



C

Appendix

Terrestrial Flora & Fauna

ATKINS

Appendix C – Terrestrial Ecology

Appendix C.1 - Scientific names of flora and fauna mentioned in the text.

Vascular Plants:

Note: Species names follow Stace (1997).

| Common Name | Scientific Name |
|----------------------------|--------------------------------|
| Ash | <i>Fraxinus excelsior</i> |
| Bird's-foot | <i>Ornithopus perpusillus</i> |
| Blackthorn | <i>Prunus spinosa</i> |
| Bracken | <i>Pteridium aquilinum</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Broad-leaved Dock | <i>Rumex obtusifolius</i> |
| Butterfly-bush | <i>Buddleja davidii</i> |
| Cabbage Palm | <i>Cordyline australis</i> |
| Clematis (Traveller's joy) | <i>Clematis vitalba</i> |
| Common Knapweed | <i>Centaurea nigra</i> |
| Corncockle | <i>Agrostemma githago</i> |
| Creeping Buttercup | <i>Ranunculus repens</i> |
| Daisy | <i>Bellis perennis</i> |
| Elder | <i>Sambucus nigra</i> |
| Escallonia | <i>Escallonia macrantha</i> |
| Fuchsia | <i>Fuchsia magellanica</i> |
| Greater Plantain | <i>Plantago major</i> |
| Hart's Tongue Fern | <i>Phyllitis scolopendrium</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Herb-robert | <i>Geranium robertianum</i> |

| | |
|-----------------------|---------------------------------|
| Ivy | <i>Hedera helix hibernica</i> |
| (Japanese) Knotweed | <i>Fallopia japonica</i> |
| Marsh St. John's wort | <i>Hypericum elodes</i> |
| Montbretia | <i>Crocsmia x crocsmiiflora</i> |
| Nettle | <i>Urtica dioica</i> |
| New Zealand Flax | <i>Phormium tenax</i> |
| Perennial Rye-grass | <i>Lolium perenne</i> |
| Polypody fern | <i>Polypodium vulgare</i> |
| Poplar | <i>Populus</i> sp. |
| Ribwort Plantain | <i>Plantago lanceolata</i> |
| Rose | <i>Rosa</i> sp. |
| Sharp-leaved Fluellen | <i>Kickxia elatine</i> |
| Slender Cotton-grass | <i>Eriophorum gracile</i> |
| Sycamore | <i>Acer pseudoplatanus</i> |
| Thrift | <i>Armeria maritima</i> |
| Traveller's Joy | <i>Clematis vitalba</i> |
| White Clover | <i>Trifolium repens</i> |
| White Water lily | <i>Nymphaea alba</i> |
| Winter Heliotrope | <i>Petasites fragrans</i> |
| Yarrow | <i>Achillea millefolium</i> |

Animals:

| Common Name | Scientific Name |
|--------------------------|--------------------------------|
| Arctic Tern | <i>Sterna paradisaea</i> |
| Black Guillemot | <i>Cepphus grylle</i> |
| Black-headed Gull | <i>Larus ridibundus</i> |
| Chough | <i>Pyrrhocorax pyrrhocorax</i> |
| Common Frog | <i>Rana temporaria</i> |
| Common Gull | <i>Larus canus</i> |
| Common Tern | <i>Sterna hirundo</i> |
| Cormorant | <i>Phalacrocorax carbo</i> |
| Great Black-backed Gull | <i>Larus marinus</i> |
| Grey Heron | <i>Ardea cinerea</i> |
| Grey Seal | <i>Halichoerus grypus</i> |
| Fulmar | <i>Fulmarus glacialis</i> |
| Harbour Porpoise | <i>Phocena phocena</i> |
| Herring Gull | <i>Larus argentatus</i> |
| Lesser Black-backed Gull | <i>Larus fuscus</i> |

| | |
|-------------------|-------------------------|
| Otter | <i>Lutra lutra</i> |
| Peregrine falcon | <i>Falco peregrinus</i> |
| Viviparous lizard | <i>Lacerta vivipara</i> |

Appendix C.2 - Evaluation of Ecological Importance and Assessment of Impact Significance

[This methodology for evaluation of ecological importance is adapted from RPS Consultants (2001)].

The criteria shown below are based on an international-national-county-local scale. The local scale is approximately equivalent to one 10 km square but can be operationally defined to reflect the character of the area of interest. For example, for riparian features it could be a section of a river catchment. Because most sites will fall within the local scale, this is sub-divided into high local importance-local importance-local value.

Table C2.1 Criteria for assessing ecological importance.

| Importance | Criteria |
|-----------------------|---|
| International | Sites which qualify for designation as SACs or SPAs |
| National ¹ | Sites which qualify for designation as NHAs Sites which hold Red Data Book (Curtis and McGough, 1988) plant species Sites which hold nationally rare invertebrate species, subject to an evaluation as to whether their known status may be largely due to under-recording Sites which hold nationally rare vertebrate species (as defined by Whilde, 1993) Sites which hold nationally important bird populations (defined as 1% of the national population; Sheppard, 1993) |
| County | Sites which hold nationally scarce plant species (recorded from less than 65 10 km squares ²), unless they are locally abundant Sites which hold nationally scarce invertebrate species (recorded from less than 65 10 km squares), unless they are locally abundant and subject to an evaluation as to whether their known status may be largely due to under-recording Sites which hold regionally scarce vertebrate species Sites which hold semi-natural habitats likely to be of rare occurrence within the county Sites which hold the best examples of a semi-natural habitat type within the county |
| High Local Importance | Sites which hold semi-natural habitats and/or species likely to be of rare occurrence within the local area Sites which hold the best examples of a semi-natural habitat type within the local area |
| Local Importance | Sites which hold high quality semi-natural habitats |
| Local Value | Any semi-natural habitat |

¹ the island of Ireland.

² based pro-rata on the British criteria of 100 10 km squares (JNCC, 1995).

Assessment of Impact Type and Magnitude

Criteria for assessing impact type and magnitude are presented in Tables C2.2 and C2.3, respectively.

Table C2.2 Criteria for assessing impact type.

| Impact type | Criteria |
|------------------|--|
| Positive impact: | A change to the ecology of the affected feature that improves its conservation status. |
| Negative impact: | A change to the ecology of the affected feature that reduces its conservation status. |

Table C2.3 Criteria for assessing impact magnitude.

| Impact magnitude | Definition |
|-----------------------|--|
| No change: | No discernible change in the ecology of the affected feature. |
| Imperceptible Impact: | A change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries. |
| Slight Impact: | A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary, but these consequences are not considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance ¹ . |
| Moderate Impact: | A change in the ecology of the affected site, which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance. |
| Substantial Impact: | A change in the ecology of the affected site, which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect species or habitats of high conservation importance and to potentially affect the overall viability of those species or habitats in the wider area ² . |
| Profound Impact: | A change in the ecology of the affected site, which has noticeable ecological consequences outside the development boundary. These consequences are considered to be such that the overall viability of species or habitats of high conservation importance in the wider area ² is under a very high degree of threat (negative impact) or are likely to increase markedly (positive impact). |

¹ it is not possible to define specific numerical thresholds, as different species/habitat have varying degrees of resilience to ecological perturbation.

² i.e., the area relevant to the assessed importance of the feature.

References

- Curtis, T.G.F. and McGough, H.N. (1988). The Irish Red Data Book. 1 Vascular Plants. The Stationery Office, Dublin.
- JNCC (Joint Nature Conservation Committee) (1995). Guidelines for Selection of Biological SSSIs. Joint Nature Conservation Committee, Peterborough, UK.
- RPS Consultants (2001). N25 Waterford Bypass Environmental Impact Statement. RPS Consultants, Cork.
- Sheppard, R. (1993). Ireland's Wetland Wealth: the birdlife of the estuaries, lakes, coasts, rivers, bogs and turloughs of Ireland (The report of the Winter Wetlands Survey, 1984/85 to 1986/87). Irish Wildbird Conservancy, Dublin.
- Whilde, A. (1993). Threatened Mammals, Birds, Amphibians and Fish in Ireland. Irish Red Data Book 2: Vertebrates. HMSO, Belfast.

Appendix C3 - National Parks & Wildlife Site Synopses

Site name: Roaringwater Bay and Islands

Site code: 000101

Roaringwater Bay, Co. Cork, is a wide shallow bay located on the southwest coast. The site includes the immediate coastline on the mainland from Long Island to Baltimore together with the whole bay and most of the islands. Bedrock is composed of a series of Devonian Old Red Sandstone reefs that run parallel to troughs of Devonian Carboniferous marine clastics in a north east/south west direction. These reefs emerge to form the islands on the south side of the bay and within the bay. Generally the coast is low-lying but the southern edge rises, in line with the hills behind Baltimore, to culminate in a summit of 160m on Cape Clear.

The bay itself has a wide variety of reef and sediment habitats, subject to a range of wave exposures and tidal currents, and has been selected for three marine habitats listed under the EU Habitats Directive, i.e. large shallow inlets and bays, marine caves and reefs. The shores of the bay range from the exposed, rocky shores of South Sherkin Island, to the sheltered rock, sand and mud communities of the Inner Bay and estuarine communities where the rivers enter the bay. The shallow subtidal reefs have good examples of kelp forest community grazed by the sea urchin *Echinus esculentus*. The animal dominated reefs includes the feather star *Antedon bifida* community, the hydroid *Sertularia argentia* and *Hydralmania falcata* community, and sponge and ascidian communities some of which are species rich and in which two rare species occur; the sponge *Tethyspira spinosa* and the rare red alga *Phyllophora sicula*. The scarce hydroid *Tamarisca tamarisca* occurs at a number of sites within the bay. These communities are typical of very sheltered areas with some current present. The cave community on Sherkin Island is home to the rare filamentous red alga, *Pterosiphonia pennata*. The sedimentary communities in Roaringwater Bay are exceptional. Of particular interest is the extensive bed of the calcareous free living red alga *Lithophyllum dentatum*, (generally termed maerl but may be locally know as 'coral') which is the largest in the country for this species. This bed typically contains specimens that are very large and uniquely flattened in form with the rare filamentous red alga *Spyridia filamentosa*. *Lithophyllum dentatum* is only known from 2 other sites. There are also other maerl communities and several seagrass beds (*Zostera marina*) which may co-occur with a particularly good example in Horseshoe Bay, Sherkin Island.

The terrestrial habitats are also of conservation interest and include three habitats listed under the EU Habitats Directive, i.e. dry heath, sea cliffs and lowland hay meadows. The coastal heath vegetation is typified by an abundance of Autumn Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*). This is regularly burnt in most places so that there are clearings where grasses and herbs such as Wood Sage (*Teucrium scorodonia*), Common Violet (*Viola riviniana*) and Tormentil (*Potentilla erecta*) have a temporary rise to prominence before the shrubs grow again. Outcrops of rock bring variety into the heath and are the sites of the more interesting species. These include many southern plants, for example the rare Red Data Book species Hairy Birdsfoot Trefoil (*Lotus subbiflorus*), the Common Birdsfoot itself (*Ornithopus perpusillus*), Spotted Rockrose (*Tuberaria guttata*), Pale Heath Violet (*Viola lactea*) and Lanceolate Spleenwort (*Asplenium billotii*). In addition there is a small amount of Deptford Pink (*Dianthus armeria*), the only place it grows in Ireland though it was likely to have been introduced. Flushes and damp places through this vegetation support some interesting liverworts as well as Birdsfoot Clover (*Trifolium ornithopodioides*) and the special annual plants of the south-west, Chaffweed (*Anagallis minima*), Yellow Centaury (*Cicendia filiformis*) and Allseed (*Radiola linoides*). Chamomile (*Chamaemelum nobile*) is also common with Yellow Bartsia (*Parentucellia viscosa*) somewhat less so.

Close to the sea the vegetation responds with Sea Pink (*Armeria maritima*) and Plantains (*Plantago maritima*, *P. coronopus*) and, locally, with Dotted Sedge (*Carex punctata*) and the Slender Spikerush (*Eleocharis uniglumis*). Two other Red Data Book plants, Little Robin (*Geranium purpureum*) and Sea Pea (*Lathyrus japonicus*) occur rarely on shingle beaches while Ray's Knotgrass (*Polygonum raii*) is more widespread. Several streams have been ponded by such beaches to create marshes of Reed (*Phragmites australis*) where Marsh Pennywort (*Hydrocotyle vulgaris*), Marsh Cinquefoil (*Potentilla palustris*) and Marsh Orchids (*Dactylorhiza majalis*, *D. incarnata*) are frequent together with some Creeping Willow (*Salix repens*) and Gypsywort (*Lycopus europaeus*). On Cape Clear a similar marsh has developed into a bog with abundant bog mosses (*Sphagnum* spp.), Bogbean (*Menyanthes trifoliata*) and St John's Wort (*Hypericum elodes*). Sand is a notable feature of Sherkin Island and occurs to a small extent elsewhere. Wild Radish (*Raphanus raphanistrum*), Crested Hairgrass (*Koeleria macrantha*) and Sea Storks-bill (*Erodium maritimum*) grow in this habitat with a little Haresfoot Clover (*Trifolium arvense*), Knotted Clover (*T. striatum*) and the Red Data Book Lesser Centaury (*Centaureum pulchellum*).

Otter and Grey seal, two mammal species listed on Annex II of the EU Habitats Directive, occur within the site. Large seabird populations breed on some of the islands in the bay. These include Arctic/Common Terns (122 pairs in 1984) on Carrigvigliash Rock. Terns are listed on Annex I of the EU Bird's Directive. On Cape Clear and the Calf and Goat Islands the 1990 totals were Fulmar (472 pairs), Cormorant (51 pairs), Shag (67 pairs), Black Guillemot (99 pairs), Lesser Black-backed Gull (252 pairs), Great Black-backed Gull 67 (pairs) and Herring Gull

(185 pairs). There are also significant numbers of Choughs (18 pairs in 1992), another species listed on Annex I of the Bird's Directive. An important bird observatory is located on Cape Clear Island.

In conclusion, Roaringwater Bay and Islands is a site of exceptional conservation importance, supporting diverse marine and terrestrial habitats, six of which are listed under the EU Habitats Directive. The site is also notable for the presence of Otter and Grey Seal plus a number of rare species and also supports important sea bird colonies.

[6.3.2000]

Site name: Barley Cove to Ballyrisode Point

Site code: 001040

This site is situated on the Mizen Head peninsula in the extreme south-west of County Cork. It straddles a 10 km stretch of coastline from the Barley Cove inlet to Ballyrisode Point at Toormore Bay. The rock type is Old Red Sandstone. This displays a NE-SW folding which is especially visible at Crookhaven and Brow Head.

While rocky heath is the dominant habitat, the site is most important for the sand dunes and related habitats which occur at Barley Cove. A fine gradation of habitat is shown, from the outer sandy beach, through dunes and salt marshes, and then brackish lagoon. Of particular importance is the fixed dune habitat, as this is a priority habitat on Annex I of the EU Habitats Directive, and is one of the few examples in county Cork and south Co. Kerry. This dune system is of moderate size and relatively intact. It grades from an outer ridge of white *Ammophila* dunes, through fixed dune hills and into an extensive area of dune grassland. A characteristic flora is displayed, with species such as Lady's Bedstraw (*Galium verum*), Common Birds-foot-trefoil (*Lotus corniculatus*), Wild Pansy (*Viola tricolor* subsp. *curtisii*) and Red Fescue (*Festuca rubra*). The moss and lichen component is well developed in places and includes *Tortula ruraliformis* and *Peltigera canina*. Long-term erosion by the tidal river has reduced the size of the dune system, though sand has been deposited elsewhere in the area.

The dunes merge with a substantial area of salt marsh which displays characters of both Atlantic and Mediterranean salt meadows (both Annex I habitats). Sea Rush (*Juncus maritimus*) is a dominant species, while other salt marsh species include Common Saltmarsh-grass (*Puccinellia maritima*), Sea-milkwort (*Glaux maritima*) and Sea Plantain (*Plantago maritima*). A fringe of Glasswort (*Salicornia* spp.) occurs at the lowermost part of the salt marsh and above the tidal river. Lissagriffin Lake, while of artificial origin, displays characteristics of a brackish lagoon, with such species as Sea Club-rush (*Scirpus maritimus*) and Tasselweed (*Ruppia* sp.). Reeds occur along the eastern and northern margins of the lagoon.

The site has extensive lengths of rocky shoreline, which develop into low cliffs in places. Shingle, another important coastal habitat listed on Annex I, occurs mostly in sheltered coves. At one location, Sea Kale (*Crambe maritima*), a Red Data Book species, occurs commonly on the shingle.

The dominant habitat over much of the remainder of the site is coastal heath. This occurs from the maritime shoreline to the highest point of the site (164 m). It is varied in character, ranging from shallow dry soils to wet peaty pockets. The heath is primarily made up of woody species, including Western Gorse (*Ulex gallii*), Bell Heather (*Erica cinerea*) and Ling (*Calluna vulgaris*). Purple Moor-grass (*Molinia caerulea*) is ubiquitous, with other character species such as Tormentil (*Potentilla erecta*), Lousewort (*Pedicularis sylvatica*) and Heath Milkwort (*Polygala serpyllifolia*).

A notable feature of the site is the concentration of rare plants associated with the heath habitat: two legally protected species (Flora (Protection) Order 1999), Hairy Bird's-foot-trefoil (*Lotus subbiflorus*) and Lanceolate Spleenwort (*Asplenium billotii*), and three Red Data Book species, Green-winged Orchid (*Orchis morio*), Bird's-foot (*Ornithopus perpusillus*) and Spotted Rock-rose (*Tuberaria guttata*), occur in places. A further scarce plant which occurs at the site is the Strawberry Tree (*Arbutus unedo*).

The site is of notable ornithological importance for Chough (Annex I Birds Directive species), with 9 breeding pairs in 1992. In addition to nesting, substantial numbers of Choughs utilise the heath and sandy habitats for feeding and socialising. Lissagriffin Lake is of some local importance for wintering waterfowl, including Whooper Swans (up to 16 at times) and Mute Swans (up to 40). Small numbers of seabirds breed on the cliffs, including Fulmar (41 pairs), Lesser Black-backed Gull (9 pairs), Herring Gull (133 pairs), Shag (39 pairs), and Black Guillemot (1-5 pairs) (all counts in 1985).

The main landuses at this site are grazing and tourism related activities. Most of the site is grazed by livestock, though not intensively. Rabbits, however, are frequent at the sand dunes and have caused serious damage. The beach and dunes at Barley Cove are utilised by day-trippers and campers during the summer months and parts of the dune system has been damaged by heavy usage.

This site is of conservation importance for the presence of a number of good examples of coastal habitats. Of particular significance is the fixed dune as this is a priority habitat on Annex I of the EU Habitats Directive. The concentration of rare plants is of especial note, as is the high density of Choughs.

[31.8.1999]

Site name: Derreennatra Cutaway

Site code: 002105

This site is the only known location for the protected plant species (Flora Protection Order, 1987), Slender Cotton-Grass (*Eriophorum gracile*) in County Cork. It was first found here in 1994. A number of other bog pond plant species are also found, including Marsh St. John's Wort (*Hypericum elodes*) and White Water Lily (*Nymphaea alba*).

[