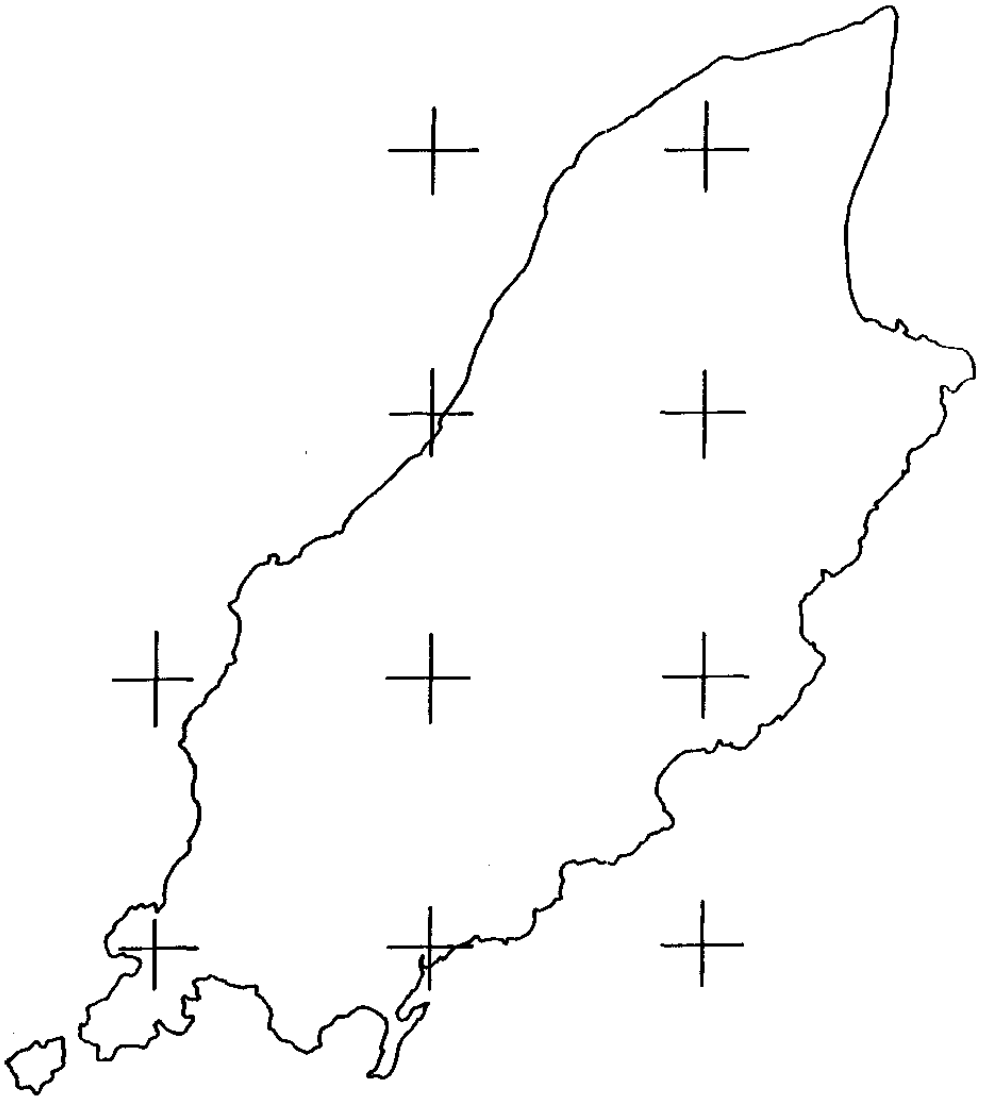
INVERTEBRATE CONSERVATION IN THE ISLE OF MAN - AN ASSESSMENT OF SELECTED SITES OF ECOLOGICAL INTEREST, 30 APRIL - 5 MAY 1989

D C BOYCE & A P FOWLES



INVERTEBRATE CONSERVATION IN THE ISLE OF MAN - AN ASSESSMENT OF SELECTED SITES OF ECOLOGICAL INTEREST, 30 APRIL - 5 MAY 1989

D C BOYCE & A P FOWLES - c/o Nature Conservancy Council, Plas Gogerddan, Aberystwyth, Dyfed, SY23 3EE.

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INTRODUCTION

This report grew out of the simple desire to see some of the range of habitats present on the Isle of Man and to carry out some basic invertebrate recording for the BRC national distribution-mapping schemes. However, in discussion with Dr LS Garrad of the Manx Museum and National Trust, we became aware of the proposed wildlife legislation due to be presented to the Manx Parliament. This marks the dawn of a new era for nature conservation on the island and the organisations responsible for implementing the legislation will need to be in possession of detailed ecological information to ensure that the most valuable sites receive their urgent attention. With a lack of resident entomologists on Mann, we offered to submit an assessment of the sites we visited to ensure that invertebrate conservation features alongside the conservation of other taxa.

With this background, we chose a selection of sites that would represent some of the more important features of Manx habitats in invertebrate terms. This was necessarily constrained by the date of our survey as we felt that upland habitats, in particular, would be relatively unproductive this early in the season. Site-survey, therefore, was concentrated on coastal and wooded localities and we drew upon our prior knowledge of the island to select a variety of sites that were both representative and geographically well-distributed. Reference was also made to Garrad (1972a) and Perkins & Buse (1974) to ensure that, as far as possible in the time available, we did not omit any sites that were likely to be of major importance. Wetlands were represented by visits to The Curraghs and the eastern end of the Lough Cranstal fens but we did not find time to investigate the southern gareys (boggy pastures). In particular, the remnant wetlands of the central valley formed by the rivers Neb and Dhoo are likely to support significant invertebrate communities which complement the fens of the northern plain. In the end we managed to sample a total of eighteen sites in our six days on the island and, although we will only have been able to record a fraction of the fauna at each site, we feel that we were able to identify the major features of invertebrate interest in the areas surveyed. Our assessment is naturally based upon our experiences of British habitats and it may be that we have under-valued sites which may be of local importance in a Manx context. Nonetheless, we feel that our evaluation of each site provides a fair account of the conservation importance for invertebrates.

Our sampling relied heavily on hand-searching for ground-active species. Obvious micro-sites, such as fallen timber and stones, were explored for invertebrates and leaf-litter was sieved for the smaller members of the fauna at most localities. Sweeping was not deemed to be profitable as the vegetation generally was not well-developed at this time of year. Only at Santon Gorge was a beating-tray used to sample the canopy fauna, although this would obviously be a worthwhile exercise in other woodlands in early summer. Finally, on river shingle sites, the technique of excavation was used to discover the presence of the subterranean element of the fauna. This involves digging a hole in the shingle bank, usually a metre or so from the water's edge and, when the water-table has been reached, the sides of the hole can be slowly collapsed to reveal invertebrates as they swim on the surface-film. More systematic and quantifiable sampling-techniques, such as pitfall- trapping, were beyond the scope of this survey.

In addition to copies retained by the authors, this report has been distributed to - The Manx Museum and National Trust; the Manx Nature Conservation Trust; Nature Conservancy Council (GBHQ Library), Peterborough; Nature Conservancy Council (CSD Terrestrial Invertebrates Branch), Peterborough; and Dr ML Luff (University of Newcastle-upon-Tyne, Dept, of Agricultural Biology).

DISCUSSION

Invertebrates have a number of features which makes their conservation challenging - a dependence on highly-specialised micro-habitats; complex life-histories; the need for site-continuity to complete their annual life-cycles; and a general lack of mobility which hinders re-colonisation. There is a growing awareness that invertebrate conservation must accomodate these varied needs but all too often nature conservation has gone along with the old maxim - 'take care of the habitat and the species will take care of themselves'. In principle, of course, this is a flawless logic but problems arise when we take too broad a view of what constitutes a 'habitat' and neglect to see that it is in fact composed of an intimate mixture of micro-habitats, each one providing a niche for a distinct community of invertebrates. It is also frequently the case that the correct juxtaposition of micro-habitats has to occur before the full ecological requirements of a species are met. Thus, some woodland invertebrates may need damp, shady conditions in which to breed but they will have to find adjacent sunny, nectar sources on which to feed and build-up their reserves of energy for reproduction.

If nature conservation is to be successful in safeguarding the full ecological spectrum of habitats, conservationists must become aware of the intricacies of invertebrate ecology and ensure that site-selection and subsequent management is sufficiently detailed and sensitive to take account of the requirements of invertebrates. In this report we aim to highlight some of the less-obvious features of importance for invertebrate conservation on a range of sites in the Isle of Man. Obviously, in the limited time available, we were only able to look at a small number of sites but it was apparent that there are several important types of habitat on the island that contain micro-sites of great value for invertebrates.

The map of our study sites shows that, geographically, they split into a group of ten sites north of the main upland massif and another eight to the south. Of greatest invertebrate importance amongst these northern sites were The Ayres coast, the glacial soft-rock cliffs at Ramsey Bay and the large peatland complexes of Lough Cranstal and the Ballaugh Curraghs. In addition, Port Cornaa, whilst not possessing any one feature of outstanding note, had a range of habitats from shingle beach and saltmarsh through river shingle to wet flushes and woodland that collectively made it a noteworthy site.

Many of the southern sites we visited were on rocky coastal shores and, of these, the outstanding examples were the flushed slopes at Lhoob Doo and the saltmarsh area of Langness. Scarlett also has considerable potential, though current grazing levels may be limiting its invertebrate diversity. Santon Gorge and Glen Maye, whilst having more natural plant communities than the Port Cornaa wood, did not appear to have a substantially greater invertebrate interest. Further work on the invertebrate fauna of Manx woodlands is desperately needed before accurate appraisal of their conservation value is possible. Most of the other sites we visited on the island had some elements of interest - only Maughold and Sulby Glen are likely to be of negligible value for invertebrate conservation.

More detailed reports on all eighteen sites visited follow this Discussion section, the remainder of which deals with the major taxa sampled and considers those invertebrate species and communities of ecological and bio-geographical interest. In addition, we have attempted to place our work within the historical perspective of existing literature on the invertebrate fauna of Mann.

PLECOPTERA

The stoneflies of the Isle of Man were comprehensively surveyed by Hynes (1952) between 1949 and 1951. He listed ten species for the island and there were no additions

amongst the seven species we recorded. Our collections were limited to adults found during casual hand-searches for other invertebrates and were taken from just five of the eighteen sites we visited. This sample is too small to draw any conclusions from but we can add the following comments to Hynes' account: Chloroperla tripunctata was taken in Glen Maye - Hynes records that this species has not been found in any small lowland streams on the island.

Diura bicaudata was taken at sea-level at Port Cornaa (as well as in Glen Maye and the Sulby Glen). Hynes comments on the occurrence of this species in lowland streams on Mann, whereas it is found at much higher altitudes on the British mainland.

HEMIPTERA

There is little published information available on Manx Hemiptera and that which exists is clouded in nomenclatural confusion. Garrad (1972c) summarises the earlier records of Mason (1888, 1898) and Chalmers-Hunt (1968), listing fifty-two species for the island. Allen & Cowin (1954) discuss the occurrence of Corizus hyoscyami and Gampsocoris punctipes, both of which are not reported in Garrad's list. Recently, invertebrate studies of the Langness peninsula (Luff 1988) recorded twenty-seven species, most of which would appear to be new to the island. We collected examples of all adult Hemiptera that we encountered during our surveys, totalling sixteen species - seven of which seem to be new records for the Isle of Man. The island list thus totals in the region of 80 species but presumably there have been other hemipterists working here who have not published their results.

A curious feature of our sample is the total absence of Homoptera. This was not apparent at the time of collection and is somewhat perplexing but we assume that we only encountered nymphal Homoptera which were not collected because of identification difficulties. Even at the early stage of the season that we carried out our survey we would have expected to have recorded adult Homoptera that had overwintered - why we did not is something of an unsolved mystery.

Most of the species we did record are common but there is some interest in the occurrence of Gampsocoris punctipes and Peritrechus geniculatus on The Ayres. Both are regarded as southern species in Britain and The Ayres marks the northern limit of their range.

HYMENOPTERA: Formicidae

The ant fauna of the island has not been extensively studied, although much useful information can be found in Garrad (1972a). In the light of this, and because the island possessed dry, open habitats, such as Langness and The Ayres, that seemed likely to have an interesting ant fauna, we made a special effort to investigate the species involved at each site visited as fully as possible. Twelve ant species have been recorded from Mann - Myrmica ruginodis, M. sabuleti, M. scabrinodis, Leptothorax acervorum, Tetramorium caespitum, Lasius fuliginosus, L. niger, L. alienus, L. flavus, L. mixtus, Formica fusca and F. lemani (Barrett 1979). Of this total, we only managed to record seven species; a rather disappointing list given the considerable time spent looking for ants during our visit. Six of these are common and rather eurytopic but the seventh, Tetramorium caespitum, is a species of southern heaths where it feeds on the seeds of heather Calluna vulgaris. It was found on the fringes of The Ayres coastal heath in small numbers and on the cliff-slopes west of The Chasms. It is one of a group of invertebrates found on the island that are very much to the north and west of their main British range. It appears that this phenomenon is largely due to the comparatively equable climate that the island enjoys. Of the species that we failed to find, the most surprising was Lasius alienus, which in mainland Britain is frequently encountered in dry coastal habitats.

It is obvious that our survey failed to provide much new information on the ant fauna of the island. This group shows interesting ecological trends, especially in relation to temperature, aspect, humidity, etc.., and they are one of the most influential groups in terms of their effects on the ecology of the plants and animals they co-habit with. Further research into the composition of the Manx ant fauna is an integral part of the work needed to put invertebrate conservation on a sound footing in Mann.

COLEOPTERA

Our knowledge of the Manx fauna is based chiefly upon the work of Britten (1943, 1944, 1945, 1946) and, more recently, Luff (1987, 1988, 1989, In Press). The only other published additions to the Manx list of Coleoptera have come from Paton (1948) and Pool (1949). With our own results, the total number of species now stands at approximately 900. This could represent as little as a third of the island's fauna (Allen 1962) and, although our survey hopefully provides some useful information, it is clear that much additional work remains to be done. The total of twenty-two species of beetles new to the Isle of Man (out of 200 species recorded) that was found during our all-too-brief visit shows how much more must await discovery.

One of the most interesting habitats we worked for Coleoptera was the glacial soft-rock exposures around the northern coastline. Sites we visited with this habitat were - Dog Mills, Phurt, Glen Mooar and Gob ny Creggan Glassey. The ground- beetles formed one of the most characteristic communities on these slopes with species such as Bembidion pallidipenne, B. andreae, B. saxatile and B. stephensi present where flushing occurred on the clay and sand exposures. Bands of exposed damp clay were riddled with the burrows of Bledius atricapillus at Dog Mills and Gob ny Creggan Glassey and at both sites the fossorial ground-beetle Dyschirius thoracicus (which preys on Bledius spp.) occurred in association. Dog Mills, which was the most interesting soft-rock site that we looked at, also had two weevils of note. These were the scarce Grypus equiseti, which was found at the base of its foodplant Equisetum arvense, and Otiorhynchus ovatus which, though quite common in the British Isles as a whole, was (like G. equiseti) not previously known from the Isle of Man (Bailey 1904).

The carabids Aepus marinus and Bembidion maritimum are both exclusively coastal in their distribution. B. maritimum was found under brackish river shingle at Port Cornaa, a typical habitat. The tiny A. marinus was found in three rather distinct habitat types: at Port Soldrick in intertidal crevices in rocks of the Manx slate series; under pebbles near high water mark on sandy shores at Phurt and The Ayres; and with B. maritimum under stones on saltmarsh shingle at Cornaa.

Moving away from the coast, the peatlands of Lough Cranstal (East) and The Curraghs also provided much of interest. Again, it was the ground-beetles (a group we concentrated on during our site visits), that yielded the best results. Despite only an hour's collecting within a small area, Lough Cranstal (East) produced three carabids new to the island; these were Agonum thoreyi (also found later at The Curraghs), A. piceum and Trichocellus placidus. The first two are both usually found in open, tall fen habitats similar to that at Cranstal. T. placidus was collected under Phalaris litter beneath Salix scrub, it is primarily thought of as an eastern species for which Cranstal is an extreme westerly outlier - though it does also occur rarely in Ireland (Luff 1982). Pterostichus rhaeticus is a recently-split species from P. nigrita. Our records from The Curraghs and wet woodland at Port Cornaa appear to be the first confirmed for Mann. In addition, we recorded female P. nigrita agg. at three sites but identification of this species complex is at present only reliably based on examination of the male genitalia. Another new Coleoptera record for the island from wetland habitats was the pselaphid Bithynus macropalpus, which was shaken from wet moss under willow carr in The Curraghs.

The Isle of Man is considered to have almost entirely lost its native tree cover historically

(Garrad 1972a) and almost all the woodland present today results from planting undertaken in the nineteenth and twentieth centuries. Perhaps because of this, it does not seem to have been a habitat well-worked by coleopterists. Port Cornaa was much the most interesting woodland site we worked for Coleoptera, which is surprising as Glen Maye and Santon Gorge are more highly-rated in conservation terms (Garrad 1972a). The deadwood species Atrecus affinis, Rhizophagus dispar, Cylindrinotus laevioctostriatus, Tetratoma fungorum and Mesites tardii were all present here. The first three of these all being recorded for the first time on the Isle of Man. A. affinis and R. dispar were found under the bark of a fallen Scot's pine whilst Tetratoma was on birch polypore fungus Piptoporus betulinus on a dead birch trunk. A single specimen of the eyed ladybird Anatis ocellata was also seen at Port Cornaa. It is a predator on conifer aphids and was probably associated with the mature Scot's pines present on the site. It has not previously been found on the island. Though Santon Gorge was rather disappointing, the weevil Anthonomus pedicularius, which was beaten from hawthorn blossom, was also a surprising addition to the island's fauna.

As might be expected from such an outstanding site, The Ayres produced a number of noteworthy beetle records. Heterocerus fusculus, Strophosomus faber and Sitona griseus were all taken on the foredunes and were the first examples to be recorded on the island. Another interesting species from this habitat was the histerid Baeckmanniolus dimidiatus, a sand dune specialist. Yet more first records for Mann came from sedge-litter around the dune slacks further inland. These were the rove-beetles Philonthus micantoides and Gabrius keysianus. The latter appears to have a strong preference for dune slack habitats in the British Isles. The Ayres shingle heath was not extensively worked but a sunny bank on its edge produced two scarce weevils, the violet-feeding Orobitis cyaneus and Sibinia primitus which is believed to feed on spurreys Spergularia spp.

River shingle has been overlooked by entomologists for many years and yet it has an extremely specialised invertebrate fauna associated with it. Shingle was investigated at Sulby Glen, Glen Maye, Port Cornaa and Glen Mooar. The beetle fauna seemed to be rather limited in comparison with river shingle in western Britain but this is not entirely unexpected as the Manx rivers are generally too small to develop extensive shingle bars. Three new species for the island were found in this habitat, all of them rove-beetles (Staphylinidae). Hydrosmecta eximia and H. thinobioides are small species which are usually found underneath stones on shingle banks, Bledius subterraneus was frequent on the sandy shingle near the mouth of Glen Mooar.

Undoubtedly the rarest beetle recorded during our visit was the weevil Polydrosus pulchellus ab. insquamosus, which was shaken from sea beet Beta maritima on the upper saltmarsh at Langness. There have been very few records of this aberration in the British Isles and the type form itself is a nationally scarce inhabitant of coastal localities. Also on this site, the saltmarsh ground-beetle Dicheirotrichus gustavi was seen in good numbers under stones on the saltmarsh fringe.

Many other beetles we recorded have not been reported from the island since the early part of this century, a situation that relates more to the rarity of coleopterists than Coleoptera! With this historical neglect of the group it is difficult to assess conservation priorities but we are firmly of the opinion that the northern soft-rock cliffs are of major importance for beetle conservation in the British Isles generally, not just in the Isle of Man. A number of species occur here in abundance which have a restricted distribution in Britain, giving added significance to their conservation. Examples of this group are - the carabids Dyschirius thoracicus, Bembidion pallidipenne, B. saxatile and B. stephensi and the weevils Barypeithes sulcifrons, Sitona lineelus and Grypus equiseti. Other habitats, such as the mesotrophic fens, are more important in a local context and much more detailed surveys are required to ensure that future conservation measures safeguard an adequate representation of the Manx beetle fauna.

COLEOPTERA NEW TO THE ISLE OF MAN

Bembidion stephensi
Pterostichus rhaeticus
Agonum piceum
Agonum thoreyi
Trichocellus placidus
Atrecus affinis
Philonthus micantoides
Gabrius keysianus
Hydrosmecta eximia
Hydrosmecta thinobioides
Bledius subterraneus
Bithynus macropalpus
Heterocerus fusculus
Rhizophagus dispar
Anatis ocellata
Tetratoma fungorum
Otiorhynchus ovatus
Polydrosus pulchellus
Strophosomus faber
Sitona griseus
Grypus equiseti
Anthonomus pedicularius

MYRIAPODA: CHILOPODA

It is perhaps an understatement to say that the Manx centipede fauna is incompletely known and yet the island has the distinction of being one of the first localities in the British Isles where the scarce coastal geophilomorph Geophilus fucorum seurati was discovered (Blower 1961). Blower (1985) recounts that it was found at Port St. Mary in 1959. The classic text on British centipedes (Eason 1964) lists a further four species for the Isle of Man, whilst the provisional BRC atlas (Barber & Keay 1988) raises the total to seven. There are some additional records of Lithobius forficatus in 'Peregrine' (Garrad 1968b, 1972d), the Journal of the Isle of Man Natural History and Antiquarian Society, although there has been some typographical confusion which negates their value.

We recorded fourteen species which, with G. fucorum and Lithobius borealis recorded previously, brings the Manx list to sixteen. Our samples will have missed much of the synanthropic element of the fauna and additional species may be found on the higher moorland, a habitat we did not survey. The high quality of the coastal habitats on the island have rich potential for centipedes and it was in the saltmarsh at Langness that we collected our most interesting species, Schendyla peyerimhoffi. This is a scarce centipede known from a scatter of sites around the southern and south-western coasts of the British Isles and the Langness example is probably the most northerly-known specimen in the world. The only other species collected during our survey that is of particular interest is Lithobius macilentus, a small lithobiid centipede that is widespread but scarce in Britain where it is most frequently found in woodland. A single individual was collected in Glen Maye and this appears to be the first record from any of the British offshore islands, including Ireland.

MYRIAPODA: DIPLOPODA

The millipedes are another neglected aspect of Manx natural history and of fifteen species listed for the island in the BRC provisional atlas (British Myriapod Group 1988) only Cylindroiulus latestriatus has been recorded since 1970. Garrad (1968b, 1972d) records Blaniulus guttulatus, Tachypodoiulus niger and Glomeris marginata but some of the records of the latter species suffer from the typographical confusion mentioned for the centipedes above. Although the island fauna is little known, as with the centipedes there is a distinguished species in their ranks, Thalassisobates littoralis. This species was collected in some abundance at Port St. Mary on 30 August 1959 -"The animals were under stones between high water neap and high water springs, in fine gravel associated with two species of centipedes Geophilus fucorum and Strigamia maritima" (Blower 1985). Thalassisobates is a scarce millepede which is usually found on gravelly estuarine shores; it has been recorded from only a handful of localities in south-western Britain.

A small number of julid millipedes which require dissection for certain identification have still to be named and the total recorded so far from our survey stands at eleven species.

Three of these - Brachyiulus pusillus, Ommatoiulus sabulosus and Polydesmus gallicus - are new to the Isle of Man. P. gallicus is perhaps of interest from a bio-geographical viewpoint as it is distinctly rare on the British mainland north of the Humber-Mersey line but is a widespread and common animal in Ireland. A single adult male was collected from the sandy cliffs at Gob ny Creggan Glassey on the west coast.

ISOPODA: Oniscidea

The taxonomic chaos that surrounded the classification of woodlice in the early part of this century makes the interpretation of early records for this group fraught with problems. In a series of papers, Collinge (1942, 1943a-d, 1944a-e) reported a total of eighteen species from the island, based on the records of C I Paton. However, in the light of current knowledge it is clear that at least three of these - Armadillidium pictum, Trichoniscoides sarsi and Porcellio ratzeburgi - are erroneous, due to the deficiencies of the literature available at the time. There are another three species - Porcellionides pruinosus, Porcellio dilatatus and Trichoniscoides albidus - which could conceivably occur on the island but which could equally be confused with commoner species. In the absence of modern confirmation it is perhaps wiser to reject these records. Since Collinge, the only published records for the Isle of Man have been notes of common species in 'Peregrine' (Garrad 1968b, 1972d, 1973a) and mention of Porcellio spinicornis on mortared walls at two sites (Garrad 1972a). The BRC atlas (Harding & Sutton 1985) has thirteen species mapped for the island and it would seem sensible to take this list as a starting point for the Manx woodlouse fauna.

Woodlice were a group which we surveyed diligently and we found a total of eleven species. The coast was the most profitable area of search for this group; Trichoniscoides saeroeensis was found at two sites in typical habitat and Armadillidium pulchellum was also found at the same two localities (but in different micro-sites) in the south-western corner of the island. Androniscus dentiger was found at three coastal sites in natural situations, suggesting that it is perhaps native on Mann. The most interesting woodlouse record of our survey, and an addition to the Manx fauna, was the discovery of small numbers of Armadillidium album on the strandline at The Ayres, almost at the northern limit of its world distribution. A. album is a rare inhabitant of the upper driftlines of sandy beaches and saltmarshes, although it is known from sites around the coasts of England, Wales, western Ireland and at one locality in southern Scotland and is probably under-recorded at present. We also collected specimens of Haplophthalmus mengei from three sites and these have been confirmed (A O Chater, pers. comm.) as that species rather than the similar H. montivaga. H. mengei (sensu lato) had already been reported by Collinge (1944c) but there has been a recent taxonomic split (Hopkin & Roberts 1987) and this is the first Manx record of H. mengei (sensu stricta). Currently, the Manx list would seem to consist of fifteen species of woodlice, as follows:

Ligia oceanica
Androniscus dentiger
Haplophthalmus mengei s.s.
Trichoniscoides saeroeensis
Trichoniscus pusillus
Oniscus asellus
Philoscia muscorum
Platyarthrus hoffmannseggi
Armadillidium album
Armadillidium pulchellum
Armadillidium vulgare
Cylisticus convexus
Porcellio scaber
Porcellio spinicornis
Porcellionides cingendus

MOLLUSCA

There has been a long tradition of mollusc recording on the Isle of Man, extending for over 150 years (since Forbes 1838) and the terrestrial molluscs are probably the most comprehensively surveyed group of invertebrates on the island. In the intervening years

there have been several accounts of the fauna (summarised by Garrad 1968a), including the interesting notes on colour-forms by Taylor (1910). The Isle of Man Natural History and Antiquarian Society was involved at an early stage with the mapping scheme organised by the Conchological Society of the British Isles and hence there is a sound basis of recent recording on which to assess the current status of species. Kerney (1976) maps 53 terrestrial molluscs as occurring on Mann, although strangely omits Cecilioides acicula which is reported from the Castletown area (Garrad 1972b).

The recording of terrestrial molluscs was one of the primary objectives of our survey and a total of 44 species (plus two freshwater species) was found. Four species are additions to the above-mentioned records - Carychium minimum, Arion flagellus, Arion distinctus and Euconulus alderi. However, each of these species has been the subject of relatively recent taxonomic revisions and their occurrence on the Isle of Mann is not surprising. A. flagellus is the most interesting of this group as only a single specimen was found on the island, in woodland leaf- litter at Port Cornaa: flagellus seems to be something of an old-woodland species in Great Britain although it is also frequently found in synanthropic situations such as gardens and hedgerows. The Cornaa woods contained a number of mature timber beetles that we did not record elsewhere on the island and it may be that this site has a more continuous history of woodland cover than was previously suspected. The Manx terrestrial molluscan fauna is of great interest in terms of island biogeography, particularly with regard to its woodland species. Given the past history of the Manx woodlands, it is curious that species which have a strong association with ancient woodland, such as Spermodea lamellata and Limax cinereoniger, have managed to persist. There are records of both of these (and also of Acicula fusca and Zenobiella subrufescens) from the northern woodlands and we were surprised not to have discovered any of them during our surveys. Glen Maye in particular would appear to be very suitable for Spermodea. The only 'ancient woodland' snails (Kerney & Stubbs 1980) we recorded were Leiostyla anglica and Vertigo substriata, both of which are more catholic in their habitat-choice in western Britain.

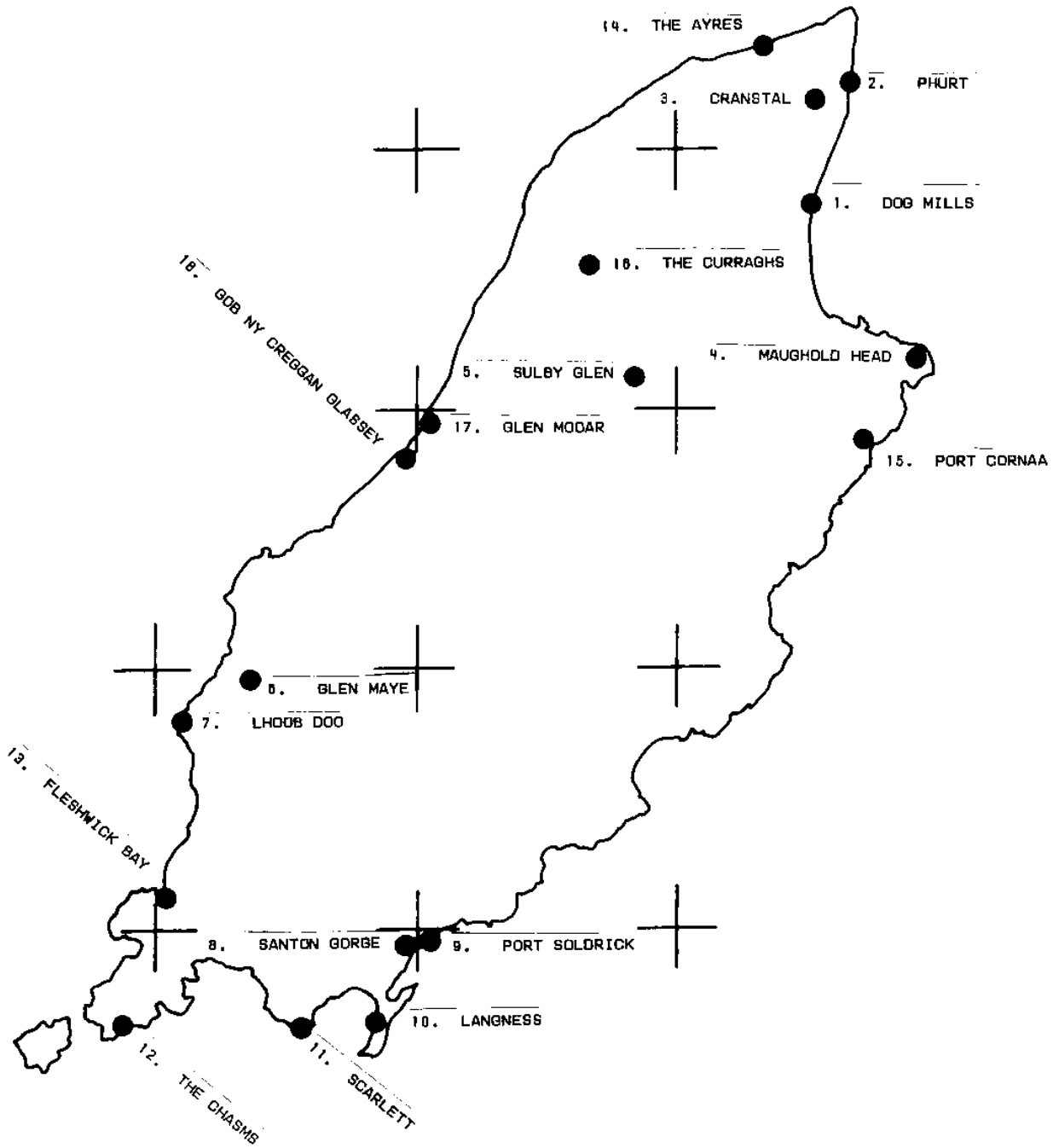
Another interesting aspect of the Manx molluscan fauna is the species which are absent from the island. In common with other recorders, we failed to find Zonitoides excavatus, Vitrea crystallina and Acanthinula acuminata. Zonitoides may have become extinct when the island was effectively de-forested (as postulated for other woodland taxa by Allen & Cowin (1954)) but the absence of the other two species (which are extremely common in Britain and Ireland) suggests that they never made it to the Isle of Man. Cernuella virgata, a typical sand dune snail, is another conspicuous absentee. A mollusc that links the island's fauna with Ireland is the slug Limax maculatus. We found it in the Glen Maye woods and above the shoreline at Lhoob Doo - it seems only ever to have been recorded in west coast sites on the island.

None of the other species we recorded are particularly unusual but it seems that Milax gagetes has been rarely recorded in the past; we found a singleton at Scarlett. Pyramidula rupestris is an uncommon snail of limestone rocks; Vertigo antivertigo and V. substriata are indicators of undisturbed wetlands; Pupilla muscorum is a localised inhabitant of dry calcareous grassland; and Balea perversa is largely arboreal, feeding partly on lichens, with a suggestion that it has declined in areas of Great Britain which suffer from high levels of atmospheric pollution (Holyoak 1978). It also occurs on lime-rich walls, as at Langness. Only a single example of the dune snail Cochlicella acuta was found and as this was in the strandline at Scarlett its origin is unknown. C. acuta is reported as occurring frequently around the sandy coasts of the Isle of Man (Garrad 1972a) and it is surprising that we did not encounter live specimens.

KEY TO SITES VISITED DURING THE PERIOD 30 APRIL - 5 MAY 1989.

1.	DOG MILLS	(SC 452977)
2.	PHURT	(NX 468027)
3.	LOUGH CRANSTAL (EAST)	(NX 457022)
4.	MAUGHOLD HEAD	(SC 495917)
5.	SULBY GLEN	(SC 379911)
6.	GLEN MAYE	(SC 232797)
7.	LHOOB DOO	(SC 211783)
8.	SANTON GORGE	(SC 297694)
9.	PORT SOLDRICK	(SC 303696)
10.	LANGNESS	(SC 284667)
11.	SCARLETT	(SC 256662)
12.	THE CHASMS	(SC 187663)
13.	FLESHWICK BAY	(SC 201714)
14.	THE AYRES	(NX 430033)
15.	PORT CORNAA	(SC 471881)
16.	THE CURRAGHS	(SC 363950)
17.	GLEN MOOAR	(SC 303893)
18.	GOB NY CREGGAN GLASSEY	(SC 298889)

NB: The maps which accompany each individual site description indicate the actual area investigated during our survey and in most cases only represents a small proportion of the total habitat which is likely to be important for invertebrate conservation.


14. THE AYRES
2. PHURT
3. CRANSTAL
1. DOG MILLS
16. THE CURRAGHS
18. GOB NY CREGGAN GLASSEY
4. MAUGHOLD HEAD
5. SULBY GLEN
17. GLEN MODAR
15. PORT CORNAA
6. GLEN MAYE
7. LHOOB DOO
13. FLESHWICK BAY
8. SANTON GORGE
9. PORT SOLDRICK
10. LANGNESS
12. THE CHASMS
11. SCARLETT

SITE 1. DOG MILLS (SC 452 977)

DATE VISITED: 30 April 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: Running north from Ramsey for some five kilometres, the coastal landscape is dominated by east-facing soft-rock cliffs which reach their highest point at Shellag Point (50 metres a.s.l.). These are composed of a mixture of sands and clays of glacial origin and the exposures here are considered to be some of the finest of their kind in Europe (Garrad 1972a). These materials are exposed along the cliff face in a number of bands which mix the two main elements in varying proportions, providing a variety of substrate conditions for invertebrates. In addition, there are a number of seepages running down the slopes. The soft substratum and flushing produce considerable slumping and there is a well-developed talus zone at the foot of the cliff. These eroded areas have a ruderal vegetation community with species such as field horsetail Equisetum arvense and coltsfoot Tussilago farfara. The drier, more consolidated, areas have a flora characteristic of sand dunes with locally-developed stands of marram Ammophila arenaria. On the landward side, improved pasture runs right up to the cliff-edge whilst the beach is sandy in character though liberally scattered with stones.

INVERTEBRATE INTEREST: This stretch of coast seems to have been poorly-worked for invertebrates in the past and it was pleasing, therefore, to discover that it was of considerable importance as an invertebrate conservation feature. The ground-beetle community was of particular note; seventeen species being recorded on site. The flushed slopes had the richest assemblage of species with Bembidion andreae, B. saxatile, B. pallidipenne, B. tetracolum and Leistus fulvibarbis among the species found. B. saxatile and B. pallidipene are quite local in Britain: the former was common under stones and amongst damp talus but only a single individual of the latter was found under an overhanging tussock of creeping soft- grass Holcus lanatus on a wet clayey slope. The sandy cliffs had a communtity which is typical of dry coastal grassland with Dromius linearis, D. melanocephalus and D. notatus amongst marram litter. Also here was the sand dune specialist Broscus cephalotes.

The moist sandy exposures were riddled with the burrows of Bledius atricapillus, one of a genus of rove-beetles that burrow in sand and clay substrates, feeding on microscopic algae. In association with this beetle, the small fossorial ground- beetle Dyschirius thoracicus was frequently found. Most Dyschirius species are specialist predators upon the adults or larvae of Bledius spp. Three specimens of the scarce weevil Grypus equiseti were found by sieving litter on the vegetated slopes. As its name suggests, it feeds on horsetails and Equisetum arvense must be its foodplant on this site. Other weevils of note were Sitona lineelus and Tropiphorus terricola. Amongst the other invertebrate taxa recorded was a colony of the rose-pink woodlouse Androniscus dentiger, which was established on a wet, clayey cliff-face beneath overhanging Holcus lanatus tussocks.

Whilst this site is of limited botanical interest, the presence of a mosaic of eroded through to well-vegetated and dry to saturated micro-habitats gives it considerable interest for invertebrate conservation. Providing that the natural processes of erosion that are at work on the site continue to operate, this interest should be maintained. Our investigations were limited to a stretch of cliff less than 100 metres long and similar conditions are presumably widespread along the coast here. A full survey is required to evaluate the extent of the invertebrate interest at this site.

SPECIES RECORDED. (DOG MILLS)

COLEOPTERA

Leistus fulvibarbis
Dyschirius thoracicus
Broscus cephalotes
Trechus obtusus
Bembidion pallidipenne
Bembidion andreae
Bembidion saxatile
Bembidion tetracolum
Bembidion harpaloides
Pterostichus nigrita agg.
Abax parallelopipedus
Agonum dorsale
Amara plebeja
Badister bipustulatus
Dromius linearis
Dromius melanocephalus
Dromius notatus
Anacaena globulus
Bledius atricapillus
Stenus guttula
Stenus brunnipes
Stenus ossium
Stenus providus
Xantholinus linearis
Xantholinus longiventris
Cafius xantholoma
Tachyporus chrysomelinus agg.
Tachyporus nitidulus
Drusilla canaliculatus
Coccidula rufa
Rhyzobius litura
Coccinella 7-punctata
Corticaria punctulata
Oulema melanopa
Chrysolina banksi
Otiorhynchus ovatus
Otiorhynchus rugifrons
Otiorhynchus singularis
Otiorhynchus sulcatus
Tropiphorus terricola
Sitona lineelus
Sitona striatellus
Grypus equiseti
Phytobius 4-tuberculatus

THYSANURA

Petrobius maritimus

HEMIPTERA

Piesma quadratum
Anthocoris nemorum
Orthops ?campestris

HYMENOPTERA: Formicidae

Formica fusca
Lasius flavus
Myrmica ruginodis

MYRIAPODA: CHILOPODA

Lithobius forficatus
Lithobius microps

MYRIAPODA: DIPLOPODA

Tachypodoiulus niger

ISOPODA: Oniscidea

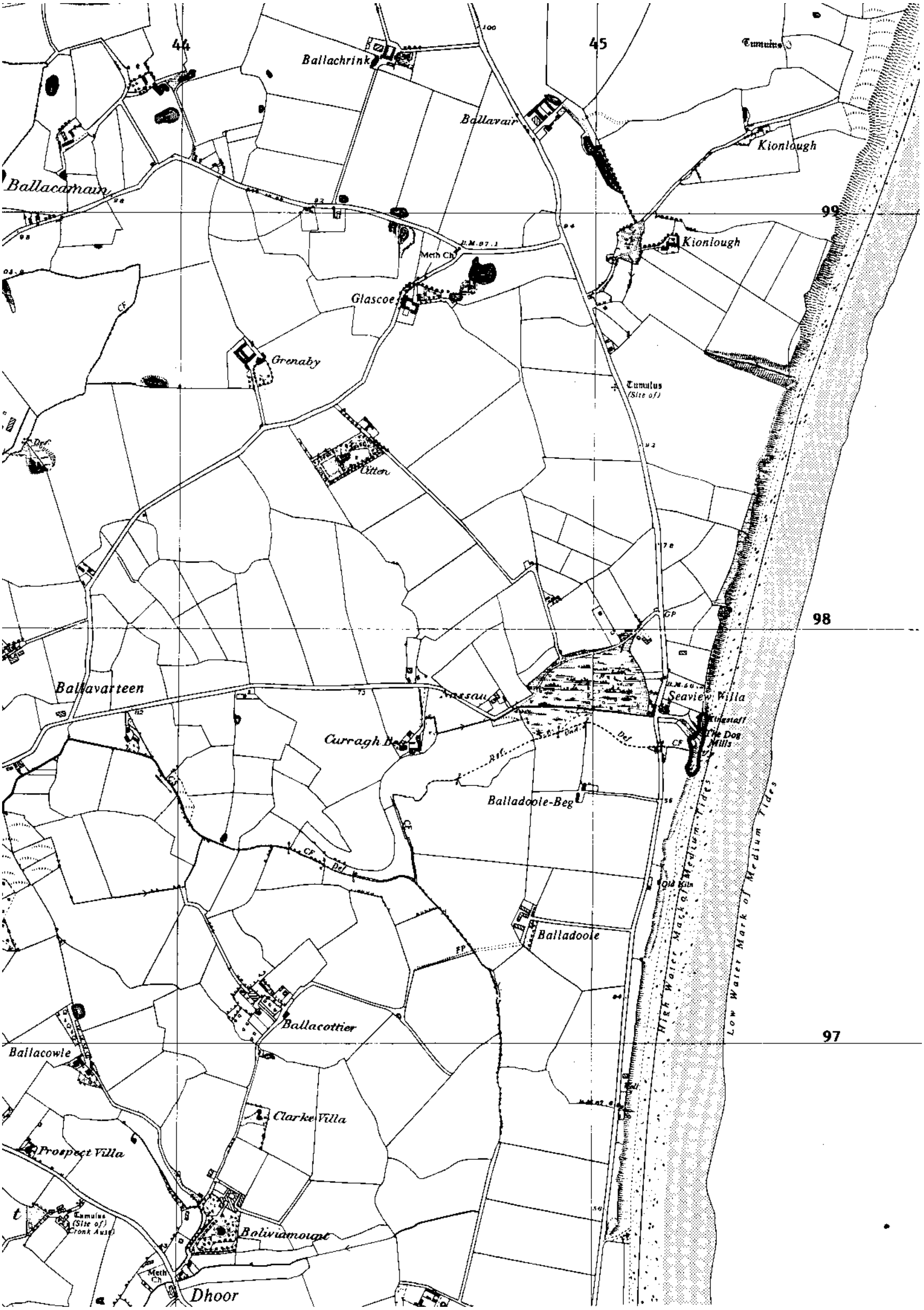
Androniscus dentiger
Armadillidium vulgare
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

ARANEAE

Arctosa perita

MOLLUSCA

Cochlicopa lubrica
Lauria cylindracea
Discus rotundatus
Arion ater agg.
Arion subfuscus
Vitrina pellucida
Candidula intersecta
Trichia striolata
Cepaea nemoralis
Helix aspersa



44
45
99
98
97
Ballachrink
Ballavair
Tumulus
Kionlough
Ballacamain
Kionlough
Meth Ch
Glascoe
Grenaby
Tumulus
(Site of)
Citten
Ballavarteen
Seaview Villa
Flagstaff
The Dog Mills
Curragh Beg
Balladoole-Beg
High Water Mark of Medium Tides
Low Water Mark of Medium Tides
Old Kiln
Balladoole
Ballacottier
Ballacowle
Clarke Villa
Prospect Villa
Tumulus
(Site of)
Cronk Aust
Boliviamount
Meth Ch
Dhoor

SITE 2. PHURT (NX 468 027)

DATE VISITED: 30 April 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: North of the sand and clay cliffs from Dog Mills to Shellag Point, the cliff-line rapidly fades out and is replaced by low, east-facing sandy exposures. Unlike Dog Mills, there are little or no clay deposits and surface- flushing is less evident. A particularly nice feature of this area, however, is a seepage that spills out over a sandy terrace at the top of the beach (Plate 1) and here an area of peat is exposed; evidence of the lower sea-level that followed the last Ice Age. The cliff-face is overhung by grass tussocks, providing damp and sheltered micro-habitats for many species of invertebrates. The beach is sandy with a narrow upper band of storm shingle. The landscape abutting the coastline immediately above the cliff consists largely of improved pasture.

INVERTEBRATE INTEREST: The most interesting feature of this site for invertebrates is the afore-mentioned flushed, sandy terrace. Searching under stones in this area produced Bembidion stephensi, a soft-rock specialist which is almost entirely restricted to the coast in the British Isles. This was the first record of the species from Mann. In company were two other noteworthy ground-beetles - Bembidion saxatile and Aepus marinus. A. marinus is a tiny carabid, restricted to the intertidal zone and most often found under large stones on muddy shores. At Phurt it was quite common on the sandy beach under stones around the high water mark. This beetle has a restricted world distribution which is centred on the coastlines of the North-west Atlantic.

The sandy banks yielded commoner ground-beetles such as Broscus cephalotes, Agonum dorsale, Bradycellus harpalinus and B. verbasci. More hygrophilous species such as Agonum fuliginosum, A. obscurum and Leistus rufescens also occurred, presumably due to the dampness of the slopes and the humid micro-climate provided by the overhanging vegetation. Here, as at Dog Mills, the weevils Tropiphorus terricola and Sitona lineelus were collected and, in addition, Barynotus obscurus, Barypeithes sulcifrons and the sand dune specialist Philopedon plagiatus were found. B. obscurus, whilst quite common in mainland Britain, appears to be rather scarce on the island. B. sulcifrons is a pronouncedly western species for which there are a number of Manx localities (Britten 1945).

The invertebrate fauna of Phurt, whilst lacking some of the more unusual soft- rock species found at Dog Mills, was nonetheless a diverse one and had a number of intrinsic features of interest. Looked at within the context of The Ayres shore to the north and the Dog Mills cliffs to the south, it provides a valuable link in what is an important stretch of coastline for invertebrate conservation on the island.

SPECIES RECORDED (PHURT)

COLEOPTERA

Leistus rufescens
Broscus cephalotes
Aepus marinus
Trechus obtusus
Bembidion andreae
Bembidion saxatile
Bembidion stephensi
Bembidion tetracolum
Pterostichus strenuus
Agonum albipes
Agonum dorsale
Agonum fuliginosum
Agonum obscurum
Amara plebeja
Bradycellus harpalinus
Bradycellus verbasci
Demetrias atricapillus
Dromius linearis
Dromius melanocephalus
Dromius notatus
Silpha atrata
Omalium rivulare
Stenus ossium
Xantholinus longiventris
Cafius xantholoma
Creophilus maxillosus
Sepedophilus marshami
Sepedophilus nigripennis
Tachyporus chrysomelinus agg.
Tachyporus hypnorum
Tachinus signatus
Encephalus complicans
Aphodius sphacelatus
Agriotes obscurus
Rhyzobius litura
Corticaria punctulata
Chrysolina banksi
Chrysolina staphylaea
Phyllotreta undulata
Apion hydrolapathi
Apion loti
Apion viciae
Apion nigritarse
Otiorhynchus singularis
Barypeithes sulcifrons
Philopedon plagiatus
Barynotus obscurus
Tropiphorus terricola
Sitona lineelus

HEMIPTERA

Piesma quadratum
Stenodema laevigatum

HYMENOPTERA: Formicidae

Formica fusca
Myrmica ruginodis

MYRIAPODA: CHILOPODA

Strigamia maritima

MYRIAPODA: DIPLOPODA

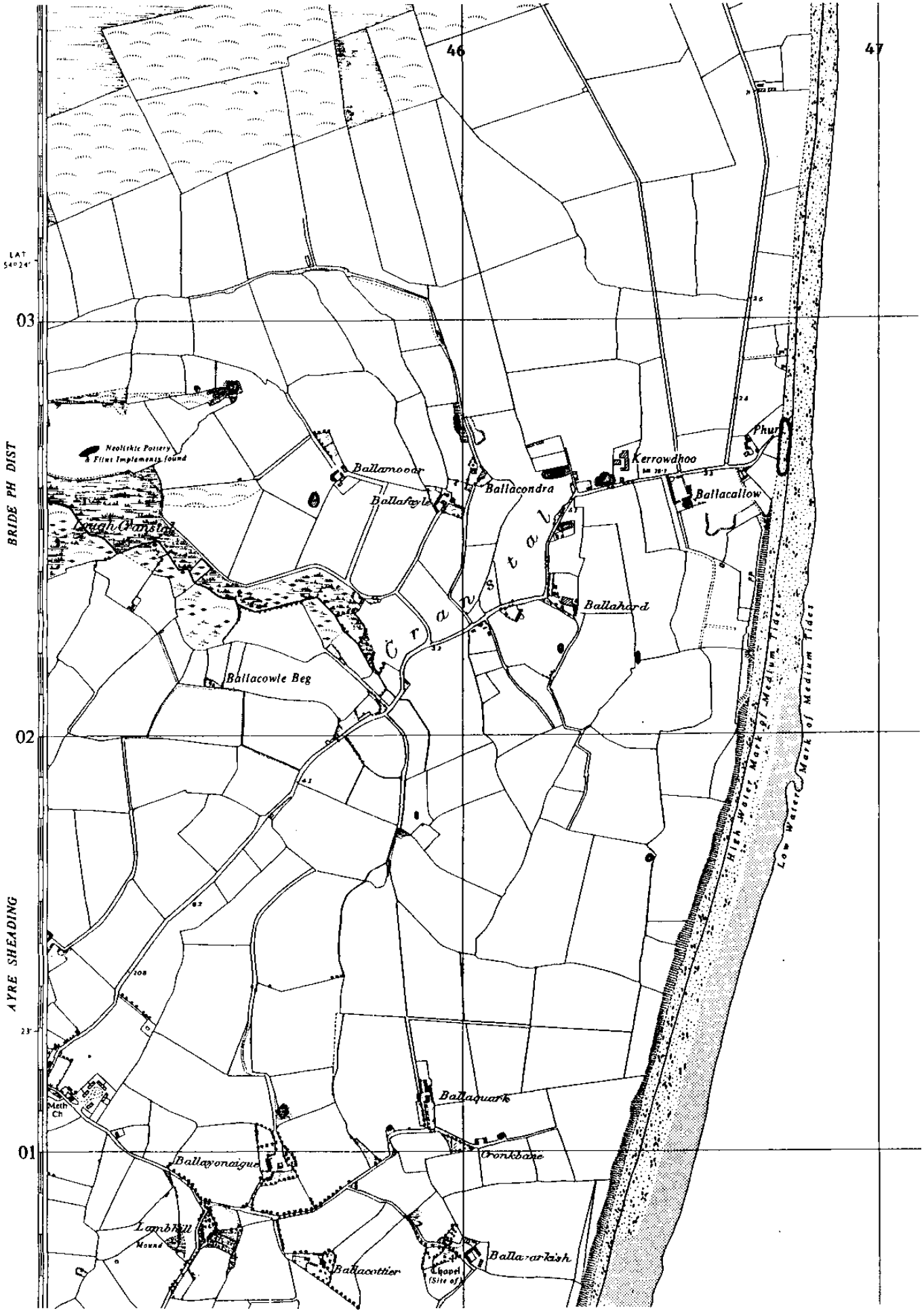
Glomeris marginata
Tachypodoiulus niger

ISOPODA; Oniscidea

Armadillidium vulgare
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

Lauria cylindracea
Vallonia excentrica
Arion ater agg.
Deroceras reticulatum
Clausilia bidentata
Trichia striolata


46
47
LAT 54°24'
03
02
01
BRIDE PH DIST
AYRE SHEADING
Neolithic Pottery & Flint Implements found
Ballamoar
Ballafayle
Ballacondra
Kerrowdhoo
Ballacallow
Phurt
Laugh Panna
Ballahard
Ballacowle Beg
Ballaquark
Ballavonaigue
Lambhill
Mound
Ballacottier
Chapel (Site of)
Ballavarkish
Meth Ch
High Water Mark of Medium Tides
Low Water Mark of Medium Tides

SITE 3. LOUGH CRANSTAL (EAST) (NX 457 022)

DATE VISITED: 30 April 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: Lough Cranstal is a large, low-lying area of fen and carr situated between The Ayres and the Bride Hills. As with most landscape features in the northern plain of the island, it is believed that the Lough came into being at the end of the last Glaciation through fluvial erosion (Garrad 1972a). During our brief visit, we only looked at the south-eastern section of the site. Two main vegetation types were represented here - a central area of grey willow Salix cinerea carr and peripheral tall fen with reed canary-grass Phalaris arundinacea, meadowsweet Filipendula ulmaria and marsh marigold Caltha palustris. The main watercourse through the fen was extremely eutrophicated and had extensive stands of floating sweet-grass Glyceria fluitans.

INVERTEBRATE INTEREST: Less than an hour was spent on the site and so the information available is only very sketchy, however, some interesting species were found and the ground-beetle fauna was of particular note, with many species being highly characteristic of tall fen habitats. Agonum thoreyi and A. piceum both require dense vegetation on fenland sites and neither have been reported previously from the Isle of Man. The local ground-beetle Trichocellus placidus was found in Phalaris litter in areas of the fen shaded by sallow bushes. This is the first record of this species from Mann and is further west than most previous records for the British Isles (Luff 1982). Pterostichus minor and Bradycellus sharpi also favour dense vegetation with a well-developed litter-layer, though not necessarily in tall fen. Other, more widespread, wetland carabids collected were Pterostichus diligens, Agonum fuliginosum and Elaphrus cupreus. The mollusc community was rather disappointing with the more sensitive wetland indicator species, especially Vertigo spp., not being found. This may be due to pollution of the site by eutrophication from surrounding farms. Nonetheless, a number of wetland species were discovered, including Deroceras laeve, Zonitoides nitidus and Euconulus alderi.

Lough Cranstal (East) is a much more nutrient-rich peatland habitat than most of the island's fens and the scarcity of this habitat means that the community of invertebrates present must also be an unusual one within a Manx context. Further study of Lough Cranstal would be highly desirable and would probably lead to the discovery of many more unusual invertebrate species. The main concern that we would express in regard to this site was the excessive eutrophication affecting the watercourse. This is presumably due to the seepage of slurry, fertilisers etc.. from surrounding farmland. The encroachment of carr onto the remaining areas of open fen would also be undesirable and management to hold this in check should be seen as a conservation priority.

SPECIES RECORDED. (LOUGH CRANSTAL - East)

HEMIPTERA

Chartoscirta cincta

COLEOPTERA

Elaphrus cupreus
Bembidion mannerheimi
Pterostichus diligens
Pterostichus minor
Agonum fuliginosum
Agonum piceum
Agonum thoreyi
Trichocellus placidus
Bradycellus sharpi
Silpha atrata
Anotylus rugosus
Stenus boops
Stenus brunnipes
Stenus juno
Coccidula rufa
Lochmaea caprea
Aphthona nonstriata

MYRIAPODA; DIPLOPODA

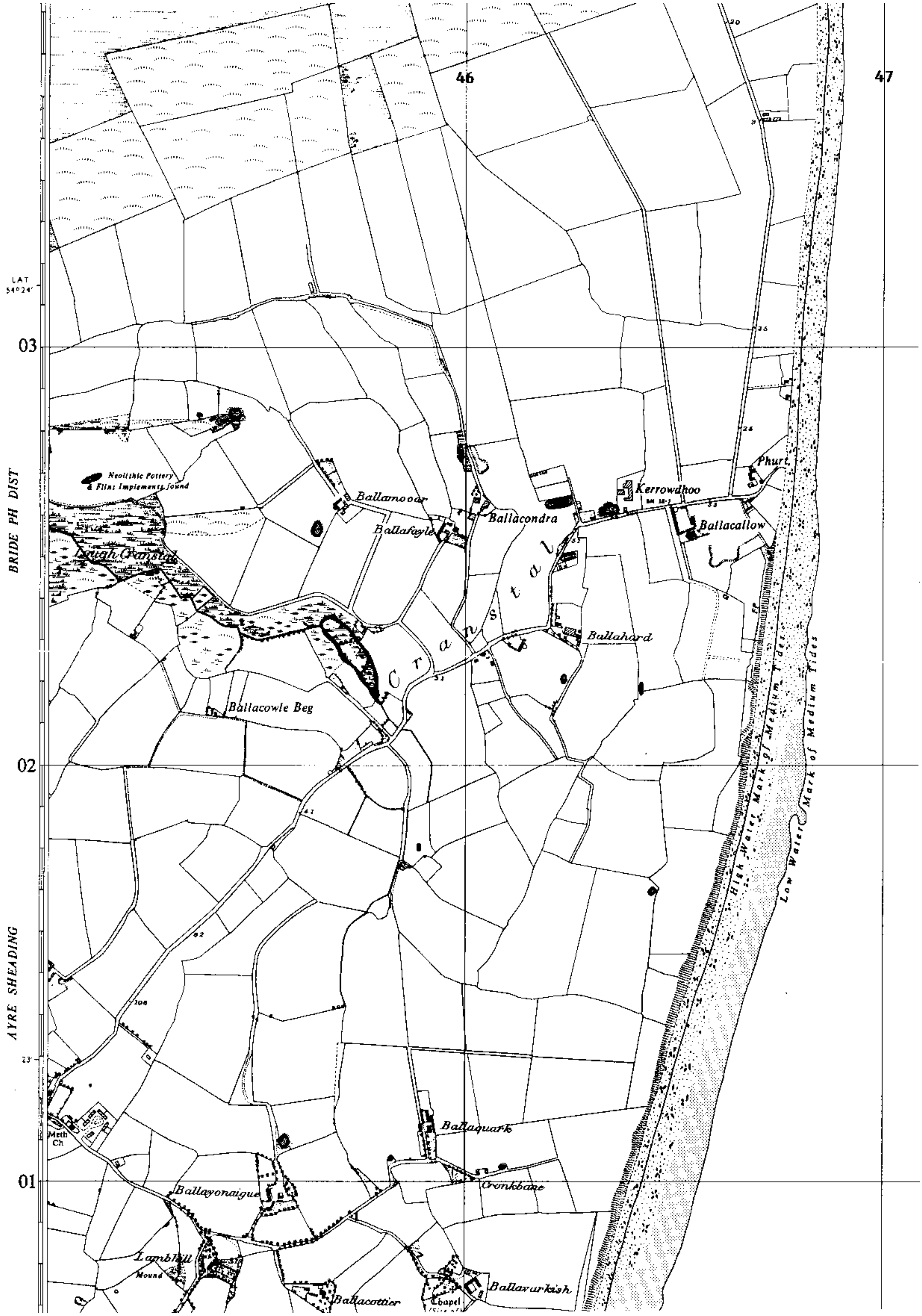
Julus scandinavius
Tachypodoiulus niger

ISOPODA: Oniscidea

Philoscia muscorum
Trichoniscus pusillus

MOLLUSCA

Carychium minimum
Lauria cylindracea
Discus rotundatus
Arion ater agg.
Arion subfuscus
Zonitoides nitidus
Deroceras laeve
Euconulus alderi


46
47
LAT
54°24'
03
02
01
23'
BRIDE PH DIST
AYRE SHEADING
Neolithic Pottery
& Flint Implements found
Lough Cranstal
Ballamooar
Ballafayle
Ballacondra
Kerrowdhoo
Phurt
Ballacallow
C r a n s t a l
Ballahard
Ballacowle Beg
High Water Mark of Medium Tides
Low Water Mark of Medium Tides
Ballaquark
Cronkbane
Meth Ch
Ballayonaigue
Lambhill
Mound
Ballacottier
Chapel
Ballavarkish

SITE 4. MAUGHOLD HEAD (SC 495 917)

DATE VISITED: 1 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: Maughold Head is the most easterly point of the Isle of Man and represents the north-easterly extremity of the belt of Manx slates that gives rise to Mann's upland scenery. This geology produces shallow acidic soils and the flora reflects this with a typical community of maritime grassland . Abundant species on the cliff-slopes included red fescue Festuca rubra, ling Calluna vulgaris, sea campion Silene maritima, sheep's sorrel Rumex acetosella and English stonecrop Sedum anglicum. On the higher slopes of the Head, very shallow, stony soils were mantled with maritime heath vegetation dominated by ling, bell heather Erica cinerea and western gorse Ulex gallii. The imposing cliffs are best known for their seabird colonies which include populations of all four species of British auks.

INVERTEBRATE INTEREST: The east-facing cliff slopes were rather poor for invertebrates and time (nor weather - a typically dense sea-mist) did not permit an investigation of the maritime heath. Certainly the latter habitat would be worth further study but we would be surprised if Maughold was of great invertebrate interest. Acidic cliff-slope communities are widespread around the Manx coast and better examples for invertebrates are likely to occur where there is a more favourable aspect.

SPECIES RECORDED. (MAUGHOLD HEAD)

HYMENOPTERA: Formicldae

Formica lemani
Lasius flavus
Myrmica scabrinodis

COLEOPTERA

Leistus rufescens
Notiophilus palustris
Dromius linearis
Agriotes obscurus
Cylindrinotus laevioctostriatus
Otiorhynchus rugifrons
Trachyphloeus bifoveolatus

MYRIAPODA: CHILOPODA

Geophilus carpophagus

MYRIAPODA: DIPLOPODA

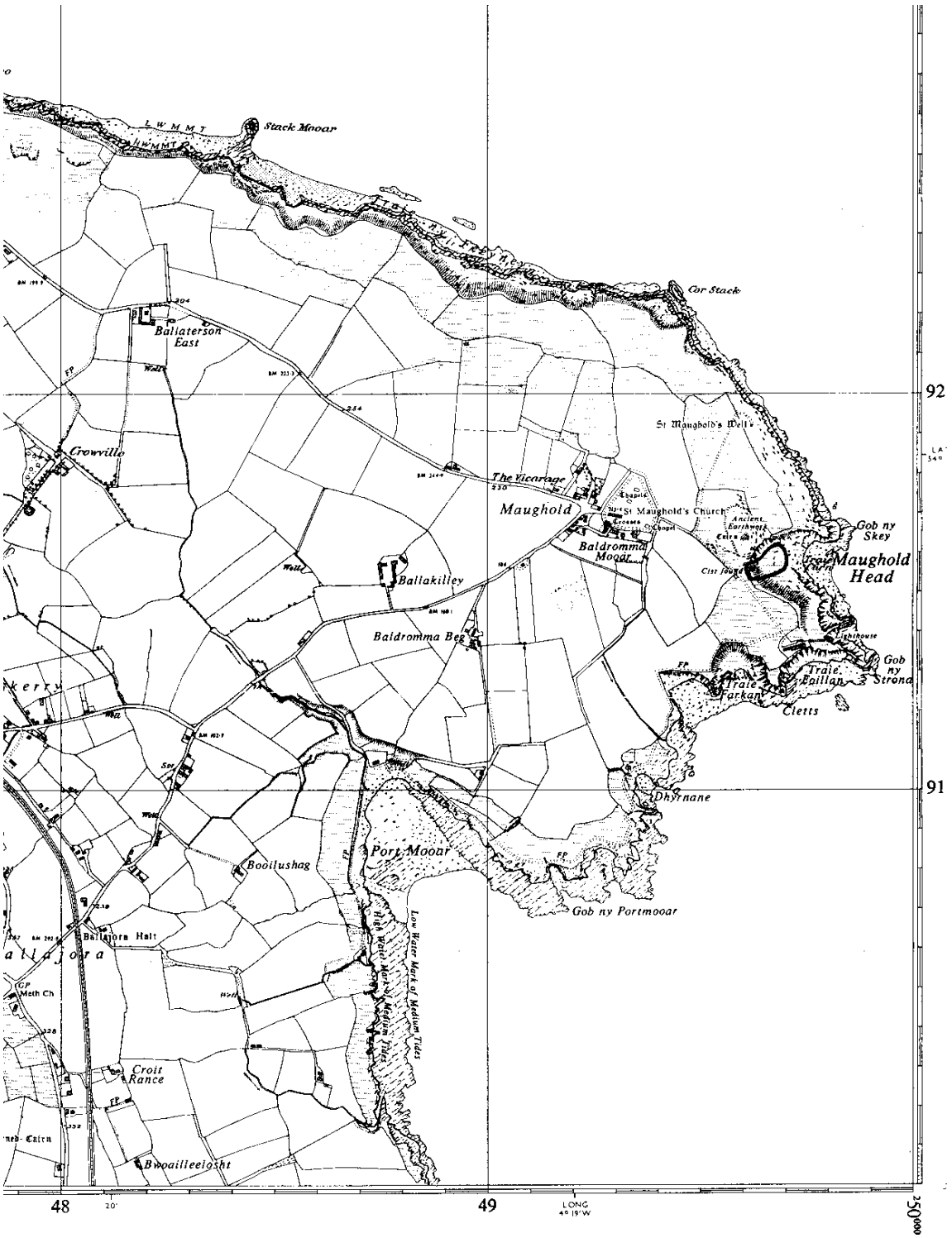
Cylindroiulus punctatus
Glomeris marginata
Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Philoscia muscorum
Porcellio scaber

MOLLUSCA

Columella aspera
Lauria cylindracea
Discus rotundatus
Arion ater agg.
Limax marginatus
Euconulus fulvus


Stack Mooar
Cor Stack
Ballaterson East
Growville
The Vicarage
Maughold
St Maughold's Church
St Maughold's Well
Baldromma Mooar
Ballakilley
Baldromma Beg
Gob ny Skey
Maughold Head
Traie Eaillan
Gob ny Strona
Traie Parkan
Cletts
Dhrynane
Port Mooar
Gob ny Portmooar
Booilushag
Ballajora Halt
Croit Rance
Bwoailleeight
92
91
48
49
LONG 4° 19' W
250000

SITE 5. SULBY GLEN (SC 379 911)

DATE VISITED: 1 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: The Sulby River at this point is relatively narrow, shallow and fast-flowing with a stony bed. Running northwards through a rather broad valley, the river deposits small, coarse shingle banks along much of its length and, although only at 55 metres a.s.l., there is an upland feel to both the general environment and the river characteristics. The land bordering the river on both sides consists of close-grazed, acidic, sheep-pasture, whilst further downstream there are strips of deciduous woodland on the riverbanks. The shingle bank sampled, on the west bank of the river, was composed of a matrix of medium pebbles mixed with finer gravels. A shute along the back of the shingle bar percolated water through the gravels, resulting in a high water table across the full width of the bank. On the highest points of the bar, a sparse acidic grassland with young plants of western gorse Ulex gallii was established but stabilised shingle grassland is presumably prevented from developing by sheep-grazing and flood-surges released from the Sulby Reservoir just two kilometres upstream.

INVERTEBRATE INTEREST: Casual hand-searching of the top layers of shingle yielded specimens of a characteristic group of common river shingle beetles - Bembidion atrocoeruleum, B.tibiale, Agonum albipes, Lathrobium multipunctum, and Zorochros minimus. Similarly, excavation within the shingle matrix to sample the subterranean fauna produced four common species of aleocharine staphylinids. Two of these - Hydrosmecta eximia and Aloconota currax - are typical shingle species but the other two are widespread and found in a variety of habitats. Adults of the stoneflies Chloroperla tripunctata and Diura bicaudata were also collected from the shingle bank. Both species frequent fast-flowing streams and rivers and have previously been widely-recorded on Mann. Other invertebrates found on the river shingle were Lasius flavus and Deroceras laeve.

The rest of the species recorded at this site were found on the strip of acidic grassland between the road and the river, particularly under stones beneath the roadside drystone wall. The comparitive richness of the mollusc fauna for such a base-poor site is probably due to the presence of small amounts of rubbish deposited by the lay-by and this may also account for the occurrence of the woodlouse Haplophthalmus mengei.

This stretch of the Sulby Glen appears to have no features of particular significance for invertebrate conservation. The sheep-pasture of the western side of the valley is too heavily-grazed to retain any features of importance and even the flushes seen in this area were trampled bare of vegetation. Stocking-levels on the slopes of Slieau Managh to the east, however, did not seem as high and there may be more of interest in the hill fauna there. The unpolluted waters of the Sulby River are obviously beneficial to freshwater invertebrates but the shingle bars are too poorly-developed to expect the fauna to be of any conservation importance.

SPECIES RECORDED. (SULBY GLEN)

PLECOPTERA

Chloroperla tripunctata
Diura bicaudata

HYMENOPTERA: Formicidae

Formica lemani
Lasius flavus
Lasius niger
Myrmica ruginodis
Myrmica scabrinodis

COLEOPTERA

Bembidion atrocoeruleum
Bembidion tibiale
Pterostichus madidus
Abax parallelopipedus
Agonum albipes
Harpalus latus
Silpha atrata
Lathrobium multipunctum
Staphylinus aeneocephalus
Hydrosmecta eximia
Aloconota currax
Amischa cavifrons
Geostiba circellaris
Zorochros minimus

MYRIOPODA: CHILOPODA

Lithobius forficatus
Lithobius variegatus

MYRIOPODA: DIPLOPODA

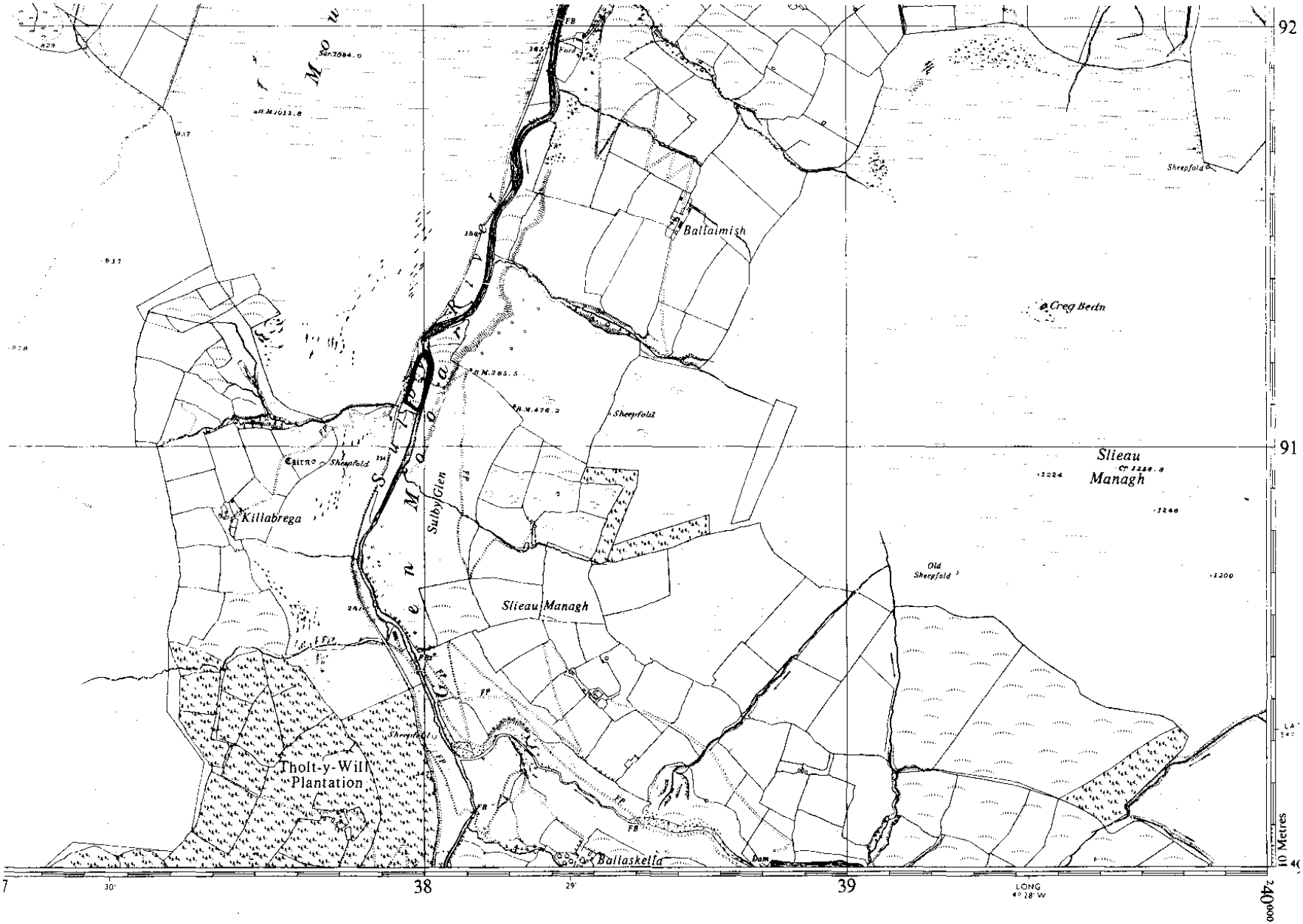
Glomeris marginata
Ophyiulus pilosus
Tachypodoiulus niger

ISOPODA: Oniscidea

Haplophthalmus mengei s.s.
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

Aegopinella pura
Arion ater agg.
Arion circumscriptus
Arion distinctus
Arion subfuscus
Clausilia bidentata
Cochlicopa lubrica
Deroceras laeve
Deroceras reticulatum
Discus rotundatus
Limax margmatus
Nesovitrea hammonis
Vitrea contracta


92
91
Ballaimish
Creg Beetn
Sheepfold
Slieau Managh
Old Sheepfold
Killabrega
Cairn
Sheepfold
Sulby Glen
Sulby River
Slieau Managh
Tholt-y-Will Plantation
Ballaskella
Dam
FB
FP
7
30'
38
29'
39
LONG 4° 28' W
10 Metres
240000

SITE 6. GLEN MAYE (SC 232 797)

DATE VISITED: 1 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: In many respects Glen Maye is a typical Manx "pleasure glen", consisting of a narrow, steep-sided, coastal dingle which was planted-up as an ornamental woodland during the nineteenth century. The canopy is rather mixed but dominated chiefly by sycamore with smaller amounts of ash, horse chestnut wych elm, etc.. Despite the secondary nature of the canopy, the ground-layer is lush and rich with aromatic stands of wild garlic Allium ursinum, abundant sanicle Sanicula europaea and hart's tongue fern Phyllitis scolopendrium, and impressive sheets of opposite-leaved golden saxifrage Chrysosplenium oppositifolium festooning the steep banks of the stream. Holly Ilex aquifolium is a frequent understorey component and drier, more acidic sections are carpeted by greater woodrush Luzula sylvatica. Only the upper portion of the glen was sampled but nearer the coast there is reported to be a stretch of oak and hazel coppice which is perhaps a remnant of the primary forest that was almost entirely cleared from Mann many centuries ago.

INVERTEBRATE INTEREST: Surveying was concentrated in two main areas; the banks of the stream immediately below the waterfall and the wooded valley slopes on the south side of the glen for a distance of approximately 200 metres downstream. Below the waterfall, saturated sheets of moss and Chrysosplenium yielded specimens of the hygrophilous staphylinids Dianous coerulescens and Stenus guynemeri, both of which have a strong association with waterfalls. Narrow banks of shingle, composed of flat boulders lying over silts and gravels, were casually sampled by stone-turning. The carabid Bembidion tibiale was abundant in this habitat; it is a typical inhabitant of shaded river shingle, particularly alongside small streams. Also collected from the shingle banks were the characteristic aleocharine staphylinids Aloconota cambrica and A. currax.

An investigation of the mollusc fauna formed a major part of the search-effort on the wooded slopes as it was hoped that such a base-enriched and humid environment would be particularly suited to this group. However, with the exception of Leiostyla anglica, none of the anticipated ancient woodland indicator species were recorded. Leiostyla is restricted to primary woodland over much of southern and eastern England but is far more widespread in the wetter climate of western Britain. The occurrence of the slug Limax maculatus in some abundance under the bark of both fallen and standing trees was of interest. This is a common species of natural habitats in Ireland and also occurs in synanthropic situations in a few places on the British mainland. Also found under bark in this area was a single specimen of the centipede Lithobius macilentus, which is a rather local and uncommon woodland species in Britain and does not appear to have been recorded from any of the offshore islands (including Ireland) before. The remains of a specimen of the wood-boring weevil Mesites tardii was found in a spider's web beneath sycamore bark. Bailey (1905) discusses the occurrence of this species in the Isle of Man. It has a localised, chiefly western, distribution in Britain and is mainly found in coastal woodland where it breeds in a variety of deciduous trees. Finally, a single adult Ferdinandea cuprea was seen on the bark of a dead elm alongside the upper path through the glen. Crellin (1986) notes this hoverfly as having been recorded by several observers on Mann. It is associated with old woodlands and the larvae are thought to inhabit sap-runs, particularly those caused by the larvae of the goat moth Cossus cossus.

It is somewhat surprising that molluscs such as Spermodea lamellata, Limax cinereoniger and Acicula fusca (all known from Mann) were not seen on this occasion but perhaps they will be discovered in the remnant oak-hazel wood lower down the valley. The almost total absence of saproxylic Coleoptera is also unusual as we would have expected to see at least

some of the commoner beetles (which are capable of colonising secondary woodland) beneath the bark of the deadwood sampled. Nevertheless, in a Manx context, Glen Maye is obviously an important site for the conservation of invertebrates as there are few woodlands on the island with such a high proportion of relatively old deciduous trees. The rich ground flora and high humidity of the gorge are factors of major significance for invertebrates and further survey will no doubt add to the list of woodland species of restricted occurrence on the Isle of Man.

SPECIES RECORDED. (GLEN MAYE)

PLECOPTERA

Chloroperla tripunctata
Diura bicaudata

HEMIPTERA

Anthochoris nemorum
Saldula saltatoria
Velia caprai

DIPTERA: Syrphidae

Ferdinandea cuprea

COLEOPTERA

Leistus ferrugineus
Nebria brevicollis
Bembidion tibiale
Bembidion harpaloides
Pterostichus madidus
Pterostichus melanarius
Abax parallelopipedus
Agonum albipes
Silpha atrata
Olophrum piceum
Anotylus rugosus
Stenus guynemeri
Stenus impressus
Dianous coerulescens
Philonthus decorus
Tachyporus obtusus
Aloconota cambrica
Aloconota currax
Geotrupes stercorarius
Otiorhyncus singularis
Mesites tardii

MYRIAPODA: CHILOPODA

Geophilus insculptus
Lithobius macilentus

MYRIAPODA: DIPLOPODA

Blaniulus guttulatus
Cylindroiulus punctatus
Glomeris marginata
Polydesmus angustus
Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

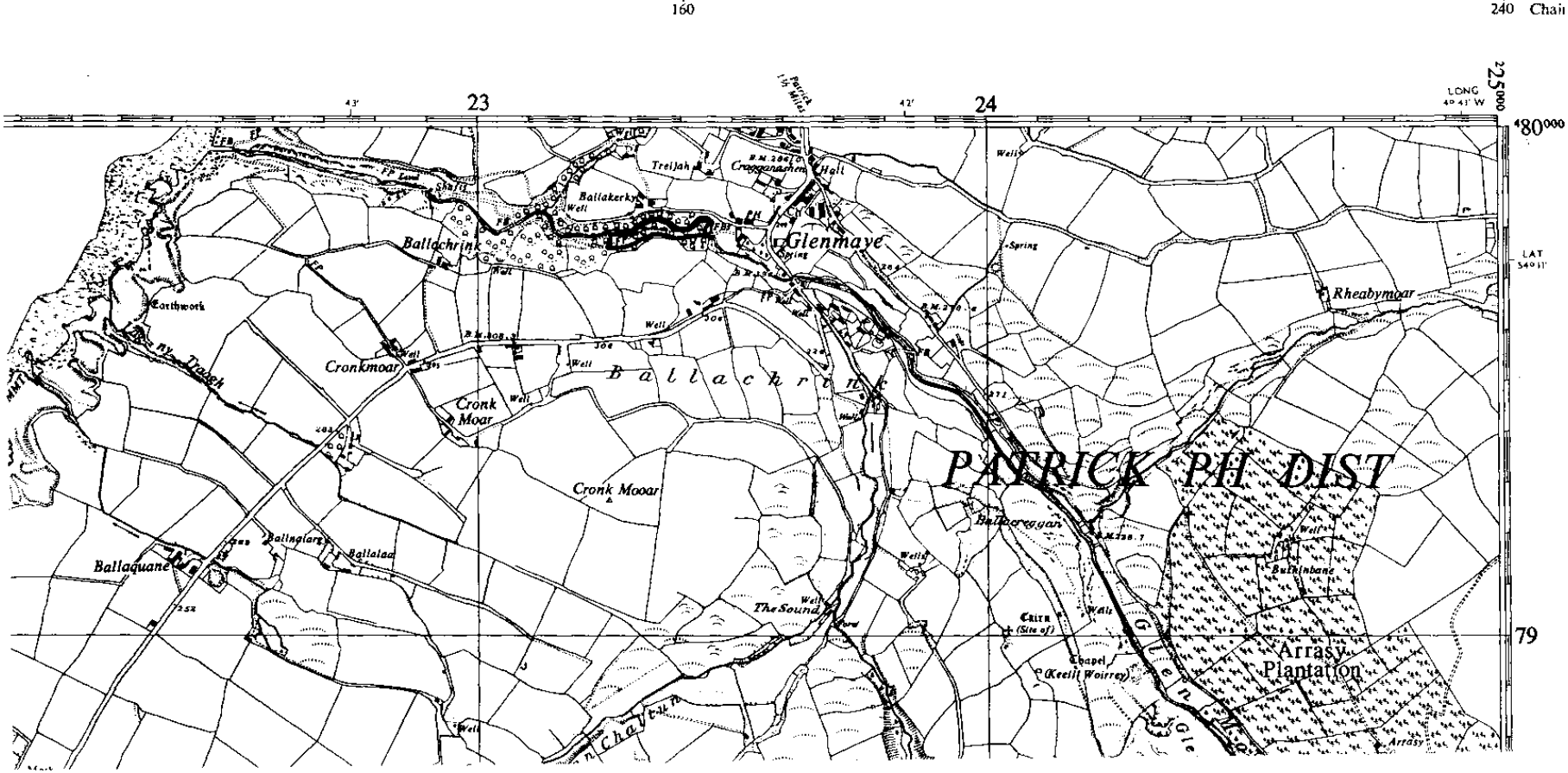
Carychium tridentatum
Leiostyla anglica
Lauria cylindracea
Punctum pygmaeum
Discus rotundatus
Arion subfuscus
Arion circumscriptus
Arion distinctus
Aegopinella nitidula
Oxychilus cellarius
Oxychilus alliarius
Limax marginatus
Limax maculatus
Deroceras reticulatum
Euconulus fulvus
Clausilia bidentata
Trichia striolata

RDNANCE SURVEY

ıle 1:10,560 or 6 Inches to 1 Mile

Provisional Edition

SHEET SC 27



SITE 7. LHOOB DOO (SC 211 783)

DATE VISITED: 1 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: The low, west-facing cliffs of Manx slate overlain with boulder- clay which run for half-a-kilometre or so north from Elby Point to Lhoob Doo support a rich maritime grassland with a recognised botanical interest. The topography consists of a series of small mounds about 10 metres high, separated from each other by broad flushes. The mounds are clothed in a thick mattress of red fescue Festuca rubra with patches of thrift Armeria maritima, sea campion Silene maritima, spring squill Scilla verna and scurvy-grass Cochlearia sp. on the lower slopes. At the southern end the flushes are dominated by purple moor-grass Molinia caerulea tussocks but further north, towards Lhoob Doo, they are botanically-richer with clumps of black bog-rush Schoenus nigricans and belts of common reed Phragmites australis (Plate 1).

The deterioration of inland boundary fences permits sheep- (and probably also cattle-) grazing along this stretch. Although stock access is opportunistic it is of vital importance in maintaining the open character of the flushes and habitat-deterioration will undoubtedly occur if fences are repaired and stock excluded. By contrast, the largest stand of Phragmites extends landwards into one of the northern fields at Creg Mooar and here excessive trampling has damaged the conservation interest of the fen. Ideally, this pocket of reedfen should be fenced in with the unimproved grassland of the coastal strip and subjected to the same light grazing pressure.

INVERTEBRATE INTEREST: The major feature of this stretch of coast is the series of base-enriched flushes. This habitat-type is capable of supporting a large number of invertebrates with specialised requirements, particularly amongst groups such as the beetles, flies and spiders. Unfortunately, on this occasion, nothing of significance was discovered but extensive survey would be worthwhile in the future. In western Britain the snail Leiostyla anglica (normally regarded as a woodland species) is a characteristic inhabitant of good quality coastal flushes and therefore it was pleasing to find it in some abundance at Lhoob Doo. Three local species of woodlice were recorded along this stretch of coast – Armadillidium pulchellum was present in small numbers amongst the maritime grassland whilst Haplophthalmus mengei and Trichoniscoides saeroeensis were found beneath stones embedded in clay deposits where these were exposed on the lower slopes. The slug Limax maculatus occurred beneath slate scree above high water mark on the rocky shore. There are indications from the cartography of the 1:10560 series O.S. map of the area that similar flushed grassland probably occurs for a considerable way north of Baiy ny Ooig and this stretch should also be surveyed during any conservation evaluation of the boulder-clay cliffs of the south-west coast.

SPECIES RECORDED. (LHOOB DOO)

THYSANURA

Petrobius brevistylis
Petrobius maritimus

PLECOPTERA

Leuctra hippopus

HEMIPTERA

Stygnocoris fuligineus
Scolopostethus affinis

HYMENOPTERA: Formicidae

Formica fusca
Formica lemani
Lasius flavus
Lasius niger
Myrmica ruginodis

COLEOPTERA

Leistus fulvibarbis
Leistus rufescens
Notiophilus biguttatus
Loricera pilicornis
Pterostichus diligens
Pterostichus madidus
Agonum albipes
Dromius linearis
Dromius notatus
Stenichnus collaris
Omalium laeviusculum
Anotylus rugosus
Stenus guttula
Gabnus trossulus
Agriotes obscurus
Rhyzobius litura
Corticaria punctulata
Apion curtirostre
Otiorhynchus atroapterus
Otiorhynchus singularis
Barypeithes pellucidus
Sitona regensteinensis
Hypera plantaginis

MYRIAPODA: CHILOPODA

Geophilus carpophagus
Geophilus insculptus
Lithobius forficatus
Schendyla nemorensis

MYRIAPODA: DIPLOPODA

Glomeris marginata
Tachypodoiulus niger

ISOPODA: Oniscidea

Androniscus dentiger
Armadillidium pulchellum
Haplophthalmus mengei s.s.
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscoides saeroeensis
Trichoniscus pusillus

MOLLUSCA

Potamopyrgus jenkinsi
Carychium minimum
Carychium tridentatum
Columella aspera
Leiostyla anglica
Lauria cylindracea
Punctum pygmaeum
Discus rotundatus
Arion ater agg.
Arion subfuscus
Vitrea contracta
Limax maculatus
Deroceras reticulatum
Euconulus alderi
Clausilia bidentata
Trichia hispida
Cepaea hortensis
Helix aspersa


LONG
4° 45' W
21
44'
22
79
78
Earthwork
Ballaquane
Boirane
Chapel
(Site of)
(Keeill yn Chiarn)
Dalby Point
Mast
Shelter
Well
Ballelby
Cross Slab
Meth Ch
Baly ny Ooig
Lhoob Doo
Ballahutchin
St. Patrick's Church
(Chapel of Ease)
Dalby
Ballacallin
Cregmoar
Spring
Westwood
Creglea
Ballacain
Elby Point
Ballacooil
Niarbyl
Balladda
FP
Earthwork
Doarlish Mooar
Croaldha
Ford
Borrane

SITE 8. SANTON GORGE (SC 297 694)

DATE VISITED: 2 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: This extremely attractive site, situated 200 metres up the Santon Burn from the sea, consists of a narrow block of scrub oak/hazel woodland on the steep slopes of the eastern bank of the river. Garrad (1972a) considers that this may well be a remnant of the Manx 'wildwood' and although the trees themselves are relatively young they originate from ancient coppice stools. Hawthorn, elder and ash are constituents of the low canopy and the middle section of the wood has thickets of blackthorn and gorse. Despite the steepness of the wood, sheep and cattle graze the upper slopes and this has resulted in a mainly graminaceous ground-layer. Leaf-litter is poorly-developed throughout and there is little deadwood, either fallen or standing. A base-enriched flush descends through the wood on the uppermost bend of the river, containing abundant ramsons Allium ursinum, opposite-leaved golden saxifrage Chrysosplenium oppositifolium and greater woodrush Luzula sylvatica, with clumps of hemlock water-dropwort Oenanthe crocata. The rocky bed of the river is lined with a strip of ramsons and there are numerous exposed, moss-covered boulders throughout its length.

INVERTEBRATE INTEREST: Survey effort was concentrated on the north-facing slope of the wood with most attention centred on the ground-dwelling fauna. The results were disappointing with no evidence of any elements of an ancient woodland fauna and all of the species recorded are likely to be widely distributed in suitable habitats on the Isle of Man. Although grazing has obviously modified vegetation structure and composition on the upper slopes, there are certainly habitat-features present which could still support ancient woodland invertebrates and it is rather surprising that they appear to be totally absent. If Santon Gorge is an ancient woodland site then the paucity of its fauna may be related to the general lack of woodland in this south-eastern corner of the island. The Santon Gorge woodland is not extensive and local extinctions will probably have occurred during adverse management conditions in the past. The Ballasalla - Santon area is poorly-wooded and, for instance, there will have been no 'reservoir' of woodland invertebrates to recolonise the site after the clear-felling which presumably occurred earlier this century.

Few invertebrates of any particular interest were recorded during this visit. The relatively poor list of beetles is likely to be due in part to the absence of a well-developed litter-layer and many more species would have been expected in such an undisturbed site. Amongst the molluscs, only Leiostyla anglica has associations with ancient woodland sites but its broader habitat tolerances on the island have already been discussed under the account of Site 6 (Glen Maye). The arboreal snail Balea perversa was frequent in the oak canopy, along with the weevil Rhynchaenus quercus; both species are capable of colonising secondary habitats. A single thysanuran Dilta sp. was found amongst the leaf-litter and has been tentatively identified as D. hibernica (the most likely species to occur in this type of habitat) although the specimen was immature and not possible to determine specifically.

SPECIES RECORDED. (SANTON GORGE)

THYSANURA

Dilta ?hibernica

HEMIPTERA

Anthocoris nemoralis
Anthocoris nemorum
Stenodema laevigatum
Saldula saltatoria

HYMENOPTERA: Formicidae

Formica fusca
Myrmica ruginodis

COLEOPTERA

Leistus fulvibarbis
Agonum albipes
Amara plebeja
Harpalus latus
Anotylus rugosus
Quedius fuliginosus
Dalopius marginatus
Apion dichroum
Sitona regensteinensis
Anthonomus pedicularius
Rhynchaenus quercus

MYRIAPODA: CHILOPODA

Lithobius forficatus

PSEUDOSCORPIONES

Chthonius tetrachelatus

MYRIAPODA: DIPLOPODA

Cylindroiulus punctatus
Glomeris marginata
Ommatoiulus sabulosus
Polydesmus angustus
Tachypodoiulus niger

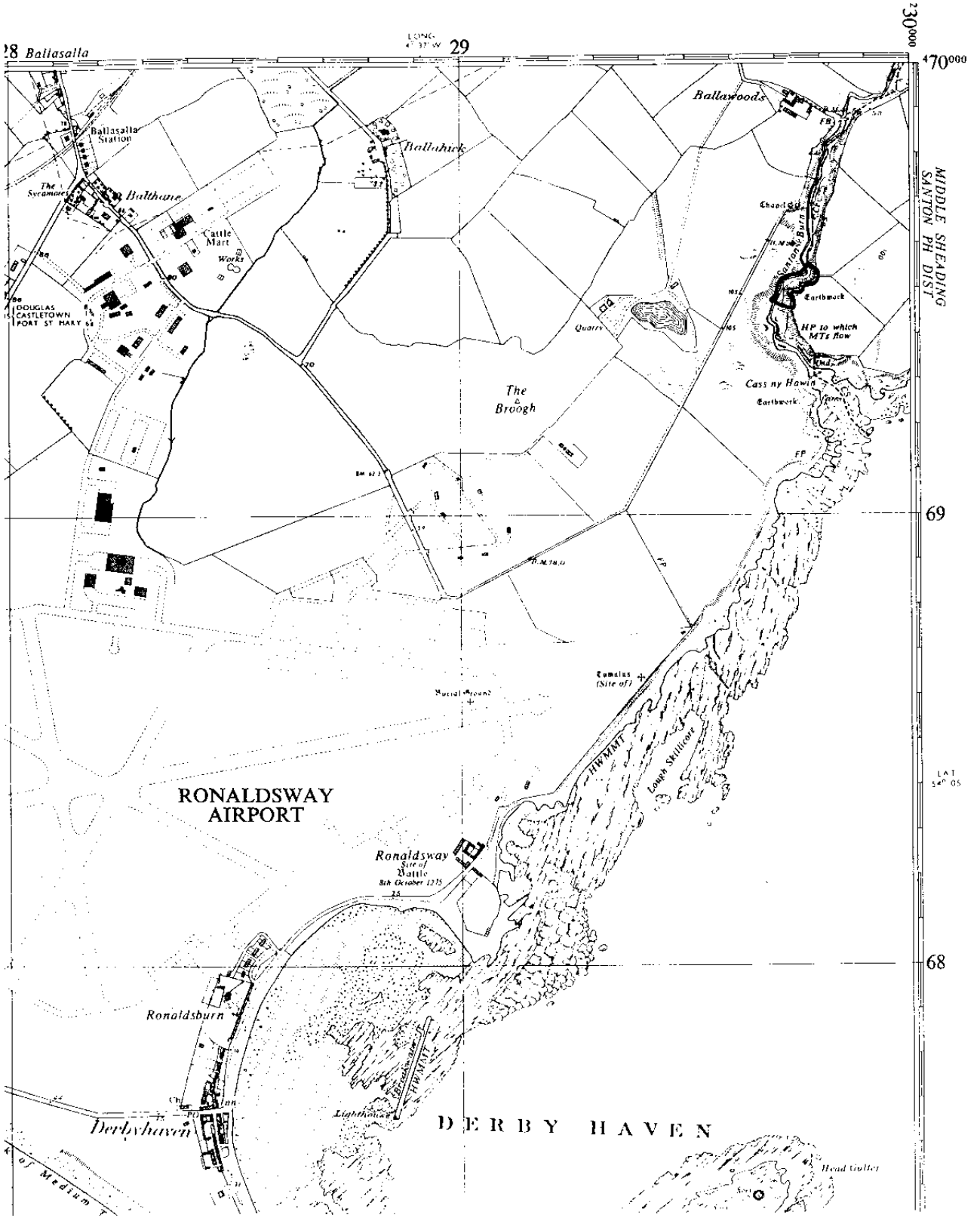
ISOPODA: Oniscidea

Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

Lymnaea truncatula
Carychium minimum
Carychium tridentatum
Cochlicopa lubrica
Leiostyla anglica
Lauria cylindracea
Discus rotundatus
Arion subfuscus
Arion distinctus
Vitrina pellucida
Aegopinella pura
Aegopinella nitidula
Oxychilus alliarius
Limax marginatus
Deroceras laeve
Deroceras reticulatum
Deroceras caruanae
Euconulus alderi
Euconulus fulvus
Clausilia bidentata
Balea perversa
Trichia hispida

160 240 Chains



SITE 9. PORT SOLDRICK (SC 303 696)

DATE VISITED: 2 May 1989.
RECORDERS: DC Boyce & A P Fowles.

SITE DESCRIPTION: Port Soldrick is a small, sheltered, south-east facing cove surrounded by cliffs overlain with thick deposits of boulder-clay. At the back of the cove, a dry gully cuts through the scrub-covered slopes and both here and along the north side of the bay there are exposed earth cliffs containing the burrows of aculeate Hymenoptera. In the north-east corner a small stream flushes across the coarse sand and shingle beach, lined with plants of curled dock Rumex crispus. Above the beach there is a narrow belt of maritime grassland, including a large stand of sea sandwort Honkenya peploides. Lower down the shore brown seaweeds are abundant, luxuriating in the sheltered conditions as they clothe the rocks of the intertidal zone.

INVERTEBRATE INTEREST: Time did not permit more than a brief and hurried visit to this site and little more than its potential for invertebrates could be gleaned from the survey. Aspect and shelter are major features of its importance and it can be anticipated that Port Soldrick will support a good range of thermophilous insects. Visits later in the season to survey groups such as bees, wasps, hoverflies, etc., should prove rewarding. Smaller scale features worthy of survey are the stream flowing across the upper beach (potentially interesting for dolichopodid, tipulid and empid flies amongst others) and the Honkenya stand, which looks ideal for the scarce tortoise beetle Cassida nobilis which is known from similar habitat at Kentraugh.

Amongst the invertebrates recorded on this occasion, the terrestrial species are all common and, without exception, are probably widespread in suitable habitats on the island. Of greater significance are the ground beetle Aepus marinus and the pseudoscorpion Neobisium maritimum. These were found by sampling the crevices of the Fucus zone on the middle shore. The sheltered nature of the cove and the crevice-bearing strata of the intertidal rocks provide ideal conditions for the highly-specialist fauna of such habitats. Both species are members of a small but distinctive community of invertebrates that inhabit the inner reaches of crevices where fine sediments support colonies of the springtail Anurida maritima and various species of mites. Many of the species of this community have a very restricted world distribution and the western coasts of the British Isles are of international importance in this regard.

SPECIES RECORDED. (PORT SOLDRICK)

THYSANURA

Petrobius maritimus

HYMENOPTERA: Formicidae

Formica fusca

COLEOPTERA

Aepus marinus
Pterostichus strenuus
Agonum albipes
Demetrias atricapillus
Dromius melanocephalus
Stenus clavicornis
Xantholinus linearis
Xantholinus longiventris
Apion violaceum
Barypeithes pellucidus
Hypera arator

MYRIAPODA: CHILOPODA

Lithobius forficatus
Necrophloeophagus longicornis

MYRIAPODA: DIPLOPODA

Brachyiulus pusillus
Cylindroiulus punctatus
Ommatoiulus sabulosus
Ophyiulus pilosus
Polydesmus angustus
Tachypodoiulus niger

ISOPODA: Oniscidea

Armadillidium vulgare
Ligea oceanica
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

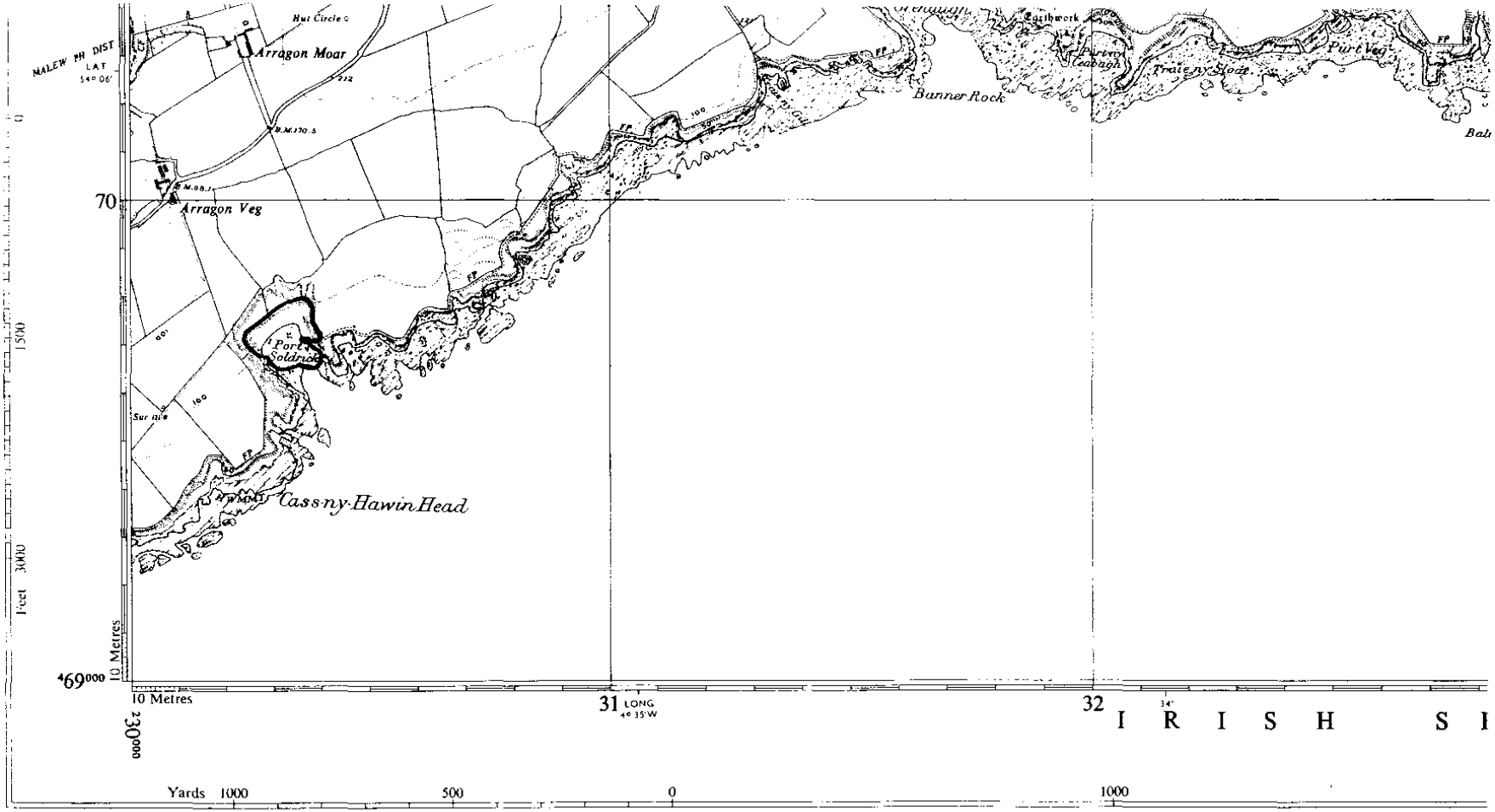
PSEUDOSCORPIONES

Neobisium maritimum

ARANEAE

Heliophanus cupreus

MOLLUSCA
Discus rotundatus
Arion subfuscus
Nesovitrea hammonis
Aegopinella pura
Oxychilus alliarius
Deroceras reticulatum
Clausilia bidentata
Trichia hispida



Roads — Fenced — Unfenced

Footpaths

Railways, Double Track — Station — Bridge over — Cutting — Tunnel — FB (Footbridge)

Single Track — Viaduct — Sidings — Level crossing — Bridge under — Embankment

INDEX TO ADJOINING SHEETS

SC 27 NE	SC 37 NW	SC 37 NE
SC 27 SE	SC 37 SW & part of SC 36 NW	SC 37 SE
SC 26 NE		

THE NATIONAL GRID

TO GIVE A GRID REFERENCE CORRECT TO 100 METR

EXAMPLE	*Glentraugh*	
The Grid Letters on this sheet are SC		
EAST *Take west edge of kilometre square in which point lies and read the large figures printed opposite this line on north or south margins.* *Estimate tenths Eastwards*	31 5 315	NORTH *Take south edge of kilometre in which point lies and read the figures printed opposite this line on east or west margins.* *Estimate tenths North*
Full 100 Metre Reference SC 315709		

The above Full Reference is unique. For many purposes the first grid letter can giving a reference, C 315709 which recurs at intervals of 500 Kilometres. I letters are omitted, the resulting reference 315709 recurs at intervals of 100

SITE 10. LANGNESS (SC 284 667)

DATE VISITED: 2 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: Langness is a narrow peninsula at the south-eastern tip of the island, approximately 2.5 kilometres long and c. 500 metres wide. The underlying rocks are chiefly Manx slate, although along the western shore outcrops of Carboniferous limestone and basement conglomerate are extensively exposed. The mosaic of habitats established on the acidic and calcareous rocks and the blown-sand areas of the isthmus - modified by a range of land-uses - gives rise to an interesting invertebrate fauna with species-associations that are almost certainly not found elsewhere on the Isle of Man (Luff 1988). In species-terms, Langness is of recognised importance for the occurrence of the lesser mottled grasshopper Stenobothrus stigmaticus, which is not known to occur elsewhere in the British Isles. The invertebrate fauna has been reasonably well-studied and has recently been the subject of a fairly comprehensive survey (Luff ibid).

Our efforts were concentrated on the saltmarsh area around Poyll Breinn on the western side of the peninsula. Between the road and the upper saltmarsh is a narrow band of brackish marsh with stands of meadowsweet Filipendula ulmaria marking freshwater seepages. The upper shore has coarse sand and shingle over a deep peaty soil and the strandlines are well-developed with thick piles of rotting seaweed. Limestone outcrops protrude through the peat in places and there are several shallow, brackish pools. Sea beet Beta maritima clumps are scattered throughout the sparse saltmarsh, which has a diverse flora in Manx terms. Alongside the boundary wall to the south of Poyll Breinn there is a raised island of shingle surmounted by a small patch of rank coastal grassland.

INVERTEBRATE INTEREST: The recent survey by Dr Martin Luff (ibid) highlighted the western saltmarshes as the most interesting habitat component of the Langness peninsula, with regard to the number of species which are probably restricted to this area on the Isle of Man. This is primarily because saltmarsh is such a rare habitat-type on Mann (Allen 1984) and clearly all efforts must be made to conserve this area in future. Probably the single most important species discovered during our six days of survey on the island was the weevil Polydrosus pulchellus. This species was frequent on sea beet in the upper saltmarsh and all specimens were referable to the form insquamosus which has very few scales on the elytra (a genetic feature; not the result of wear). P. pulchellus (formerly known as chrysomela) is a widespread but local species of saltmarshes and coastal shingle around British coasts but ab. insquamosus (until recently considered as a separate species) has only been recorded from Devon, Kent & Gloucestershire and was last seen in the 1930's at Croyde Bay in North Devon (P Hyman, pers. comm.). An indication of the rarity of this aberration is given by the fact that there is only a single specimen held in the British Museum (Natural History) and hence a specimen from Langness has been lodged in their collections. The only other specialist saltmarsh beetle recorded during our investigation was the carabid Dicheirotrichus gustavi, a common species on the British mainland but restricted on Mann by habitat limitations. Dicheirotrichus was common under stones around the perimeter of the shingle island by the boundary wall and, interestingly, was not found by Dr Luff on the larger expanse of saltmarsh on the southern side of this wall.

Another interesting saltmarsh invertebrate which is worthy of comment was the centipede Schendyla peyerimhoffi. A single female was collected amongst a batch of centipedes sent to AD Barber for determination and the exact micro-site was not recorded. S. peyerimhoffi was not recognised as occurring in the British Isles until 1961 and has now been found around high-tide mark in Sussex, Devon, Cornwall, the Scillies, South Wales and Anglesey. Elsewhere, the species is known from Morocco and Portugal (Barber & Keay 1988), but presumably also occurs on the coasts of France and Spain. The Manx record is therefore of

great interest as Langness would appear to be the northernmost locality in the world for this species. Most of the molluscs recorded were found on the wall along the east side of the road above the saltmarsh, including the relatively uncommon Pyramidula rupestris and Balea perversa.

Langness is of unquestioned ecological importance in a Manx context. Our investigations have added further information to the significance of the saltmarsh zone but there is clearly much more scope for entomological survey in this habitat. The 'Stinking Pool' of Poyll Breinn is an interesting feature which would repay detailed study and the freshwater seepages onto the upper shore are also likely to be of considerable interest. The impressive driftlines of rotting seaweed are equally likely to harbour a range of species with a restricted distribution on the Isle of Man, including wrack-bed flies of the families Coelopidae and Helcomyzidae, and it would be worthwhile to investigate the spider fauna of the strandlines in the future.

SPECIES RECORDED. (LANGNESS)

THYSANURA

Petrobius maritimus

HEMIPTERA

Piesma quadratura

HYMENOPTERA: Formicidae

Myrmica ruginodis

COLEOPTERA

Leistus fulvibarbis
Dyschirius globosus
Bembidion mannerheimi
Pterostichus strenuus
Dicheirotrichus gustavi
Badister bipustulatus
Omalium laeviusculum
Anotylus rugosus
Gyrohypnus angustatus
Xantholinus longiventris
Tachinus signatus
Agriotes lineatus
Rhyzobius litura
Corticaria crenulata
Apion violaceum
Apion miniatum
Polydrosus pulchellus ab. insquamosus
Barypeithes pellucidus
Cidnorhinus quadrimaculatus

MYRIAPODA: CHILOPODA

Lithobius melanops
Necrophloeophagus longicornis
Schendyla peyerimhoffi
Schendyla nemorensis
Strigamia maritima

MYRIAPODA: DIPLOPODA

Brachyiulus pusillus
Cylindroiulus punctatus
Tachypodoiulus niger

ISOPODA: Oniscidea

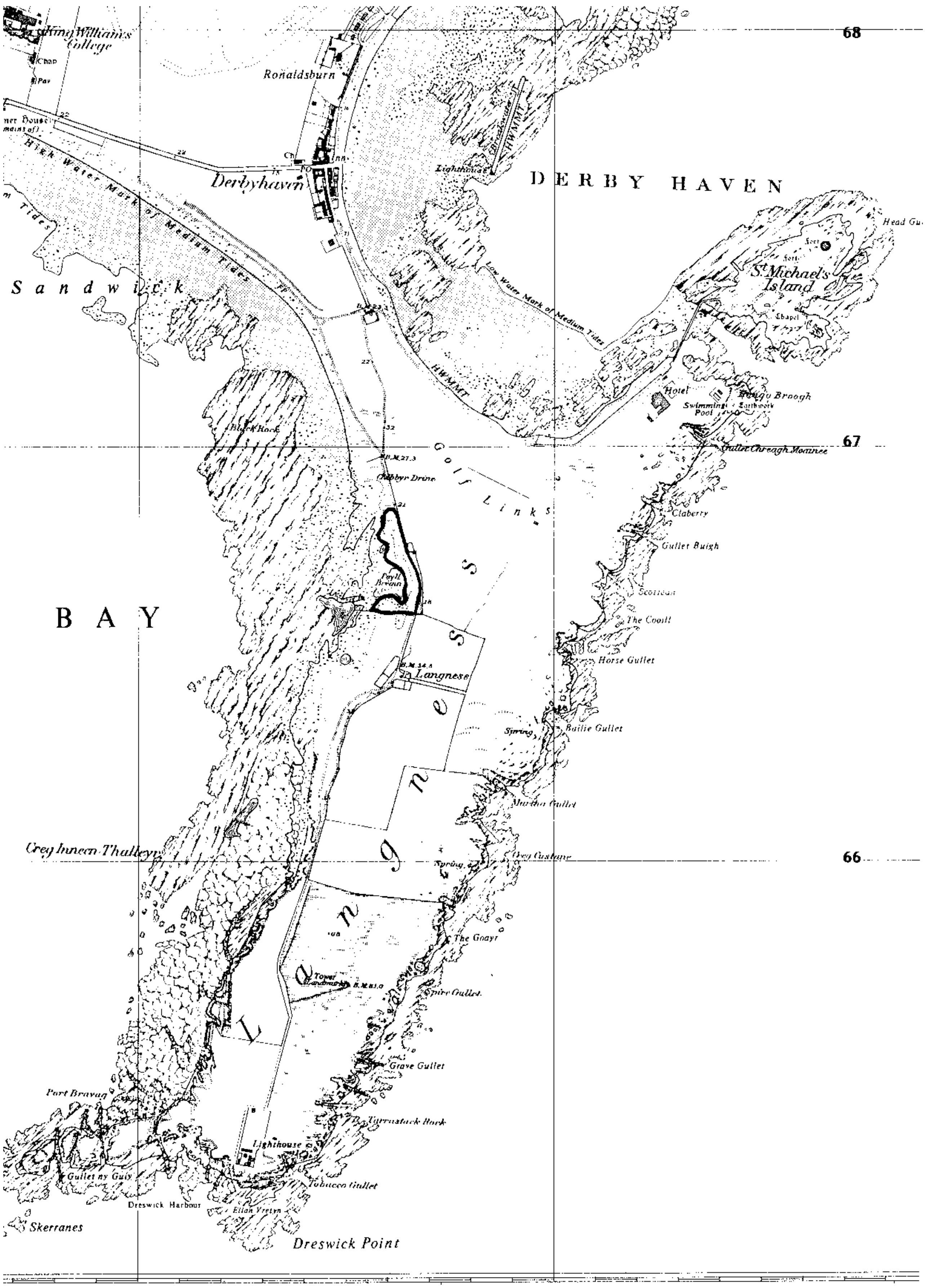
Armadillidium vulgare
Ligia oceanica
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

PSEUDOSCORPIONES

Chthonius ischnocheles

MOLLUSCA

Cochlicopa lubrica
Pyramidula rupestris
Lauria cylindracea
Discus rotundatus
Arion ater agg.
Oxychilus cellarius
Deroceras reticulatum
Balea perversa
Trichia striolata



68
67
66
King William's College
Ronaldsburn
Derbyhaven
High Water Mark of Medium Tides
Sandwick
DERBY HAVEN
Lighthouse
St Michael's Island
Low Water Mark of Medium Tides
Hotel
Swimming Pool
Gullet Chreagh Moainee
Golf Links
Claberry
Gullet Buigh
BAY
Black Rock
The Cooill
Horse Gullet
Langness
Baillie Gullet
Spring
Martha Gullet
Creg Inneen Thalleyn
Creg Custane
The Gnayr
Spire Gullet
Grave Gullet
Port Bravag
Tarrustack Rock
Lighthouse
Gullet ny Guiy
Tobacco Gullet
Dreswick Harbour
Skerranes
Dreswick Point

SITE 11. SCARLETT (SC 256 662)

DATE VISITED: 3 May 1989.
RECORDERS: A P Fowles & I S Francis.

SITE DESCRIPTION: Surface exposures of volcanic rocks and Carboniferous limestone give Scarlett a unique character and contribute to the botanical richness of the narrow belt of maritime grassland sandwiched between the sea and enclosed farmland. The close-grazed grassland, dominated by red fescue Festuca rubra, is interspersed with small limestone outcrops and there are low (1-2 metre) cliffs along much of the shore. Westwards, towards Scarlett Point, the grassland zone broadens to some 40 - 50 metres wide and slopes gently to an area of small, brackish pools and a narrow band of strandline shingle. There are several springs and seepages which run for short distances across the turf or which emerge on the shore to trickle down the rock faces. The flushes are either too seasonal or too heavily trampled to develop much in the way of a marsh flora but a few would appear to persist as short muddy streamlets throughout the year.

INVERTEBRATE INTEREST: It was anticipated that such a geologically-diverse area could have supported a significant invertebrate fauna in a Manx context but the reality was disappointing with few species of any significance observed. The only species worthy of especial comment belong to the Mollusca, although even here the fauna seemed to be rather limited for such a calcareous habitat. A single Milax gagetes was found beneath a stone on the maritime grassland; this is a rather uncommon slug of coastal localities in Britain (but also occurring in synanthropic situations inland) and appears not to have been seen on the Island since c.1890 (LS Garrad, pers. comm.), although it is recorded from one modern (post-1970) 10-km square in the Conchological Society/Biological Records Centre Atlas (Kerney 1976) for this group. Several specimens of Pupilla muscorum were found and a single shell of Cochlicella acuta was sieved from strandline litter. C acuta is known to occur at the base of the wall by the coastguard's hut at Scarlett (Garrad 1972a) but in view of the uncertain origin of strandline material this record has been omitted from further account in this report.

A major feature of the wildlife interest of Scarlett is the series of pools of varying degrees of salinity, however, these were not sampled during the present survey. The floristic diversity of the short turf community is presumably maintained by heavy cattle grazing but it appeared, during this visit, that stocking levels are currently too high for conservation purposes. This is particularly noticeable along the freshwater seepages where poaching is severe. A degree of cattle-poaching alongside flushes can be beneficial to many wetland invertebrates but in this case the level of damage is too excessive. The significance of the maritime grassland for invertebrates also seems to be diminished by heavy grazing pressure and a reduction in stocking-levels would seem to be desirable if this is not considered to have an unacceptably adverse effect on botanical richness.

SPECIES RECORDED. (SCARLETT)

THYSANURA

Petrobius brevistylis

HEMIPTERA

Stygnocoris fuligineus

HYMENOPTERA: Formicidae

Lasius flavus
Lasius niger
Myrmica scabrinodis

COLEOPTERA

Nebria salina
Dyschirius globosus
Agonum albipes
Amara aenea
Philonthus varius
Tachyporus chrysomelinus agg.
Tachinus signatus
Agriotes lineatus
Rhyzobius litura
Apion dichroum

MYRIAPODA: CHILOPODA

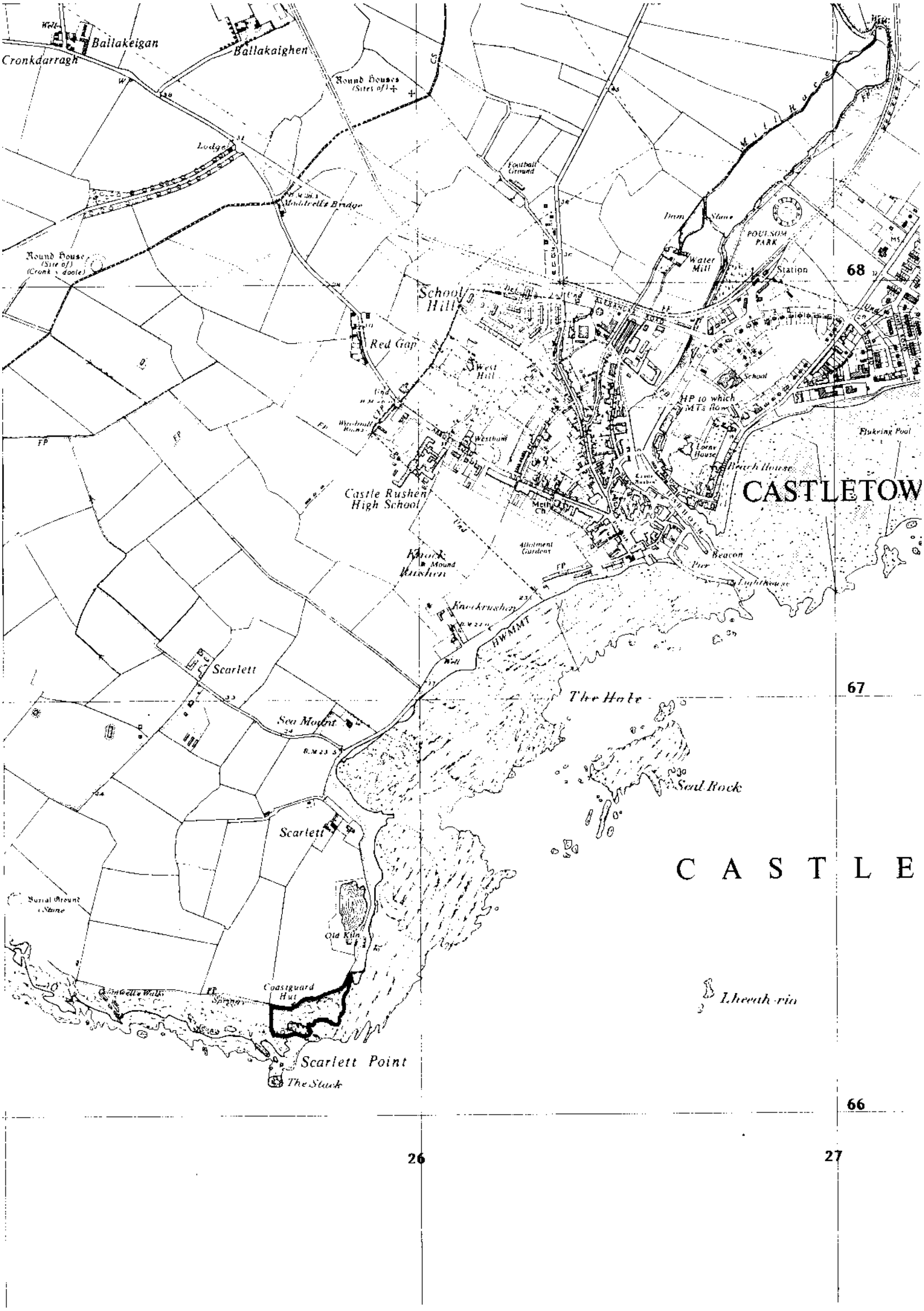
Lithobius forficatus
Lithobius melanops

ISOPODA: Oniscidea

Ligia oceanica
Oniscus asellus
Philoscia muscorum
Porcellio scaber

MOLLUSCA

Arion ater agg.
Candidula intersecta
Cochlicopa lubrica
Deroceras reticulatum
Discus rotundatus
Helix aspersa
Milax gagetes
Pupilla muscorum
Vallonia excentrica


Ballakeigan
Cronkdarragh
Ballakaighen
Round Houses (Sites of)
Lodge
Round House (Site of) (Cronk y doole)
School Hill
Red Gap
West Hill
Castle Rushen High School
Knock Rushen
Mound
Knockrushen
HWMMT
Scarlett
Sea Mount
Scarlett
Burial Ground
Old Kiln
Coastguard Hut
Scarlett Point
The Stack
The Hole
Seal Rock
Lheeah-rio
Dam
Sluice
Water Mill
POULSOM PARK
Station
School
Lorne House
Beach House
Beacon
Pier
Lighthouse
Fluking Pool
Football Ground
Allotment Gardens
CASTLETOW
C A S T L E
68
67
66
26
27

SITE 12. THE CHASMS (SC 187 663)

DATE VISITED: 3 May 1989.
RECORDERS: A P Fowles & I S Francis.

SITE DESCRIPTION: A stretch of steep, south-facing cliffs rising to sixty metres a.s.l. The upper slopes support acidic coastal heath vegetation on sparse soils with species such as western gorse Ulex gallii, wood sage Teucrium scorodonia and bracken Pteridium aquilinum as conspicuous and characteristic components. Honeysuckle Lonicera periclymenum forms dense mats of trailing stems over large areas. This gorse-heath is established amongst a jumble of boulder-scree derived from the Manx slates which form the cliffs. On the lower slopes which are subjected to a greater influence from salt-spray there is a band of maritime grassland with spring squill Scilla verna, sea campion Silene maritima, English stonecrop Sedum anglicum etc.. amongst a rank sward of red fescue Festuca rubra. A herring gull colony is present on the lower cliffs in this area.

INVERTEBRATE INTEREST: Although this site is rather exposed, Spanish Head to the immediate west presumably affords a degree of shelter from the worst of the prevailing winds and the southerly aspect permits the occurrence of the somewhat thermophilous ant Tetramorium caespitum. With this exception, the rest of the fauna is typical of base-poor coastal cliffs in north-western Britain. Species of localised distribution recorded during the brief visit were -
Armadillidium pulchellum (Isopoda): frequent under slate scree on the upper slopes.
Trichoniscoides saeroeensis (Isopoda): several specimens were found beneath stones embedded in soil on the lower slopes, up to about five metres above high water mark of medium tides.
Polyxenus lagurus (Myriapoda: Diplopoda): two individuals were found beneath a stone on top of the cliff-edge.

The cliff slopes of Bay Stacka probably support an invertebrate fauna which is widespread around the hard rock coast of the Isle of Man and as such is not considered to require any special degree of conservation. Undoubtedly further survey will turn up other elements of interest but it is anticipated that the habitat features present will support species that could be expected to occur at other undisturbed cliff localities on the island.

SPECIES RECORDED. (THE CHASMS)

HYMENOPTERA: Formicidae

Formica lemani
Lasius flavus
Myrmica scabrinodis
Tetramorium caespitum

COLEOPTERA

Amara ovata
Dromius notatus
Stenus brunnipes
Xantholinus linearis
Rhyzobius litura
Coccinella 7-punctata
Ceutorhynchus contractus

MYRIAPODA: DIPLOPODA

Blaniulus guttulatus
Cylindroiulus punctatus
Polydesmus angustus
Polyxenus lagurus
Tachypodoiulus niger

MYRIAPODA: CHILOPODA

Geophilus carpophagus

ISOPODA: Oniscidea

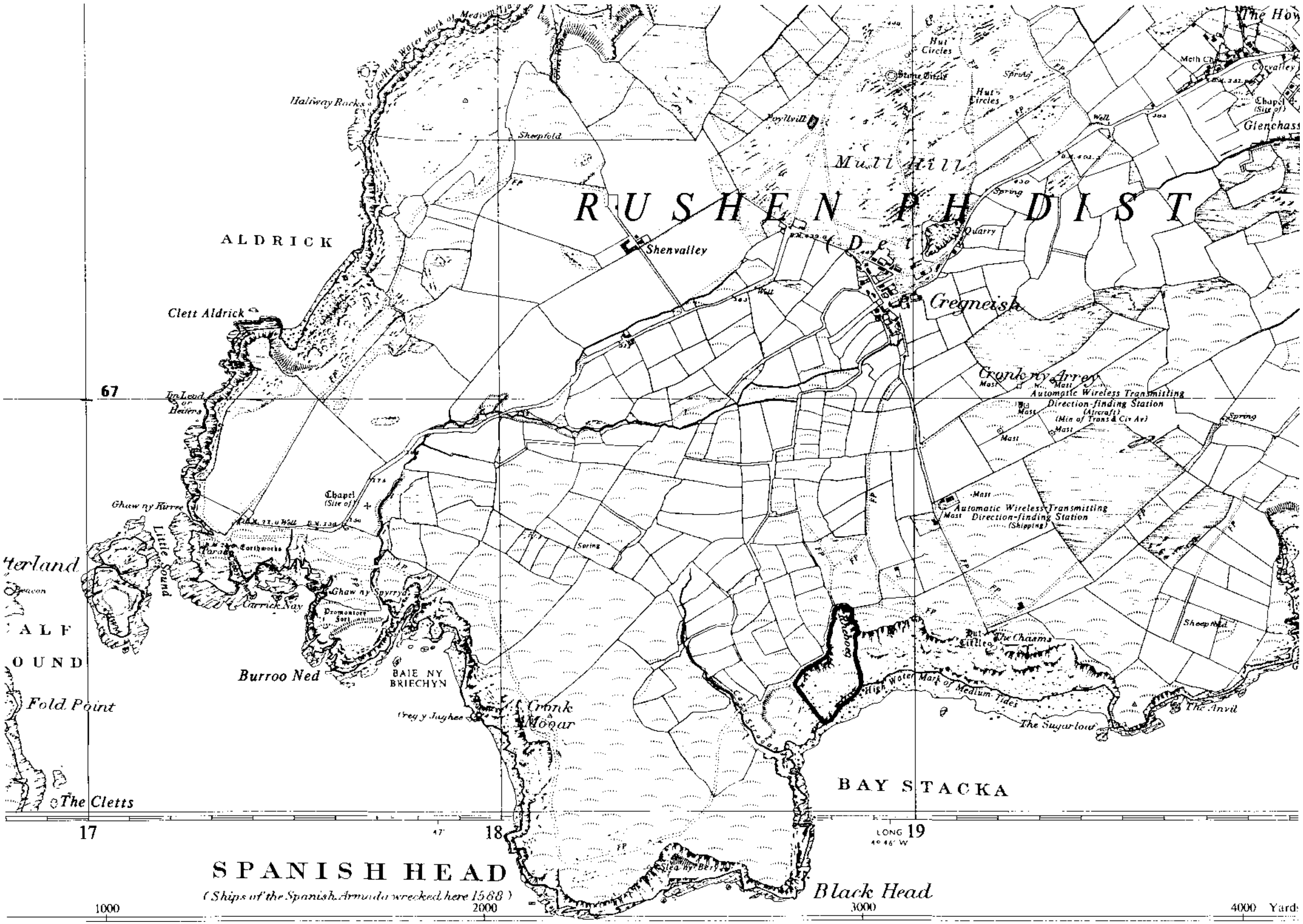
Armadillidium pulchellum
Armadillidium vulgare
Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscoides saeroeensis

ARANEAE

Euophrys frontalis
Heliophanus cupreus

MOLLUSCA

Arion ater agg.
Candidula intersecta
Cepaea nemoralis
Deroceras reticulatum
Discus rotundatus
Lauria cylindracea
Limax marginatus


RUSHEN PH DIST
ALDRICK
Halfway Rocks
Sheepfold
Shenvalley
Mull Hill
Hut Circles
Stone Circle
Gregneish
Quarry
Meth Ch
Chapel (Site of)
Glenchass
The How
Clett Aldrick
67
Cronk ny Arrey
Automatic Wireless Transmitting Direction-finding Station
Mast
Spring
Well
Chapel (Site of)
Ghaw ny Kirree
Little Sound
Earthworks
Ghaw ny Spyrryd
Carrick Nay
Promontory Fort
Burroo Ned
BAIE NY BRIECHYN
Creg y Jughee
Cronk Moar
Fold Point
The Cletts
The Chasms
High Water Mark of Medium Tides
The Anvil
The Sugarloaf
Sheepfold
BAY STACKA
Black Head
SPANISH HEAD
(Ships of the Spanish Armada wrecked here 1588)
17
18
19
LONG 4° 46' W
1000
2000
3000
4000 Yards

SITE 13. FLESHWICK BAY (SC 201 714)

DATE VISITED; 3 May 1989.
RECORDERS: A P Fowles & I S Francis.

SITE DESCRIPTION: This small, north-facing cove lies sheltered between the upland blocks of Bradda Hill and Lhiatlee ny Beinnee in the south-west corner of the island. The adjacent slopes of the bay consist of unimproved coastal heath but higher up the narrow valley, behind the bay, improved pastures alongside the stream are grazed by cattle and sheep. This stream cuts through a storm-beach of coarse shingle which contains large quantities of seaweed debris cast-up by the tides. Stands of sea beet Beta maritima and curled dock Rumex ?crispus occur along the top of the storm-beach but behind this the stabilised grassland is disturbed by car-parking and tipping and has no significant maritime element. The grassy slopes immediately to the north of the bay are flushed and relatively rich botanically.

INVERTEBRATE INTEREST: An unusual feature of this site is the rich matrix of rotting organic matter within the upper storm-beach. This habitat is capable of supporting a number of specialised detritivores, although no species of particular interest were found during the limited sampling time available. The woodlice Haplophthalmus mengei (sensu stricta) and Androniscus dentiger, along with the centipedes Cryptops hortensis and Haplophilus subterraneus, were collected from beneath stones on the storm-beach. Each of these species is known to thrive in synanthropic situations and may have been introduced to this site with rubbish tipped at the back of the beach but the two woodlice, at least, are also capable of surviving in undisturbed storm-beaches. None of the other invertebrates recorded on this visit are of any particular significance but, nonetheless, it is felt that further survey this area could prove to be profitable. The flushes of the northern slope were not surveyed but they appeared to be in excellent condition for invertebrates, with a lush flora in places, peaty margins, and an interesting stretch above the shore where the water seeps across the exposed rock. It is suggested that the south-facing aspect enjoyed by these flushes may be particularly beneficial to certain species of Diptera (eg. Dolichopodidae, Ephydriidae, Stratiomyidae etc.) and survey effort in concentrating on these groups would be worthwhile. Streams flowing across storm-beaches are also known to support distinctive invertebrate communities but in this case eutrophication from livestock on the pastures above is likely to have reduced the value of this habitat.

An attempt was made to sample the intertidal crevice fauna of the bay but the rock strata were not easy to work and no terrestrial invertebrates were found. The bay seems to receive little fine sediment to form the basis of the crevice food-chain and the apparent scarcity of intertidal Collembolans (Anurida maritima) suggests that this site is not likely to support much in the way of diversity amongst the predatory non-marine invertebrates of rock-crevices in the intertidal zone.

SPECIES RECORDED. (FLESHWICK BAY)

HEMIPTERA

Piesma quadratum

HYMENOPTERA: Formicidae

Myrmica ruginodis

COLEOPTERA

Pterostichus nigrita agg.
Bradycellus verbasci
Otiorhynchus sulcatus
Rhinoncus pericarpius

MYRIAPODA: CHILOPODA

Cryptops hortensis
reticulatum
Haplophilus subterraneus
Lithobius forficatus

MYRIAPODA: DIPLOPODA

Cylindroiulus punctatus
Polydesmus angustus

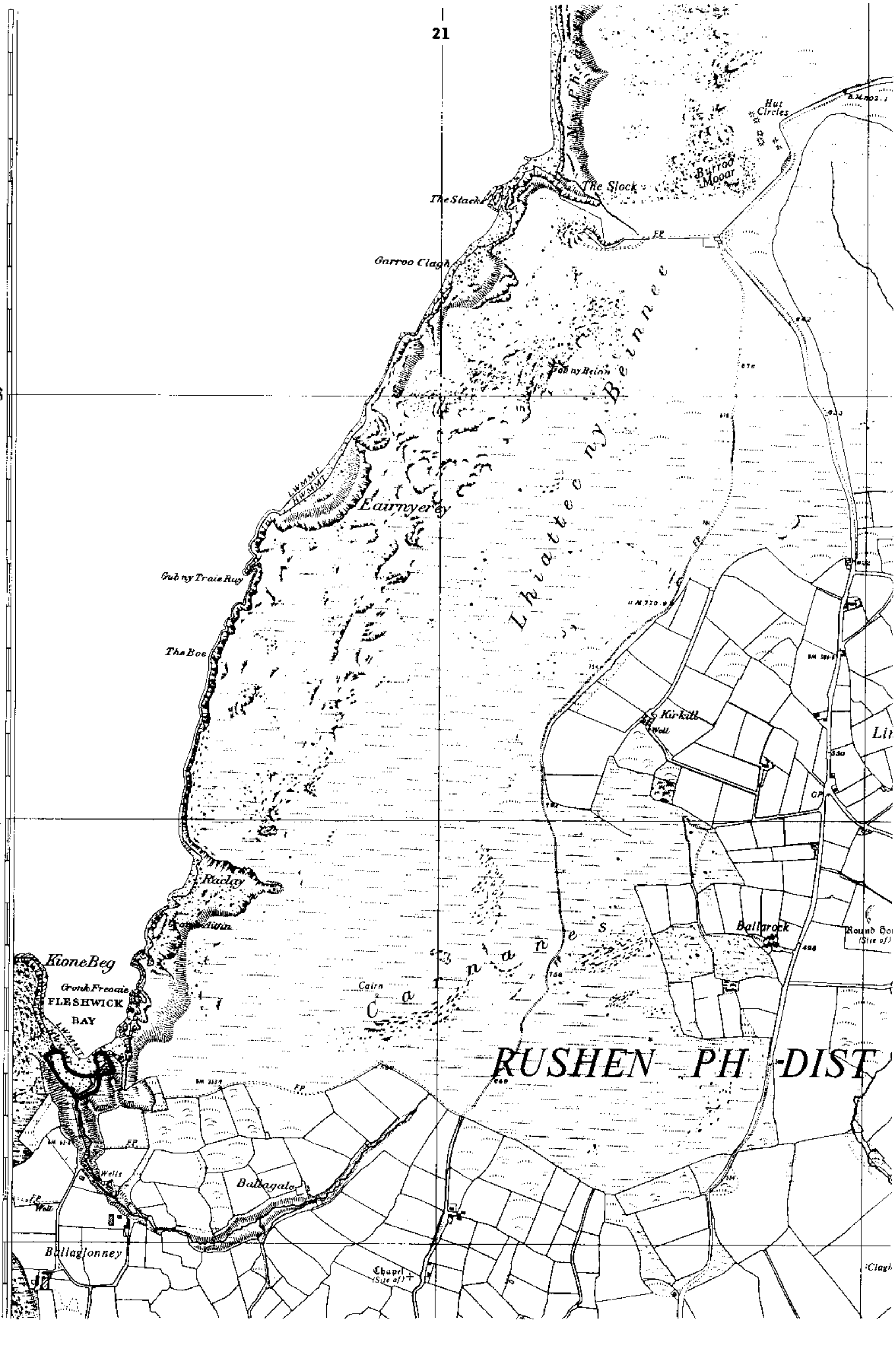
ISOPODA: Oniscidea

Androniscus dentiger
Haplophthalmus mengei s.s.
Oniscus asellus
Trichoniscus pusillus

MOLLUSCA

Arion distinctus
Arion subfuscus
Clausilia bidentata
Deroceras

Discus rotundatus


21
73
72
71
Hut Circles
Burroo Mooar
The Slock
The Stacks
Garroo Clagh
Gob ny Beinn
Lhiattee ny Beinnee
Eairnyerey
Gob ny Traie Ruy
The Boe
Kirkill
Well
Raclay
Kione Beg
Cronk Freoaie
FLESHWICK BAY
Cairn
Carnanes
Ballarock
Round House (Site of)
RUSHEN PH DIST
Wells
Ballagale
Well
Ballaglonney
Chapel (Site of)

SITE 14. THE AYRES (NX 430 033)

DATE VISITED: 4 May 1989.
RECORDERS: D C Boyce, A P Fowles & I S Francis.

SITE DESCRIPTION: This is probably the most well-known site for nature conservation on Mann. Lying on the north coast of the island, The Ayres is a raised shingle beach - as indicated by the old coastline of low, sandy cliffs about one kilometre inland. Sand has overlain the shingle in many places, initially as a mature dune system lying at the foot of the Bride Hills and, more recently, by a fore-dune ridge which has developed just behind the present beach. This unique landscape runs for eight kilometres along the coast from the Point of Ayre to the mouth of the Lhen.

The fore-dunes have typical vegetation dominated by marram with restharrow Ononis repens, Portland spurge Euphorbia portlandica, sea spurge E. paralias, sea holly Eryngium maritimum and sea sandwort Honkenya peploides. The more mature dunes towards the landward edge of the raised beach have a much thinner marram cover with grassy 'lawns'; the vegetation being strongly influenced by rabbit grazing. Extensive tracts of these dunes have become scrubbed-over with a mixture of bramble Rubus fruticosus agg., bracken Pteridium aquilinum and gorse Ulex europaeus. The most interesting feature of this zone is the line of dune slacks, which vary from sedge-rich hollows that are only flooded in winter to areas of permanent open- water with aquatic and emergent plants such as yellow flag Iris pseudacorus, water violet Hottonia palustris and floating pondweed Potamogeton natans.

Sandwiched between the old and the new dunes lies an extensive block of heathland which has developed on the shingle platform of the raised beach (Plate 2). One of the striking features of this internationally-significant habitat is the abundance and diversity of terricolous and saxicolous lichens, though more typical heathland plants, such as western gorse Ulex gallii, ling Calluna vulgaris and bell heather Erica cinerea, are also common. The coastal element of this heathland is manifested by the abundance of burnet rose Rosa pimpinellifolia.

INVERTEBRATE INTEREST: It was very pleasing to find the rare pill woodlouse Armadillidium album underneath strandline debris embedded in the sand. This is a typical habitat for this species which has a very scattered distribution in the British Isles. In addition, the fore-dune area had an interesting assemblage of beetles, including littoral specialists such as Aepus marinus and Cafius xantholoma and those generally found in the fore-dune zone like Aegialia arenaria, Broscus cephalotes, Phylan gibbus, Phaleria cadaverina and Baeckmanniolus dimidiatus. Interesting weevils taken here were the dune species Philopedon plagiatus and Sitona griseus along with the local weevil Sitona lineelus. The scarce heterocerid Heterocerus fusculus was also found crawling about on the foredunes.

Collecting-effort in the mature dune area was concentrated in the dune slacks. The mollusc fauna here was characteristic of mesotrophic wetland conditions with Deroceras laeve, Arion intermedius, Zonitoides nitidus, Euconulus alderi, Carychium minimum and Vertigo antivertigo. Sedge-litter around the fringe of the large, permanently-flooded pool at the west end of the line of slacks had the uncommon rove-beetle Gabrius keysianus, which is chiefly found in this type of micro-habitat. The weevils Rhinoncus castor and Phytobius 4-tuberculatus were collected from the floating leaves of Potamogeton natans in the centre of this pool.

Sadly, there was not sufficient time to investigate the heathland in any detail but a sandy, south-facing bank on the heathland fringe was very productive. Here we recorded four species - the weevils Orobitis cyaneus and Sibinia primitus, the jumping-spider Attulus saltator and the ant Tetramorium caespitum - that have a distinctly southern distribution on

mainland Britain. Along with the hemipterans Gampsocoris punctipes and Peritrechus geniculatus (which were recorded in the fore-dunes), these species provide evidence of the equable climate that the Manx northern plain enjoys, enabling many invertebrates to survive further north than they can in Britain. Allen & Cowin (1954), discussing the unique association of "Continental" taxa on The Ayres, comment - "These species appear to be relics of a xerothermic period in early post-glacial times and may have found survival here easier than elsewhere in the British Isles owing to the more feeble spread of forest cover". We feel confident that, given further study, the invertebrate interest of The Ayres would match that of its flora. In declaring a representative block of The Ayres as a nature reserve the Manx National Trust has recognised the international importance of the site for nature conservation. It is to be hoped that as much as possible of this unique habitat can be preserved in the future.

SPECIES RECORDED. (THE AYRES)

COLEOPTERA

Carabus nemoralis
Leistus rufescens
Nebria salina
Notiophilus germinyi
Dyschirius globosus
Broscus cephalotes
Aepus marinus
Bembidion assimile
Pterostichus nigrita agg.
Pterostichus versicolor
Calathus fuscipes
Agonum obscurum
Amara aenea
Amara tibialis
Harpalus anxius
Harpalus tardus
Demetrias atricapillus
Dromius linearis
Dromius melanocephalus
Dromius notatus
Metabletus foveatus
Hydrobius fuscipes
Baeckmanniolus dimidiatus
Anotylus rugosus
Stenus impressus
Stenus juno
Philonthus micantoides
Philonthus varius
Gabrius keysianus
Cafius xantholoma
Staphylinus brunnipes
Tachyporus hypnorum
Aegialia arenaria
Heterocerus fusculus
Agrypnus murinus
Coccidula rufa
Rhyzobius litura
Coccinella 11-punctata
Phylan gibbus
Phaleria cadaverina
Cylindrinotus laevioctostriatus
Oulema melanopa
Cassida rubiginosa
Otiorhynchus atroapterus
Strophosomus faber
Philopedon plagiatus
Sitona griseus
Sitona lineelus
Hypera plantaginis
Ceutorhynchus quadridens
Rhinoncus castor
Phytobius 4-tuberculatus
Orobitis cyaneus
Sibinia primitus

ORTHOPTERA

Tetrix undulata

HEMIPTERA

Peritrechus geniculatus
Trapezonotus arenarius
Macrodema micropterum
Scolopostethus decoratum
Gampsocoris punctipes

HYMENOPTERA: Formicidae

Formica lemani
Lasius niger
Myrmica scabrinodis
Tetramorium caespitum

MYRIAPODA: CHILOPODA

Brachygeophilus truncorum
Schendyla nemorensis

MYRIAPODA: DIPLOPODA

Polydesmus angustus

ISOPODA: Oniscidea

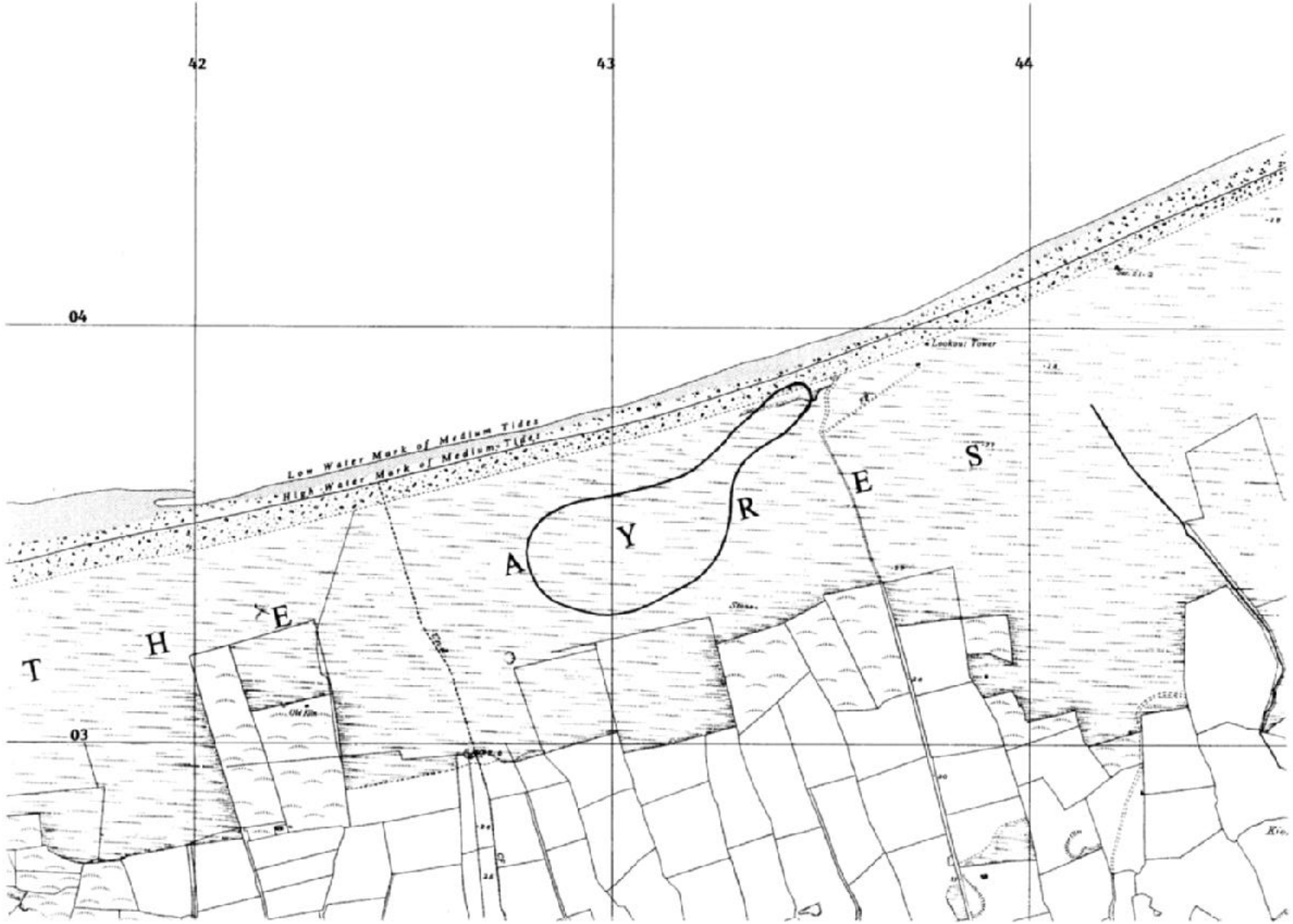
Armadillidium album
Armadillidium vulgare
Philoscia muscorum
Porcellio scaber

ARANEAE

Arctosa perita
Attulus saltator

MOLLUSCA

Carychium minimum
Vertigo antivertigo
Punctum pygmaeum
Arion intermedius
Oxychilus alliarius
Zonitoides nitidus
Deroceras laeve
Deroceras reticulatum
Euconulus alderi
Candidula intersecta
Trichia striolata
Cepaea nemoralis
Cepaea hortensis
Helix aspersa


42
43
44
04
03
Low Water Mark of Medium Tides
High Water Mark of Medium Tides
Lookout Tower
A
Y
R
E
S
T
H
E

SITE 15. PORT CORNAA (SC 471 881)

DATE VISITED: 4 May 1989.
RECORDERS: D C Boyce, A P Fowles & I S Francis.

SITE DESCRIPTION: Although the Cornaa stream is relatively small, it is situated within a comparatively broad valley-floor and the range of habitats contained within the site contributes significantly to the diversity of its invertebrate fauna (Plate 2.). Behind a tall storm-beach there is a species-poor, red fescue Festuca rubra saltmarsh with a network of channels and, beyond the tidal reach, the river deposits shingle banks alongside semi-improved pastures. The south-facing slopes of the valley are wooded, consisting of a mature plantation of mixed deciduous and coniferous trees. The woodland is grazed but nonetheless contains a reasonable ground-flora and shrub-layer and there are numerous fallen trees providing habitat for deadwood invertebrates. At the foot of the wooded slope, there are peaty backwaters with mature alder carr and stands of marsh marigold Caltha palustris. The slopes are more open towards the mouth of the valley, with gorse Ulex europaeus scrub and acidic bog-moss Sphagnum flushes with bog-asphodel Narthecium ossifragum and other characteristic plant species.

INVERTEBRATE INTEREST: The value of this attractive site is greatly enhanced by the juxtaposition of its habitats as well as having several interesting individual features. Thus, open-ground invertebrates can find temporary shelter and over-wintering sites on the wooded slopes and woodland species can forage for prey and nectar in the pastures and marshes below. Although none of the habitats were of high quality in their own right, the site in total produced a number of noteworthy species that we did not record elsewhere on the island and was one of the most profitable and enjoyable areas we surveyed. Sampling was confined largely to three habitat units - the saltmarsh fringes; a shingle bank in the freshwater stretch of the river; and the lower wooded slopes on the north side of the valley.

The saltmarsh is not as botanically-diverse as other examples on the island, perhaps as a result of grazing pressure, but nevertheless has a significant invertebrate interest. The sheltered conditions and shallow silt and gravel channels provide favourable habitat for ground-active species which inhabit the mud banks lining the channels. Beneath stones and inside crevices in the lower saltmarsh we recorded three characteristic species of invertebrates - the ground-beetles Aepus marinus and Bembidion maritimum and the centipede Strigamia maritima. Strigamia is a common and widespread inhabitant of the inter-tidal zone in a variety of coastal situations but the two beetles are scarce members of the saltmarsh community with a restricted distribution in the British Isles. The lack of vegetational structure in the Cornaa saltmarsh will limit the potential fauna but it is likely that further survey, amongst groups such as the flies and spiders, will reveal other species that are rare on Mann because of the scarcity of their habitat.

The beetle fauna of a small shingle bank (c.15 metres x 4 metres) was comprehensively investigated and produced several stenotopic carabids, staphylinids, and the elaterid Zorochros minimus. The bank structure (composed of a mixture of coarse pebbles over gravel) and position (backing onto a fringe of gorse scrub and semi-improved pasture) are suitable for supporting a diverse and interesting shingle fauna but all of the species recorded can be regarded as probably common and widespread along the island's gravel-bed rivers and streams. Turning stones on the surface shingle-layer yielded numerous Bembidion atrocoeruleum and smaller numbers of B. tibiale. The habitat-specific heteropteran Cryptostemma alienum was also common under stones. The bank was also sampled by excavation (collapsing in the sides of a hole dug down to the water-table to flood out subterranean invertebrates) and five species of aleocharine staphylinids were collected in this manner. Four of these - Hydrosmecta eximia, H. thinobiodes, Aloconota cambrica and A. currax - are characteristic species restricted to river shingle but can be expected to occur

widely in suitable habitat on the Isle of Man.

The woodland was only briefly surveyed but we were pleased to discover a number of saproxylic beetles as this aspect of the Manx invertebrate fauna must be limited as a result of past woodland management on the island. Cylindrinotus laevioctostriatus, Rhizophagus dispar and Atrecus affinis were found underneath the loose bark of fallen trees; Tetratoma fungorum occurred beneath bracket fungi growing on a dead birch; and the remains of an adult Mesites tardii were found under the bark of a sycamore. It is worth noting that only the latter species was found during our surveys of Glen Maye and Santon Gorge, both of which are regarded as higher quality woodlands than Port Cornaa in overall conservation terms.

Port Cornaa is the kind of site that is easily overlooked during the formulation of conservation strategies as each of its components are small examples without outstanding features, but the site taken as a mosaic is of considerable interest and worthy of consideration. Within this relatively compact and undisturbed area, a high species-abundance will occur by virtue both of its habitat-diversity and the recognised benefits of mosaic-communities for invertebrates. The valley would make an ideal conservation area and if this could be brought about some thought might be given to altering the grazing patterns in order to increase the vegetational structure of the woodland floor, saltmarsh and pastures. However, grazing should obviously not be terminated altogether as this is essential for maintaining both open-ground conditions along the wetland margins and clearings amongst the gorse scrub on the valley slopes.

SPECIES RECORDED. (PORT CORNAA)

PLECOPTERA

Diura bicaudata
Leuctra inermis
Protonemura meyeri
Siphonoperla torrentium

HEMIPTERA

Cryptostemma alienum

DIPTERA: Syrphidae

Portevinia maculata

HYMENOPTERA: Formicldae

Laslus flavus
Lasius niger

COLEOPTERA

Nebria brevicollis
Elaphrus cupreus
Loricera pilicornis
Aepus marinus
Bembidion atrocoeruleum
Bembidion tibiale
Bembidion maritimum
Bembidion harpaloides
Pterostichus rhaeticus
Pterostichus strenuus
Agonum albipes
Agonum muelleri
Dromius linearis
Atrecus affinis
Hydrosmecta eximia
Hydrosmecta thinobioides
Aloconota cambrica
Aloconota currax
Amischa cavifrons
Zorochros minimus
Dalopius marginatus
Rhizophagus dispar
Micrambe vini
Coccinella 7-punctata
Anatis ocellata
Cylindrinotus laevioctostriatus
Tetratoma fungorum
Sitona lepidus
Mesites tardii

MYRIAPODA: CHILOPODA

Lithobius variegatus
Necrophloeophagus longicornis
Strigamia maritima

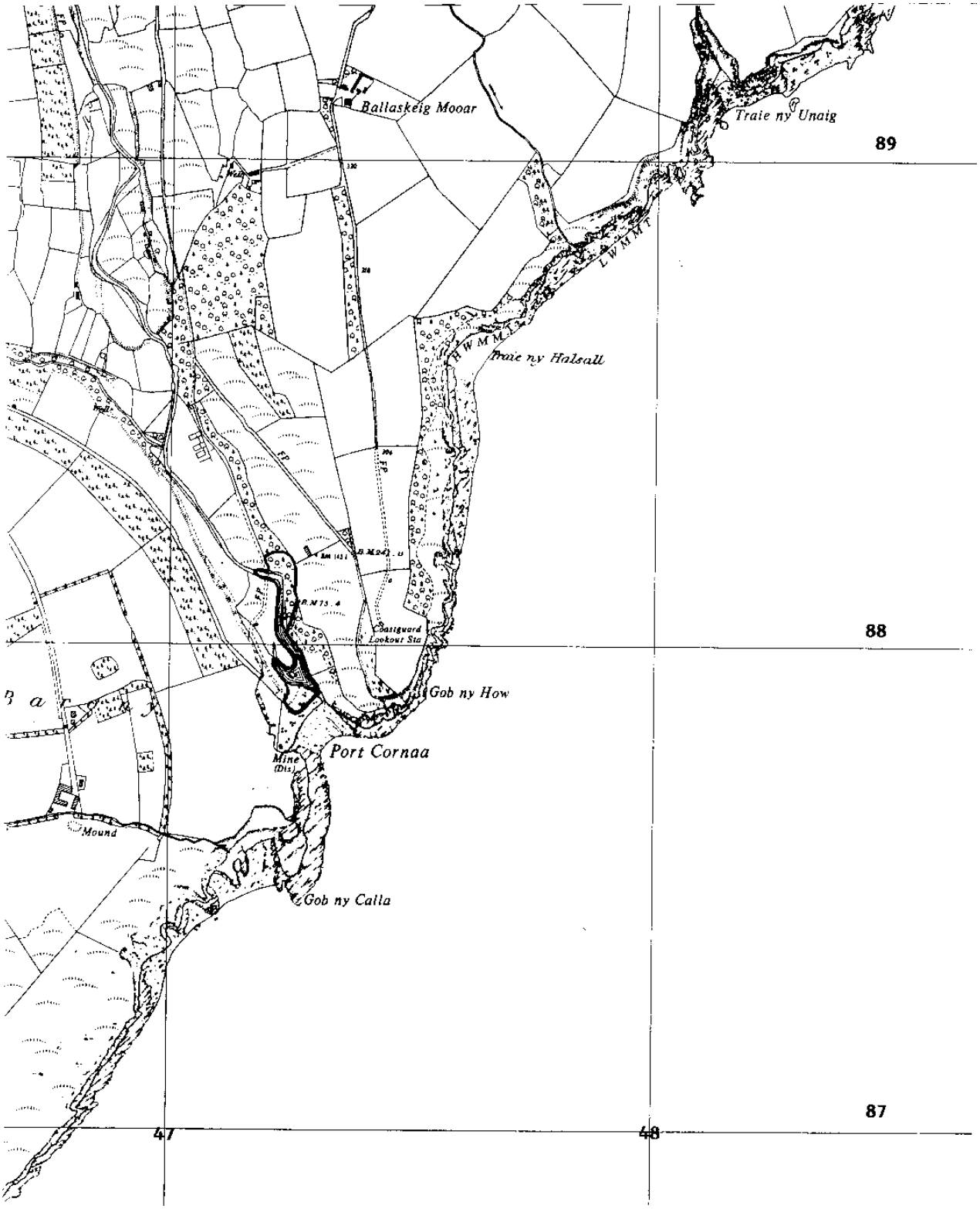
MYRIAPODA: DIPLOPODA

Blaniulus guttulatus
Cylindroiulus punctatus
Glomeris marginata
Ophyiulus pilosus
Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA
Cochlicopa lubrica
Columella aspera
Leiostyla anglica
Lauria cylindracea
Discus rotundatus
Arion ater agg.
Arion flagellus
Arion subfuscus
Arion circumscriptus
Arion distinctus
Aegopinella pura
Aegopinella nitidula
Oxychilus cellarius
Oxychilus alliarius
Limax marginatus
Deroceras laeve
Deroceras reticulatum
Euconulus fulvus
Clausilia bidentata
Candidula intersecta
Trichia striolata


Ballaskeig Mooar
Traie ny Unaig
89
HWMT
LWMT
Traie ny Halsall
Coastguard Lookout Sta
88
Gob ny How
Port Cornaa
Mine (Dis)
Mound
Gob ny Calla
87
47
48

SITE 16. THE CURRAGHS (SC 363 950)

DATE VISITED: 5 May 1989.
RECORDERS: D C Boyce, A P Fowles & I S Francis.

SITE DESCRIPTION: At the end of the last glaciation, the melting ice produced a large lake in the north of the island, Lake Andreas, which in time became infilled with peat. Pollen analysis has shown that vegetation similar to that now present on the peat basin has been in existence for thousands of years (Garrad 1972a). Despite sporadic attempts to drain parts of the site, a very large area of wetland habitat still remains. The maturity of the site and the relative lack of disturbance by Man has enabled a rich wetland flora to develop. 'Curragh' in Manx means an area of willow carr and this is an accurate description of a majority of the area we looked at. Underneath the dense sallow canopy the ground flora was sparse, though scattered cushions of bog mosses Sphagnum spp. were present. Open glades within the carr were dominated by purple moor-grass Molinia caerulea and, where wetter conditions prevailed, a ground flora with species like marsh cinquefoil Potentilla palustris and bogbean Menyanthes trifoliata occurred. More locally, stands of bog myrtle Myrica gale and large clumps of royal fern Osmunda regalis were present (Plate 3). The Curraghs are criss-crossed by a network of ditches with a rich aquatic and emergent flora. The main area of the site we investigated appeared to have received little or no management for many years. This has resulted in a good vegetation structure, with Molinia forming large tussocks and a well-developed litter-layer.

INVERTEBRATE INTEREST: It was hoped that some of the rarer species of wetland molluscs would be found during our visit. Nothing exceptional was discovered but the presence of the two tiny whorl snails Vertigo antivertigo and V. substriata is indicative of undisturbed wetland habitats. The ground-beetle community was fairly typical of acidic peatlands with common species such as Pterostichus diligens, P. rhaeticus, P. minor and Agonum fuliglnosum. It was more surprising to find Agonum thoreyi, which is usually found in richer fen habitats. Although we failed to make any particularly unusual discoveries, there is no doubting the importance of The Curraghs for invertebrate conservation. The Diptera fauna, particularly amongst the willow carr, seems likely to provide a rewarding field for future research.

SPECIES RECORDED. (THE CURRAGHS)

PLECOPTERA

Nemoura cinerea

HEMIPTERA

Anthocoris nemorum

COLEOPTERA

Leistus rufescens
Pterostichus diligens
Pterostichus minor
Pterostichus rhaeticus
Agonum fuliginosum
Agonum thoreyi
Amara plebeja
Anacaena globulus
Silpha atrata
Stenichnus collaris
Lesteva heeri
Stenus flavipes
Stenus juno
Stenus nitidiusculus
Lathrobium brunnipes
Staphylinus erythropterus
Quedius fuliginosus
Bibloplectus ambiguus
Bythinus macropalpus
Rybaxis sp.
Cyphon padi
Cyphon variabilis
Coccinella 7-punctata
Adalia 10-punctata
Chrysolina polita
Chalcoides aurea
Otiorhynchus sulcatus
Barypeithes araneiformis
Rhinoncus pericarpius

HYMENOPTERA: Formicidae

Lasius niger
Myrmica ruginodis

MYRIAPODA: CHILOPODA

Brachygeophilus truncorum
Cryptops hortensis

MYRIAPODA: DIPLOPODA

Brachyiulus pusillus
Cylindroiulus punctatus
Glomeris marginata
Polydesmus angustus
Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

Lymnaea truncatula
Carychium minimum
Columella aspera
Vertigo antivertigo
Vertigo substriata
Lauria cylindracea
Discus rotundatus
Arion intermedius
Nesovitrea hammonis
Aegopinella pura
Deroceras laeve
Euconulus alderi

SITE 17. GLEN MOOAR (SC 303 893)

DATE VISITED: 5 May 1989.
RECORDERS: D C Boyce, A P Fowles & I S Francis.

SITE DESCRIPTION: This site should really be considered with Site 18, Gob ny Creggan Glassey (which covers the cliffs to the south of the mouth of the Glen), but has been discussed separately to facilitate the extraction of records for distribution-mapping. Situated at the southern end of the west coast 'brooghs', or sandy cliffs, Glen Mooar cuts its way through a thick deposit of boulder-clay. The southern bank is a steep, and very tall, unstable cliff of sand and clay which is continually being undercut by the stream. The processes of erosion are too rapid to permit the establishment of more than a sparse cover of vegetation. The northern bank has been disturbed by the creation of a car-park and Japanese knotweed Reynoutria japonica and other ruderal plants dominate the bankside vegetation. There is a small shingle bar on this northern bank, apparently within the reach of occasional high-tide flooding.

INVERTEBRATE INTEREST: Cursory investigations suggest that the sandy cliff forming the southern bank is too unstable to support the specialised fauna of such habitats. Similarly, the cliff lacks the surface-flushing which is so valuable in soft-rock habitats. Aspect is also unfavourable and hence this face, which is presumably of geomorphological interest, can be regarded as being of little value for invertebrates on present evidence. However, the shingle bar (which is derived chiefly from the eroded till) yielded a good complement of beetles typical of this habitat. Five species of surface-active Bembidions were recorded and, although all are presumably common on the island, B. saxatile is rather a local species on the British mainland. The sandy matrix of this bar is ideal for fossorial beetles and this presumably accounts for the presence of the staphylinid Bledius subterraneus, several specimens of which were found beneath embedded stones. Excavation of the matrix (cf. Site 15), however, was disappointing and produced just two common species of subterranean aleocharines. It may be that this bar is too shallow, and hence regularly flooded, to support a more diverse fauna, but further collecting here would be worthwhile.

SPECIES RECORDED. (GLEN MOOAR)

COLEOPTERA

Notiophilus biguttatus
Bembidion atrocoeruleum
Bembidion tibiale
Bembidion decorum
Bembidion saxatile
Bembidion tetracolum
Agonum albipes
Demetrias atricapillus
Bledius subterraneus
Stenus guttula
Hydrosmecta eximia
Aloconota cambrica
Agriotes obscurus
Rhyzobius litura
Coccinella 11-punctata
Chrysolina banksi

HYMENOPTERA: Formicidae

Formica fusca
Lasius flavus
Myrmica ruginodis

MYRIAPODA; DIPLOPODA

Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Trichoniscus pusillus

MOLLUSCA

Arion subfuscus
Deroceras reticulatum
Deroceras caruanae
Clausilia bidentata
Candidula intersecta
Trichia hispida
Cepaea nemoralis

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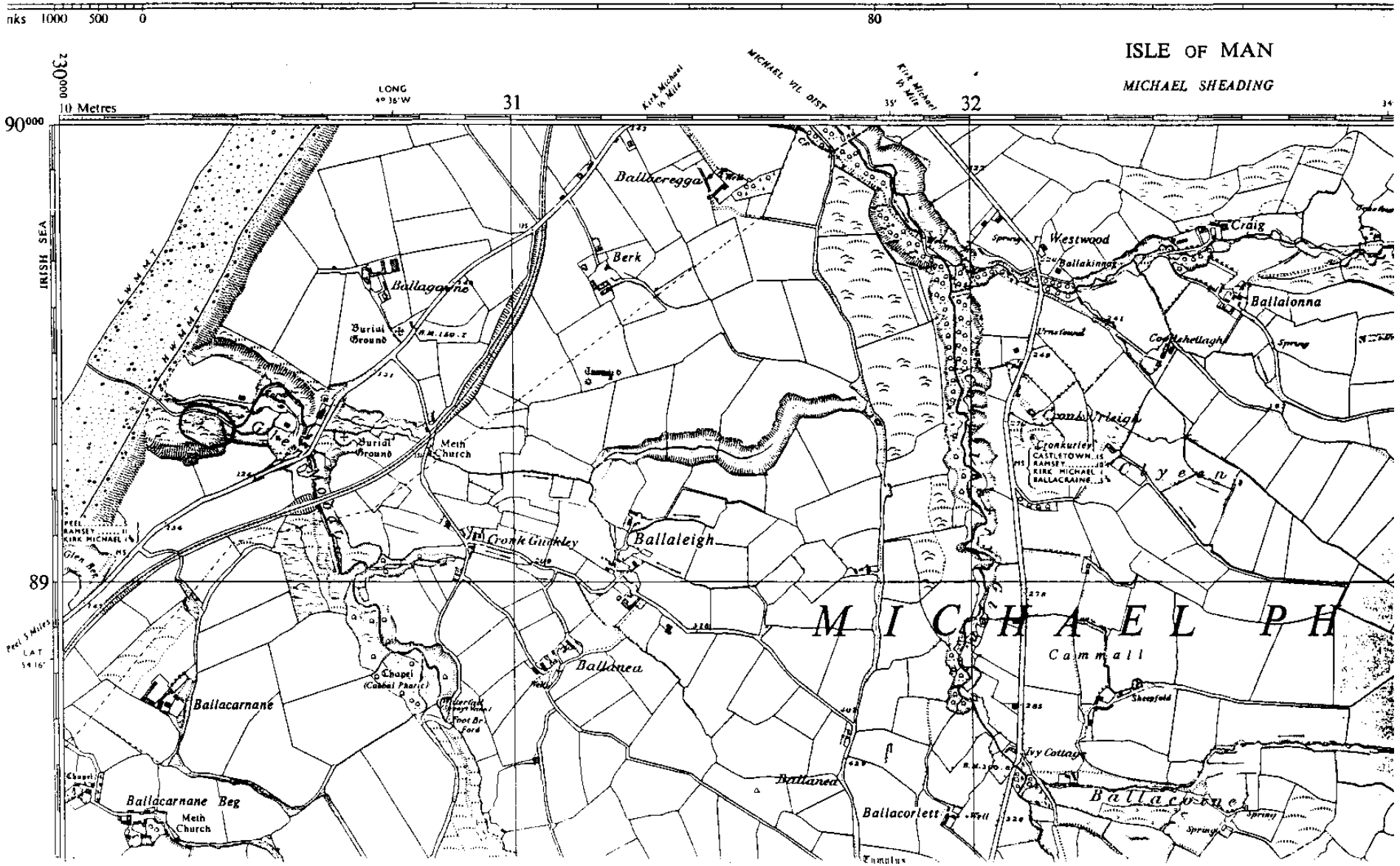
ORDNANCE SURVE

Scale 1:10,560 or 6 Inches to 1 M



SITE 18. GOB NY CREGGAN GLASSEY (SC 298 889)

DATE VISITED: 5 May 1989.
RECORDERS: D C Boyce & A P Fowles.

SITE DESCRIPTION: This area marks the junction of the zone of glacial sands that dominate the coastal landscape to the north and the Manx slates and shales that give rise to the magnificent sea-cliffs of the greater part of the Manx coastline. The sandy cliffs south of Glen Mooar are subject to considerable erosion and the extensive flushing of the slopes is partly responsible for this phenomenon. The sand acts as an aquifer, holding water above the clay slopes until the weight is too great and the cliff-face slumps. In one area in particular, the sand was saturated with water and forming unconsolidated 'wallows' with no vegetation able to establish a foothold. Wind erosion is presumably also a major factor on this exposed, west-facing coastline.

Though for the most part the sandy cliffs had little or no vegetation, there were pockets of dune vegetation with marram grass Ammophila arenaria. In other places the sandy cliffs were mixed with glacial clays, allowing a more diverse flora to develop on the consolidated substrate. At the southern extremity of the section we explored, the rocky cliffs are only shallowly-mantled with sand and the flora in the flushes here was rather different, containing coarse grasses and sheets of scurvy-grass Cochlearia sp. At the foot of the slopes, erosion has deposited an accumulation of sand and clay debris. This was only casually explored but such talus zones can be rich habitats for invertebrates, including woodlice, centipedes, ground-beetles etc..

INVERTEBRATE INTEREST: As at Dog Mills, the combination of moist sand and clay substrates supported colonies of the rove-beetle Bledius atricapillus. Accompanying it on the more stable, southern section of the cliff was the fossorial ground- beetle Dyschirius thoracicus. As might be expected, the heavily-eroded cliff slopes were almost devoid of invertebrates, however, the presence of a large colony of the carabid Bembidion andreae in the sandy 'wallows' was of interest.

In comparison with the soft-rock exposures at Dog Mills, those at Gob ny Creggan Glassey did not have the same degree of interest. Whilst a certain level of site- disturbance through erosion is of benefit to many invertebrates of soft-rock cliffs, the level operating over much of this site would appear to be too extreme. The fauna can be expected to be very limited but this is bound to include a proportion of specialists, such as B. andreae, that can tolerate this degree of instability. The cliffs here fora an interesting comparison to the Ramsey Bay soft-rock coast but the latter are of greater value for invertebrate conservation as they have more sections of semi-stable cliff which allow species to re-colonise the eroded faces in time. Should proposals for coastal defences ever be considered for this site, revetments (as used on the North Norfolk coast) would slow down the processes of erosion without eliminating them altogether. This would improve the conservation value of the cliffs for invertebrates whilst retaining the geomorphological interest of the exposures.

SPECIES RECORDED. (GOB NY CREGGAN GLASSEY)

HEMIPTERA

Saldula saltatoria

HYMENOPTERA: Formicidae

Formica fusca
Lasius flavus
Myrmica ruginodis

COLEOPTERA

Nebria brevicollis
Dyschirius thoracicus
Trechus obtusus
Bembidion lampros
Bembidion andreae
Calathus mollis
Agonum albipes
Amara ovata
Bradycellus verbasci
Dromius linearis
Bledius atricapillus
Stenus guttula
Creophilus maxillosus
Tachyporus chrysomelinus agg.
Apion frumentarium
Philopedon plagiatus
Rhinoncus castor

MYRIAPODA: CHILOPODA

Brachygeophilus truncorum
Geophilus insculptus
Lithobius forficatus
Strigamia maritima

MYRIAPODA: DIPLOPODA

Glomeris marginata
Polydesmus gallicus
Tachypodoiulus niger

ISOPODA: Oniscidea

Oniscus asellus
Philoscia muscorum
Porcellio scaber
Trichoniscus pusillus

MOLLUSCA

Lauria cylindracea
Discus rotundatus
Arion ater agg.
Arion subfuscus
Vitrina pellucida
Clausilia bidentata
Trichia striolata
Trichia hispida

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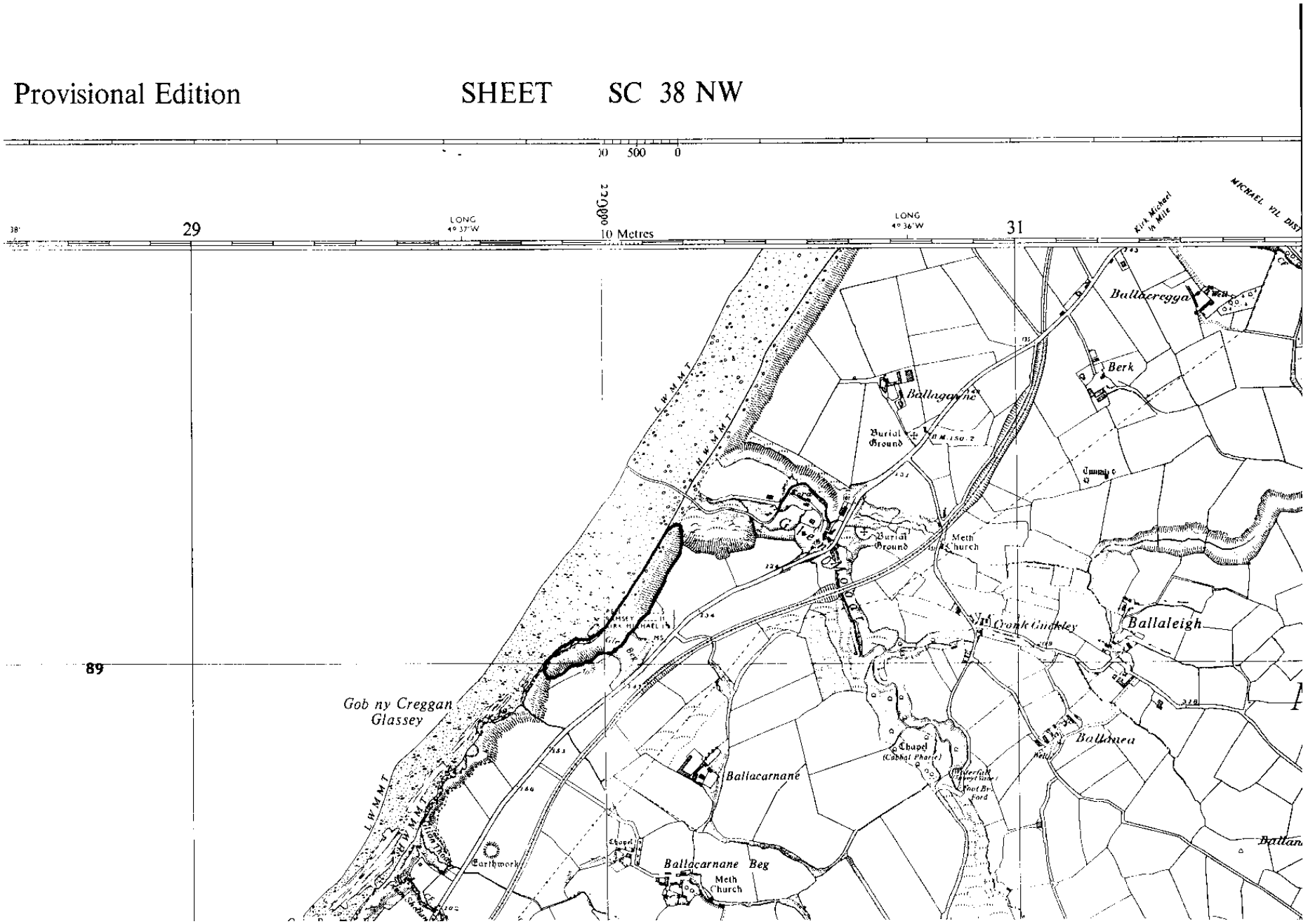

PHURT (SITE 2.) -Low slumping cliffs at the northern end of Ramsey Bay, with flushes from the pastures above seeping over a band of peat on the upper beach. The permanently damp, sandy conditions are a valuable invertebrate habitat and the thick mattress of grasses on the cliff-face sustains high humidity levels during dry periods.

LHOOB DOO (SITE 7.) -Coastal flushes on the low boulder-clay cliffs in the south-west of the island. Light grazing maintains an open structure to several of these flushes but others are more densely-vegetated, including narrow strips of reed-fen. The varied character of these flushes provides a good niche-range for invertebrates and the maintenance of suitable grazing levels is critical for site quality.

Plate 1.

THE AYRES (SITE 14.) - The internationally-important lichen heath at the northern tip of the island has developed on a raised shingle beach. Rabbit grazing and accidental fires maintain open heath conditions over several square kilometres and, coupled with the exceptionally mild climate, permits the occurrence of many xerophilous invertebrates at the northern limit of their distribution in the British Isles.

PORT CORNAA (SITE 15.) -The interest of this site lies in the intimate mosaic of habitats contained in a small, attractive valley. The gravel-bed stream fans across an area of saltmarsh before cutting through the storm-beach to the sea; at the foot of the northern slopes, ponded backwaters support mature alder carr and impeded drainage produces flush-fens with Sphagnum carpets. A mixed deciduous woodland on the valleyside, topped by gorse heath, has plenty of fallen timber and, although not ancient in origin, supports an interesting woodland fauna.

Plate 2.

THE CURRAGHS (SITE 16.) - Essentially this is an area of ancient willow carr which has developed on the peaty basin of the post-glacial Lake Andreas and is regarded as the oldest plant community extant on Mann. Fringing the central carr are areas of old peat-cuttings which, being closer to the water-table, have a shrubby fen community dcminated by bog myrtle and purple moor-grass with open pools.

PLATE 3.

ACKNOWLEDGEMENTS.

The authors would like to thank Ian Francis for his help with invertebrate recording during the survey and for permission to use the photographs reproduced in Plates 2 & 3. We are extremely grateful to the following for identifying specimens collected during the survey - Tony Barber (centipedes), John Bratton (stoneflies), Kefyn Catley (spiders), Arthur Chater (bristletails), Pete Kirby (bugs) and John Owen (aleocharine rove-beetles). Larch Garrad and Martin Luff provided advice and information used in the compilation of this report.

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APPENDIX - Taxonomic list of species recorded.

THYSANURA (Det. AO Chater)	**SITE NO/s**
Dilta ?hibernica	- 8.
Petrobius brevistylis	- 7, 11.
Petrobius maritimus	- 1, 7, 9, 10.

PLECOPTERA (Det. JH Bratton)	**SITE NO/s**
Chloroperla tripunctata	- 5, 6.
Diura blcaudata	- 5, 6, 15.
Leuctra hippopus	- 7.
Leuctra inermis	- 15.
Nemoura cinerea	- 16.
Protonemura meyeri	- 15.
Siphonoperla torrentium	- 15.

ORTHOPTERA (Det. DC Boyce & AP Fowles)	**SITE NO/s**
Tetrix undulata	- 14.

HEMIPTERA (Det. P Kirby)	**SITE NO/s**
Peritrechus geniculatus	- 14.
Trapezonotus arenarius	- 14.
Macrodema micropterum	- 14.
Stygnocoris fuligineus	- 7, 11.
Scolopostethus affinis	- 7.
Scolopostethus decoratus	- 14.
Gampsocoris punctipes	- 14.
Cryptostemma alienum	- 15.
Piesma quadratum	- 1, 2, 10, 13.
Anthocoris nemoralis	- 8.
Anthocoris nemorum	- 1, 6, 8, 16.
Orthops ?campestris	- 1.
Stenodema laevigatum	- 2, 8.
Saldula saltatoria	- 6, 8, 18.
Chartoscirta cincta	- 3.
Velia caprai	- 6.

DIPTERA: Syrphidae (Det. DC Boyce & AP Fowles)	**SITE NO/s**
Ferdinandea cuprea	- 6.
Portevinia maculata	- 15.

HYMEMOPTERA: Formicidae (Det. DC Boyce) **SITE NO/s**

Fornica fusca	- 1, 2, 7, 8, 9, 17, 18.
Formica lemani	- 4, 5, 7, 12, 14.
Lasius flavus	- 1, 4, 5, 7, 11, 12, 15, 17, 18.
Lasius niger	- 5, 7, 11, 14, 15, 16.
Myrmica ruginodis	- 1, 2, 5, 7, 8, 10, 13, 16, 17, 18.
Myrmica scabrinodis	- 4, 5, 11, 12, 14.
Tetramorium caespitum	- 12, 14.

COLEOPTERA (Det. DC Boyce & AP Fowles) **SITE NO/s**

Carabus nemoralis	- 14.
Leistus ferrugineus	- 6.
Leistus fulvibarbis	- 1, 7, 8, 10.
Leistus rufescens	- 2, 4, 7, 14, 16.
Nebria brevicollis	- 6, 15, 18.
Nebria salina	- 11, 14.
Notiophilus biguttatus	- 7, 17.
Notiophilus germinyi	- 14.
Notiophilus palustris	- 4.
Elaphrus cupreus	- 3, 15.
Loricera pilicornis	- 7, 15.
Dyschirius globosus	- 10, 11, 14.
Dyschirius thoracicus	- 1, 18.
Broscus cephalotes	- 1, 2, 14.
Aepus marinus	- 2, 9, 14, 15.
Trechus obtusus	- 1, 2, 18.
Bembidion lampros	- 18.
Bembidion pallidipene	- 1.
Bembidion atrocoeruleum	- 5, 15, 17.
Bembidion tibiale	- 5, 6, 15, 17.
Bembidion andreae	- 1, 2, 18.
Bembidion decorum	- 17.
Bembidion maritimum	- 15.
Bembidion saxatile	- 1, 2, 17.
Bembidion stephensi	- 2.
Bembidion tetracolum	- 1, 2, 17.
Bembidion assimile	- 14.
Bembidion harpaloides	- 1, 6, 15.
Bembidion mannerheimi	- 3, 10.
Pterostichus diligens	- 3, 7, 16.
Pterostichus madidus	- 5, 6, 7.
Pterostichus melanarius	- 6.
Pterostichus minor	- 3, 16.
Pterostichus nigrita agg.	- 1, 13, 14.
Pterostichus rhaeticus	- 15, 16.
Pterostichus strenuus	- 2, 9, 10, 15.
Pterostichus versicolor	- 14.
Abax parallelopipedus	- 1, 5, 6.
Calathus fuscipes	- 14.
Calathus mollis	- 18.
Agonum albipes	- 2, 5, 6, 7, 8, 9, 11, 15, 17, 18.
Agonum dorsale	- 1, 2.
Agonum fuliginosum	- 2, 3, 16.
Agonum muelleri	- 15.
Agonum obscurum	- 2, 14.

Agonum piceum	- 3.
Agonum thoreyi	- 3, 16.
Amara aenea	- 11, 14.
Amara ovata	- 12, 18.
Amara plebeja	- 1, 2, 8, 16.
Amara tibialis	- 14.
Harpalus anxius	- 14.
Harpalus latus	- 5, 8.
Harpalus tardus	- 14.
Dicheirotrichus gustavi	- 10.
Trichocellus placidus	- 3.
Bradycellus harpalinus	- 2.
Bradycellus sharpi	- 3.
Bradycellus verbasci	- 2, 13, 18.
Badister bipustulatus	- 1, 10.
Demetrias atricapillus	- 2, 9, 14, 17.
Dromius linearis	- 1, 2, 4, 7, 14, 15, 18.
Dromius melanocephalus	- 1, 2, 9, 14.
Dromius notatus	- 1, 2, 7, 12, 14.
Metabletus foveatus	- 14.
Hydrobius fuscipes	- 14.
Anacaena globulus	- 1, 16.
Baeckmanniolus dimidiatus	- 14.
Silpha atrata subrotundata	- 2, 3, 5, 6, 16.
Stenichnus collaris	- 7, 16.
Olophrum piceum	- 6.
Lesteva heeri	- 16.
Omalium laeviusculum	- 7, 10.
Omalium rivulare	- 2.
Micralymma marina	- (*)
Bledius atricapillus	- 1, 18.
Bledius subterraneus	- 17.
Anotylus rugosus	- 3, 6, 7, 8, 10, 14.
Stenus boops	- 3.
Stenus clavicornis	- 9.
Stenus flavipes	- 16.
Stenus guttula	- 1, 7, 17, 18.
Stenus brunnipes	- 1, 3, 12.
Stenus guynemeri	- 6.
Stenus impressus	- 6, 14.
Stenus juno	- 3, 14, 16.
Stenus nitidiusculus	- 16.
Stenus ossium	- 1, 2.
Stenus providus	- 1.
Dianous coerulescens	- 6.
Lathrobium brunnipes	- 16.
Lathrobium multipunctum	- 5.
Atrecus affinis	- 15.
Gyrohypnus angustatus	- 10.
Xantholinus linearis	- 1, 9, 12.
Xantholinus longiventris	- 1, 2, 9, 10.
Philonthus decoru8	- 6.
Philonthus micantoides	- 14.
Philonthus varius	- 11, 14.
Gabrius keysianus	- 14.
Gabrius trossulus	- 7.
Cafius xantholoma	- 1, 2, 14.
Staphylinus aeneocephalus	- 5.

Staphylinus brunnipes - 14.
Staphylinus erythropterus - 16.
Creophilus maxillosus - 2, 18.
Quedius fuliginosus - 8, 16.
Sepedophilus marshami - 2.
Sepedophilus nigripennis - 2.
Tachyporus chrysomelinus agg. - 1, 2, 11, 18.
Tachyporus hypnorum - 2, 14.
Tachyporus nitidulus - 1.
Tachyporus obtusus - 6.
Tachinus signatus - 2, 10, 11.
Encephalus complicaos - 2.
Hydrosmecta eximia - 5, 15, 17.
Hydrosmecta thinobioides - 15.
Aloconota cambrica - 6, 15, 17.
Aloconota currax - 5, 6, 15.
Amischa cavifrons - 5, 15.
Geostiba circellaris - 5.
Drusilla canaliculatus - 1.
Bibloplectus ambiguus - 16.
Bythinus macropalpus - 16.
Rybaxis sp. - 16.
Geotrupes stercorarius - 6.
Aegialia arenaria - 14.
Aphodius sphacelatus - 2.
Cyphon padi - 16.
Cyphon variabilis - 16.
Heterocerus fusculus - 14.
Agrypnus murinus - 14.
Zorochros minimus - 5, 15.
Agriotes obscurus - 2, 4, 7, 17.
Agriotes lineatus - 10, 11.
Dalopius marginatus - 8, 15.
Rhizophagus dispar - 15.
Micrambe vini - 15.
Coccidula rufa - 1, 3, 14.
Rhyzobius litura - 1, 2, 7, 10, 11, 12, 14, 17.
Coccinella 7-punctata - 1, 12, 15, 16.
Coccinella 11-punctata - 14, 17.
Adalia 10-punctata - 16.
Anatis ocellata - 15.
Corticaria crenulata - 10.
Corticaria punctulata - 1, 2, 7.
Phylan gibbus - 14.
Phaleria cadaverina - 14.
Cylindronotus laevioctostriatus - 4, 14, 15.
Tetratoma fungorum - 15.
Oulema melanopa - 1, 14.
Chrysolina banksi - 1, 2, 17.
Chrysolina polita - 16.
Chrysolina staphylaea - 2.
Lochmaea caprea - 3.
Phyllotreta undulata - 2.
Aphthona nonstriata - 3.
Chalcoides aurea - 16.
Cassida rubiginosa - 14.
Apion curtirostre - 7.
Apion hydrolapathi - 2.

Apion violaceum	- 9, 10.
Apion frumentarium	- 18.
Apion miniatum	- 10.
Apion loti	- 2.
Apion viciae	- 2.
Apion dichroum	- 8, 11.
Apion nigritarse	- 2.
Otiorhynchus atroapterus	- 7, 14.
Otiorhynchus ovatus	- 1.
Otiorhynchus rugifrons	- 1, 4.
Otiorhynchus singularis	- 1, 2, 6, 7.
Otiorhynchus sulcatus	- 1, 13, 16.
Trachyphloeus bifoveolatus	- 4.
Polydrosus pulchellus ab. insquamosus	- 10.
Barypeithes araneiformis	- 16.
Barypeithes pellucidus	- 7, 9, 10.
Barypeithes sulcifrons	- 2.
Strophosomus faber	- 14.
Philopedon plagiatus	- 2, 14, 18.
Barynotus obscurus	- 2.
Tropiphorus terricola	- 1, 2.
Sitona cambricus	- 18.
Sitona griseus	- 14.
Sitona lepidus	- 15.
Sitona lineelus	- 1, 2, 14.
Sitona regensteinensis	- 7, 8.
Sitona striatellus	- 1.
Hypera arator	- 9.
Hypera plantaginis	- 7, 14.
Mesites tardii	- 6, 15.
Grypus equiseti	- 1.
Cidnorhinus 4-maculatus	- 10.
Ceutorhyncus contractus	- 12.
Ceutorhynchus quadridens	- 14.
Rhinoncus castor	- 14, 18.
Rhinoncus pericarpius	- 13, 16.
Phytobius 4-tuberculatus	- 1, 14.
Orobitis cyaneus	- 14.
Anthonomus pedicularius	- 8.
Sibinia primitus	- 14.
Rhynchaenus quercus	- 8.

(*) Micralymma marina was recordedfrom intertidal crevices at Sulby Bridge, Ramsey (SC447946) on 30 April 1989.

MYRIAPODA: CHILOPODA (Det. AD Barber) **SITE NO/s**

Brachygeophilus truncorum	- 14, 16, 18.
Cryptops hortensis	- 13, 16.
Geophilus carpophagus	- 4, 7, 12.
Geophilus insculptus	- 6, 7, 18.
Haplophilus subterraneus	- 13.
Lithobius forficatus	- 1, 5, 7, 8, 9, 11, 13, 18.
Lithobius macilentus	- 6.
Lithobius melanops	- 10, 11.
Lithobius microps	- 1.
Lithobius variegatus	- 5, 15.

Necrophloeophagus longicornis	- 9, 10, 15.
Schendyla peyerimhoffi	- 10.
Schendyla nemorensis	- 7, 10, 14.
Strigamia maritima	- 2, 10, 15, 18.

MYRIAPODA: DIPLOPODA (Det. AP Fowles) **SITE NO/s**

Blaniulus guttulatus	- 6, 12, 15.
Brachyiulus pusillus	- 9, 10, 16.
Cylindroiulus punctatus	- 4, 6, 8, 9, 10, 12, 13, 15, 16.
Glomeris marginata	- 2, 4, 5, 6, 7, 8, 15, 16, 18.
Julus scandinavius	- 3.
Ommatoiulus sabulosus	- 8, 9.
Ophyiulus pilosus	- 5, 9, 15. (*)
Polydesmus angustus	- 6, 8, 9, 12, 13, 14, 16.
Polydesmus gallicus	- 18.
Polyxenus lagurus	- 12.
Tachypodoiulus niger	- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 17, 18.

(*) Ophyiulus pilosus was also recorded from disturbed ground on the hillside above Ballacarmel, Ramsey (SC 459931) on 29 April 1989.

ISOPODA (Det. DC Boyce & AP Fowles) **SITE NO/s**

Androniscus dentiger	- 1, 7, 13.
Armadillidium album	- 14.
Armadillidium pulchellum	- 7, 12.
Armadillidium vulgare	- 1, 2, 9, 10, 12, 14.
Haplophthalmus mengei	- 5, 7, 13.
Ligia oceanica	- 9, 10, 11. (*)
Oniscus asellus	- 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18.
Philoscia muscorum	- 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18.
Porcellio scaber	- 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18.
Trichoniscoides saeroeensis	- 7, 12.
Trichoniscus pusillus	- 1, 2, 3, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18.

(*) Ligia oceanica was also recorded from intertidal crevices at Sulby Bridge Ramsey (SC447946) on 30 April 1989.

PSEUDOSCORPIONES (Det. DC Boyce) **SITE NO/s**

Chthonius ischnocheles	- 10.
Chthonius tetrachelatus	- 8.
Neobisium maritimum	- 9.

ARANEAE (Det. KM Catley)	**SITE NO/s**
Arctosa perita	- 1, 14.
Attulus saltator	- 14.
Euophrys frontalis	- 12.
Heliophanus cupreus	- 9, 12.

MOLLUSCA (Det. DC Boyce & AP Fowles)	**SITE NO/s**
Potamopyrgus jenkinsi	- 7.
Lymnaea truncatula	- 8, 16.
Carychium minimum	- 3, 7, 8, 14, 16.
Carychium tridentatum	- 6, 7, 8.
Cochlicopa lubrica	- 1, 5, 8, 10, 11, 15.
Pyramidula rupestris	- 10.
Columella aspera	- 4, 7, 15, 16.
Vertigo antivertigo	- 14, 16.
Vertigo substriata	- 16.
Pupilla muscorum	- 11.
Leiostyla anglica	- 6, 7, 8, 15.
Lauria cylindracea	- 1, 2, 3, 4, 6, 7, 8, 10, 12, 15, 16, 18.
Vallonia excentrica	- 2, 11.
Punctum pygmaeum	- 6, 7, 14.
Discus rotundatus	- 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 18.
Arion ater agg.	- 1, 2, 3, 4, 5, 7, 10, 11, 12, 15, 18.
Arion flagellus	- 15.
Arion subfuscus	- 1, 3, 5, 6, 7, 8, 9, 13, 15, 17, 18.
Arion circumscriptus	- 5, 6, 15.
Arion intermedius	- 14, 16.
Arion distinctus	- 5, 6, 8, 13, 15.
Vitrina pellucida	- 1, 8, 18.
Vitrea contracta	- 5, 7.
Nesovitrea hammonis	- 5, 9, 16.
Aegopinella pura	- 5, 8, 9, 15, 16.
Aegopinella nitidula	- 6, 8, 15.
Oxychilus cellarius	- 6, 10, 15.
Oxychilus alliarius	- 6, 8, 9, 14, 15.
Zonitoides nitidus	- 3, 14.
Milax gagetes	- 11.
Limax marginatus	- 4, 5, 6, 8, 12, 15.
Limax maculatus	- 6, 7.
Deroceras laeve	- 3, 5, 8, 14, 15, 16.
Deroceras reticulatum	- 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17.
Deroceras caruanae	- 8, 17.
Euconulus alderi	- 3, 7, 8, 14, 16.
Euconulus fulvus	- 4, 6, 8, 15.
Clausilia bidentata	- 2, 5, 6, 7, 8, 9, 13, 15, 17, 18.
Balea perversa	- 8, 10.
Candidula intersecta	- 1, 11, 12, 14, 15, 17.
Trichia striolata	- 1, 2, 6, 10, 14, 15, 18.
Trichia hispida	- 7, 8, 9, 17, 18.
Cepaea nemoralis	- 1, 12, 14, 17.
Cepaea hortensis	- 7, 14.
Helix aspersa	- 1, 7, 11, 14.