



Ceannabeinne Township Environment

Introduction and General

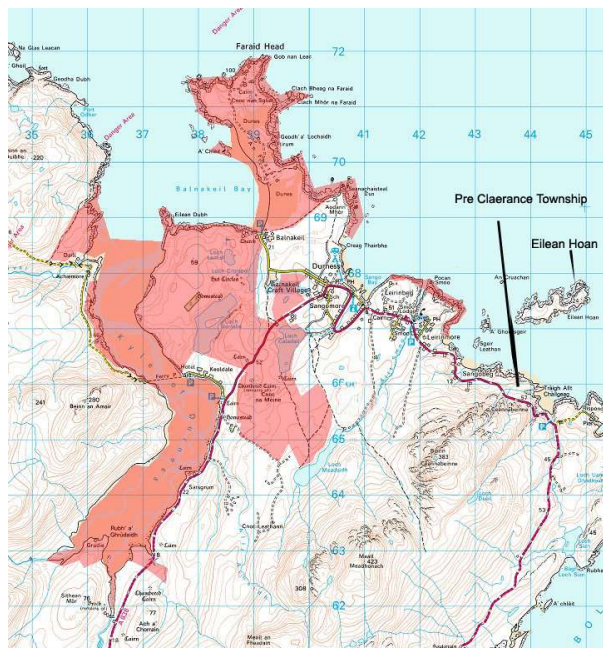
The abandoned township of Ceannabeinne (meaning ‘head of the mountain’) lies to the east of the village of Durness, at the northern end of the mountain from which the township takes its name (centred at NC 438 658). It lies mainly to the north of the A838 road that leads from Durness to Tongue, with one outlying building to the south of the road. The topography consists of craggy knolls and steep-sided hills to either side of the burn known as Allt Chailgeag (‘burn of bereavement and death’). The burn runs through a broad, flat-bottomed valley in the western part of the township and then descends a narrow, steep-sided valley toward the beach of the same name. To the north of the valley, the ground rises in undulating knolls and then descends steeply toward the sea shore, dropping to cliffs above the broad beach known as Traigh na H’Uamhag (‘beach of the little cave’).



Ceannabeinne is a small part of the North West Highlands Geopark in the heart of Mackay Country. A Geopark is an environment with the incredible legacy left by an extraordinary geological past. The mountains and coasts, the flora and fauna, the communities and culture all owe a great deal to the difference which the underlying geology makes. The Geopark extends to the east of Durness, beyond Loch Eriboll, and on to The

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Moine. The eastern boundary of the Geopark largely follows the Moine Thrust zone, a famous and important geological structure



The landscape in and around Durness including the Ceannabeinne site is considered as '*moorland slopes and hills*' (Caithness and Sutherland Landscape assessment (1998)) The site is outside the Durness SAC and SSSI and roughly 1 km from the Eilean Hoan SSSI/North Sutherland Coastal Islands SPA. These sites are key habitats and species of international importance.

Durness SAC and SSSI site was originally designated as a SSSI in 1990 and then subsequently also as an SAC on the 17th of March 2005. The map adjacent provides an overview of the extent of the designated area which covers 1,997 hectares.

The qualifying reasons for the original SSSI designation was due primarily to interesting geological formations and rare floral habitats and species The qualifying reasons for designation as an SAC have been listed below. The priority habitats within this area consist of the limestone pavements and Dune grassland. The key conservation objective is to avoid the deterioration of habitats utilised by Otters and avoiding disturbance where possible.

Scientific name	Common Name
Alkaline fens	Base rich fens
Alpine and Sub-alpine calcareous grasslands	Alpine and Sub-alpine calcareous grasslands
European dry heaths	European dry heaths
Fixed dunes with herbaceous vegetation	Dune grassland*
Hard oligo-mesotrophic waters with benthic vegetation	Calcium-rich nutrient-poor lochs and pools
Humid dune stacks	Humid dune stacks
Hydrophilous tall herb fringe communities	Tall herb communities
Limestone pavements	Limestone pavements*
Lutra lutra	Otter
Shifting dunes with <i>Ammophila arenaria</i>	Shifting dunes with Marram grass

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The preclaece township site is located to the south west of the Island of Eilean Hoan that is a SSSI and also part of the North Sutherland Coastal Islands Special Protection Area (SPA) along with another Island, Eilean nan Ron, located further to the east. This designated area can be seen highlighted above and is about 1.25 km from the township. The 48 hectare Island has its designation primarily because of its internationally important wintering population of Greenland Barnacle Geese (*Branta leucopsis*). At peak times a total of 630 individuals have been counted on both Islands and this represents 2% of the global breeding population. The geese primarily feed on the Island's grassland but also feed on the improved agricultural land on the mainland.

There are also a number of important breeding populations of other seabirds that frequent the Island. Of these the greatest importance is the nationally important breeding population of Great Black-backed Gull (*Larus marinus*) with 470 pairs (3% of GB population).

There is no one way to examine the living organisms but individuals do not occur in isolation and distribution depends upon a combination of environmental factors. The relationship of geology, scenery, climate and vegetation cannot be totally separated except for ease of investigation. Wind is a factor of notable variability and of extreme. The topography enters greatly into exposure of wind and in many places is a prominent factor. Soil is a major multiple factor with a close correlation between rock type and soil character. The elements of climate, vegetation and relief are determinant in soil formation. Soil is of vital importance to countless living organisms and its nature depends on respective diverse processes interacting over a long period. Soils are identified and classified according to the features and arrangement of the horizons that make up the soil profile.

Assessment 1841 and 2007

Ceannabeinne township was once a thriving township on the Rispond Estate. Today it consists of several ruined structures situated by the side of the A838 Durness to Tongue road. In many cases only the lowest courses of the foundation survive, as the substantial stone enclosure dykes built after the clearance of the settlement in 1842 have re-used much of the stone from the buildings. The township now is undistinguished and forms part of the Durness common grazing.



*The illustration is
an artist's
impression of
how
Ceannabeinne
may have looked
prior to 1841.*

People lived with flocks of goats, sheep, horses and cattle, and they were living happy, with flesh and fish and butter, and cheese and fowl and potatoes and kail and milk too. There was no want of anything.

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Ceannabeinne is a different entity today than in 1841 for comparative reason principally because of a loss of boundary features. The walls demarcating the site today used to be part of the township making the built environment inhabited by the township people and their stock. This would have had a different effect on the “wildlife” associated with the stone habitat and the ecology of the area. The flora and fauna changes with the geology, climate and land use and cultivation ceased for sheep farming and human impact has determined the presence and abundance of many current plants and animals.

Mans activities are so varied and on such a scale that in effect he creates his own environment. The landscape around him is the result of his own workmanship. Man commonly substitute's natural climaxes with other climaxes better suited to his immediate gain whatever may be the long term consequences for him or other organisms. What was once a farm town evolving in 1841 abruptly became an area dominated by sheep grazing that the complexes in their comparison may not be apparent. The farm town would comprise of a variety of situations many of them inherently ephemeral but stabilized for a time by human control while laterally the area was maintained by the multifarious activities of a single domesticated animal species instead of by the influence of climate or large plants. More recently even with the grazing of sheep the area is likelier to be of a natural climax - Blanket bog and sparse grassland. Grazing pressure is a key factor in determining ecological variation while the site is becoming waterlogged and declining into moor land



Landscape can be characterized as rugged and hilly with small well-defined areas of good land.

The garden areas were very fertile in their day growing potatoes, cabbage, kale, onions and carrots. Difficult to understand now as heavily grazed by sheep since the township was cleared. Grazing sheep and rabbits keep grass incredibly short and bracken has become invasive.

FARMING BEFORE THE IMPROVEMENTS- pre 1941 at Ceannabeinne

Throughout Scotland the land was farmed by a method known as the run-rig system. There were no large farms as we know them today; instead the land was divided into numerous, narrow strips of land. Evidence can be

identified on the site but dating these would require a much fuller investigation. These strips consisted of ridges of cultivated land- the rigs- separated from one another by quite deep ditches. These rigs were, on average, 30 feet broad. The hollows acted as shallow drains for the rainwater, but most of them were covered in reeds, broom and marsh plants.



The farmers rented the land from the local landowner and usually paid him in kind. They lived in small clusters of houses and, each day, went forth to farm their rigs and tend to their animals. Most of them rented a number of rigs, but it was unusual for a farmer to have two or more rigs alongside each other. These strips were curved into a sort of S shape because of the need for turning space for the teams of oxen pulling the heavy, wooden, "Old Scots Plough". The best land (known as the Infield) was always kept under crop. It was never rested and, on most rigs, the same crop was grown year after year.

Some of the poorer township land (Outfield) was either cropped once in a while or left as pasture. Nearly every farmer kept a few animals and grazed them on the common grazing land, which was shared by all the villagers.

Not all the land was arranged in rigs. The people were not able to drain the land as would happen today and so there was a deal of marshland, the flat land with the deepest and richest soil, close to the river banks, probably flooded and couldn't be used for farming. These marshlands were home to numerous insects, including the mosquito, which spread diseases amongst the country folk. But they were also home to wild fowl which were much sought after as a source of fresh meat. The landscape would be a completely alien one to anyone from our time. They would have good and safe access from the sea, grazing for animals, soils suitable for growing crops, and be sheltered by surrounding hills. Biodiversity means the variety of life or the richness of nature concerned with the relationship of nature and people Biological diversity is also part of our cultural heritage - the current distribution and numbers of plant and animal species is, for better or worse, a result of human management. Crucially, biodiversity is concerned with the relationship of nature and people, and sees the natural world as a vital asset, essential to our survival and quality of life.



In 1841 domesticated farm animals and humans shared a common protective existence. Ceannabeinne was the biggest farm town on the Rispond Estate with fourteen houses and a school and the census of June 1841 details ten families living there.

Today it is described as an area of rocky outcrops and steep mountainside to the south of the road, and of green fields and rocky cliff line, high above the sea-shore to the north. The remains of the township are situated in a cluster between the cliffs and the north side of the road. The area is now divided into fields by later stone dykes, which in some areas dissect the earlier buildings. The site can be entered from the roadside.

One of the most basic problems encountered was how to define a 'site'. At one level this is simple: a site is any residue of human activity either visible or previously recorded within the survey area. It becomes more troublesome when dealing with large complex sites which span large areas of land and which functioned over a long period of time

At present, much of the land is given over to sheep. Very little arable was encountered, even in those areas where it was deemed likely that crops could be grown. It was quite common to encounter land which had apparently been cultivated in the recent past but which was now poorly tended and waterlogged and declining into moorland. Analysis of this information is not straightforward, partly due to the sheer scale of the information but also because of the nature of the resource and the problems of summarizing an extremely heterogeneous data set within tight parameters. It was commonplace to encounter isolated fragments of what were most likely to be much larger residues of past activity. An example of this might be a ruinous dyke, or an outbuilding which functioned only as part of a field system, cleared areas that may relate to the agricultural activities of the townsfolk, cultivation areas and animal enclosures. The hillside too shows evidence of strips of stone clearance and attempts may have been made to cultivate the hillside. There is possible area of rig and

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furrow ground disturbance by sheep grazing various patches of cultivation strips and terrace-like features which may pre-date the cleared township.

The exposed areas of heathland scattered across the British Isles can be divided into two main types: lowland and upland. Lowland heath is defined as below 300m in altitude, while upland heath occurs at heights above 300m. The lowland heath of Ceannabeinne could be an important habitat for many species, such as butterfly, lizard and toad. The type of animal and plant species found here depends largely on the quality of the soil. The poorest soils of this site are thin and nutrient-deficient bogs and pools of water can be found and water-loving species like sundews, raft spiders and dragonflies abound. Lowland heath can be divided into three main types: dry, wet and humid the latter bearing characteristics of both wet and dry heath. All 3 are found at Ceannabeinne. Lowland heath is usually a man-made environment.



The overwhelming presence of nature gives visitors to this breathtaking landscape the opportunity to contemplate the fragility and scale of human existence.

Dry heath occurs where the soils are free-draining and where the water table always remains below the surface. The shrubs commonly found on areas on dry lowland heath are common heather (ling), bell heather, cross-

leaved heath and three species of gorse: common, western and dwarf. Other plants include grasses like bristle bent and sheep's fescue. These dry sandy heaths are ideal habitats for reptiles. All six species of UK reptiles can be found here, which is one reason why it's important to conserve this declining habitat. The diversity of species found in lowland heath habitats tends to be proportional to the level of moisture in the soil. The wetter the soil, the greater the number of plants and animal species found there. Wet heath is characterised by the presence of cross-leaved heath, purple moor grass, cotton grass, Apart from grazing sheep, the lowland heath environment is not a suitable habitat to support many species of UK mammal.

Species likely to be found on Ceannabeinne lowland heath, Blanket bog and sparse grassland

Mammals

- The dwarf vegetation characteristic of open heathland does not provide enough cover, the food supply is limited, and free-draining soil makes the conditions too dry. Due to the lack of suitable cover, lowland heath is typically inhabited by underground dwellers like foxes and rabbits.



Badgers are absent from the heath because the soil is too sandy for them to build their sets. Other mammals include shrews and short-tailed voles that live in the grass. Deer have been seen grazing.

Marine Mammals can be common sighting from this coastline.



It is not uncommon to catch glimpses of dolphins, whales and porpoises off the coast at Ceannabeinne. These marine mammals are collectively known as cetaceans. Viable from the land Bottlenose Dolphin occasional in summer, Risso's porpoise occasional May _ October, White beaked dolphin occasional May _ October, and Minkie Whale rare in Spring frequent June – August.

Birds- see separate lists

- Heathland birds are quite difficult to spot as they are well camouflaged among the dense vegetation. You are more likely to hear them singing. Birds of prey can be seen here too.

Invertebrates

- Lowland heaths are home to many species of invertebrate. Insects that proliferate during the warm summer months include ants, beetles, dragonflies, spiders, grasshoppers, moths, bees and wasps. Several butterfly species can be seen fluttering among the flowering heather and gorse during the summer. Areas of wet heath with small bogs and pools support most of the UK's 38 species of dragonfly.



*The invertebrates are by a large margin
the most species-rich group*

Reptiles

- The lowland heath habitat supports all six British native reptiles. Here they find a good supply of invertebrates and small mammals on which they feed.

Amphibians

- Amphibians are found in areas of wet heath.

Plants - see separate lists on botanical report

- The open lowland heath landscape is characterized by low-growing shrubs like gorse and heather. The other plant which grows here in abundance is bracken. Common gorse can be seen in spring the air is filled with its coconut smell. The purple expanse of heather is a characteristic of lowland heath in summer. Other heathland plants include haresfoot clover and St John's wort. Typical grass species include bristlebent and sheep's fescue. In the areas of wet heath species such as marsh gentian, sphagnum moss and the carnivorous sundews can be seen.

Ceannabeinne: Solid and Drift Geology

Limestone pavements are a scarce and non-renewable resource. They were exposed by the scouring action of ice sheets during the ice age which ended some 10,000 years ago. Since then water action has widened the cracks in the pavements to form a complex pattern of crevices known as *grikes* between which are massive blocks of worn limestone called *clints*. The habitat is widely scattered in Britain, on Carboniferous limestone with an important Durness limestone in Scotland. The UK holds a significant proportion of the resource of this habitat within the European Union.

Limestone pavements are of both geological and biological importance. The vegetation is rich in vascular plants, bryophytes and lichens and varies according to geographical location, altitude, rock type and the presence or absence of grazing animals. Limestone pavement vegetation may also contain unusual combinations of plants, with woodland and wood-edge species well-represented in the sheltered grikes. The clints support plants of rocky habitats or are often unvegetated. In the absence of grazing scrub may develop. In oceanic areas scrub over limestone pavement is important for epiphytes.

The Ceannabeinne township is built upon Precambrian basement which consists of grey, banded Lewisian Gneiss and numerous red-pink coloured pegmatite intrusions which become more abundant travelling inland towards Beinne Ceannabeinne. The basement in the Durness area is capped by white-cream coloured quartzites of Cambrian age which belong to the Eriboll Sandstone Group (consisting of the Basal Quartzite and Pipe Rock members). The quartzites have been eroded down to basement level at the location of the township although small outliers of the lowermost Basal Quartzite are found immediately to the northwest of the site around Cnoc nan Uamhag. These quartzites also form the nearby dip-slope on the western side of Loch Eriboll (hence the

Eriboll Sandstone Group) and are also found more locally at Sangobeg. Here the rocks have been down-faulted where sections of both the Basal Quartzite and overlying Pipe Rock are present.

Drift deposits are widespread with thick glacial tills covering most of the area. These contain large erratic boulders which are mainly gneissose at Ceannabeinne although boulders of quartzite are also common in the area which have been eroded from outcrops found to the west of Loch Eriboll and Sangobeg. Coastal areas however have relatively thick, raised wind-blown sand deposits which consist of carbonate-rich shell sands which are characteristic of the Durness area.

As the underlying basement and quartzites are all composed of acidic silica-rich rocks, one might expect to find poor, acidic soils beneath the township which are similar to the boggy and heather covered regions found immediately inland. However, unusually large areas of green pasture are found across parts of the township and along areas hugging the shoreline. This type of pastureland is more characteristic of areas around the village of Durness where Durness Group carbonates are found, implying that the carbonate sands are allowing pasture growth in otherwise unfavourable conditions. It is interesting to see that some enclosed fields are much more pasture-rich than their surrounding land with stone dykes often coinciding with lines of vegetation change. Therefore it is likely that these underlying raised sands have been purposely spread across certain fields and have been used as a raw fertiliser in the past.

The building stones appear to be local rocks as only gneiss, quartzite and some pegmatites were noted in the wall remains. The majority of the building stones are gneisses, although a large proportion are boulders of Basal Quartzite which appears unusual at first as only small outcrops are found *in-situ* at the nearby Traigh na h-Uamhag (beach). All of the local rocks are very hard crystalline materials which would make quarrying without machinery difficult. Therefore due to the general rounding of the building stones, it is also likely that small erratics and other loose boulders have been collected from nearby and brought to the site.



Also, a nearby gully at Clais Lobhta, Sangobeg represents a large fault where the northern slope is covered in quartzite scree which may have been another source for some of the building material, all within easy distance for transporting materials.

Ceannabeinne NC4365: botanical report

1. The site was visited by Pat and Ian Evans on 27th May and 29th June 2007.
2. 119 species of ferns and higher plants were listed from the site; further visits would add more, but probably not many. This is a respectable number of species from a relatively small area and reflects the wide range of habitats present and the different plant communities they support.
3. The plant communities form a mosaic. Their variety and distribution may be explained by factors such as the topography, presence of outcrop rock, steepness of slope, drainage/water logging, underlying soil type (acid/neutral/basic, peaty/sandy) and past and present management of the site (cultivation, grazing and the construction of drains, walls and buildings).
4. The plant communities have characteristic indicator species, such as members of the heather family. However, some species occur across a range of communities and the communities tend to intergrade at their edges.
5. There are only a few species obviously associated with past occupation of the site. They include tough, long-lived perennials, such as stinging nettle, and others, typical of scree elsewhere, which are protected from grazing in the tumbledown walls.
6. For more information see the full species list and detailed comments.

PAE/IME

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Ceannabeinne Archaeological Site, NC4365: detailed comments on the vegetation

1. The area surveyed consists of two 'fields' to the west, which are bounded by the road and walls/fences, and a larger area to the east, on both sides of the main burn, which contains the main concentration of ruins (sites 7a-7d); this larger area is bounded by notional lines on the map supplied. The site extends for some 400m west to east and 200m north to south and has an area of approx. 5 hectares.
2. Some 119 species of higher plants were recorded from the site and a few more might be added with further visits. This is a good number for a relatively small area and reflects the considerable range of habitats present. These habitats form a mosaic across the site, their presence in any one area depending on a number of factors.
3. These factors include the following:
 - a. the varied topography of the site, and the resultant drainage patterns, with well- and poorly-drained areas cut by burns and drains.
 - b. the presence and nature of outcrop rock (Lewisian gneiss), which may be relatively mineral-rich in places.

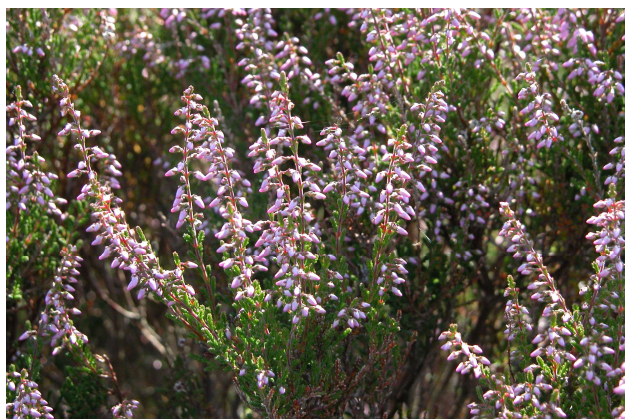
c. the presence in the main burn valley (and possibly elsewhere on the site) of a considerable depth (up to 3m) of glacial debris (moraine), the surface layers of which appear to have been augmented by sand blown up from the bay at the mouth of the burn. This sand may have a shell component, helping to explain the presence of some 'lime-loving' species of plants such as hair sedge *Carex capillaris*, which is locally frequent in the lower parts of the site.



d. the presence, elsewhere on the site, of a shallow layer of peat (although this may have been cut for fuel, or affected by cultivation).

e. the history of the site, including former cultivation areas (and associated drains/ditches), the ruins of buildings, enclosures and their walls, and more recent management (close grazing by livestock).

3. The different habitats support characteristic plant communities, although they do tend to intergrade on their edges. These may be recognised by 'indicator species', such as ling and other heathers, cotton-grass or bog-moss *Sphagnum*.



Ling Heather



Cotton Grass

No attempt was made, in the time available, to map the habitats, but they include the following:

- a. outcrop rock, with associated thinly-soiled areas on flat surfaces, in gulleys and on shelves; the steeper north faces of some of the outcrops are richer than the more gently-sloping south-facing slopes (partly because they are shaded/damper and also because they are relatively inaccessible to grazing animals).
- b. dry, acid grassland.
- c. dry heath.
- d. wet heath/bog/marsh.
- e. dry neutral/calcareous grassland.
- f. damp neutral/calcareous grassland.
- g. open water along the drains and burn courses.
- h. tumbledown walls of the former building sand associated enclosures, and more modern walls.

4. Plants characteristic of the plant communities present are as follows. They are not all large and conspicuous, and some species occur in a range of communities.

- a. outcrop rock: maidenhair spleenwort, early hair-grass, mountain everlasting, sea- pink, crowberry, primrose (gullies on north-facing crags), bilberry.



Maidenhair

Speenwort

b. dry, acid grassland: sweet vernal-grass, heath bedstraw, common thyme (also in other well-drained short grassland), tormentil; bracken (former cultivation areas?)



Tormentil

Common Thyme

c. Dry Heath: Ling.



Heather ling

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- d. wet heath/bog/marsh: bog-moss, cotton-grass, cross-leaved heath, bog asphodel, bog myrtle, sundews, heath spotted-orchid, compact and soft rushes. Grasses such as yorkshire fog and crested dog's-tail occur in lush areas at edge of the marshy ground, with northern marsh-orchid.
- e. dry neutral/calcareous grassland: hair sedge, crested hair-grass, limestone bedstraw, fairy flax, common thyme, lady's bedstraw, alpine bistort, mouse-ear hawkweed, mountain avens.
- f. damp neutral/calcareous grassland (including damp flushes): lesser clubmoss, yellow saxifrage, alpine meadow-rue, tawny sedge, grass-of-parnassus.
- g. drains, ditches and burns: bog pondweed, water horsetail, marsh horsetail, lesser spearwort, bulbous rush.
- h. buildings and walls: stinging nettle, spear thistle, broad buckler-fem, common polypody fem, field forget-me-not.

5. Plants associated with former occupation of the site (see immediately above) are few and mostly extremely tough perennial 'weeds' such as stinging nettle. There are also some annual 'weeds' typical of disturbed ground, and ferns, elsewhere found in scree, which are protected from grazing amongst the stones of the tumbledown walls.

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21.8.07

List of species recorded by P.A-Evans and I.M.Evans on 27.05.07 and 29.06.07 at the Ceannabeinne Archaeological Site

FERNS & ALLIES

Lesser Clubmoss	<i>Selaginella selaginoides</i>
Water Horsetail	<i>Equisetum fluviatile</i>
Marsh Horsetail	<i>Equisetum palustre</i>
Moonvort	<i>Botrychium lunaria</i>
Polypody	<i>Polypodium vulgare</i> agg.
Bracken	<i>Pteridium aquilinum</i>
Lemon-scented Fem	<i>Oreopteris limbosperma</i>
Black Splenvort	<i>Asplenium adiantum-nigrum</i>
Maidenhair	<i>SpleenwortAsplenium trichomanes</i>
Lady Fem	<i>Athyrium filix-femina</i>
Broad Buckler-fem	<i>Dryopteris dilatata</i>
Hard Fem	<i>Blechnum spicant</i>



Bracken

FLOWERING PLANTS

Marsh Marigold	<i>Caltha palustris</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Lesser Celandine	<i>Ranunculus ficaria</i>
Lesser Meadow-rue	<i>Thalictrum minus</i>
Alpine Meadow-rue	<i>Thalictrum alpinum</i>
Common Nettle	<i>Urtica dioica</i>
Bog Myrtle	<i>Myrica gale</i>
Common Chickweed	<i>Stellaria media</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Ragged Robin	<i>Lychnis flos-cuculi</i>
Alpine Bistort	<i>Persicaria vivipara</i>
Sheep's Sorrel [agg.]	<i>Rumex acetosella</i>
Common Sorrel	<i>Rumex acetosa</i>
Thrift	<i>Armeria maritime</i>
Slender St. John's-wort	<i>Hypericum pulchrum</i>
Round-leaved Sundew	<i>Drosera rotundifolia</i>
Great Sundew	<i>Drosera longifolia</i>
Common Dog-violet	<i>Viola riviniana</i>
Marsh Violet	<i>Viola palustris</i>
Cuckoo-flower	<i>Cardamine pratensis</i>
Hairy Bitter-cress	<i>Cardamine hirsuta</i>
Crowberry	<i>Empetrum nigrum</i>
Heather	<i>Calluna vulgaris</i>
Cross-leaved Heath	<i>Erica tetralix</i>
Bilberry	<i>Vaccinium myrtillus</i>
Primrose	<i>Primula vulgaris</i>
Yellow Saxifrage	<i>Saxifraga aizoides</i>
Grass of Paranssus	<i>Parnassia palustris</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Stone Bramble	<i>Rubus saxatilis</i>
Tormentil	<i>Potentilla erecta</i>
Mountain Avens	<i>Dryas octopetala</i>
Tufted Vetch	<i>Vicia cracca</i>
White Clover	<i>Trifolium repens</i>
Gorse	<i>Ulex europaeus</i>
Short-fruited Willow herb	<i>Epilobium obscurum</i>
Fairy Flax	<i>Linum catharticum</i>
Common Milkwort	<i>Polygala vulgaris</i>



Bog Myrtle



Marsh Marigold



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Heath Milkwort
 Wood-sorrel
 Field Forget-me-not
 Selfheal
 Wild Thyme
 Sea Plantain
 Ribwort Plantain
 Thyme-leaved Speedwell
 Wall Speedwell
 an eyebright
 Lousewort
 Pale Butterwort
 Common Butternut
 Lady's Bedstraw
 Limestone Bedstraw
 Heath Bedstraw
 Devils-bit Scabious
 Spear Thistle
 Marsh Thistle
 Creeping Thistle
 Autumnal Hawkbit
 Dandelion
 agg.
 Mouse-ear-hawkweed
 Mountain Everlasting
 Daisy
 Yarrow
 Common Ragwort
 Marsh Ragwort
 Marsh Arrowgrass
 Bog Pondweed
 polygonifolius
 Heath Rush
 Jointed Rush
 Bulbous Rush
 Soft Rush
 Compact Rush
 Field Wood-rush
 Heath Wood-rush
 Common Cottongrass
 angustifolium
 Deergrass
 cespitosum
 Few-flowered Spike-rush

Polygala serpyllifolia
 Oxalis acetosella
 Myosotis arvensis
 Prunella vulgaris
 Thymus polytrichus
 Plantago maritima
 Plantago lanceolata
 Veronica serpyllifolia
 Veronica arvensis
 Euphrasia micrantha
 Pedicularis sylvatica
 Pinguicula lusitanica
 Pinguicula vulgaris
 Galium verum
 Galium stemon
 Galium saxatile
 Succisa pratensis
 Cirsium vulgare
 Cirsium palustre
 Cirsium arvense
 Leontodon autumnalis
 Taraxacum officinale
 Pilosella officinarum
 Antennaria dioica
 Bellis perennis
 Achillea millefolium
 Senecio jacobaea
 Senecio aquaticus
 Triglochin palustre
 Potamogeton
 Juncus squarrosus
 Juncus articulatus
 Juncus bulbosus
 Juncus effusus
 Juncus conglomeratus
 Luzula campestris
 Luzula multiflora
 Eriophorum
 Trichophorum
 Eleocharis quinqueflora

Grass of Paranssus



Tormentil



Wild Thyme



Selfheal

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Black Bog-rush	<i>Schoenus nigricans</i>
Star Sedge	<i>Carex echinata</i>
Dioecious	<i>SedgeCarex dioica</i>
Hair Sedge	<i>Carex capillaris</i>
Glaucous Sedge	<i>Carex flacca</i>
Camation Sedge	<i>Carex panicea</i>
Tawny Sedge	<i>Carex hostiana</i>
Common Yellow Sedge	<i>Carex viridula</i> ssp.
oedocarpa	
Pill Sedge	<i>Carex pilulifera</i>
Common Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Mat-grass	<i>Nardus stricta</i>
Red Fescue	<i>Festuca rubra</i> sens.str.
Sheep's Fescue [agg.]	<i>Festuca ovina</i> agg.
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Rough Meadow-grass	<i>Poa trivialis</i>
Crested Hair-grass	<i>Koeleria macrantha</i>
Yorkshire-fog	<i>Holcus lanatus</i>
Early Hair-grass	<i>Aira praecox</i>
Sweet Vernal Grass	<i>Anthoxanthum</i>
odoratum	
Velvet Bent	<i>Agrostis canina</i> sens.lat.
Heath-grass	<i>Danthonia decumbens</i>
Purple Moor-grass	<i>Molinia caerulea</i>
Bog Asphodel	<i>Narthecium ossifragum</i>
Frog Orchid	<i>Coeloglossum viride</i>
heath spotted-orchid	<i>Dactylorhiza maculata</i>
ssp. ericeto	
Northern Marsh-orchid	<i>Dactylorhiza purpurella</i>



Eyebright



Sundew

General description of Ceannabeinne Habitats identified

In general the more diverse the range of physical habitats, the more biological diversity there will be. A **habitat** (which is Latin for "it inhabits") is an ecological or environmental area that is inhabited by a particular species. It is the natural environment in which an organism lives, or the physical environment that surrounds (influences and is utilized by) a species population. The term "species population" is preferred to "organism" because, while it is possible to describe the habitat of a single organism, we may not find any particular or individual single organism but the grouping of single organisms that comprise a breeding population and occupy a certain biogeographical area. Further, this habitat could be somewhat different from the habitat of another group or population of single organisms living elsewhere. Thus it is neither the species nor the individual for which the term habitat is typically used.

A Outcrop Habitat



The shoreline-dunes-cliff/talus-rock outcrop habitat is composed of many sparsely vegetated native plant community types. These communities, which include, sand dunes, cliffs, and rock outcrops, all have extensive areas of exposed substrate such as, sand, gravel, cobbles, or bedrock. Most of these communities are sparsely vegetated because of the absence of well-developed soils and frequent disturbance. the communities are characterized by their exposed surface materials.

Cliff and sloping area of rock rubble communities are present on cliffs or steep-sided headland, especially one with a broad face. The sea ward cliffs and talus slopes are often associated with one another because talus slopes are composed of rock fractured either from cliffs or smaller areas of exposed bedrock on steep hillsides. The vegetation of these communities is generally open. Lichens and mosses are often the dominant life forms, and vascular plants are sparse or patchy because of scarcity of soil. Scattered cliffs are present on bedrock formations around the site on the seaward side. Talus slopes provide the only habitat for several land snails. These communities provide a cool, moist, equable climate that allows the snail species to persist.

Rock outcrop communities are open plant communities on horizontal or sloping bedrock exposures. They are common in landscapes with thin soils over bedrock and tend to be small in size. Crustose and foliose lichens typically cover exposed rock surfaces. Vascular plant cover is sparse to patchy, depending on the amount of fracturing of the bedrock surface and accumulation of soil in cracks, crevices, and shallow depressions.

Outcrops that have minimal fracturing and little accumulation of soil are dominated by lichens, with scattered shrubs and herbaceous plants.

Many plants on bedrock outcrops are adapted to frequent desiccation because of the low moisture-holding capacities of substrates and exposure to direct sunlight and strong winds.

Limited availability of nutrients in outcrop communities strongly influences community composition and limits growth rates of plants. Frequent drought and scarce soils, plays a role in maintaining the open vegetation characteristic of these communities.

B Dry acid grassland Habitat



Lowland acid grassland typically occurs on nutrient-poor, generally free-draining soils with pH ranging from 4 to 5.5 overlying acid rocks or superficial deposits such as sands and gravels. This habitat frequently forms a mosaic with lowland heath and mire. It is often found over sands and gravels on acidic soils which are poor in nutrients. Unimproved grasslands on acid soils are ancient habitats that have evolved through traditional land management by our ancestors over tens, hundreds or even thousands of years. This can be a product of inherently low soil fertility combined with a long history of grazing. Plant communities consist of low growing plant species, which tolerate grazing and the more extreme soil conditions, but would suffer from shading and competition in the taller vegetation stands of more moist or fertile soils.

Because of acid grassland's somewhat lowly image and confusing identity as a habitat type, it is often undervalued. Significantly, these soil conditions also support dwarf-shrub heathland, and much of today's acid grassland represents a degraded habitat which has lost its characteristic low-growing shrubs (such as heather), due to various erosive forces. It is important to remember, however, that acid grassland has always had an important place in the habitat mosaic on heathlands, and the present lack of heather must be seen as

symptomatic of an imbalance brought on by particular circumstances rather than the undesirable replacement of one habitat by another.

Heaths



Heathlands occur on barren infertile land. Heather moorland or dwarf shrub heath is made up of a mix of ‘dwarf shrubs’ (heathers, blaeberry, cowberry and so on) with some grasses (such as purple moor-grass and deer grass). The exact mix depends on the soil type and amount of rainfall on the area, as well as the history of burning and browsing. Heather moorland has two types: ‘dry heath’ with ‘wet heath’ (with more cross-leaved heath). There are several types of heath which are distinguished by the plants they support; shrubs such as heather, bilberry, bell heather and in some areas western gorse. A diversity of shrub age structure should also be present. This provides a range of attributes and targets for vegetation extent, composition and structure.

Heaths are wide open landscapes dominated by plants such as Heathers, Gorse and heathland grasses and punctuated by scattered trees such as Silver Birch. They are historic landscapes and are essentially a man-made habitat. Superficially heaths may appear to be fairly uniform, but the associated plants and animals may vary greatly from one heathland to another. Differences in the location of the heaths, their underlying geology and soils, climates and age structure of the plant community, all play a part in determining which species are found in a particular area. Heaths are home to a rich assemblage of animal species. There are four types of heather moorland - dry heath, wet heath, blanket bog and degraded heath. All heather moorland types have at least 25% cover of heather and heath indicator species including western gorse, with the exception of degraded heath, which has between 5-25% cover.

C Dry Heath Habitat

This habitat usually occurs as extensive tracts of heath vegetation with various vegetation type mosaics and includes areas of degraded habitat where restoration measures may be required. Dry heath, and the species associated with it, are considered to be rare or threatened within a European context. These habitats also support a variety of invertebrates, such as butterflies and bumblebees, small mammals and ground nesting birds. Ideally dry heaths should have heather at different stages of growth, including areas of mature heather. The soils are usually sandy (and therefore free-draining), acidic and very low in plant nutrients. Because the soils are free-draining, they do not hold water for long and heaths are therefore often subject to summer droughts. A unique association of plants and animals adapted to withstand such inhospitable conditions has evolved to form the distinctive heathland community.

D Wet heath/bog/marsh habitat

Wet heaths occur in several types of ecological gradient. Wet Heath occurs on lower slopes too dry or steep for deep peat deposits normally under 200m. Peat depth is up to 0.5m. The vegetation comprises of heather, cross-leaved heath, bilberry, deer grass, and purple moor grass with Sphagnum mosses. Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage where there is movement of mildly base-rich water through the peat. Wet heath is found in areas with a moderate to high rainfall, and is the typical form of wet heath in the north and west of the UK. The full range of variation within wet heath in the UK also includes types rich in lichens, *Racomitrium lanuginosum* or *S. nigricans*. Wet heath is an important habitat for a range of vascular plant and bryophyte species of an oceanic or Atlantic distribution in Europe, several of which have an important part of their EU and world distribution in the UK. Wet heaths become increasingly extensive in the cool and wet north and west, especially in the Scottish Highlands. However, the area covered by wet heath is significantly smaller than that covered by Blanket bogs or dry heath. This area is representative of the range of northern Atlantic wet heaths in the more highly oceanic and cool parts of the north-west Scottish Highlands

Blanket Bog occurs on deep peat deposits over 0.5m deep. The average depth of peat is 2m to 3m. It is formed on areas normally over 200m. Blanket bogs develop topography with numerous pools and raised hummocks, which are formed by Sphagnum mosses. Vegetation comprises heather, cross-leaved heath, cotton-grasses, deer-grass, crowberry, bog asphodel and sedges such as white-beaked sedge. Bog pools and margins support bog bean, sundews and bladderworts. Sphagnum mosses are very frequent. Black bog rush and purple moor grass are found on western blanket bogs at lower altitudes

Marshland is special for all wildlife. Due to the nature of the conditions a unique blend of flora and fauna has evolved to take advantage. While perhaps not the very best area for Butterflies there are several species that thrive in boggy conditions. The flora is always distinctive.

E Dry neutral/calcareous grassland and

F Damp neutral/calcareous grassland



This habitat comprises various forms of grassland characterised by the prominence of calcareous ('calcium-loving') grasses and herbs. Calcareous grasslands are developed on shallow lime-rich soils most often derived from chalk and limestone rocks. Calcareous grasslands can be found in nearly every county or Scottish district, but are very unevenly distributed. Calcareous grasslands contain an exceptional diversity of rare plants, but are particularly characterised by a series of widespread grassland plants which are mainly restricted to lime rich soils. Due to the high plant variation of these grasslands 13 different types are recognised.

Grassland communities included under situations on neutral, acid and calcareous soils are listed as UK BAP Priority habitats. Unimproved neutral grassland is comprised of a mix of grassland types. This is a species-rich, closely grazed turf habitat, of small extent and ecologically fragmented important as a locus for a number of local plant species.

Grazing is the main factor affecting the grassland mosaic. Ecological over-grazing has resulted in loss of habitat and species diversity which is best exemplified by the conversion of dwarf-shrub heath to species-poor acid grassland. Where grazing animals have not been there is an evident recovery of dwarf-shrub heath. Calcareous grasslands support a rich and varied invertebrate fauna including many GB Red Data Book species as well as several species afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981

G drains, ditches and burns open water along the drains and burn courses.



These areas play an important role in ecological and wildlife diversity, providing habitat for several rare or endangered animals, plants and insects. The ecological viability is directly dependent on sustaining the water which can be sensitive to drought. Rivers, burns, streams and drainage ditches are key features of the Scottish landscape, forming a vital part of our country's environment. Watercourses are by nature dynamic but stable - or more accurately 'metastable' - gradually adapting their course and changing their flow patterns as they travel from source to sea. Such watercourses exist in a state of equilibrium with the surrounding environment, which allows development of a rich variety of habitats and species. 'macro-factors' such as climate, under-lying bedrock, drift geology, soil cover, topography and slope form are important because they will determine the amount and rate of water entering the watercourse, and the type and quantity of sediment available for erosion

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and transportation downstream. Catchment land use is also very important. For example, overgrazing in a significant part of a catchment will greatly increase soil erosion and therefore the sediment load of a watercourse.



Burns comprises a range of physical habitats forming important wildlife corridors and is a valuable habitat for many species. Burns form corridors of varying width and two aspects should be considered: the watercourse itself - the “wetted channel”, and the complete corridor of channel and riparian zone (bank and associated land). The linear nature of burns and rivers gives them value beyond their immediate provision of living space: they

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provide wildlife corridors enabling dispersion and migration of species, the utilisation of fragmented areas of habitat by mobile species, and interconnection of fragmented populations.

Ditches and drains that hold water for most of the year are considered to be open water habitats, since there is often no, or only a very slight, flow of water. Standing water habitats are important for a range of wildlife

including great crested newt, grass snake, water vole, water shrew, dragonflies and other invertebrates such as snails and crustaceans.

Although an artificial habitat, drainage ditches and their associated banks are of high value for a broad range of wildlife. There are many plants which have become associated with ditches. Ditches are common in landscapes influenced by agricultural, forestry, and peat mining activities, and their value as corridors remains unassessed. Small wet areas of ditches should be cherished. They can be rich in wildlife, providing spawning areas for frogs, habitat for newts, and for many insects like dragon and damsel flies. Ditches provide feeding places and nesting places for birds creating a network of freshwater life. Although a man-made habitat ditches support a wealth of invertebrate and plant life. Numerous wetland and water plants adorn their margins providing a refuge for a glittering array of rare water beetles.

H buildings and walls tumbledown walls of the former buildings and associated enclosures, and more modem walls.

The old building remains and dykes are important as a wildlife habitat, often colonised by a variety of plants, insects, animals and birds which can all find a habitat amongst the dyke's stones. These important wildlife habitats are often colonised by mosses and lichens, particularly in damp situations. In time, conditions may develop to suit ferns and flowering plants. The small holes in dykes provide dry, sheltered nest sites for small birds. The walls provide shelter and cover for small mammals that inhabit dykes and, for small mammals in search of eggs and nestlings, dykes provide important hunting sites. Dykes and wall tumble provide essential features, and are characteristic of particular areas both in their construction and the contribution they make to the local character of the landscape and an understanding of its history providing a range of linear features of importance to biodiversity and landscape



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Ceannabeinne area birds

This includes species which are likely to be seen from or within the clearance area, i.e. breeders and passers by. It is by no means purported to be an all inclusive record and it is likely to be added to and corrected over the years. The letters following the species name indicate the following; B – breeding in immediate area, P – in passage through area, C – common, R – rarely seen. W – Winter migrant.

Red and black throated divers P,C

Great northern diver W

Fulmar B,C

Shearwaters sp.P

Gannet P

Cormorant P

Shag P,C

Heron P

Whooper swan W

Pink footed goose W

White fronted goose W

Greylag goose W,C

Barnacle goose W [Eilean Hoan] C

Mallard P

Eider B,C

Scoter P

Red breasted merganser W

Sea eagle R

Golden eagle R

Sparrow hawk R

Buzzard C

Kestrel R

Merlin R

Peregrine P

Red grouse P

Corncrake R

Common crane R

Oystercatcher B

Ringed plover B

Golden plover P

Lapwing P

Knot P

Sanderling P

Dunlin P

Snipe B

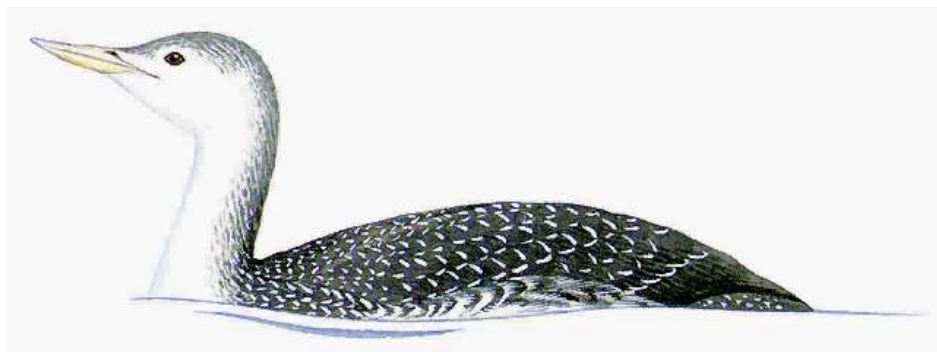
Woodcock P

Whimbrel P

Curlew P

Redshank P

Greenshank P



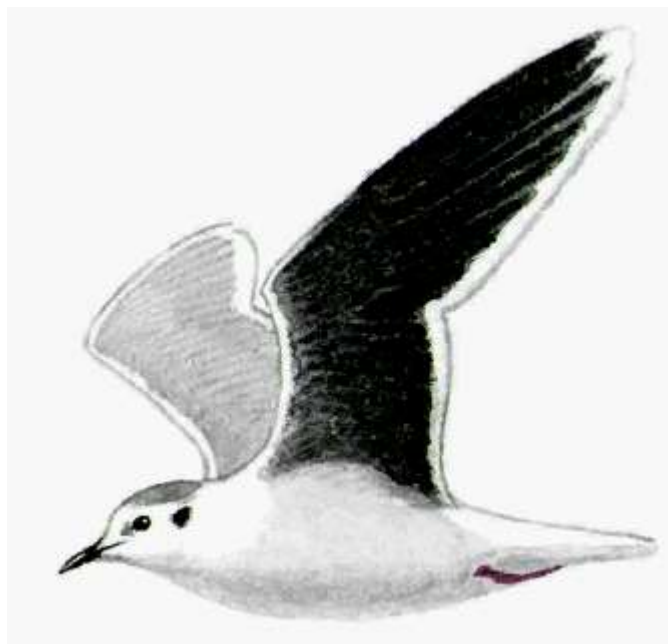
Red Throated Diver



Fulmar

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Common sandpiper B
Turnstone P
Arctic skua P
Great skua P
Black headed gull P
Common gull P
Lesser black backed gull C
Greater black backed gull C
Herring gull C
Kittiwake P
Sandwich tern R
Common tern P
Arctic tern P
Guillemot P
Razorbill p
Black guillemot P
Puffin P
Rock dove C
Wood pigeon R
Cuckoo B
Tawny owl R
Skylark B
Swallow P
Meadow pipit B,C
Rock pipit B,C
Grey wagtail B
Pied wagtail B
Wren C,B
Dunnock R
Robin B
Stonechat B, C
Wheatear B,C
Blackbird B
Fieldfare W
Song thrush B
Redwing W
Blackcap R
Willow warbler B
Hoodie crow B C
Raven P C
Starling P C
House sparrow R
Chaffinch R
Linnet R
Twite R
Redpoll sp R



Common tern



Cuckoo

There is no one way to examine the living organisms but individuals do not occur in isolation and distribution depends upon a combination of environmental factors. The relationship of geology, scenery, climate and vegetation cannot be totally separated except for ease of investigation.

North West Britain is an area of consistent progression and recoil of the oceanic and continental air. It is this which makes the climate so changeable and when altered by the relief of the mountain country consequently incomparable.

The Ecological processes of the area can be easily superficially perceived and referred to as they might appear at a single point in time but the interconnections between the marine and terrestrial processes are not readily obvious and explained. Many animals and plants have a patchy distribution and populations are rarely isolated and distinct. Disparate ecosystems; segments of nature, including all the animals and plants, species network plus the inorganic environment in which they live; can be readily detected and the manifestations of the human activities are closely interrelated. There has been perpetual change, natural and man induced, ever since the ice disappeared ten thousand years ago. The plants and animals have to be adapted behavioural as well as structural to their environment, unique to itself and encompassing all those abiotic and biotic factors which impinge upon it and frame its way of life. To survive therefore, the organisms are adapted to perform a particular role in a community occupying a certain position in the total framework; the individual organisms ecological niche. The plants are easier to locate if looked for at the appropriate time of year. The mammal numbers and diversity, which have been present in the past and those present now, are an indication of the human influences. Free living small rodents and insectivores are the main faunal components of the terrestrial ecosystems. The spacial distribution of the situations they occupy is not readily defined with further complication by the animals not uniformly restricting themselves to clear cut and regular distribution. Birds are well documented with species recognised between water and land.

Produced with support from

