dead in dunes.
Phytosus balticus, L. 20.6.76, under drift-wood on beach.
Cafius xantholoma, L. 20.6.76, in seaweed on shore.
Atheta (Datomicra) celata, S. 25.6.76, in rabbit dung in dunes.
A. (Dimetrota) atramentaria, S. 25.6.76, in rabbit dung on dunes.
A. (Thinobaena) vestita, L. 20.6.76, in seaweed and under drift-wood on shore.
S. 25.6.76, in dead gull on beach and crawling in dunes.
Aleochara algarum, L. 20.6.76, under drift-wood on beach.
A. grisea, L. 20.6.76, under seaweed on shore.
A. obscurella, L. 20.6.76, under seaweed on shore and under drift-wood on beach.
S. 25.6.76, in dead gull on beach.

Geotrupidae

Geotrupes vernalis, S. 30.7. - 21.8.76, in pitfall trap.

Scarabaeidae

Aegialia arenaria, L. 20.6.76, crawling in dunes.
S. 25.6.76, in rabbit dung in dunes.
Aphodius sp., S. 25.6.76, indet. larvae in old sheep dung.

Curculionidae

Otiorhynchus atroapterus, L. 20.6.76, crawling in dunes.
S. 25.6.76, crawling in dunes.

The following additional species were collected by Prof. J.A. Owen during July 1976 at Seilebost (S) and Luskentyre (L) but habitat data is not known.

Carabidae

Nebria brevicollis (S)
Notiophilus biguttatus (S)
Dyschirius politus (S)
Clivina fossor (S)
Broscus cephalotes (S)
Bembidion pallidipenne (S)
B. tetracolum (L)
Olisthopus rotundatus (S)
Agonum muelleri (S)

Hydrophilidae

Cercyon haemorrhoidalis (S)

Silphidae

Thanatophilus rugosus (S)

Staphylinidae

Megarthrus denticollis (S)
Omalium excavatum (S)
Gyrohypnus punctulatus (S)
Philonthus marginatus (L)
Quedius curtipennis (S)
Atheta elongatula (S)
A. aterrima (S)
Aleochara grisea (S)

Scarabaeidae

Aphodius ater (S)

Byrrhidae

Byrrhus pilula (S)

Cantharidae

Cantharis nigra (S)

Cryptophagidae

Atomaria nitidula (S)

Chrysomelidae

Psylliodes marcida (S and L)

Curculionidae

Ceutorhynchus pollinarius (L)

4.3 Terrestrial Isopoda

The following species were recorded by Dr S.L. Sutton, Leeds University, on 25.7.75 from waste ground on the shore of Foadhail Seilebost. The specimens were found under flat stones among a vegetation of *Thymus drucei*, *Prunella vulgaris* and dead *Cirsium* spp..

Trichoniscidae

Trichoniscoides saeroeensis

Oniscidae

Oniscus asellus

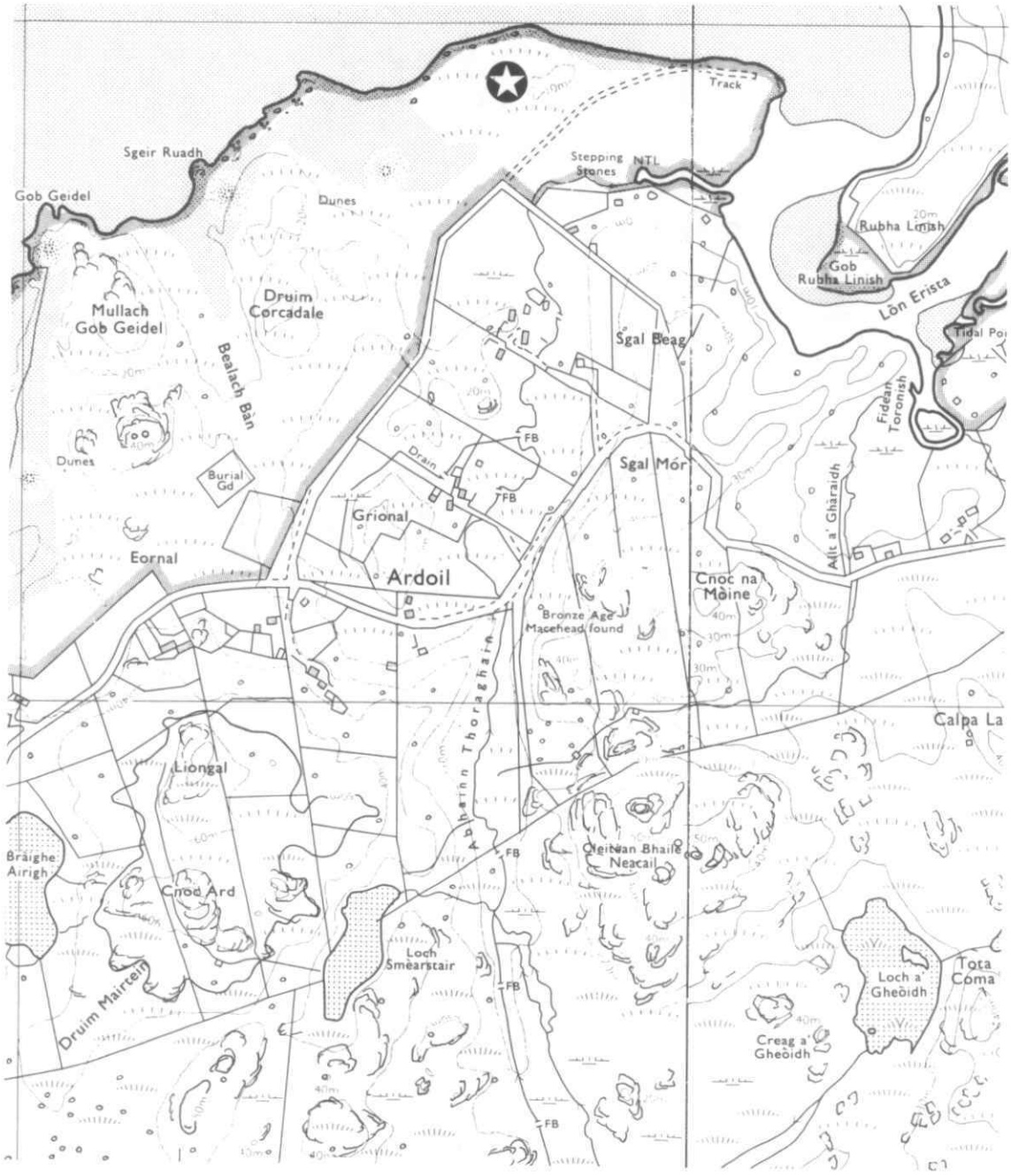
Porcellionidae

Porcellio scaber

This is only the fourth known Scottish locality for *T. saeroeensis*, and the most northerly recorded occurrence in the British Isles.

Site 41 Uig

Site 41 Uig



Light trap & pitfall traps

SITE 41

UIG

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The site consisted of hummocky "fixed dunes" interspersed with relatively flat areas.

1.2 Vegetation

The flat areas, which were grazed, contained scattered thin tufts of Ammophila arenaria. This grass was dense on the raised areas, which were consequently less rich floristically. Bellis perennis was apparently absent. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: Ranunculus spp., Lotus corniculatus, Trifolium pratense.

Pair 2: Ranunculus spp., L. corniculatus, Thalictrum sp., Plantago spp., Galium sp..

Pair 3: 5% bare sand, with a rabbit burrow close to trap 3A; Trifolium pratense, Ranunculus spp., Ammophila arenaria, Plantago spp., Heracleum sphondylium, mosses.

Pair 4: Ranunculus spp., A. arenaria.

Other species of plant which were recorded from the sampling sites included Rhinanthus minor, Campanula rotundifolia, Prunella vulgaris, Thymus drucei, Daucus carata, Dactylorchis fuchsii, Euphrasia spp. and Coeloglossum viride.

1.3 Disturbance

The site was probably well used by tourists during the height of the season. The track ends in a car park which emphasises the attraction of this area as one of the few sites with an accessible sandy coast in this part of Lewis. Caravans were parked in the dunes in the western part of this area. Flat areas grazed by rabbits and sheep and some fairly recent pony dung were also present.

1.4 Distance from sea

Both light trap and pitfall traps were about 600 m from the sea.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The site was situated behind a high ridge which obscured it from the track and had no obvious vehicular access to make it unduly vulnerable to human interference; yet it was, in fact, easily accessible. It was also away from the main centres of tourist activity. The light trap was placed in a flat hollow out of view of a cottage and the surrounding area, mid-way between pitfall traps 2B and 3B. The pitfall traps were put out in a line north-west to south-east, with pairs 1 and 2 on a closely grazed flat area, pair 3 at the base of a marram-covered mound, and with pair 4 half way up the side. The usual spacing was made of 10 metres between each pair of traps and 5 metres between the individual traps in each pair.

2.2 Damage or malfunction

The light trap operated from 18 - 26.6.76 and was believed to be still operating on the last day of this period. It operated from 22 - 30.7.76 and was still functioning on 30th, though one clip had been removed. The pitfall traps were all functional during the whole of each of the three periods 18 - 26.6.76, 26.6 - 22.7.76 and 22 - 30.7.76.

2.3 Colour slides available

Box 1, 82-87

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Perizoma albulata	2	0	2
Apamea monoglypha	0	2	2
Mesapamea secalis	0	3	3
Autographa gamma	1	0	1
TOTAL	3	5	8

The catch was very poor, considering that the trap functioned satisfactorily. Only nine specimens of four species were taken: these included Autographa gamma, which did not occur at any other Hebridean site.

One stenophagous species was collected: Perizoma albulata, which feeds on the seeds of Rhinanthus minor.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	1	1	0	2
Notiophilus aquaticus	0	5	6	11
Notiophilus substriatus	2	2	0	4
Dyschirius globosus	62	90	59	211
Trechus obtusus	0	1	0	1
Calathus fuscipes	57	204	49	310
Calathus melanocephalus	5	52	27	84
Amara aulica	1	4	1	6
Amara bifrons	4	9	8	21
Amara eurynota	1	0	0	1
Harpalus rufipes	0	1	0	1
Harpalus latus	1	2	0	3
TOTAL	134	371	150	655

Although Calathus fuscipes was the most numerous carabid at this site, larger numbers of Dyschirius globosus were collected than at any other site sampled during this survey. C. melanocephalus was relatively numerous but C. mollis was absent from all samples. The xerophilous Amara bifrons was fairly well represented and the single specimens of Harpalus rufipes and Amara eurynota, both species of open country and cultivated ground, were recorded at no other site. The record for the last species appears to be the first from the Outer Hebrides. Eleven larvae of Notiophilus substriatus were trapped during the first two sampling periods and there was a single Amara sp. larva in the first sample. A single Dyschirius larva was also taken in the last period.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	6	29	27	62
Acrotrichus atomaria	0	8	14	22
Leiodes dubia/obesa	4	19	5	28
Catops morio	0	2	0	2
Nicrophorus humator	0	0	1	1
Stenichnus collaris	3	1	7	11
Omalium laticolle	0	0	1	1
Stenus brunnipes	1	2	1	4
Stenus nanus	3	5	6	14
Gyrohypnus angustatus	0	2	0	2

	JUNE	JN/JL	JULY	TOTAL
Xantholinus laevigatus	0	0	1	1
Xantholinus linearis	0	1	0	1
Philonthus cognatus	0	1	0	1
Staphylinus melanarius	1	0	0	1
Quedius semiaeneus	0	0	1	1
Tachyporus chrysomelinus	3	9	2	14
Tachyporus pusillus	2	5	1	8
Amischa cavifrons	0	0	2	2
Geostiba circellaris	2	0	0	2
Atheta amicula	0	1	0	1
Atheta fungi	10	0	2	12
Atheta exigua	2	12	9	23
Geotrupes vernalis	0	23	4	27
Serica brunnea	0	625	11	636
Simplocaria semistriata	1	2	0	3
Byrrhus fasciatus	0	8	1	9
Agriotes obscurus	24	9	0	33
Cryptophagus setulosus	0	2	2	4
Atomaria nitidula	0	2	1	3
Longitarsus jacobaeae	0	0	7	7
Longitarsus luridus	0	0	168	168
Longitarsus succineus	0	5	0	5
Apion apricans	0	3	2	5
Otiorhynchus atroapterus	1	0	0	1
Philopedon plagiatus	8	24	1	33
Rhinoncus pericarpius	0	3	0	3
TOTAL	71	803	277	1151

The fauna at this site was more reminiscent of that of some of the South Uist sites, with Serica brunnea the predominant species, together with smaller numbers of species such as Megasternum obscurum, Leiodes dubia, Tachyporus chrysomelinus and Atheta fungi. Longitarsus luridus, a phytophagous species on Plantago spp. and Cirsium arvense, was virtually absent from the South Uist samples but here it was more numerous than any other site sample. Agriotes obscurus, with its root-feeding "wireworm" larva, was also at its most numerous here. The only other site where it was trapped in any numbers was Site 21, the only other Hebridean site at which it was taken.

Psammophile species such as Philopedon plagiatus, Leiodes dubia and Atheta exigua were well represented, with only very small numbers of Otiorhynchus atroapterus and Quedius semiaeneus. Nicrophorus humator and possibly Catops morio indicated the presence of carrion, whilst Geotrupes vernalis requires dung and Cryptophagus setulosus inhabits the nests of solitary bees.

Of the phytophagous species, Longitarsus jacobaeae feeds on Senecio spp., L. succineus on a variety of Compositae, Apion apricans on Trifolium spp., and Rhinoncus pericarpius on Rumex spp..

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Clubiona neglecta	0	0	1	1
Xysticus cristatus	33	20	0	53
Pardosa palustris	31	16	0	47
Trochosa terricola	5	0	1	6
Arctosa perita	2	0	0	2
Pachygnatha degeeri	3	0	0	3
Walckenaera antica	1	0	0	1
Oedothorax retusus	1	0	0	1
Tiso vagans	15	13	3	31
Erigone atra	0	2	0	2
Erigone promiscua	49	15	48	112
Meioneta beata	1	0	0	1
Bolyphantes luteolus	0	0	1	1
Lepthyphantes tenuis	1	0	0	1
TOTAL	142	66	54	262

The most abundant species at this site was Erigone promiscua (42.8%), the exposed, short grazed vegetation being highly suitable for this spider. The lack of bare sand and the distance from the sea (600 metres) probably accounts for the absence of E. arctica, a drift line species which seems to occur further inland on the coast of north-west Scotland. The common thomisid, Xysticus cristatus, was very abundant at this site. This species was plentiful at sites in the Hebrides but occurred infrequently at only a few mainland sites. Pardosa palustris was the most abundant lycosid, probably due to the open nature of the vegetation. Arctosa perita, a species of sand dunes and sandy heaths, was present in small numbers, there being little bare sand. Trochosa terricola, which is common in many habitats, was taken at

only two sites in the Hebrides. It occurred quite commonly on the North Coast and East Coast. Tiso vagans is found quite commonly in grassy areas but is not particularly associated with sand dunes. Here, as at Sites 40 and 45, it formed a significant proportion of the catch. Clubiona neglecta, a clubionid which is often taken on sand dunes, had not been previously recorded from the Outer Hebrides. It occurred at several mainland sites. The linyphiid Bolyphantes luteolus is a fairly common northern grassland species but was taken only at this site during the survey. This was the first record of the species from the Outer Hebrides. Meioneta beata is an infrequent grassland species thought to be more common in the south of Britain than the north. Elsewhere in the Hebrides it was taken only at Site 45, but occurred in some numbers at several North Coast and East Coast sites, The remaining species are all common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	8	60	37	105
Cochlicopa lubricella	7	91	44	142
Vertigo substriata	0	0	1	1
Lauria cylindracea	0	0	1	1
Vallonia excentrica	0	0	1	1
Vitrina pellucida	0	0	6	6
Aegopinella pura	0	2	0	2
Oxychilus alliarius	3	7	0	10
Helicella itala	106	195	164	465
Cochlicella acuta	85	216	107	408
TOTAL	209	571	361	1141

The assemblage of five species that is typical of most Hebridean and North Coast sites and is characteristic of machair and fixed dune areas, made up 98.7% of the catch. Of the remaining species, Vertigo substriata Lauria cylindracea, Vallonia excentrica and Oxychilus alliarius are more usually found in grazed machair turf. Aegopinella pura, which did not occur at any other Hebridean or North Coast site, is usually associated with damp areas, especially woods. Vertigo substriata occurred elsewhere only at Site 45, also in the Hebrides.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	10	23	12	45

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera

The following species were observed in the field during the course of the survey:

Lycaenidae

Polyommatus icarus

Satyridae

Maniola jurtina

Geometridae

Lycia zonaria

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

Carabidae

Loricera pilicornis, 30.7. - 22.8.76, in pitfall trap.
Broscus cephalotes, 26.6.76, in fresh seaweed on shore.

Hydrophilidae

Cercyon litteralis, 26.6.76, in fresh seaweed on shore.

Staphylinidae

Omalium riparium, 26.6.76, in fresh seaweed on shore.
Bledius longulus, 30.7. - 22.8.76, in pitfall trap.
Anotylus maritimus, 26.6.76, in fresh seaweed on shore.
Staphylinus aeneocephalus, 30.7. - 22.8.76, in pitfall traps.
Quedius fuliginosus, 30.7. - 22.8.76, in pitfall traps.
Atheta vestita, 26.6.76, in fresh seaweed on shore.
Aleochara obscurella, 26.6.76, in fresh seaweed on shore.

Geotrupidae

Geotrupes stercorarius, 30.7. - 22.8.76, in pitfall traps.

Although included within the defined site boundary as part of Site 41, the bay of Mangersta (19/007307) is geographically quite separate and, had a suitable sampling site been available, it would have been sampled separately. During a brief visit on 18.6.76 the following Coleoptera were noted.

Carabidae

Broscus cephalotes, under drift-wood on machair.

Calathus fuscipes, under drift-wood on machair.

Hydrophilidae

Cercyon littoralis, under drift-wood on machair.

Staphylinidae

Anotylus maritimus, under drift-wood on machair.

Phytosus balticus, under drift-wood on machair.

4.3 Mollusca

The following species was recorded by Dr R.C. Welch (det. D. Green)

Zonitidae

Nesovitrea hammonis, 30.7. - 22.8.76, in pitfall traps.

Site 42 Valtos

Site 42 Valtos

Light trap & pitfall traps

SITE 42

VALTOS

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

The sampled site was in an area of dunes extending up to 1 kilometre inland to a fence line marking the sharp division between "managed" machair and a natural "fixed dune" system. The dune area was very uneven, with several steep ridges and a considerable amount of bare sand.

1.2 Vegetation

The vegetation varied from short grazed turf on the ridges to lush, floristically rich areas in the hollows. Ammophila arenaria was present throughout at a low density and there was a fairly high percentage of bare sand. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 10% bare sand and rabbit burrows, on a close grazed ridge; Trifolium repens, Senecio jacobaea, Plantago spp. and Thymus drucei.

Pair 2: 25% bare sand; Lotus corniculatus, T. repens, S. jacobaea and Ranunculus spp..

Pair 3: 40% bare sand; L. corniculatus, T. repens, Ranunculus spp. and Thalictrum sp..

Pair 4: 25% bare sand overall, with 40% near trap 4A; T. repens, Ranunculus spp., Plantago spp., Bellis perennis and Cerastium sp..

Other species of plants which were recorded from the sampling sites included Thalictrum sp., Daucus carota, Heracleum spondylium, Galium sp., Prunella vulgaris, Rumex acetosa and Achillea millefolium.

1.3 Disturbance

Human interference with this area was probably minimal. Some very old sheep dung was seen, but the sheep were mainly grazed on the richer machair. There was a fair amount of evidence of activity by rabbits.

1.4 Distance from sea

The light trap and pitfall traps were about 700 metres from the coast.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The sampled site was in uneven terrain with the light trap in a sheltered depression and the pitfall traps among a variety of floristic and physical conditions. Pitfall traps 3B and 4A were on the edge of an area of bare sand and pair 1 was close to a number of rabbit burrows.

2.2 Damage or malfunction

The light trap operated from 18 - 26.6.76 and was still functional on 26th when tested. It operated from 22 - 30.7.76 but was not functional on 30th when tested. The pitfall traps were all functional during the whole of each of the three periods 18 - 26.6.76, 26.6. - 22.7.76 and 22 - 30.7.76. Pitfall trap 3A had to be replaced at the end of the first period because the overflow holes were too small and the trap was nearly full when collected on 26.6.76.

2.3 Colour slides available

Box 1, 88-98.

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Epirrhoe alternata	1	7	8
Cosmorhoe ocellata	0	1	1
Perizoma albulata	0	1	1
Agrotis vestigialis	0	12	12
Standfussiana lucernea	0	1	1
Noctua pronuba	0	14	14
Hada nana	1	0	1
Apamea monoglypha	0	33	33
Mesapamea secalis	0	2	2
TOTAL	2	71	73

This site produced an average species list but a fairly low total catch compared with other Hebridean sites.

Agrotis vestigialis, a sand dune species, was trapped extensively at many other sites, often commonly, especially on the North Coast.

A few species are restricted to a limited number of larval food plants. Epirrhoe alternata and Cosmorhoe ocellata both feed on Galium spp.. Perizoma albulata feeds on the seeds of Rhinanthus minor.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Loricera pilicornis	0	1	0	1
Dyschirius globosus	3	24	5	32
Dyschirius politus	9	25	3	37
Calathus fuscipes	1	2	6	9
Calathus melanocephalus	5	12	10	27
Calathus mollis	3	20	2	25
Amara bifrons	0	0	4	4
Amara familiaris	0	4	0	4
TOTAL	21	88	30	139

The catch of carabids at this site was unique because Dyschirius politus and D. globosus were both more abundant than either Calathus melanocephalus or C. mollis, and C. fuscipes was present only in very low numbers. D. politus is characteristic of sparsely vegetated very fine sand, whereas D. globosus is eurytopic on moist ground in open country. The former species was recorded at only three other sites. Six specimens were taken at Site 52 and single specimens at Site 86 and 39. Three larvae of Amara sp. and three Dyschirius sp. larvae were collected during the last two sampling periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Leiodes dubia/obesa	0	9	6	15
Nicrophorus humator	1	0	0	1
Omalium rivulare	0	1	0	1
Bledius longulus	60	159	41	260
Anotylus maritimus	0	1	0	1
Gyrohypnus angustatus	0	5	1	6
Xantholinus laevigatus	0	8	2	10
Xantholinus linearis	1	4	2	7

	JUNE	JN/JL	JULY	TOTAL
Tachyporus hypnorum	2	3	1	6
Atheta fungi	0	1	0	1
Atheta exigua	2	1	5	8
Serica brunnea	0	173	44	217
Simplocaria semistriata	0	2	0	2
Byrrhus fasciatus	0	4	0	4
Coccinella undecimpunctata	0	1	0	1
Lathridius anthracinus	1	0	0	1
Longitarsus jacobaeae	0	2	24	26
Apion loti	0	2	0	2
Apion dichroum	1	3	0	4
Otiorhynchus atroapterus	1	0	0	1
Philopedon plagiatus	11	30	0	41
Sitona lepidus	1	0	1	2
Sitona lineellus	1	2	1	4
Hypera postica	0	1	0	1
TOTAL	82	412	128	622

Fewer species were trapped here than at any other Hebridean site. The fauna was unusual because Bledius longulus was the most abundant species and was present in the largest numbers recorded during the survey. This species is apparently absent from the more northerly sites on Lewis. The other psammophilous/coastal species, making up the bulk of the remaining specimens caught, included Serica brunnea, Philopedon plagiatus, Leiodes dubia, Atheta exigua, Quedius semiaeneus, Otiorhynchus atroapterus, Anotylus maritimus and Coccinella undecimpunctata. The only other species present in any numbers was Longitarsus jacobaeae which feeds on Senecio jacobaea.

Among the other phytophagous species Apion dichroum, the two Sitona spp. and Hypera postica feed on Trifolium spp., and A. loti on Lotus corniculatus.

Nicrodes humator is indicative of the presence of carrion and the two species of Xantholinus probably reflect the occurrence of dung at the site. Lathridius anthracinus, a newly recognised British species, was not found at any other site during the survey and Tozer (1973) maps it only from Rhum north of the Highland Boundary Fault, although she believes it to be a more widely distributed species.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Pardosa palustris	1	0	0	1
Arctosa perita	5	1	0	6
Oedothorax retusus	11	4	0	15
Erigone atra	2	1	1	4
Erigone promiscua	9	1	11	21
Erigone arctica	21	36	9	66
TOTAL	49	43	21	113

This was a disappointing catch with only six species being taken despite the rather more varied terrain. The abundance of Erigone arctica (58.4%), no doubt due to the large areas of bare sand, is remarkable at a distance of 700 metres from the sea. This species is normally restricted to drift lines on beaches and salt marshes but seems to occur much further inland, given suitable habitat, in north-west Scotland. Erigone promiscua, was usually common at these exposed, grazed sites. Oedothorax retusus here replaced O. fuscus, the latter was usually the more abundant in the Hebrides. Both these species are usually associated with pioneer habitats. Arctosa perita was the most abundant lycosid, unerstandably in an area with much bare sand. It is typical of sand dunes and sandy heaths.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicella acuta	1	3	6	10

This was a very small catch compared with other Hebridean sites, only at Site 43 were fewer specimens recorded. Cochlicella acuta is characteristically found on machair and fixed dune areas.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	42	92	15	149

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera : Geometridae

The following species was observed in the field during the course of the survey:

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch from pitfall traps operating from 31.7. - 23.8.76.

Carabidae

Nebria brevicollis
Laemostenus terricola
Harpalus latus

Silphidae

Thanatophilus rugosus

Staphylinidae

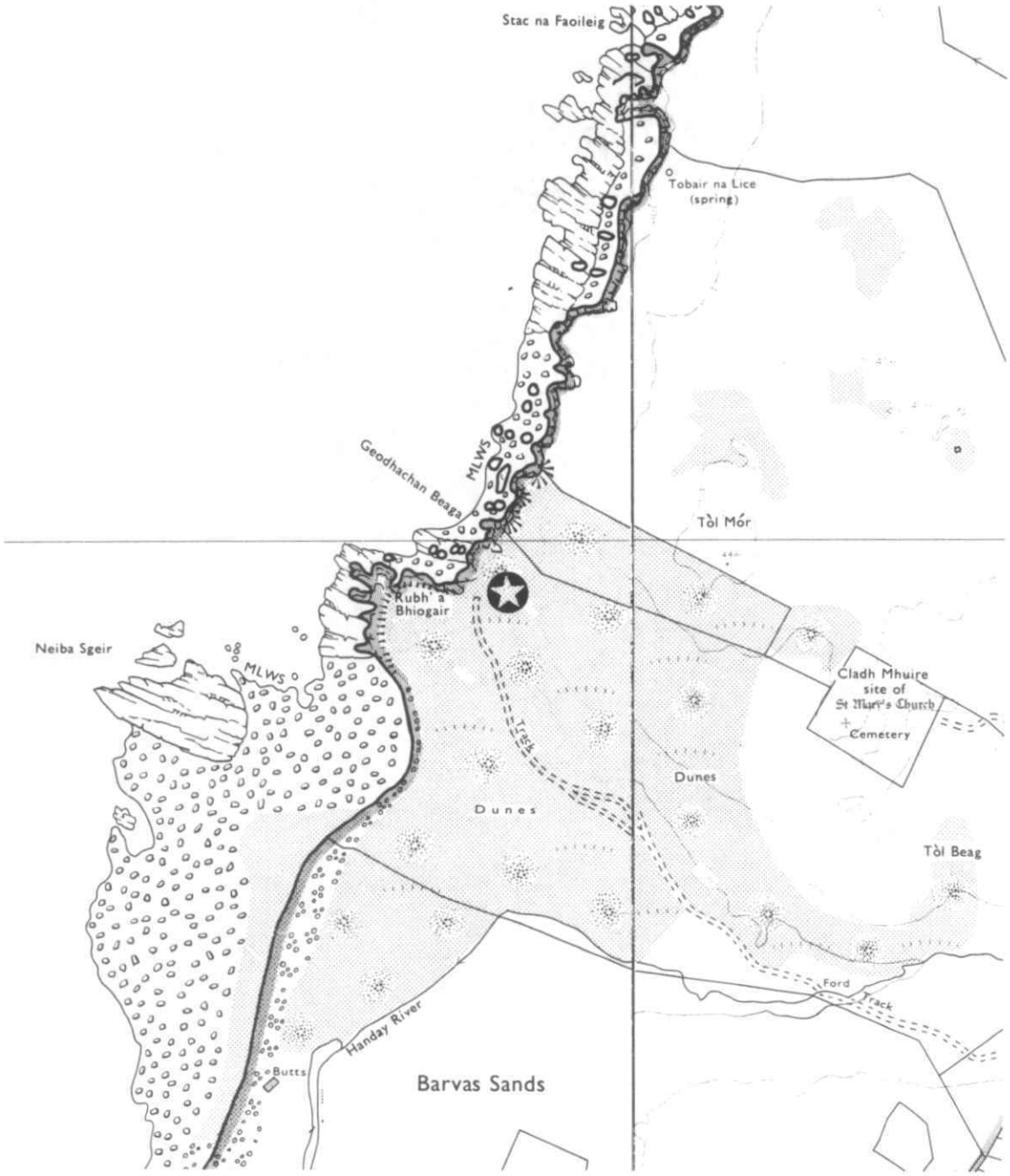
Anotylus sculpturatus
Tachyporus chrysomelinus
T. pusillus
Xantholinus glabratus
Quedius semiaeneus
Atheta amicula

Apionidae

Apion apricans

Site 43 Barvas

Site 43 Barvas



Light trap & pitfall traps

SITE 43

BARVAS

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

Sampling was done in an area of flat machair protected on the north and west sides by high dunes. There were some small rocky outcrops near pitfall trap pair 4.

1.2 Vegetation

The whole trapping area was very heavily grazed, with a short turf. There was very little Ammophila arenaria except on the dunes. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 25% bare sand, with rabbit burrows beside trap 1B; Ranunculus spp., Lotus corniculatus, Bellis perennis, Cirsium spp. and Arctium minus.

Pair 2: 10% bare sand, with an area of bare sand to the west; Ranunculus spp., Trifolium spp., Senecio jacobaea and B. perennis.

Pair 3: no bare ground, but extremely closely grazed; B. perennis, Plantago spp. and mosses.

Pair 4: 20% bare sand, with a large bare area to the north, and closely grazed; B. perennis, S. jacobaea and Plantago spp..

Other species of plant which were recorded from the sampling area included Euphrasia spp., Prunella vulgaris, Achillea millefolium and Armeria maritima.

1.3 Disturbance

Sheep were on the dunes above the site on 26.6.76 when two pegs anchoring the light trap had been pulled out of the ground, probably as a result of sheep rubbing against the trap. Rabbits also were present, with many burrows at the foot of dune slope. A considerable amount of sand excavation had been, and still was, taking place on the site as a whole. The inland dune area had been considerably disturbed by sand excavation, and was traversed by vehicle tracks. On 26.6.76 car racing was taking place at the southern end of the site near Loch Mor Barvas. A number of old camp fire sites were noticed in the neighbourhood of trapping area.

1.4 Distance from sea

The light trap was about 500 metres from the shore, with the pitfall traps within approximately 15 metres wither side of the light trap.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The inland dune area was disturbed by sand excavation. Of the remaining coastal strip, the area chosen for trapping provided one of the few positions that offered any degree of protection from wind. The pitfall traps were placed in a line running south-east to north-west with 10 metres between pairs and 5 metres between the traps in each pair. The light trap was midway between pitfall traps 2B and 3B.

2.2 Damage or malfunction

The light trap operated from 18 - 23.6.76 and 23 - 31.7.76 but was not functioning at the end of either period when tested. The pitfall traps operated from 18 - 23.6.76, 23.6. - 23.7.76 and 23 - 31.7.76 and were all functional for the whole of each period, except for trap 3B during the first period, from which no sample was obtained.

2.3 Colour slides available

Box 1, 99-103

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Agrotis vestigialis	0	23	23
Noctua pronuba	0	1	1
Cerapteryx graminis	0	1	1
Blepharita adusta	1	0	1
Apamea monoglypha	0	8	8
Mesapamea secalis	0	9	9
TOTAL	1	42	43

The trap failed to function correctly during both periods. Few species were caught and the total catch was low. All the species recorded here were taken at many other sites in all regions. Agrotis vestigialis is a common sand dune species and occurred extensively and often commonly at many other sites, especially on the North Coast.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	3	0	0	3
Nebria gyllenhali	0	0	1	1
Notiophilus biguttatus	2	6	0	8
Notiophilus substriatus	0	1	0	1
Loricera pilicornis	3	5	0	8
Dyschirius globosus	1	0	0	1
Calathus fuscipes	5	103	38	146
Calathus melanocephalus	39	140	33	212
Calathus mollis	7	36	7	50
Agonum albipes	1	0	0	1
Amara bifrons	1	11	7	19
Amara familiaris	2	4	1	7
Amara tibialis	0	1	0	1
TOTAL	64	307	87	458

The carabid fauna caught at this site was dominated by Calathus melanocephalus and C. fuscipes with a larger number of C. mollis than on the other northern Hebridean sites. The xerophilous species, Amara bifrons, was more common in the later samples. Agonum albipes is more usually associated with moist, heavy soils but also frequently occurs on shores. A single Nebria gyllenhali was taken in the last sampling period. This is a species of mountain and moorland, usually found near water, and was taken elsewhere only at Site 44 during this survey. Eight larval Notiophilus substriatus occurred in the first two trapping periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	7	30	22	59
Leiodes dubia/obesa	29	106	24	159
Catops morio	1	11	5	17
Anotylus sculpturatus	8	4	0	12
Stenus brunnipes	0	0	3	3
Stenus nanus	2	5	0	7
Gyrohypnus angustatus	1	0	0	1
Xantholinus glabratus	0	7	4	11
Xantholinus linearis	4	6	1	11
Philonthus varius	0	4	0	4
Quedius fuliginosus	0	2	0	2

	JUNE	JN/JL	JULY	TOTAL
Quedius semiaeneus	0	3	4	7
Tachyporus chrysomelinus	51	59	2	112
Tachyporus hypnorum	0	1	0	1
Tachyporus pusillus	16	54	8	78
Atheta amicula	0	1	0	1
Atheta fungi	0	0	1	1
Serica brunnea	0	61	6	67
Simplocaria semistriata	10	15	0	25
Atomaria nitidula	0	4	1	5
Longitarsus jacobaeae	0	8	23	31
Longitarsus luridus	0	0	7	7
Apion dichroum	0	2	0	2
Otiorhynchus atroapterus	1	0	1	2
Sitona lineellus	2	2	0	4
TOTAL	132	385	112	629

The two most abundant species of this relatively poor catch, Leiodes dubia and Tachyporus chrysomelinus, conflict in that the former is a species of sandy areas, whereas the latter inhabits densely vegetated sites with a well developed litter layer of decaying vegetable material. The latter type of habitat is favoured by Megasternum obscurum, although, together with Anotylus sculpturatus, Philonthus varius and the two Xantholinus species, it may be indicative of the presence of dung. Other psammophilous/coastal species include Serica brunnea, Otiorhynchus atroapterus, and Quedius semiaeneus.

Apion dichroum and Sitona lineellus are phytophagous on Trifolium spp., Longitarsus jacobaeae feeds on Senecio spp. and L. succineus on various compositae.

The larvae of Tachyporus spp. were numerous in all three sampling periods.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Xysticus cristatus	1	0	0	1
Pardosa palustris	0	2	0	2
Arctosa perita	1	0	1	2
Erigone atra	25	2	7	34
Erigone promiscua	40	15	32	87

	JUNE	JN/JL	JULY	TOTAL
Erigone arctica	82	130	36	248
TOTAL	149	149	76	374

This was a very poor catch with three species of Erigone forming 98.7% of the total. E. arctica (66.3%) was the most abundant. This species is typical of beach and salt marsh drift lines but occurred here (and at some other , mainly Hebridean sites) a great deal further inland (500 metres) than is usual in Britain. E. promiscua was also present in fairly large numbers, not unexpectedly considering the very short grazed turf and patches of bare sand. Arctosa perita, a species typical of sand dunes and sandy heaths, and Pardosa palustris were both present probably because there was not too much bare ground to suit the latter and not too much vegetation for the former. The remaining species are all common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	0	1	0	1
Vitrina pellucida	0	1	1	2
TOTAL	0	2	1	3

This was the smallest catch of mollusca taken at any Hebridean site, possibly a result of the intensity of grazing. It was the only Hebridean site at which Cochlicella actua was not recorded. Both species are typical of machair and fixed dune areas.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	6	8	1	15

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Lepidoptera : Geometridae

The following species was observed in the field during the course of the survey:

Lycia zonaria larvae

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch

Carabidae

Broscus cephalotes, 26.6.76, under drift-wood on the beach.

Amara aulica, 26.6.76, under drift-wood on the beach.

Hydrophildae

Cercyon littoralis, 26.6.76, in seaweed on shore.

Staphylinidae

Omalium riparium, 26.6.76, in seaweed on shore.

Othius laeviusculus, 31.7. - 23.8.76, in pitfall trap.

Xantholinus laevigatus, 31.7. - 23.8.76, in pitfall trap.

Cafius xantholoma, 26.6.76, in seaweed on shore.

Creophilus maxillosus, 26.6.76, in seaweed on shore.

Quedius tristis, 26.6.76, under drift-wood on shore.

Tachyporus nitidulus, 18. - 26.6.76, one of two Coleoptera in incomplete pitfall sample 3B but not included in main site list and analysis.

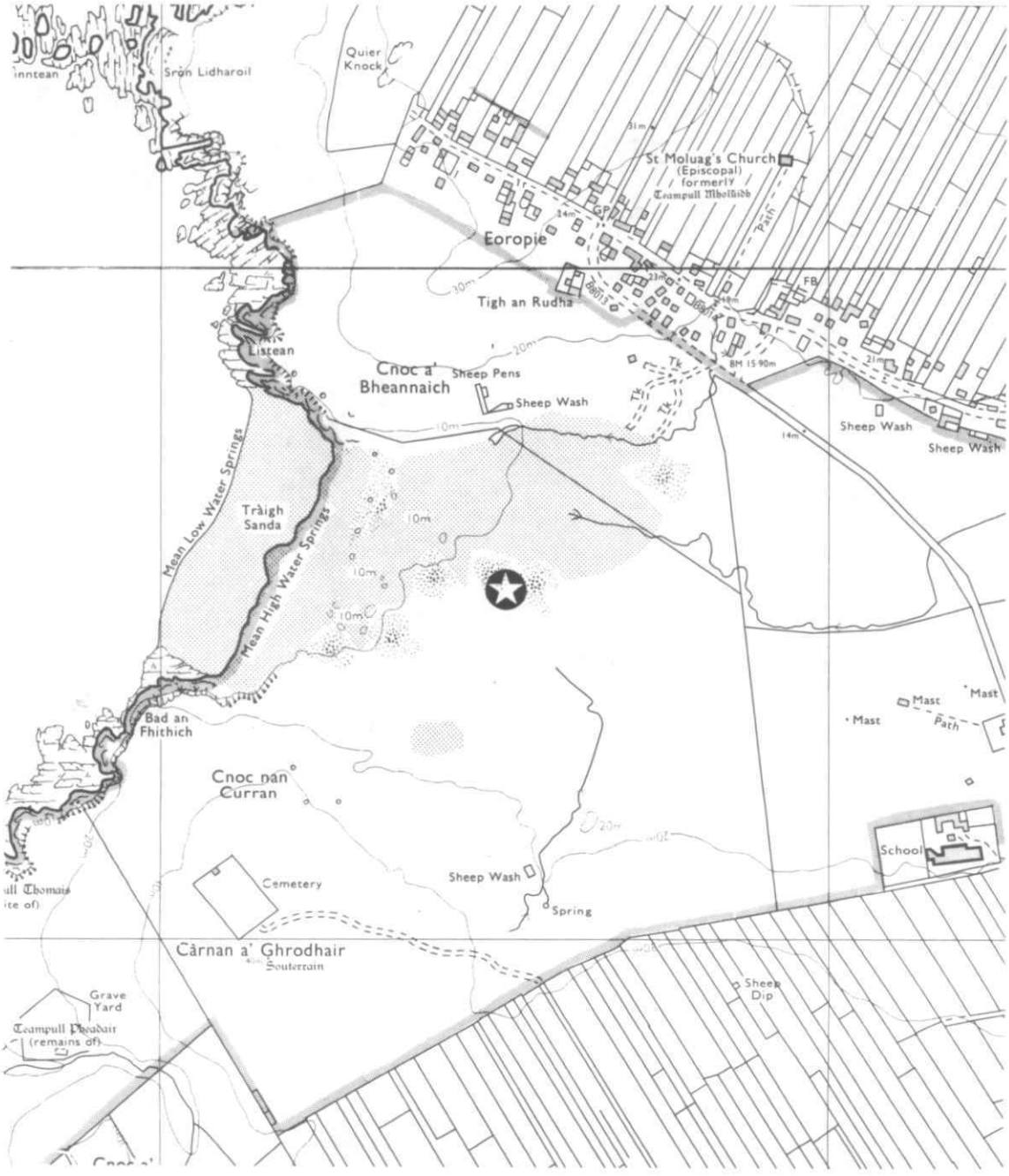
Amischa cavifrons, 31.7. - 23.8.76, in pitfall trap.

Atheta vestita, 26.6.76, in seaweed on shore.

Aleochara algarum, 26.6.76, in seaweed on shore.

Site 44 Eoropie

Site 44 Eoropie



Light trap & pitfall traps

SITE 44

EOROPIE

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

This is a very open, exposed site, for the most part in direct view of the township of Eoropie. Much of dune area has been excavated or eroded away so that the agricultural land to east is now at a higher level.

1.2 Vegetation

The sampled site was on a small area of fairly closely grazed machair-type turf surrounded by the almost bare, sandy slopes of a depression. A low density of Ammophila arenaria was present throughout. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 20% bare sand with Ranunculus spp., Bellis perennis, Senecio jacobaea, Equisetum sp. and Plantago spp..

Pair 2: 20% bare sand with Lotus corniculatus, S. jacobaeae, Trifolium repens and Plantago spp..

Pair 3: 20% bare sand with L. corniculatus, Potentilla anserina and Rumex crispus.

Pair 4: No bare ground. L. corniculatus, Ranunculus spp., Geranium sp., T. repens, B. perennis, Plantago spp., Achillea millefolium and Cerastium sp..

Other species of plant which were noted in the sampling area included Euphrasia spp., Daucus carota, Rhinanthus minor, Taraxacum sp., and mosses.

1.3 Disturbance

If the present rate of sand excavation continues, this site will virtually cease to exist in a few years. Very little relatively undisturbed "fixed dune" areas remained and Vehicle tracks wound through every depression in the dunes. Rabbits were present and one old dead rabbit was found in the dunes to the west of the site.

1.4 Distance from sea

The light trap and pitfall traps were about 1500 metres from the shore.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

A very limited area of possible sites for sampling remained. The area that was eventually chosen was where the traps were least likely to be interfered with and it provided a sheltered hollow out of sight of the village and most casual passers-by. However, a restricted area was considered suitable for trapping. Pitfall trap pairs 1 and 3 were in the base of a depression 10 metres apart with pair 4 in line a further 10 metres to the north-east on the top of the ridge and adjacent to some agricultural land. The marker post for pair 2 was 6 metres to the north of the marker post for pair 1 and 7 metres west from the marker post for pair 3. The traps in pairs 2 and 4 were 5 metres apart, whilst those in pairs 1 and 3 were 4 metres apart. The light trap was positioned north of pair 1, and 4 metres equidistant from the marker posts for pairs 1 and 2.

2.2 Damage or malfunction

The light trap operated from 17 - 23.6.76 and 23 - 31.7.76 but was not functional at the end of either period when tested. The trap possibly had been interfered with by humans during the latter period. The pitfall traps were all functional during the whole of each of the three periods 18 - 23.6.76, 23.6. - 23.7.76 and 23 - 31.7.76.

2.3 Colour slides available

Box 1, 104-109.

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Euxoa tritici	0	15	15
Agrotis vestigialis	0	1	1
Cerapteryx graminis	0	3	3
Apamea monoglypha	0	1	1
Mesapamea secalis	0	12	12
TOTAL	0	32	32

This was the most northern of the Hebridean sites. The trap failed to function satisfactorily during both periods. The species list was poor compared with other Hebridean sites and the total catch was small.

Agrotis vestigialis, a common sand dune species, occurred extensively and often commonly at many other sites especially on the North Coast. The other species were common and widely distributed.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Nebria brevicollis	7	13	1	21
Nebria gyllenhali	0	0	1	1
Notiophilus biguttatus	3	0	0	3
Notiophilus substriatus	0	1	0	1
Loricera pilicornis	1	6	11	18
Dyschirius globosus	43	37	4	84
Trechus obtusus	0	3	5	8
Bembidion pallidipenne	1	0	0	1
Calathus fuscipes	0	7	2	9
Calathus melanocephalus	1	24	16	41
Calathus mollis	27	13	3	43
Amara aulica	0	0	1	1
Amara bifrons	3	12	12	27
Amara familiaris	19	26	1	46
Amara tibialis	0	1	1	2
TOTAL	105	143	58	306

This site had a very unusual assemblage of Carabidae showing some similarities with that at Site 42 but having nearly twice as many species. Dyschirius globosus was the most abundant species (although D. politus was apparently absent) with Amara familiaris in addition to Calathus mollis and C. melanocephalus trapped in approximately equal numbers. The C. melanocephalus was virtually confined to the last two sampling periods whilst the others were most frequent during the first two periods. A. familiaris is a species of open country whereas A. bifrons, which is fairly common in the later samples, is a xerophylic species. Nebria brevicollis, a eurytopic species of woods and open grouns, was more numerous here than at any other site sampled and only at Site 36 were similarly high numbers caught. Numbers of the more hygrophilous species, Loricera pilicornis, were only exceeded at Site 22 during this survey. Bembidion pallidipenne is a species of sandy sea shores. Twenty-three Amara sp. larvae and three Notiophilus substriatus were taken in the last two trapping periods, whilst ten L. pilicornis larvae were caught during the middle period.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Helophorus aquaticus	0	1	0	1
Helophorus brevipalpis	0	3	0	3
Helophorus flavipes	0	1	0	1
Megasternum obscurum	9	36	32	77
Leiodes dubia/obesa	70	121	57	248
Stenus brunnipes	1	0	0	1
Stenus clavicornis	0	1	0	1
Stenus nanus	10	18	5	33
Othius angustus	0	4	1	5
Gyrohypnus angustatus	1	1	0	2
Xantholinus glabratus	0	0	1	1
Xantholinus linearis	4	3	1	8
Philonthus succicola	1	0	0	1
Philonthus varius	0	1	0	1
Gabrius subnigritulus	0	1	0	1
Tachyporus chrysomelinus	33	15	2	50
Tachyporus hypnorum	0	4	0	4
Tachyporus pusillus	28	43	26	97
Tachinus signatus	19	7	4	30
Atheta fungi	7	10	15	32
Atheta exigua	2	0	0	2
Serica brunnea	0	15	3	18
Simplocaria semistriata	9	5	0	14
Atomaria nitidula	7	7	4	18
Coccinella undecimpunctata	0	1	0	1
Longitarsus jacobaeae	0	9	69	78
Longitarsus luridus	0	0	16	16
Apion loti	8	20	6	34
Apion dichroum	8	11	2	21
Otiorhynchus atroapterus	1	3	0	4
Philopedon plagiatus	4	9	0	13
Sitona lineellus	3	2	6	11
Ceutorhynchus contractus	0	1	0	1
Rhinoncus pericarpius	1	0	0	1
TOTAL	226	353	250	829

Leiodes dubia was by far the most abundant species in the catch at this

although other psammophile species such as Otiorhynchus atroapterus, Philopedon plagiatus, Serica brunnea and Atheta exigua were present in relatively small numbers. The more hygrophilous species, Megasternum obscurum, Stenus and Tachyporus spp., Tachinus signatus and Atheta fungi, were generally more numerous. Members of the genus Helophorus, represented by three species, are water beetles and may have originated from a small stream crossing the beach about 150 metres to the north of the trapping area. However, none were collected at Site 45 where a larger stream flowed at approximately the same distance from the traps. These species do fly considerable distances from water and are attracted to small areas of water and shiny surfaces, and may have been attracted by the preservative in the pitfall traps.

Among the phytophagous species the most numerous Longitarsus jacobaeae, feeds on Senecio spp., L. luridus on Plantago spp., and Cirsium spp.. Apion dichroum and Sitona lineellus feed on Trifolium spp., A. loti on Lotus corniculatus, Rhinoncus pericarpius on Rumex spp., and Ceutorhynchus contractus on various Cruciferae.

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Pardosa palustris	1	0	0	1
Arctosa perita	4	13	3	20
Pachygnatha degeeri	4	7	0	11
Dicymbium nigrum	0	0	1	1
Oedothorax fuscus	2	3	0	5
Tiso vagans	0	3	0	3
Savignya frontata	1	0	0	1
Erigone atra	1	5	14	20
Erigone promiscua	50	258	186	494
Erigone arctica	42	94	46	182
TOTAL	105	383	250	738

This site was typical of the very exposed sites with bare sand in the Hebrides where the three Erigone species were abundant. E. promiscua was the most abundant here (66.9%). This species is commonly taken on open rather bare habitats such as burnt heathland. E. arctica, normally associated with drift lines on beaches and salt marshes was again found at this site very far (1500 metres) from the shore. This seems to be a characteristic of the species in north west Scotland. Pardosa palustris and Arctosa perita were the only lycosids recorded.

The latter was the most abundant, probably due to the large amount of bare sand.

Savignya frontata, a species commonly found in grassland, occurred in the Hebrides only at this site and at Site 45. Oedothorax fuscus is common in pioneer habitats and was present here in small numbers. All the remaining species are common in grassy areas.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	1	0	1	2
Vitrina pellucida	7	36	12	55
Cochlicella acuta	64	235	92	391
TOTAL	72	271	105	448

The catch consisted of three species that are typical of machair and fixed dune areas and which occurred at most Hebridean and North Coast sites.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus	62	79	5	146

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

No terrestrial Isopoda were recorded at this site.

4. ADDITIONAL SPECIES

4.1 Heteroptera : Saldidae

The following species was recorded by Dr R.C. Welch.

Saldula orthochila, several in pitfall trap samples (26.6.76 - 23.7.76). A widespread species of dunes and sandy heaths, being more common in the north.

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch on 26.6.76:

Carabidae

Broscus cephalotes, in seaweed on the shore.

Hydrophilidae

Cercyon littoralis, in seaweed on the shore.

Silphidae

Silpha tyrolensis, in dead rabbit on dunes.

Staphylinidae

Anotylus sculpturatus, 31.7. - 19.8.76, in pitfall trap.

Gyrohypnus fracticornis, in dead rabbit on dunes.

Quedius fuliginosus, 31.7. - 19.8.76, in pitfall trap.

Q. semiaeneus, at base of dune cliff, and 31.7. - 19.8.76 in pitfall trap.

Tachyporus nitidulus, at base of dune cliff.

Atheta graminicola, in dead guillemot on beach.

A. vestita, in dead guillemot on beach.

Aleochara bilineata, in dead rabbit on dunes.

A. algarum, in dead guillemot on beach.

A. obscurella, in seaweed on shore.

Scarabaeidae

Aphodius sphacelatus, at base of dune cliff.

Cryptophagidae

Cryptophagus setulosus, 31.7. - 19.8.76, in pitfall trap.

Atomaria apicalis, at base of dune cliff and under dead rabbit on dunes.

Apionidae

Apion apricans, 31.7. - 19.8.76, in pitfall trap.

Curculionidae

Sitona lepidus 31.7. - 19.8.76, in pitfall trap.

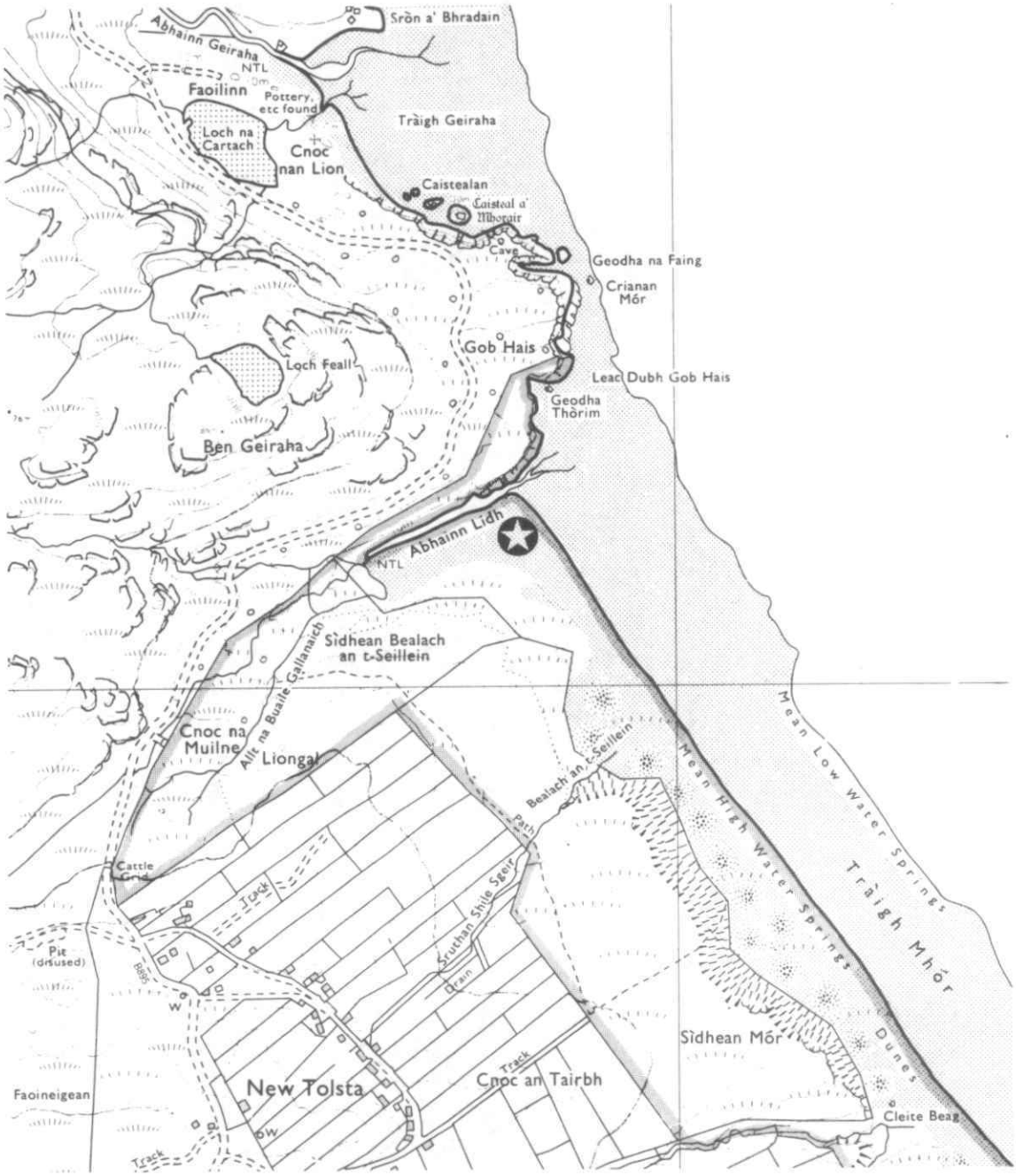
4.3 Mollusca (Land snails)

Oxyloma pferifferi, 31.7. - 19.8.76, in pitfall trap.

This species occurred in the catch from the fourth trapping period. This species is usually restricted to wet habitats, and was recorded at only one other site in the survey, Site 97.

Site 45 Tolsta

Site 45 Tolsta



Light trap & pitfall traps

SITE 45

TOLSTA

1. DESCRIPTION OF SAMPLED SITE

1.1 Topography

A coastal strip of fixed dunes was backed by steep slopes up to open machair at an elevation of 30-40 metres, used for sheep grazing. The Northern limit of the dunes was somewhat eroded and interspersed with bare sand but the remainder of the site was undulating with a deeper landward depression before the steep slope up to the machair.

1.2 Vegetation

The whole area was covered with fairly dense Ammophila arenaria and a dense cushion of mosses. Only in the hollows was this grass replaced by the more typical dense, short machair turf where Lotus corniculatus was dominant. The vegetation surrounding the pitfall traps consisted of the following species:

Pair 1: 5% bare sand with L. corniculatus, Bellis perennis and Senecio jacobaea.

Pair 2: no bare ground; B. perennis, L. corniculatus and Trifolium sp..

Pair 3: no bare ground; B. perennis, and S. jacobaea

Pair 4: no bare ground; B. perennis and Thymus drucei.

Other species of plant which were recorded from the sampling area included Daucus carota, Achillea millefolium, Polygala sp., Taraxacum sp., Prunella vulgaris, Anthyllis vulneraria, Cerastium spp. and Cirsium spp..

1.3 Disturbance

The site was obviously popular with tourists as a picnic and bathing area although there were no obvious pathways in the immediate vicinity of the sampling area. Rabbits were present and a very old, dead sheep was found at the base of the slope on the landward side of the sunes.

1.4 Distance from sea

The light trap was about 200 metres from the shore, with the pitfall traps stretching a further 30 metres inland.

2. SITING OF LIGHT TRAP AND PITFALL TRAPS

2.1 Selection of site

The light trap was situated in a deep hollow which provided shelter from all directions. The pitfall traps were in a line running north-east - south-west with 10 metres between sites and 5 metres between the traps in each pair. The light trap was 2 metres south of the marker stake for pitfall trap pair 1. Pair 1 was in the bottom of a hollow in the dunes with the remaining pairs rising up the sloping dunes, with pair 4 on the exposed ridge.

2.2 Damage or malfunction

The light trap operated from 18 - 23.6.76, and 23 - 31.7.76 and was still functional at the end of both periods when tested. The pitfall traps were all functional during the whole of each of the three periods 18 - 23.6.76, 23.6. - 23.7.76 and 23 - 31.7.76.

2.3 Colour slides available

Box 1, 110-115

3. THE FAUNA

3.1 Lepidoptera

	JUNE	JULY	TOTAL
Hepialus fusconebulosa	1	0	1
Epirrhoe alternata	0	1	1
Cosmorhoe ocellata	1	1	2
Perizoma didymata	0	1	1
Agrotis vestigialis	0	2	2
Hada nana	3	0	3
Cerapteryx graminis	0	15	15
Blepharita adusta	3	0	3
Apamea monoglypha	0	2	2
Mesapamea secalis	0	8	8
Autographa pulchrina	0	1	1
TOTAL	8	31	39

This was the only site sampled on the east coast of the Hebrides and some differences in species composition were expected compared with other Hebridean sites. Apart from a single specimen of Perizoma didymata, which was not recorded anywhere else, although it is generally

common and widespread in Britain, the lepidopterous fauna was not distinctive. This was the only site in the Hebrides where the light trap functioned satisfactorily over both periods. The species list was longer than average but the total catch was low.

Agrotis vestigialis, a common sand dune species, occurred extensively and often commonly at many sites especially on the mainland North Coast.

A few species are confined to a limited range of larval food plants. Hepialus fusconebulosa which was widely recorded during the survey feeds on the roots of Pteridium aquilinum. Cosmorhoe ocellata and Epirrhoe alternata feed on Galium spp.. Perizoma didymata feeds on Primula vulgaris, Silene dioica, Vaccinium spp. and the flowers of coarse grasses.

3.2 Coleoptera : Carabidae

	JUNE	JN/JL	JULY	TOTAL
Leistus rufescens	0	1	0	1
Nebria brevicollis	1	0	0	1
Trechus obtusus	1	0	2	3
Pterostichus niger	1	6	4	11
Calathus fuscipes	12	244	91	347
Calathus melanocephalus	21	117	18	156
Calathus mollis	0	11	4	15
Amara bifrons	0	2	2	4
Amara familiaris	1	2	0	3
Amara tibialis	0	1	0	1
TOTAL	37	384	121	542

The carabid fauna caught at this site was dominated by Calathus fuscipes and, to a lesser extent, by C. melanocephalus. Xerophylic species which were trapped included C. mollis, A. bifrons and A. tibialis. Pterostichus niger is a species of fairly open, not too dry country. Single Amara sp. larvae were trapped during each of the last two sampling periods.

3.3 Coleoptera : Hydrophilidae to Scolytidae

	JUNE	JN/JL	JULY	TOTAL
Megasternum obscurum	52	104	31	187
Acrotrichus atomaria	1	0	0	1
Leiodes dubia/obesa	2	4	1	7

	JUNE	JN/JL	JULY	TOTAL
Stenus brunnipes	0	1	1	2
Othius angustus	3	1	0	4
Gyrohypnus angustatus	10	10	0	20
Xantholinus glabratus	1	43	13	57
Xantholinus linearis	4	1	0	5
Gabrius subnigritulus	0	1	0	1
Staphylinus aeneocephalus	0	1	3	4
Staphylinus melanarius	1	0	0	1
Quedius boops	1	0	0	1
Quedius fuliginosus	0	5	2	7
Quedius semiaeneus	0	2	0	2
Mycetoporus splendidus	1	0	0	1
Tachyporus chrysomelinus	12	20	5	37
Tachyporus pusillus	12	20	5	37
Amischa cavifrons	2	0	3	5
Geostiba circellaris	2	0	1	3
Atheta exigua	1	0	0	1
Serica brunnea	0	11	0	11
Simplocaria semistriata	0	2	0	2
Byrrhus fasciatus	3	3	1	7
Longitarsus jacobaeae	0	0	1	1
Apion loti	6	5	1	12
Apion dichroum	0	1	0	1
Otiorhynchus atroapterus	3	0	0	3
Philopedon plagiatus	6	1	0	7
Sitona lepidus	1	0	0	1
Sitona lineellus	2	3	0	5
Hypera punctata	1	1	0	2
TOTAL	127	240	68	435

The catch here was unusual because Megasternum obscurum was the most abundant species. Other hygrophilous species associated with decaying vegetable matter and dung made up the bulk of the catch and included two species of Xantholinus and Tachyporus, and Gyrohypnus angustatus. Psammophilous species such as Philopedon plagiatus, Otiorhynchus atroapterus, Leiodes dubia, Serica brunnea and Atheta exigua were present in small numbers.

Among the phytophagous species Apion loti, feeding on Lotus corniculatus

was the most numerous, with small numbers of Apion dichroum, Hypera punctata and two species of Sitona all of which feed on Trifolium spp..

3.4 Araneae

	JUNE	JN/JL	JULY	TOTAL
Haplodrassus signifer	1	0	0	1
Clubiona diversa	1	0	0	1
Xysticus cristatus	0	2	0	2
Pardosa palustris	65	49	4	118
Pardosa pullata	0	1	0	1
Pardosa nigriceps	1	0	0	1
Trochosa terricola	4	5	0	9
Pachygnatha degeeri	0	1	0	1
Ceratinella brevipes	2	0	0	2
Walckenaera acuminata	1	1	1	3
Walckenaera antica	0	0	2	2
Walckenaera vigilax	5	3	0	8
Dicymbium nigrum	1	0	0	1
Oedothorax retusus	1	2	0	3
Tiso vagans	75	68	12	155
Monocephalus fuscipes	0	1	2	3
Gongylidiellum vivum	0	1	0	1
Savignya frontata	2	1	1	4
Agyneta conigera	2	0	0	2
Agyneta decora	4	0	1	5
Meioneta beata	14	0	2	16
Lepthyphantes tenuis	4	4	4	12
TOTAL	183	139	29	351

The spider fauna of this site differed from that of other Hebridean sites. It was richer in species although not in numbers, probably due to a complete absence of Erigone species. This absence is difficult to explain as some suitable habitat was present although not plentiful. Possibly the fact that this site was east facing and therefore more protected from the prevailing winds may offer some explanation. The most abundant species at this site was the erigonine Tiso vagans (44.2%). Although widespread and common in grassy places, it is not generally thought of as a dominant sand dune species. Three species of Pardosa were present although only P. palustris, a common lycosid of open ground, occurred in any numbers. P. pullata, a very common lycosid

with a preference for damper areas, might indicate that this site was slightly wetter than many others in the Hebrides. P. nigriceps is usually associated with longer vegetation. Three species of Walckenaera were taken. W. acuminata and W. antica are both widespread in grassland but W. vigilax, although a grassland species, is taken only infrequently. Agyneta lonigera and A. decora are both fairly common grassland species but the latter does have a rather more northern distribution. Meioneta beata, a grassland species with a rather southern distribution, occurred here and at one other Hebridean site (41). The erigonine, Monocephalus fuscipes although very widespread and common was taken only at this site in the Hebrides. Oedothorax retusus, is commonly found in pioneer habitats. It was present only in very low numbers which may be indicative of the lack of short cropped turf and bare ground. The remaining species are all common in grassland.

3.5 Mollusca (Land snails)

	JUNE	JN/JL	JULY	TOTAL
Cochlicopa lubrica	24	127	42	193
Cochlicopa lubricella	11	38	0	49
Vertigo substriata	0	0	2	2
Lauria cylindracea	0	2	2	4
Vitrina pellucida	0	0	3	3
Nesovitrea hammonis	0	1	0	1
Cochlicella acuta	1	0	0	1
Cepaea hortensis	3	15	1	19
TOTAL	39	183	50	272

A noticeably different fauna to other Hebridean sites was caught here, with the two Cochlicopa species making up 89% of the catch. This was the only Hebridean site at which Cepaea hortensis was recorded. Vertigo substriata occurred in the catch elsewhere only at Site 41. The fauna reflects the dense vegetation and comparative absence of bare ground recorded in the area of the pitfall traps.

3.6 Diplopoda

	JUNE	JN/JL	JULY	TOTAL
Cylindroiulus latestriatus .	4	4	2	10

Cylindroiulus latestriatus is common on sandy coasts throughout Britain.

3.7 Terrestrial Isopoda

	JUNE	JN/JL	JULY	TOTAL
Trichoniscus pusillus	0	2	0	2

Trichoniscus pusillus occurs widely in damp situations throughout Britain.

4. ADDITIONAL SPECIES

4.1 Lepidoptera : Lycaenidae

The following species were observed in the field during the course of the survey:

Polyommatus icarus

4.2 Coleoptera

The following species were recorded by Dr R.C. Welch:

Carabidae

Cychrus caraboides, 31.7. - 23.8.76, in pitfall trap

Nebria gyllenhali, 31.7. - 23.8.76, one larva in pitfall trap.

Loricera pilicornis, 31.7. - 23.8.76, 23 larvae in pitfall trap.

Bembidion guttula, 19.6.76, in straw at edge of dunes.

B. pallidipenne, 19.6.76, under drift-wood in estuary.

Amara aulica, 31.7. - 23.8.76, in pitfall trap.

Harpalus latus, 19.6.76, in straw at edge of dunes.

Hydrophilidae

Cercyon littoralis, 19.6.76, in dead razorbill on shore.

C. melanocephalus, 19.6.76, in dead rabbit on dunes.
26.6.76, in seaweed on shore.

Hydraenidae

Limnebius truncatellus, 26.6.76, sweeping by stream.

Ptilliidae

Acrotrichis fascicularis, 17.6.76, under drift-wood in dunes.
19.6.76, in straw at edge of dunes.

Leiodidae

Catops nigricans, 19.6.76, in dead razorbill on shore.

Staphylinidae

Omalium laeviusculum, 19.6.76, in dead razorbill on shore and in dead rabbit in dunes.
26.6.76, in seaweed on shore.

O. riparium, 19.6.76, in dead rabbit in dunes.

O. rugulipenne, 26.6.76, in seaweed on shore.

Anotylus maritimus, 19.6.76, under drift-wood on beach and in dead razorbill on beach.
26.6.76, in seaweed on shore.

Stenus clavicornis, 26.6.76, sweeping in dunes.

Othius mymecophilus, 19.6.76, in straw at edge of dunes.

O. punctulatus, 19.6.76, in straw at edge of dunes.

Philonthus cephalotes, 19.6.76, in dead razorbill on shore.

Quedius curtipennis, 26.6.76, in Sphagnum spp. on dunes.

Creophilus maxillosus, 19.6.76, in dead rabbit in dunes.

Tachyporus hypnorum, 26.6.76, in Sphagnum spp. on dunes.

T. nitidulus, 19.6.76, in straw at edge of dunes.
26.6.76, sweeping in dunes.

Tachinus marginellus, 19.6.76, in straw at edge of dunes.

Phytosus balticus, 19.6.76, in dead razorbill and under drift-wood on beach.

Autalia puncticollis, 19.6.76, sweeping Caltha palustris in estuary.

Atheta elongatula, sweeping by stream.

A. aterrima, 19.6.76, in dead razorbill on beach.

A. celata, 19.6.76, in dead razorbill on beach.

A. atramentaria, 19.6.76, in dead razorbill on beach and in Sphagnum spp. on dunes.

A. longicornis, 26.6.76, in dead razorbill on beach.

A. vestita, 26.6.76, under drift-wood in dunes.

Aleochara obscurella, 19.6.76, in dead rabbit in dunes and dead razorbill on beach.
26.6.76, in seaweed on shore.

Geotrupidae

Geotrupes stercorarius, 31.7. - 23.8.76, in pitfall trap.

Scirtidae

Elodes marginata, 19 and 26.6.76, sweeping by streams. (e.g. on Caltha palustris).

Cantharidae

Rhagonycha femoralis, 26.6.76, sweeping by stream.

Nitidulidae

Meligethes aeneus, 19.6.76, sweeping by stream.

Cryptophagidae

Cryptophagous dentatus, 31.7. - 23.8.76, in pitfall trap.

Atomaria fuscicollis, 19.6.76, in straw at edge of dunes.

(Ommitted from list to be published in Symposium on the Natural Environment in the Outer Hebrides).

Chrysomelidae

Chrysolina staphylea, 17.6.76, under drift-wood in dunes.

4.3 Terrestrial Isopoda

The following species was recorded by Dr R.C. Welch on 17.6.76:

Oniscidae

Oniscus asellus, under drift-wood in dunes.

Porcellionidae

Porcellio scaber, under drift-wood in dunes.

APPENDIX

Records were obtained for three additional sites, only two of which were included in the list of sites drawn up by the Nature Conservancy Council for the survey as part of ITE Project 340.

Site number	Site Name	Island
37	BERNERAY	Berneray
-	HUSHINISH	Harris
46	TONG	Lewis

SITE 37

BERNERAY

1. Lepidoptera : Satyridae

The following was recorded by Dr D.S. Ranwell on 28.7.76.

Maniola jurtina

2. Coleoptera

This site was not visited during the course of this survey but Prof. J.A. Owen collected on the island during July 1976 and recorded the following species from "sandy beach at south end" (08/896802) and "sandy pasture" (08/8980).

Carabidae

Notiophilus aquaticus

Bembidion pallidipenne

B. tetracolum

Agonum albipes

Amara bifrons

Staphylinidae

Xantholinus glabratus

Quedius semiaeneus

Aloconota cambrica

Atheta amicula

Scarabaeidae

Aegialia arenaria

Byrrhidae

Simplocaria semistriata

Nitidulidae

Meligethes aeneus

Cryptophagidae

Atomaria nitidula

Chrysomelidae

Psylliodes marcida

Apionidae

Apion ? apricans

A. dichroum

Curculionidae

Otiorhynchus atroapterus

Phytobius quadrituberculatus

HUSHINISH

(National Grid ref. 09/992120)

Although not included in the list of sites drawn up by the Nature Conservancy Council, this site possessed a good south-facing sandy bay with a machair isthmus behind it from which shell sand was being extracted.

1. Coleoptera

The following, mainly coastal/psammophile species were recorded by Dr R.C. Welch on 20.6.76.

Carabidae

Nebria brevicollis, under drift-wood at top of beach and on machair.

Broscus cephalotes, at roots of vegetation on machair.

Trechus fulvus, under drift-wood at top of beach. (First record for Outer Hebrides).

Calathus fuscipes, under drift-wood on machair.

C. melanocephalus, under drift-wood on machair.

Agonum albipes, under drift-wood at top of shore.

Amara aulica, under drift-wood on machair.

A. bifrons, in seaweed on shore.

Hydrophilidae

Cercyon littoralis, in old sheep and in seaweed on shore.

Silphidae

Silpha tyrolensis, under drift-wood on machair.

Staphylinidae

Omalium riparium, in seaweed on shore.

Anotylus maritimus, in seaweed on shore.

Cafius xantholoma, in seaweed on shore.

Creophilus maxillosus, in seaweed on shore.

Quedius tristis, under drift-wood on machair.

Tachinus signatus, under drift-wood on machair.

Myrmecopora sulcata, in seaweed on shore.

Atheta orbata, in old cow on machair.

A. vestita, in seaweed on shore.

Halobrecta flavipes, in seaweed, old sheep on shore. Under drift-wood at top of beach and on machair.

Aleochara algarum, under drift-wood on beach.

A. obscurella, under drift-wood on beach and in seaweed and old dead sheep.

Scarabaeidae

Aphodius spacelatus, in old cow dung on machair.

Dascillidae

Dascillus cervinus, under drift-wood at top of shore.

Cryptophagidae

Atomaria apicalis, in old cow dung on machair.

Curculionidae

Philopedon plagiatus, under drift-wood on machair.

2. Isopoda : Porcellionidae

The following species was recorded by Dr R.C. Welch on 20.6.76.

Porcellio scaber, under drift-wood on machair.

SITE 46

TONG

Both sides of the estuary at this site were examined but the close proximity of Stornoway Airport precluded the use of the light trap. A cursory visit was made to the west side at Cnoc Mor Thunga (19/450355) on 17.6.76 when two species of woodlice were recorded. The eastern peninsula at Gob Steinish (19/455345) was visited on 19.6.76 when all the following species of Coleoptera were collected by Dr R.C. Welch.

1. Coleoptera

Carabidae

Nebria brevicollis, under drift-wood in dunes.

Bembidion tetracolum, under drift-wood in dunes.

Dicheirotrichus gustavi, under drift-wood in dunes and on the beach.

Hydrophilidae

Helophorus ? dorsalis, 1♀ dead in seaweed on shore.

Cercyon littoralis, in seaweed on shore and under drift-wood on the beach.

Staphylinidae

Omalium laeviusculum, in seaweed on shore.

O. riparium, in seaweed on shore.

Bledius longulus, under stone on salt marsh.

Anotylus maritimus, under stone on salt marsh and under drift-wood on beach.

Othius punctulatus, in seaweed on shore.

Gyrohypnus fracticornis, under drift-wood in dunes.

Cafius xantholoma, under drift-wood on beach.

Staphylinus olens, under drift-wood on beach.

Quedius cinctus, pupa under drift-wood at edge of dunes.

Tachinus laticollis, in seaweed on shore.

Atheta vestita, in seaweed on shore, under drift-wood on beach and under stone on salt marsh.

Halobrecta flavipes, in seaweed on shore.

Aleochara obscurella, under drift-wood on beach.

2. Isopoda

The following species were recorded by Dr R.C. Welch.

Ligiidae

Ligia oceanica, 19.6.76, Gob Steinish, under drift-wood.

Trichoniscidae

Trichoniscus pusillus, 19.6.76, Gob Steinish, under drift-wood.

Oniscidae

Oniscus asellus, 17.6.76, Cnoc Mor Thunga, under pieces of wood.

Porcellionidae

Porcellio scaber, 17.6.76, Cnoc Mor Thunga, under pieces of wood.
19.6.76, Gob Steinish, under drift-wood.

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