

THE STATUS OF EU PROTECTED HABITATS AND SPECIES IN IRELAND

**Conservation Status in Ireland of Habitats and Species listed in the
European Council Directive on the Conservation of Habitats, Flora
and Fauna 92/43/EEC**

**NATIONAL PARKS AND WILDLIFE SERVICE
Department of the Environment, Heritage
and Local Government**

2008



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FOREWORD

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This report gives the first assessment of the status of the habitats and species that Ireland is required to protect under the EU Habitats Directive. These are the very building blocks of biodiversity and maintaining them in favourable conservation status is a central purpose of the Habitats Directive.

The report provides us with a stark message: the conservation status of some of these key habitats and species is far from satisfactory. The midland's raised bogs, for example, are in serious danger with the last intact remnants disappearing at an alarming rate. For plant and animal species the overall picture is a little more encouraging but there is no room for complacency. The imminent threat of extinction in Ireland of the freshwater pearl mussel, our longest living animal species, is a real challenge for us all.

The assessments highlight the pressures and threats that habitats and species face in Ireland. This report also points to the many gaps in our knowledge. It allows us to prioritise work to ensure a better status in future for some of the most endangered habitats and species.

The Programme for Government 2007-2012 includes a commitment to strengthen Ireland's implementation of the Habitats Directive, and Government funding to the National Parks and Wildlife Service was increased significantly in the 2008 Budget. Much of these additional funds will go to farmers to help them improve their care and management of areas important for wildlife. Agri-environmental schemes, such as the Rural Environment Protection Scheme (REPS), can also go a long way towards conserving the fabric of nature on farmland.

With the challenges posed by climate change, it is becoming increasingly clear that the key components of our natural environment must be protected to ensure our very own survival. The ecosystem services provided, such as clean water to drink and bathe in, flood control, and high value areas for recreation and tourism in Ireland are incalculable.

I want to thank all the staff of the National Parks and Wildlife Service, and many experts and NGOs, for their input into this report.

ACKNOWLEDGEMENTS

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Thanks are due to all NPWS Regional Staff for submitting records.

Publication consultants: Natura (Richard Nairn with assistance from Katharine Duff and Aisling Dower).

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Photographers are acknowledged on each page.

INTRODUCTION

The EU Directive on the Conservation of Habitats, Flora and Fauna (92/43/EEC), commonly known as “the Habitats Directive”, came into force in 1994 and was transposed into Irish law in 1997. It has become the single most important piece of legislation governing the conservation of biodiversity in Europe. As the nature writer Michael Viney put it, “Only in the supranational framework of the EU could such an objective, scientific consensus have been achieved”¹.

The main aim of the Habitats Directive is to achieve and maintain favourable conservation status for habitats and species which are considered at risk. This is to be achieved by designating key sites as Special Areas of Conservation, and also by introducing protective measures for species considered at risk. The protection of these habitats and species occurring in Ireland presents many of the most important priorities for nature conservation in this country.

Birds do not feature in the lists of protected species in this publication because they are covered by a separate EU Directive on the Conservation of Wild Birds (79/409/EEC).

Under Article 17 of the Habitats Directive, each member state is obliged to report to the European Commission on the status of listed habitats and species every six years. In December 2007, Ireland submitted the first baseline assessments of conservation status for all 59 habitats and c.100 species that occur in Ireland.

The current status has been derived using best available information, although in some cases there are inadequate data to make a precise statement on conservation status. It is expected that the next report will derive much more information from detailed monitoring programmes carried out on each of the habitats and species in the intervening years.

While most habitats important for wildlife are covered in this report, the species listed in the Directive are a small fraction of all Irish species, and this report does not attempt to review the status of the full extent of biodiversity in Ireland.

What this publication presents

This publication provides a synopsis for each of the listed habitats and species. It is not a guide to identification, but

should provide enough information to form a picture of the habitat or species. It also presents a map of the known distribution for each habitat and species, based on the 10km squares of the National Grid (or other appropriate grid sizes). Summary statistics of the conservation assessments are presented, including lists of pressures on the habitat or species concerned. Finally, the publication draws conclusions and indicates priorities for the next five years and beyond.

The listed habitats and species

The Annexes to the Habitats Directive may appear to the reader as an unintelligible list of names and numbers. The standard use of scientific (Latin) names is essential because of the multiplicity of languages and numerous common names in use throughout Europe. A brief explanation of each of the relevant annexes is given in the following table. Please note that some species occur on more than one annex.

| Annex | Status | Total number in Ireland * |
|-------|---|---------------------------|
| I | Habitat types whose conservation requires the designation of Special Areas of Conservation. Priority habitats, which are indicated with an asterisk, are those which the EU considers require particular protection because their global distribution largely falls within the EU and they are danger of disappearance. | 59 |
| II | Animal and plant species whose conservation requires the designation of Special Areas of Conservation | 26 |
| IV | Animal and plant species in need of strict protection | 41 |
| V | Animal and plant species whose taking in the wild and exploitation may be subject to management measures | 48 |

* Note that some species are listed in more than one Annex. Annex V includes all species of *Sphagnum*, *Cladonia* subspecies *Cladina* and four species in the *Lycopodium* group.

To assist users in identifying the listed habitats in the Directive, the European Commission published an *Interpretation Manual of European Union Habitats*². Some problems still remain in interpreting the habitat types but in many cases pragmatic solutions have been agreed³.

¹ Viney, M. (2003) Ireland: A Smithsonian Natural History. Blackstaff Press. Belfast. ² Commission of the European Communities. 2003. Interpretation Manual of European Union Habitats – EUR 25. DG-Environment – Nature and Biodiversity. Brussels. Commission of the European Communities. ³ Evans, D. 2006. The Habitats of the European Union Habitats Directive. Biology and Environment. Proceedings of the Royal Irish Academy. 106B: 167-173.

Definition of conservation status

The **conservation status of a habitat** is defined in Article 1 of the Directive as the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and the areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The conservation status of a species is defined as the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory of the member states. The conservation status of a species will be taken as favourable when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Conservation measures required by the Directive

To ensure favourable conservation status of the habitats in Annex I and the species in Annex II, the Member States are required to set up a "coherent European ecological network of special areas of conservation under the title Natura 2000" (Article 3). "For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative, contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites" (Article 6(1)).

Under Article 12, "Member States shall take the requisite measures to establish a system of strict protection for the **animal species listed in Annex IV (a)** in their natural range, prohibiting:

- all forms of deliberate capture or killing of specimens of species in the wild;
- deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration;
- deliberate destruction or taking of eggs from the wild;
- deterioration or destruction of breeding sites or resting places.

Under Article 13, "Member States shall take the requisite measures to establish a system of strict protection for the **plant species listed in Annex IV (b)**, prohibiting:

- the deliberate picking, collecting, cutting, uprooting or destruction of such plants in their natural range in the wild;
- the keeping, transport and sale or exchange and offering for sale or exchange of specimens of such species taken in the wild, except those taken legally before this Directive is implemented.

Under Article 15, Member States shall prohibit the use of all indiscriminate means capable of causing local disappearance of or serious disturbance to populations of the **species of wild fauna listed in Annex V (a)**.

How conservation status was assessed

The conservation status for listed habitats and species was assessed across the whole national territory, not just in Special Areas of Conservation.

Methods for assessing conservation status were drawn up by the European Topic Centre for Nature Conservation (ETCNC) in conjunction with the Member States represented on the Scientific Working Group of the Habitats Directive. A standard format was agreed at a European level in 2006.

The format for the assessment of conservation status involves the application of a "traffic-light" scheme and brings together information on four parameters for habitats and species:

| | Habitat | Species |
|----|-----------------------|--------------------------|
| 1. | Range | Range |
| 2. | Area | Population |
| 3. | Structure & Functions | Area of Suitable Habitat |
| 4. | Future Prospects | Future Prospects |

Each parameter was classified as being “favourable” (good), “unfavourable – inadequate” (poor), “unfavourable – bad” (bad) or “unknown”. Good, poor and bad status are colour-coded green, amber and red respectively.

Favourable reference values were set as targets against which current values could be judged. These reference values had to be at least equal to the value when the Habitats Directive came into force, i.e. in 1994.

Favourable Reference Range is the geographic range within which all significant ecological variations of the species are included and which is sufficiently large to allow the long-term survival of the species.

The favourable reference values for Habitat Area and Species Population are the minimum values required for the long-term survival of the habitat or species in question.

For habitats, the assessment of structure and functions included an assessment of the condition and the typical species that characterize the habitat. For species, the extent and quality of suitable habitat was assessed to determine whether the long-term survival of the species was assured.

The major pressures and threats were also listed for each assessment. The impacts of these pressures and threats were used to determine the future prospects.

If any one of the four parameters was assessed as “red”, the overall assessment was also “red” (i.e. unfavourable – bad). A summary of results for all habitats and species is given in Chapter 4.

Full guidelines for assessing conservation status can be accessed in the Circa Library <http://circa.europa.eu/Public/irc/env/monnat/library>

Who carried out the assessments?

All of the conservation assessments were carried out by staff of the National Parks and Wildlife Service (NPWS), in conjunction with external experts. All contributors are listed in the Acknowledgements at the beginning of this publication.

Where did the data come from?

The data which informed the conservation assessments came from a combination of sources. Among these were site files and reports held by the NPWS. Scientific publications were reviewed to ensure the most up-to-date information was included. Additional information came from the Central Fisheries Board (CFB), the Environmental

Protection Agency (EPA), Corine Land Cover maps, aerial photographs, distribution information from the National Biodiversity Network (NBN) gateway, etc.

Where has the data been submitted?

All of the data has been submitted to the ETCNC, which will produce a summary report for the whole EU. Detailed assessments for all Irish habitats and species will be available on www.npws.ie.

Content of this publication

In the sections that follow, a synopsis is given for each of the habitats and species, listed in the Habitats Directive, which occur in Ireland. These synopses are intended to be non-technical and to provide an overview for the general reader. Each one is based on extensive research and is supported by a detailed report by an appropriate expert.

Note on maps

The map presented with each habitat or species gives the known or best estimate of **distribution**, shown as hatched squares. The **range** is defined by the smallest polygon size containing all of these grid squares. Horizontal or vertical gaps in the habitat distribution of three or more grid squares or oblique gaps of two or more squares were deemed enough as to justify a break in the range. When the ecological conditions for the development of the habitat were deemed unsuitable, gaps of just one grid square may also have been admitted.

The distribution maps for many of the cetaceans (whales, dolphins and porpoises) were derived from incidental sightings. The range maps are based on an extrapolation of these sightings, using expert judgement.

2. HABITATS



SANDBANKS (1110)

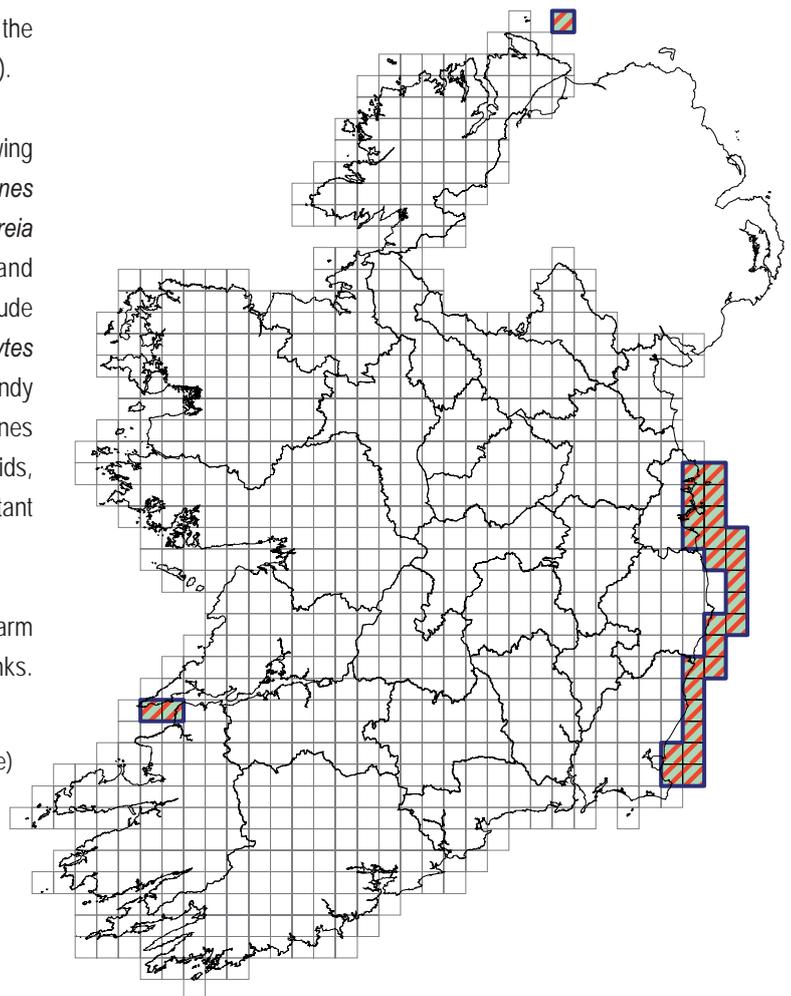


A total of 21 sandbanks have been identified around Ireland. These are mainly found in the Irish Sea with isolated examples in the Shannon Estuary (west coast) and off Lough Foyle (north coast).

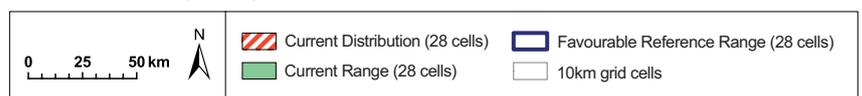
Shallow sandy sediments are typically colonised by a burrowing fauna of worms (*Glycera lapidum*, *Nephtys* spp., *Spiophanes bombyx* etc.), crustaceans (*Pontocrates arenarius*, *Bathyporeia elegans* etc.), clams (*Abra alba*, *Fabulina fibula* etc.) and echinoderms. Life at the surface of the sandbank may include mysid shrimps, snails, crabs and fish. Sand-eels (*Ammodytes* spp.), which are an important food for birds, also live in sandy sediments. Where coarse stable material such as shells or stones is present on the sediment surface, species such as hydroids, seamats and sea squirts are present. The banks are very important feeding areas for seabirds.

The potential for aggregate extraction, coal extraction and wind farm development remain a threat to the integrity of sandbanks. Therefore their conservation status is assessed as poor.

Photograph: Kish lighthouse, on the Kish bank, Dublin Bay (John Eagle)



SANDBANKS (1110)



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| | |
|--|-------------|
| SANDBANKS slightly covered by seawater at all times (1110) | |
| Range | Good |
| Area | Good |
| Structure & Function | Good |
| Future prospects | Poor |
| OVERALL | POOR |

ESTUARIES (1130)

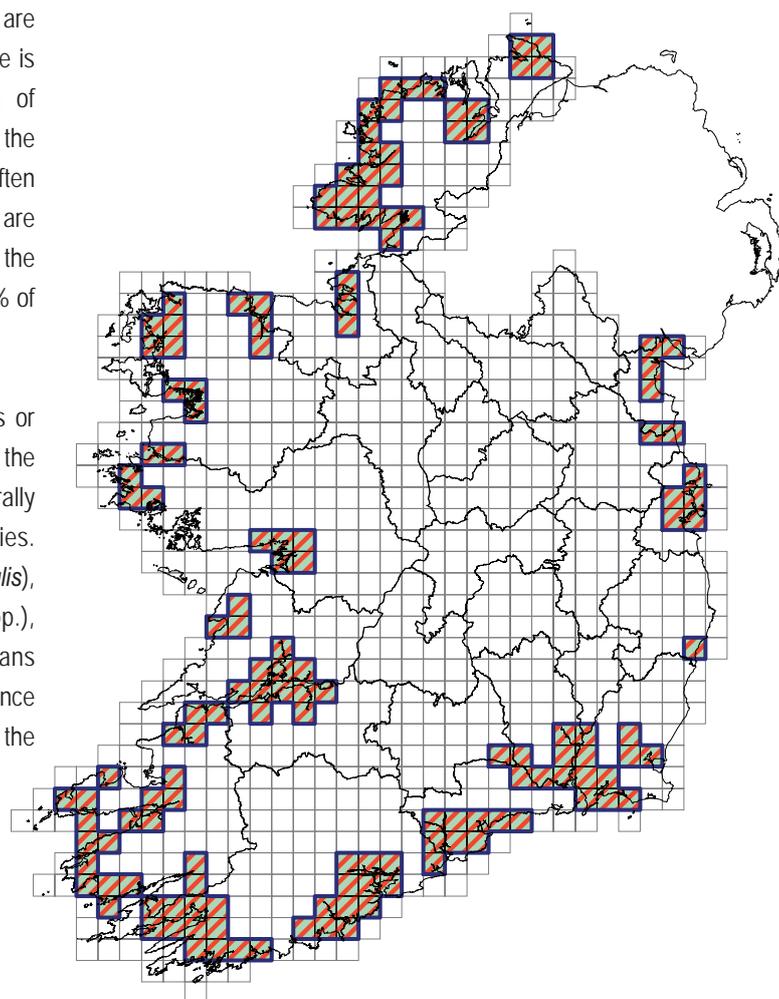


Estuaries have been poorly sampled in the past and there is insufficient data to determine the present structure and function of the habitat across Ireland. While many estuaries are regarded as having favourable future prospects some larger estuaries are considered to face significant pressures. Impacts arising from aquaculture, fishing, coastal development and water pollution are considered the principal threats. Their overall conservation status is considered to be poor.

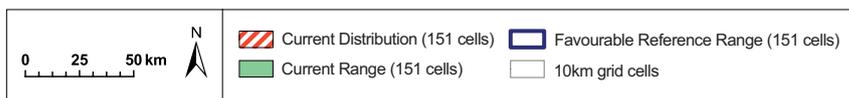
Photograph: Gweebarra Estuary, Co. Donegal (Richard Nairn)

Estuaries are downstream parts of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where, unlike 'large shallow inlets and bays' there is generally a substantial freshwater influence. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to deposition of fine sediments, often forming extensive intertidal sand and mudflats. Estuaries are located on all parts of the coastline. The largest is located in the mid-west (Shannon Estuary) and constitutes approximately 50% of the national resource.

Estuarine sediments are typically soft muds but where stones or shells occur, the green algae *Enteromorpha* spp. and *Ulva* spp., the brown algae *Fucus ceranoides* and other fucoids are generally present. Saltmarshes are also characteristic of estuaries. Invertebrate communities include edible mussels (*Mytilus edulis*), polychaete worms (*Capitella* spp., *Nereis* spp., *Spio* spp.), oligochaete worms (*Tubificoides benedii*) and crustaceans (*Corophium* spp.). Estuaries are of major international importance for wintering water birds. Mammal species occurring include the harbour seal, grey seal and otter.



ESTUARIES (1130)



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| ESTUARIES (1130) | |
|----------------------|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Unknown |
| Future prospects | Poor |
| OVERALL | POOR |

TIDAL MUDFLATS AND SANDFLATS (1140)

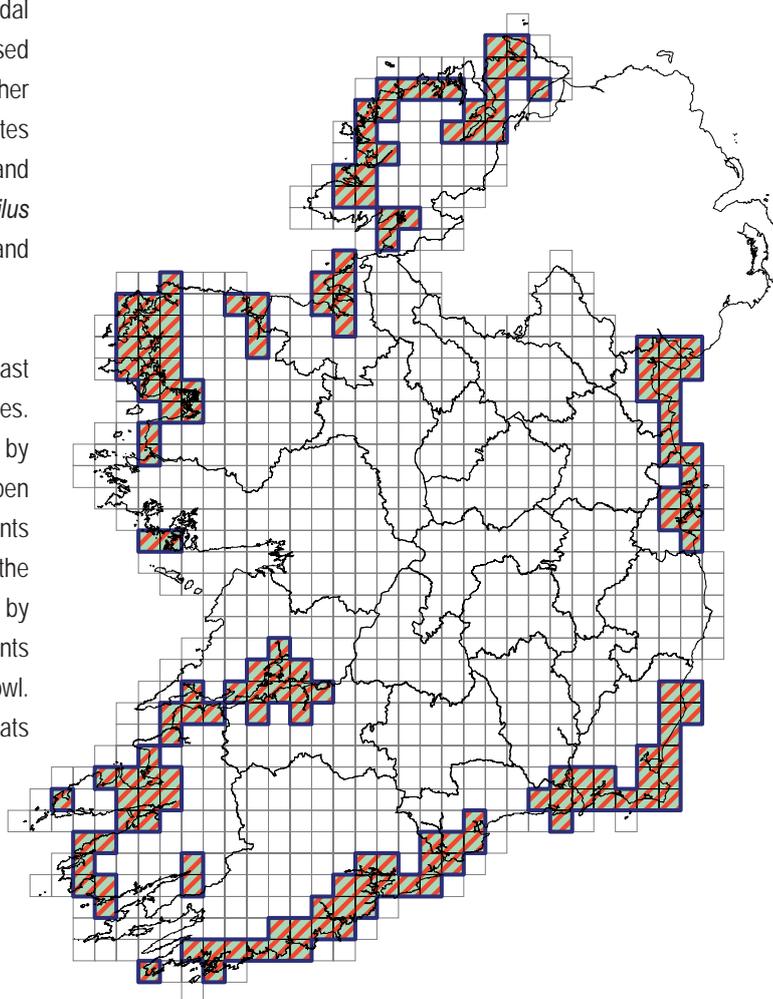


Expert judgement and the available biological information suggests that habitat structure and function is poor. The most serious threats arise from aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species, particularly cord-grass (*Spartina* spp.). In addition, there is some concern at the potential impact that hard coastal defence structures may have, in combination with sea-level rise, for the long-term extent of this habitat. The overall conservation status of this habitat is assessed as poor.

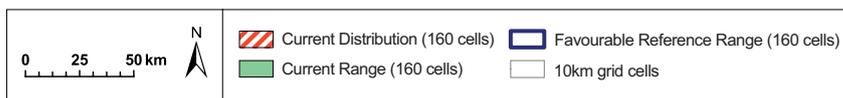
Photograph: Lough Swilly, Co. Donegal (Richard Nairn)

Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide and are normally associated with inlets, estuaries or shallow bays. The physical structure of these intertidal flats ranges from mobile, coarse-sand beaches on wave exposed coasts to stable, fine-sediment mudflats in estuaries and other marine inlets. They support diverse communities of invertebrates such as the polychaete worms *Tubificoides* spp., *Capitella* spp., and *Malacoceros* spp.; molluscs such as *Abra alba* and mussel (*Mytilus edulis*), algae including *Ulva* spp. and *Enteromorpha* spp., and plants, principally eelgrass (*Zostera* spp.).

Mudflats are usually located in the most sheltered areas of the coast where large quantities of silt from rivers are deposited in estuaries. In sheltered areas, communities are typically dominated by polychaete worms and bivalve molluscs. Sandflats occur on open coast beaches and bays where wave action or strong tidal currents prevent the deposition of finer silt. On more exposed coasts the biodiversity may be lower and the communities dominated by crustaceans. The high biomass of invertebrates in tidal sediments often provides an important food source for waders and wildfowl. Intertidal mudflats and sandflats can be part of a mosaic of habitats that occurs in estuaries and shallow inlets and bays.



TIDAL MUDFLATS AND SANDFLATS (1140)



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| MUDFLATS & SANDFLATS not covered by seawater at low tide (1140) | |
|---|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

COASTAL LAGOONS (1150)

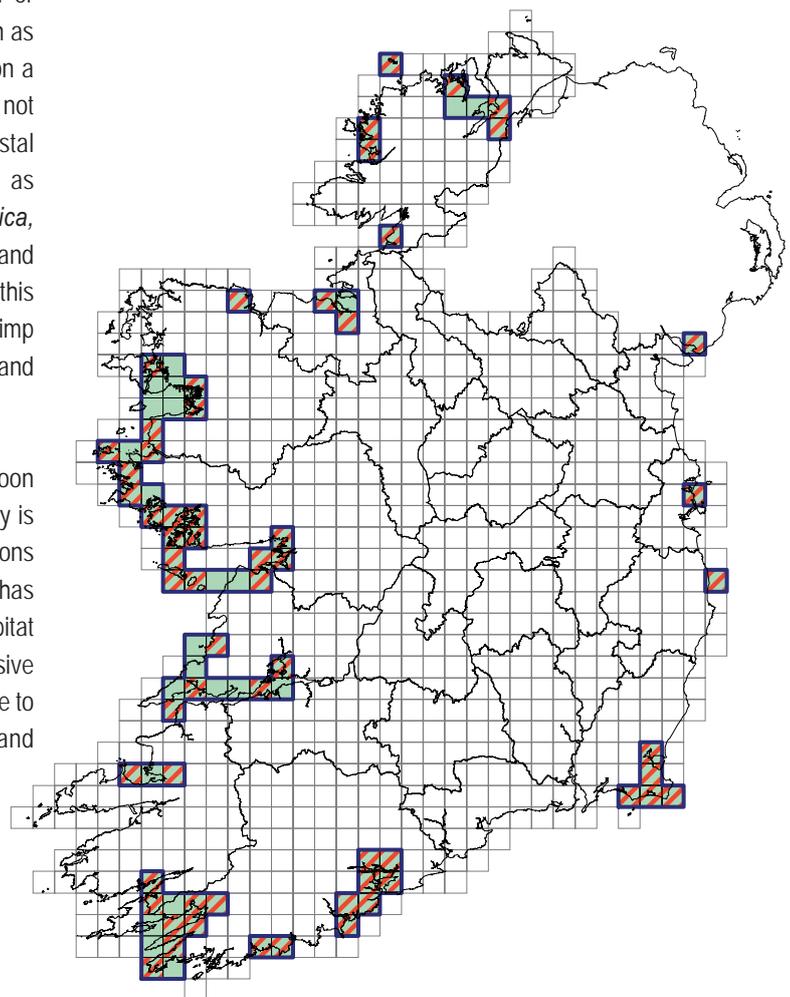


Coastal lagoons are lakes or ponds fully or partially separated from the sea by sandbanks or shingle, or less frequently by rocks. The salt content of the water (salinity) in the lagoon varies depending on rainfall, evaporation and through the addition of seawater from storms, temporary flooding by the sea in winter or tidal exchange. This habitat also includes artificial lagoons such as salt basins and salt ponds providing that they had their origin on a transformed old natural lagoon or on a salt marsh, and are not significantly exploited. Plant species characteristic of coastal lagoons include tasselweed (*Ruppia* spp.) and algae such as *Chaetomorpha linum*, *Cladophora battersii*, *Chara baltica*, *C. canescens*, *C. connivens*, *Lamprothamnion papulosum* and *Tolypella nidifica*. Animal species that are characteristic of this habitat include the hydroid *Cordylophora caspia*, sand shrimp (*Gammarus chevreuxi*), snails including *Rissoa membranacea* and beetles such as *Enochrus bicolor*.

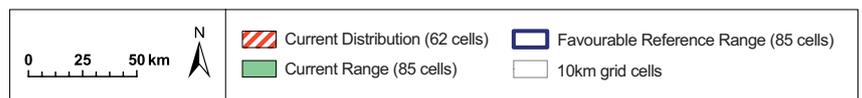
There is no evidence of any significant loss of coastal lagoon habitat range in the last 100 years. The most damaging activity is the deliberate drainage of the largest lagoon for agricultural reasons and a smaller lagoon for safety reasons. Further loss of habitat has occurred as a result of natural silting-up. The quality of the habitat has been impacted by water pollution in the form of excessive nutrient enrichment mostly from agricultural sources, but also due to domestic effluents due to an increase in urbanisation and commercial and industrial activities.

The extent and quality of coastal lagoon habitat in Ireland has been damaged and future prospects are uncertain. Therefore the overall assessment of conservation status is bad.

Photograph: Coastal lagoon (NPWS)



COASTAL LAGOONS (1150)



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| COASTAL LAGOONS (1150) | |
|------------------------|------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Bad |
| Future prospects | Poor |
| OVERALL | Bad |

LARGE SHALLOW INLETS AND BAYS (1160)



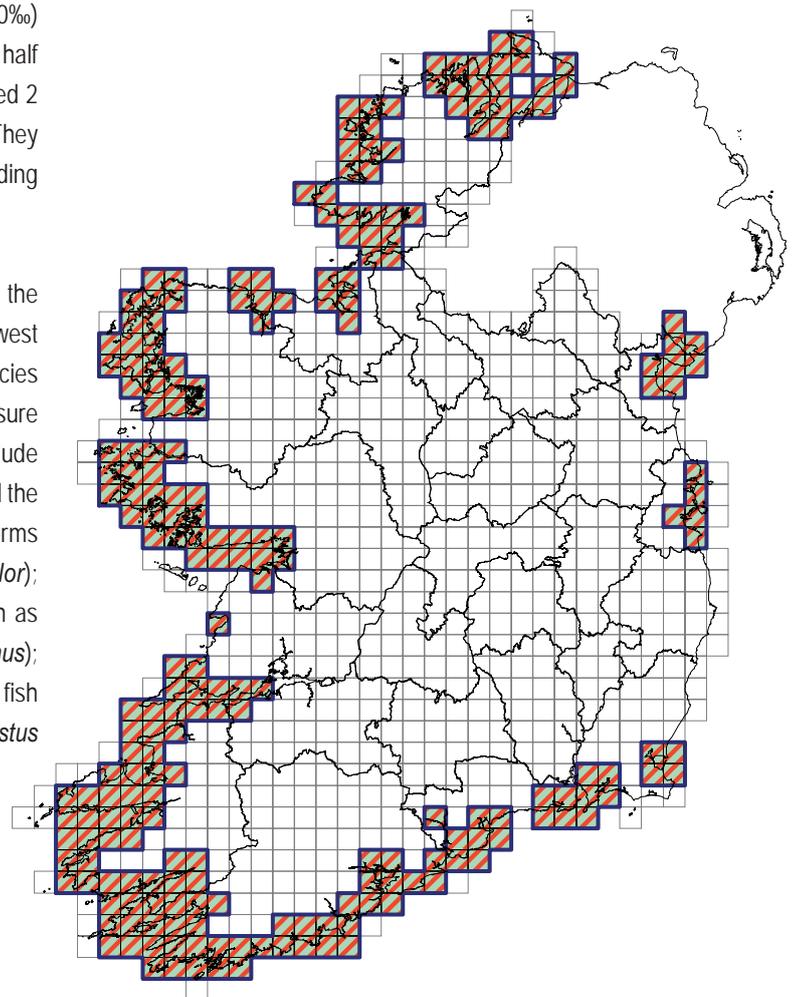
minutus); calcareous algae (*Phymatolithum calcareum*, *Lithothamnion corallioides*), and flowering plants such as eelgrass (*Zostera* spp.).

The NPWS programme to baseline map large shallow inlets and bays in Ireland commenced in 2005 and it is too early to provide an overview of structure and function for this habitat. Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are considered the principal threats. Nationally, the overall conservation status of the habitat Large Shallow Inlets and Bays is considered poor.

Photograph: Dublin Bay (Richard Nairn)

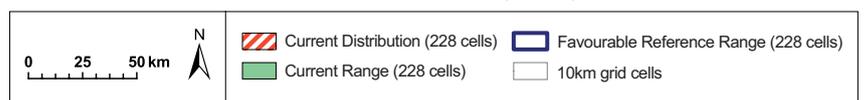
Shallow inlets and bays are indentations of the coastline that have no freshwater input or only a low level, such as small streams and/or local rainfall runoff. They experience coastal salinities (30‰) continuously. Average water depth is about 30 m with at least half of the inlet/bay shallower than 30 m. Their linear lengths exceed 2 km and the length to width ratio is generally greater than 2:1. They are large areas that encompass many other habitat types, including a number which are listed in the Habitats Directive.

Large Shallow Inlets and Bays are located on all parts of the coastline. The two largest sites are located in the mid-west (Shannon Estuary) and south-west (Dingle Bay). Typical species will vary depending on the depth, substrate and degree of exposure to wave action or tidal currents. In general these will include coelenterates such as slender sea pen (*Virgularia mirabilis*), and the anemone (*Cerianthus llodyii*); polychaetes including lugworms (*Arenicola* spp.) and the ragworm (*Hediste diversicolor*); crustaceans including various crabs and shrimp; bivalves such as banded venus (*Clausinella fasciata*), and scallop (*Pecten maximus*); echinoderms such as common starfish (*Asterias rubens*); fish including dragonet (*Callionymus lyra*) and goby (*Pomatoschistus*



LARGE SHALLOW INLETS AND BAYS (1160)

| LARGE SHALLOW INLETS AND BAYS (1160) | |
|--------------------------------------|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Unknown |
| Future prospects | Poor |
| OVERALL | POOR |



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REEFS (1170)

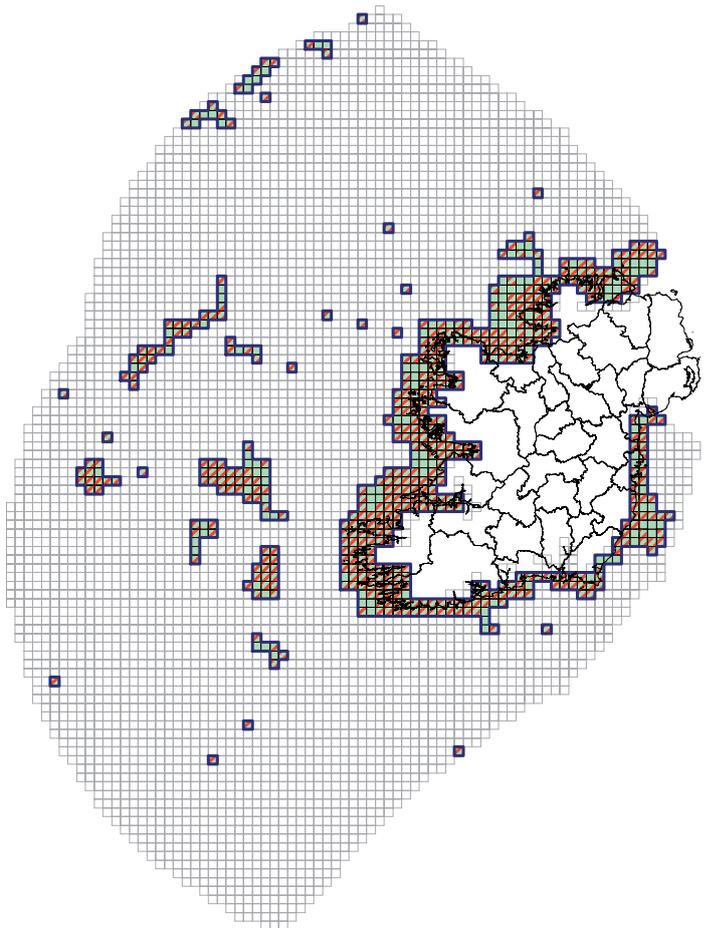


Reefs may be made of rock or constructed by animals (such reefs are called biogenic reefs). In Ireland rocky reefs are found both intertidally and subtidally, from sheltered waters through areas moderately exposed to swell and wave action, to waters exposed to the full forces of Atlantic waves. The structure of reefs varies from bedrock to boulders or cobbles, and the geology includes limestone, shale, granite, schists and gneiss.

The shallowest biogenic reefs are intertidal, including honeycomb reefs made by polychaete worms and reefs made by mussel (*Mytilus edulis*). Underwater biogenic reefs in Ireland include a small number of serpulid reefs which are made by the polychaete worm *Serpula vermicularis* and sabellaria reefs, constructed by the polychaete worm *Sabellaria*. Coldwater coral reefs occur in depths from 200 to 1600 m, where the water temperature is 4 to 8°C and the salinity is up to 36‰. Coral reefs found to date are generally associated with carbonate mounds; muddy features that rise up to 300-500 m above the sea floor. These are found close to the continental shelf slope and on the Rockall Bank. Corals are also recorded on the Hatton Bank. The typical reef forming species are *Lophelia pertusa* and *Madrepora oculata*. They create a complex 3-dimensional structure and provide a habitat for many other species that are found both on live and dead coral and in the spaces between the coral branches.

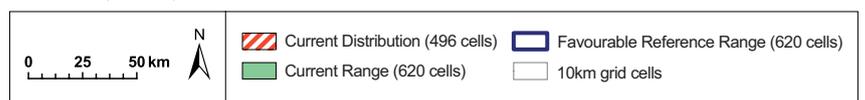
As the full extent of fisheries impacts on offshore reefs has not been documented, the status of the habitat is assessed as poor.

Photograph: Intertidal reefs at Rossbeg, Co. Donegal (Ciaran O'Keeffe)



| REEFS (1170) | |
|----------------------|----------------|
| Range | Good |
| Area | Unknown |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

REEFS (1170)



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ANNUAL VEGETATION OF DRIFT LINES (1210)



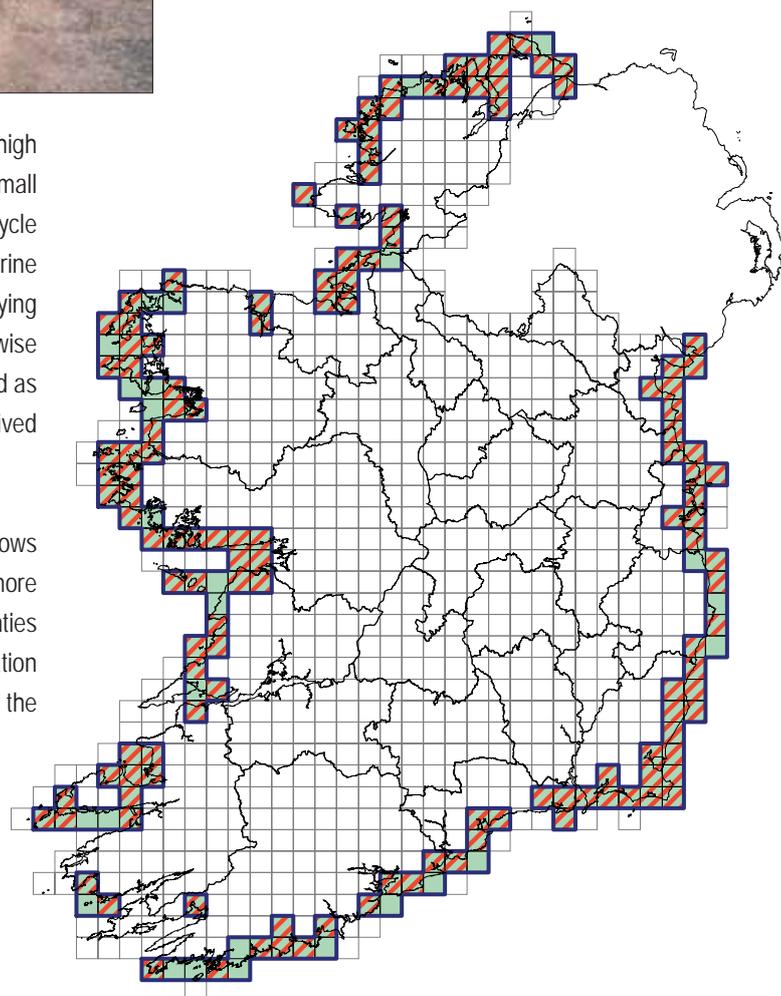
The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache (*Atriplex prostrata*), frosted orache (*Atriplex laciniata*), sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*) and prickly saltwort (*Salsola kali*).

The main threats to this habitat arise from recreational uses, including trampling, horse riding, vehicle use and mechanised removal of tidal litter. Other threats arise from grazing, sand and gravel extraction, removal of beach materials and sea defence or coastal protection works. Owing to the short-lived nature of its appearance and ongoing threats from recreation and coastal protection works, the overall conservation status of this habitat is considered to be poor.

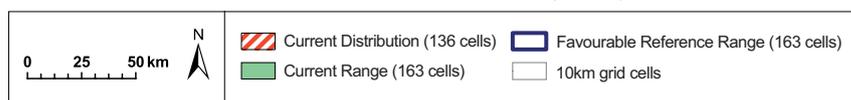
Baltray, Co. Louth (Karen Gaynor)

Annual vegetation of drift lines is found on beaches along the high tide mark, where tidal litter accumulates. It is dominated by a small number of annual species (i.e. plants that complete their life-cycle within a single season). Tidal litter contains the remains of marine algal and faunal material, as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy, fragmented stands of vegetation that are very short-lived and subject to frequent reworking by the tide.

The habitat is mainly associated with a sandy substrate and shows a continuous distribution along the coast of Ireland with a more dispersed pattern along the north of Co. Mayo, as well as counties Cork and Kerry. County Donegal contains the highest concentration of habitat records, followed by Galway. County Wexford has the highest number of habitat records along the east coast.



ANNUAL VEGETATION OF DRIFT LINES (1210)



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| ANNUAL VEGETATION OF DRIFT LINES (1210) | |
|---|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Good |
| Future prospects | Poor |
| OVERALL | POOR |

PERENNIAL VEGETATION OF STONY BANKS (1220)



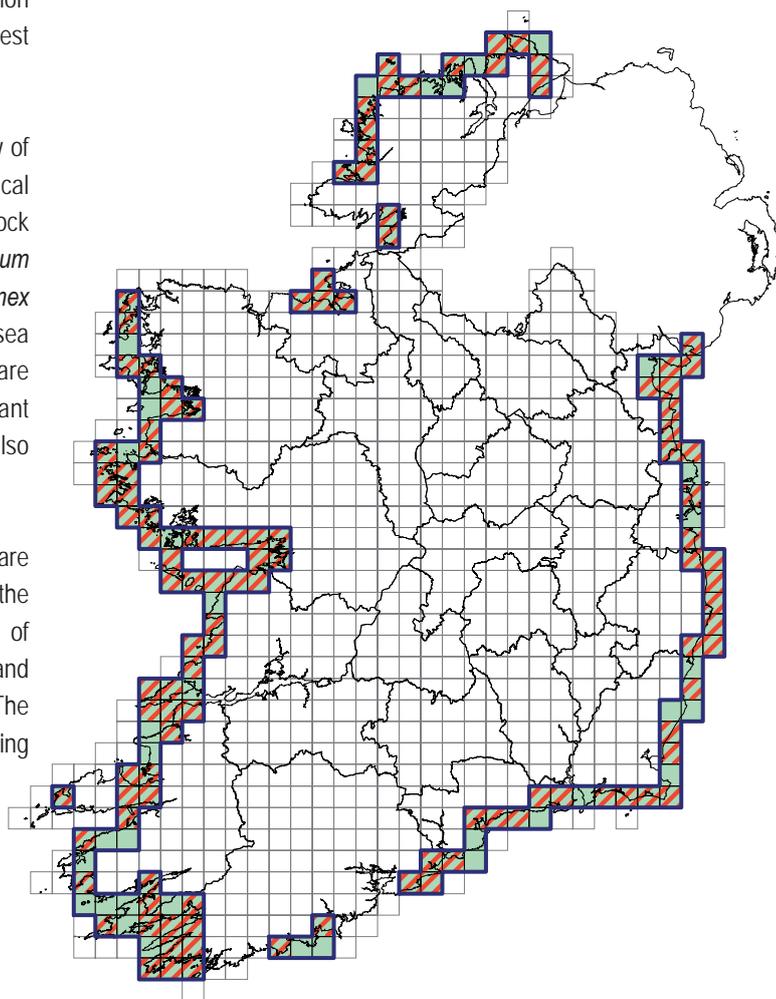
Perennial vegetation of stony banks is vegetation that is found above the high tide mark on beaches comprised of shingle (cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The habitat shows a widespread distribution along the Irish coastline with a more dispersed distribution along the coasts of County Cork and north County Mayo. County Donegal contains the highest concentration of records, followed by Galway. County Louth has the highest number of records along the east coast.

The degree of exposure, as well as the coarseness and stability of the substrate determine species diversity. Some of the typical species include sea beet (*Beta vulgaris* subsp. *maritima*), rock samphire (*Crithmum maritimum*), yellow horned-poppay (*Glaucium flavum*), sea sandwort (*Honckenya peploides*), curled dock (*Rumex crispus*), sea campion (*Silene vulgaris* subsp. *maritima*), and sea mayweed (*Tripleurospermum maritimum*). A number of rare species, including sea pea (*Lathyrus japonicus*), oysterplant (*Mertensia maritima*) and sea-kale (*Crambe maritima*) are also found in this habitat.

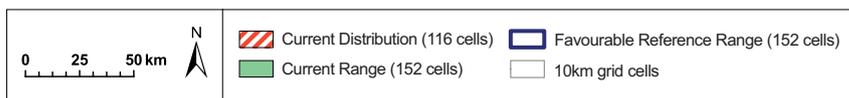
Shingle beaches are constantly changing and shingle features are rarely stable in the long term. The main impact on the habitat is the disruption of the sediment supply, owing to the interruption of coastal processes, caused by developments such as car parks and coastal defence structures such as rock armour and sea walls. The removal of gravel is still one of the most widespread and damaging

activities directly affecting the habitat. Shingle vegetation is fragile and damage caused by trampling, horse riding, and vehicles can be significant. In view of the continuing pressures on this resource, the overall status of this habitat is considered to be poor.

Photograph: Clew Bay, Co. Mayo (Neil Lockhart)



PERENNIAL VEGETATION OF STONY BANKS (1220)



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| PERENNIAL VEGETATION OF STONY BANKS (1220) | |
|--|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

VEGETATED SEA CLIFFS (1230)

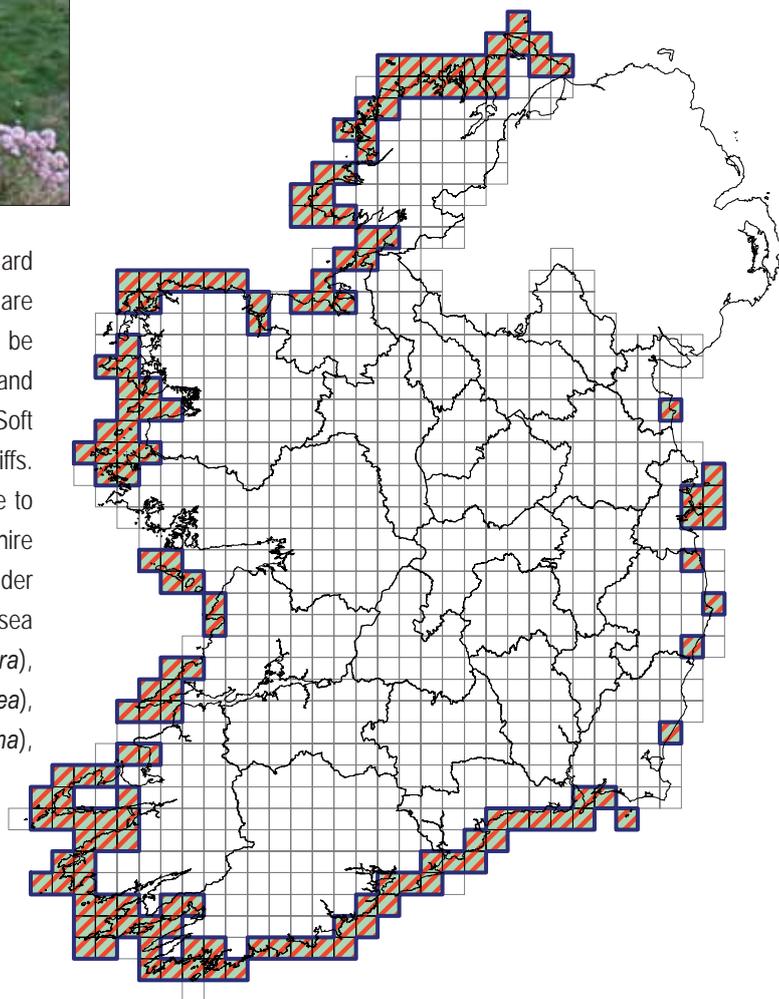


ling (*Calluna vulgaris*), and juniper (*Juniperus communis*). Coastal cliffs provide important resting, roosting and nesting areas for seabirds. The faeces produced by the birds are rich in phosphorous and nitrogen, which can influence the composition of the vegetation present. Vegetated sea cliffs display a widespread geographical distribution in Ireland, with a greater frequency of soft cliffs along the eastern seaboard.

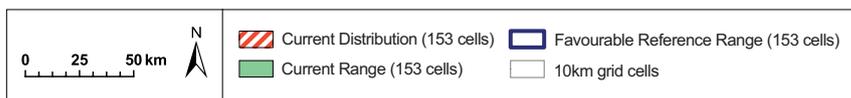
Pressures and threats on this habitat include erosion, grazing, recreational pressures, development of golf courses and housing, dumping and cutting of peat. In some cases, coastal protection works interfere with the natural functioning of sea cliffs, particularly those of the soft variety, which are prone to erosion. The impacts of climate change are likely to result in more cliffs being artificially consolidated or stabilised. Consequently the overall status of this habitat is considered to be poor.

Photograph: Wicklow Head, Co. Wicklow (Richard Nairn)

Vegetated sea cliffs can be divided into two broad categories: hard (or rocky) cliffs and soft (or sedimentary) cliffs. Hard cliffs are composed of rocks that are resistant to weathering and can be vertical or steeply sloping. Vegetation tends to occur on ledges and in crevices or where a break in slope allows soil to accumulate. Soft cliffs tend to be less steep and more vegetated than hard cliffs. However, owing to their inherent weak structure they are prone to slumping and landslides. Typical cliff species include rock samphire (*Crithmum maritimum*), thrift (*Armeria maritima*), sea-lavender (*Limonium* spp.), common scurvygrass (*Cochlearia officinalis*), sea plantain (*Plantago maritima*), red fescue (*Festuca rubra*), golden-samphire (*Inula crithmoides*), roseroot (*Rhodiola rosea*), tree-mallow (*Lavatera arborea*), spring squill (*Scilla verna*),



VEGETATED SEA CLIFFS (1230)



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| VEGETATED SEA CLIFFS of the Atlantic and Baltic coasts (1230) | |
|---|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

SALTMARSH HABITATS

Saltmarshes are stands of vegetation that occur along sheltered coasts, mainly on mud or sand, and are flooded periodically by the sea. The plants and animals are restricted to a small number of specialist species that can survive the salt content of the substrate. Saltmarshes are often dissected by a pattern of muddy channels or "creeks".

In Ireland, there are five separate saltmarsh habitats listed under Annex I of the EU Habitats Directive:

- Salicornia and other annuals colonising mud and sand (1310)**
- Spartina swards (1320)**
- Atlantic salt meadows (1330)**
- Mediterranean salt meadows (1410)**
- Halophilous scrub (1420)**

Transitional communities can occur between these habitats and they may also form mosaics with each other.

SALICORNIA MUD (1310)

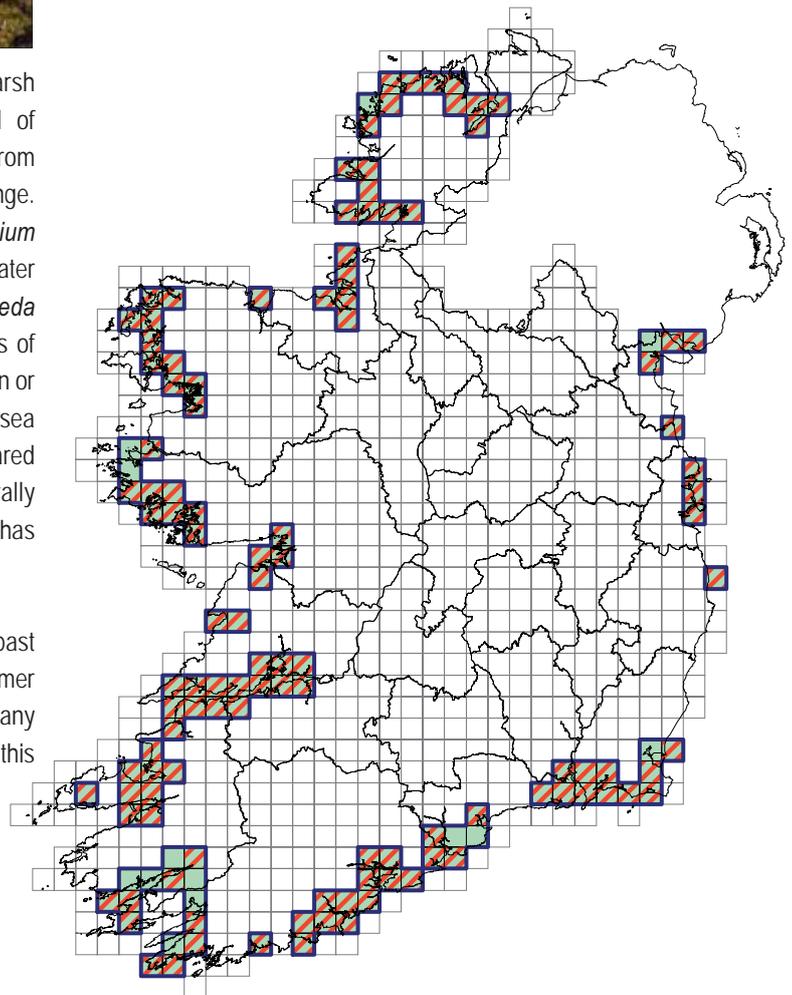


Swards of glasswort (*Salicornia* spp.) are pioneer saltmarsh communities and may occur on muddy sediment seaward of established saltmarsh. They may also form patches isolated from other saltmarsh on mudflats within a suitable elevation range. Typical species include lax-flowered sea-lavender (*Limonium humile*), common saltmarsh-grass (*Puccinellia maritima*), greater sea-spurrey (*Spergularia media*), annual sea-blite (*Suaeda maritima*) and common cord-grass (*Spartina anglica*). Patches of vegetation dominated by annual sea-blite are much less common or extensive. Short-lived patches of saltmarsh vegetation with sea pearlwort (*Sagina maritima*) are also much less extensive compared to swards of glasswort (*Salicornia* spp.), and are generally associated with the transition from saltmarsh to sand-dune that has been recorded in Ireland.

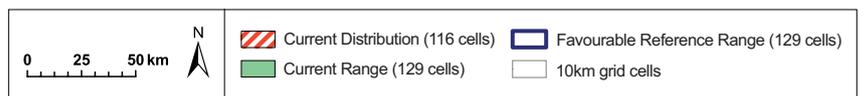
The area of *Salicornia* flats may have contracted slightly in the past due to the infilling, reclamation and embankment of some former saltmarsh and intertidal areas for agricultural purposes at many sites around the country. Very few impacts or activities affect this

habitat probably due to its inaccessible position in the lower zone of the saltmarsh. The main impact affecting this habitat is the spread of the invasive species common cord-grass (*Spartina anglica*). This habitat is short-lived in places, as it is so vulnerable to natural erosion and accretion cycles and storms. Overall the status of this habitat is considered to be poor.

Photograph: *Salicornia* on mudflats (Richard Nairn)



SALICORNIA MUD (1310)



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| SALICORNIA and other annuals colonising mud and sand (1310) | |
|---|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

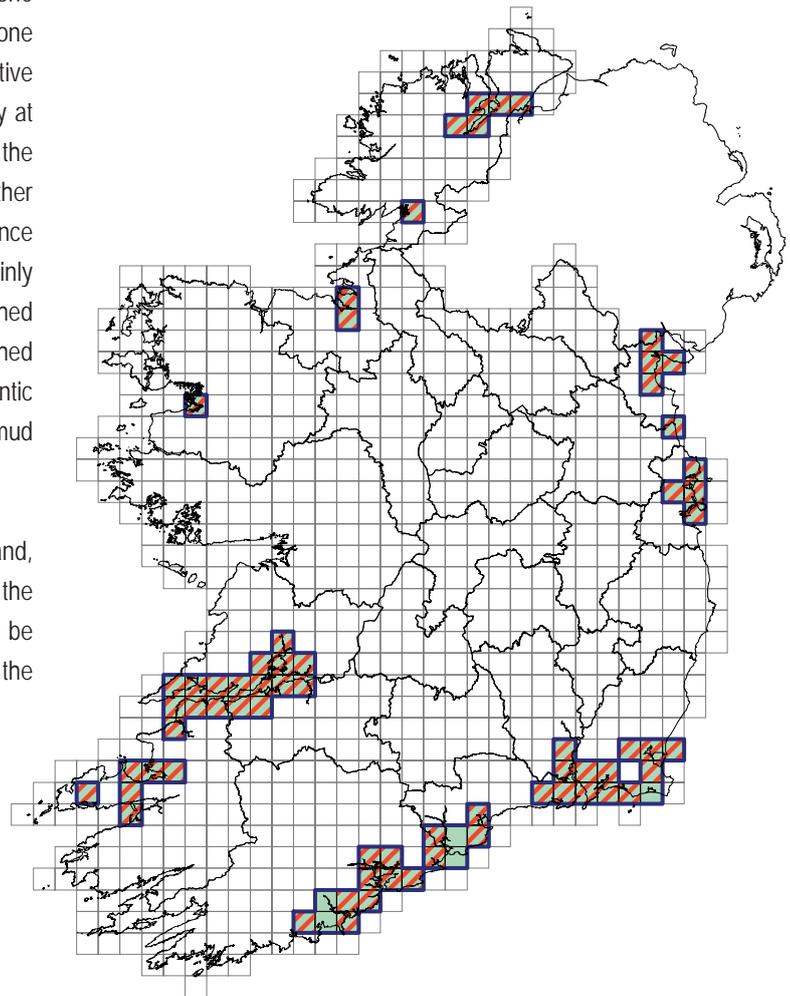
SPARTINA SWARDS (1320)



Spartina swards generally form extensive stands in the lowest zone of the saltmarsh. In Ireland, this habitat is usually dominated by one species, common cordgrass (*Spartina anglica*). This is a non-native species in Ireland. It was first planted in the early 20th century at locations in Cork Harbour and Fergus Estuary, Co. Clare for the purposes of land reclamation. It was subsequently planted at other locations in Co. Dublin, Co. Donegal and Co Mayo. It has since spread to many other locations along the coast. It has mainly spread on unvegetated mudflats seaward of previously established saltmarsh, but has also spread on other previously established saltmarsh habitats listed in the Habitats Directive, including Atlantic salt meadows, (1330), areas formerly vegetated by *Salicornia* mud (1310) and areas formerly vegetated by eelgrass (*Zostera* spp).

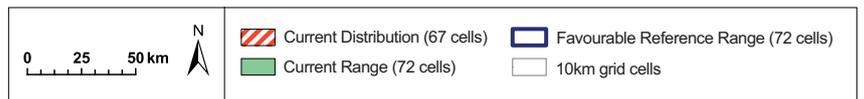
As *Spartina* is considered to be an invasive alien species in Ireland, it is assessed in a different way to other habitats. Increases in the area and extent of *Spartina* swards are actually considered to be unfavourable and as future expansion is considered likely, the overall conservation status of this habitat is rated as poor.

Photograph: Inch, Co. Kerry (Karen Gaynor)



SPARTINA SWARDS (1320)

| SPARTINA SWARDS (1320) | |
|------------------------|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Good |
| Future prospects | Poor |
| OVERALL | POOR |



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ATLANTIC SALT MEADOWS (1330)

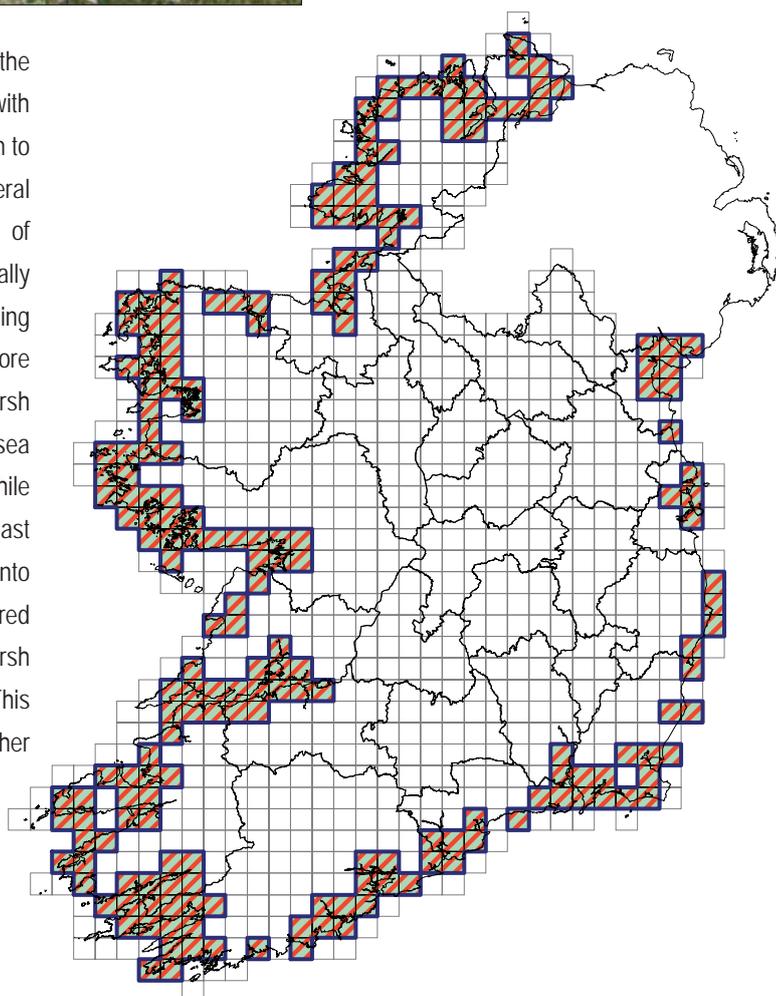


wildlife. Atlantic salt meadows display a wide geographical distribution in Ireland.

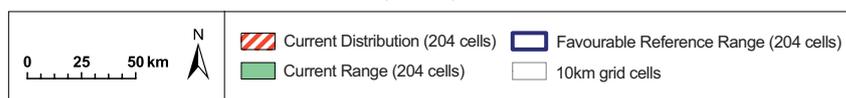
The most common impacts in the current assessment period were over-grazing by sheep or cattle, and erosion. Common cordgrass (*Spartina anglica*) is also present on many Irish saltmarshes and is considered an invasive species. There have been some minor losses of habitat during the current assessment period due to infilling and reclamation. As a result of these recorded losses and the continuing pressures from grazing and *Spartina* invasion, the overall conservation status assessment for Atlantic Salt Meadow habitat is poor.

Photograph: Baldoyle Estuary, Co Dublin (NPWS)

Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on medium to large sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and frequency of submergence. The lowest part along the tidal zone is generally dominated by the most halophytic (salt-tolerant) species including common saltmarsh-grass (*Puccinellia maritima*) and species more usually associated with *Salicornia* muds (1310). The mid-marsh zone is generally characterised by sea thrift (*Armeria maritima*), sea plantain (*Plantago maritima*) and sea aster (*Aster tripolium*), while sea purslane (*Atriplex portulacoides*) can dominate sites on the east and south coasts. This mid-zone vegetation generally grades into an herbaceous community in the upper marsh, dominated by red fescue (*Festuca rubra*), sea milkwort (*Glauca maritima*), saltmarsh rush (*Juncus gerardii*) and creeping bent (*Agrostis stolonifera*). This habitat is also important for wintering waders and wildfowl and other



ATLANTIC SALT MEADOWS (1330)



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| ATLANTIC SALT MEADOWS (1330) | |
|------------------------------|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

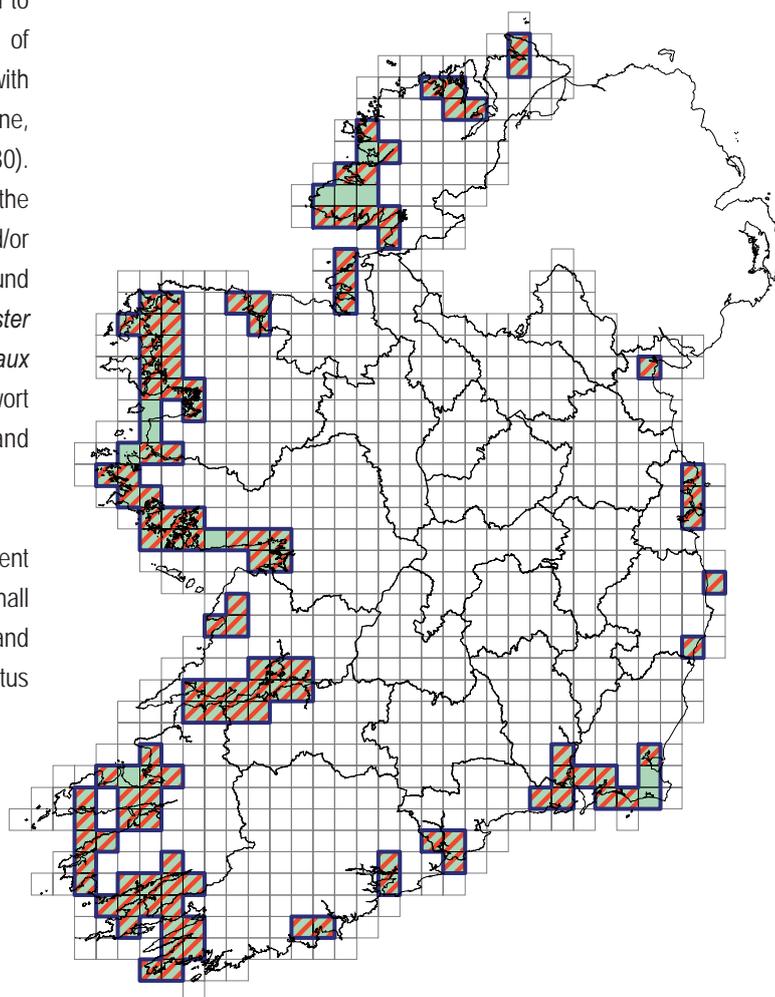
MEDITERRANEAN SALT MEADOWS (1410)



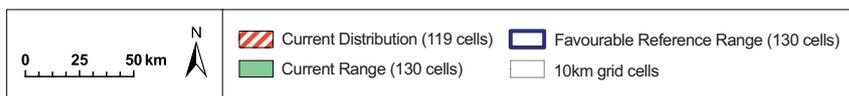
Despite the name, Mediterranean salt meadows are considered to occur in Ireland. They generally occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline, although they are not as common as Atlantic salt meadows (1330). This habitat is distinguished from Atlantic salt meadows by the presence of tall rushes such as sea rush (*Juncus maritimus*) and/or sharp rush (*J. acutus*), along with a range of species typically found in Atlantic salt meadows (1330). These include sea aster (*Aster tripolium*), sea purslane (*A. portulacoides*), sea-milkwort (*Glaux maritima*), saltmarsh rush (*Juncus gerardii*), parsley water-dropwort (*Oenanthe lachenalii*), sea plantain (*Plantago maritima*) and common saltmarsh-grass (*Puccinellia maritima*).

The most common impact recorded during the current assessment period was over-grazing by cattle or sheep. Owing to a small number of recorded losses caused by infilling and reclamation, and the on-going impacts of overgrazing, the overall conservation status for Mediterranean Salt Meadow habitat is poor.

Photograph: Dooaghtry, Co. Mayo (Mark McCorry)



MEDITERRANEAN SALT MEADOWS (1410)



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| MEDITERRANEAN SALT MEADOWS (1410) | |
|-----------------------------------|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

HALOPHILOUS SCRUB (1420)

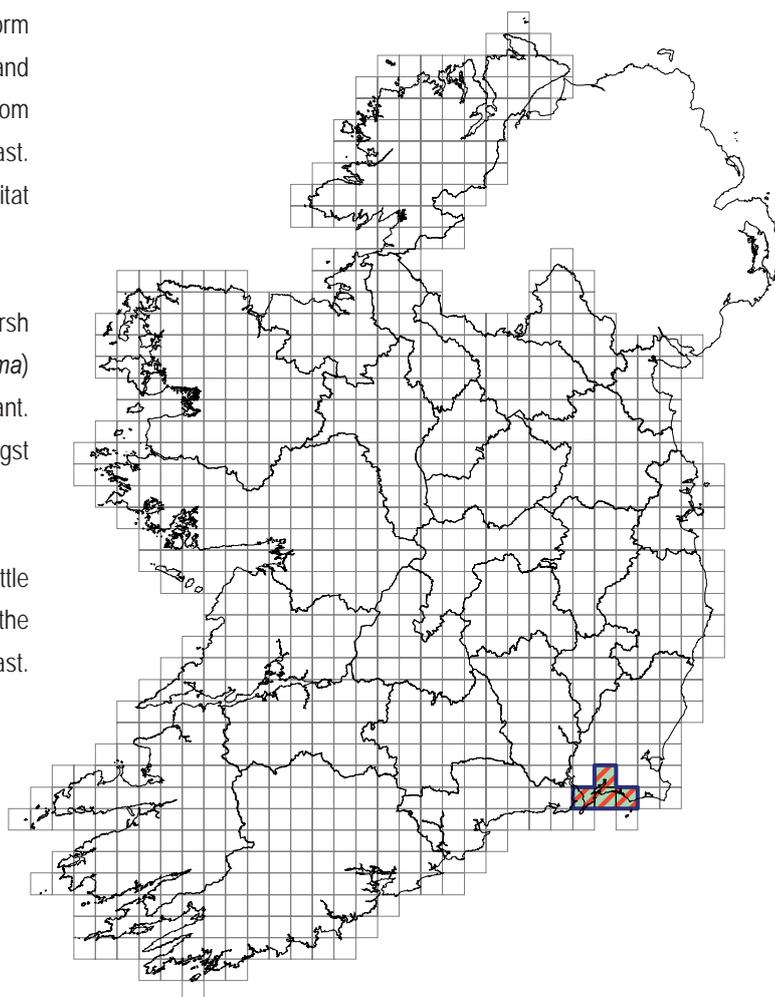


This habitat is characterised by the presence of a single species, perennial glasswort (*Sarcocornia perennis*, previously known as *Arthrocnemum perenne*) on saltmarsh. This fleshy, slightly woody perennial can grow up to 30cm tall and often extends to form tussocks up to 1m in diameter. This species is very rare in Ireland and is protected under the Flora Protection Order. It is known from only five saltmarsh sites, all located on the south-east coast. Consequently, this habitat is the rarest Annex I saltmarsh habitat found in Ireland.

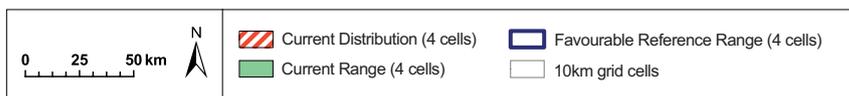
Perennial glasswort is found generally in the mid-lower saltmarsh zone, often with common saltmarsh grass (*Puccinellia maritima*) and lax-flowered sea-lavender (*Limonium humile*) predominant. It also occurs with glasswort species (*Salicornia* spp.) and amongst clumps of common cord-grass (*Spartina anglica*).

Some sites containing this habitat are being affected by cattle poaching and by tracks created by off-road vehicles. At one site the habitat was damaged by horse riding activities in the recent past. The overall conservation status for this habitat is bad.

Photograph: Ballyteigue Burrow, Co. Wexford (Mark McCorry)



HALOPHILOUS SCRUB (1420)



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| HALOPHILOUS SCRUB (1420) | |
|--------------------------|------------|
| Range | Good |
| Area | Bad |
| Structure & Function | Poor |
| Future prospects | Bad |
| OVERALL | BAD |

SAND DUNE HABITATS

Sand dunes are hills of wind blown sand that have become progressively stabilised by a cover of vegetation. In general, most sites display a progression through strandline, foredunes, mobile marram dunes and fixed dunes. Where the sandy substrate is decalcified, fixed dunes may give way to dune heath. Wet hollows, or dune slacks, occur where the dunes have been eroded down to the level of the water-table. Machair is a specialised form of dune system that is only found on the northwest coasts of Ireland and Scotland. Transitional communities can occur between dune habitats and they may also form mosaics with each other. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that

all of the habitats achieve favourable conservation status. In Ireland, there are eight separate sand dune habitats listed under Annex I of the EU Habitats Directive (* indicates a priority habitat):

- Embryonic shifting dunes (2110)**
- Marram dunes (white dunes) (2120)**
- Fixed dunes (grey dunes)* (2130)**
- Decalcified Empetrum dunes* (2140)**
- Decalcified dune heath* (2150)**
- Dunes with creeping willow (2170)**
- Humid dune slacks (2190)**
- Machair* (21AO)**

EMBRYONIC SHIFTING DUNES (2110)

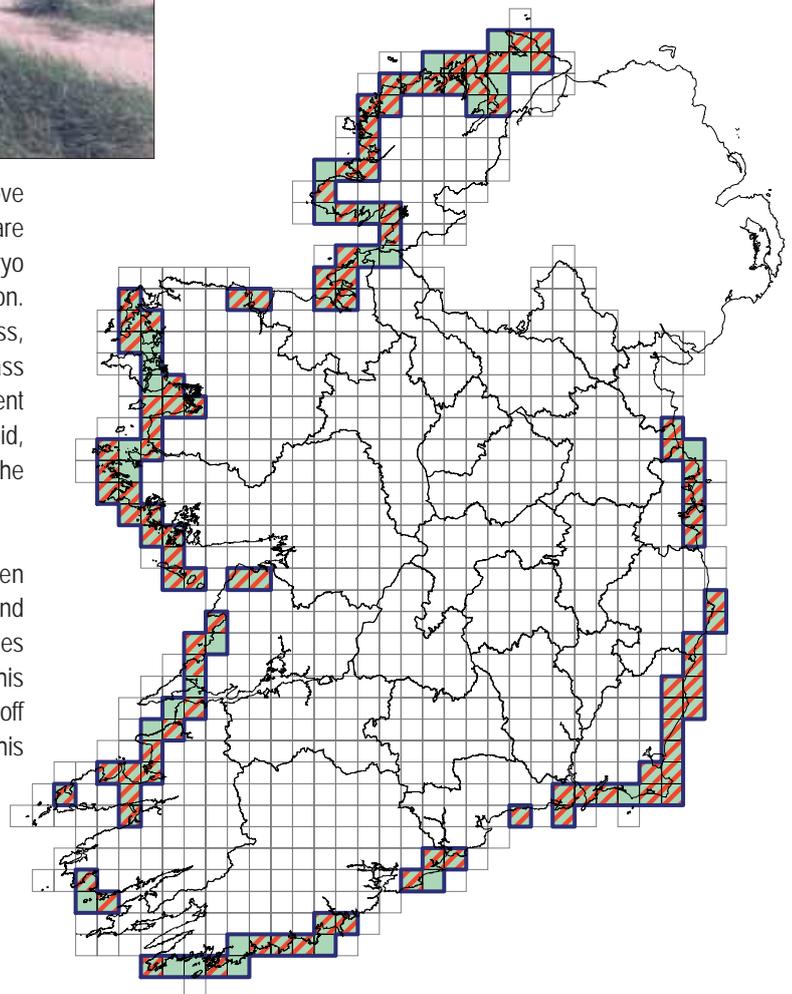


habitat. In view of a number of recent recorded losses of habitat area and the on-going pressures of recreation and coastal stabilisation, the overall conservation status of this habitat is considered to be poor.

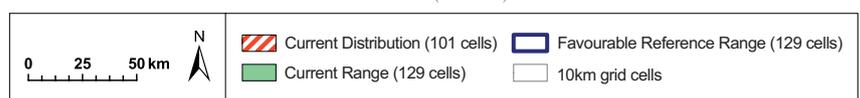
Photograph: Inch Strand, Co. Kerry (Karen Gaynor)

Embryonic dunes are low accumulations of sand that form above the strandline, at the foot of the taller marram dunes. They are sometimes referred to as foredunes, pioneer dunes, or embryo dunes, as they can represent the primary stage of dune formation. They are characterised by the presence of the dune-building grass, sand couch grass (*Elytrigia juncea*), and at some sites, lyme grass (*Leymus arenarius*). Strandline species can remain a persistent element of the vegetation. Where sand accumulation is more rapid, marram grass (*Ammophila arenaria*) begins to invade, initiating the transition to mobile marram dunes.

Embryonic dunes are very dynamic systems that are often short-lived. Many sites are subject to natural erosion processes and susceptible to removal by storms or high tides; human activities such as recreation and sand extraction can exacerbate this problem. Construction of coastal protection works can also cut off the supply of sand that is vital for the natural functioning of this



EMBRYONIC SHIFTING DUNES (2110)



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EMBRYONIC SHIFTING DUNES (2110)

| | |
|----------------------|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

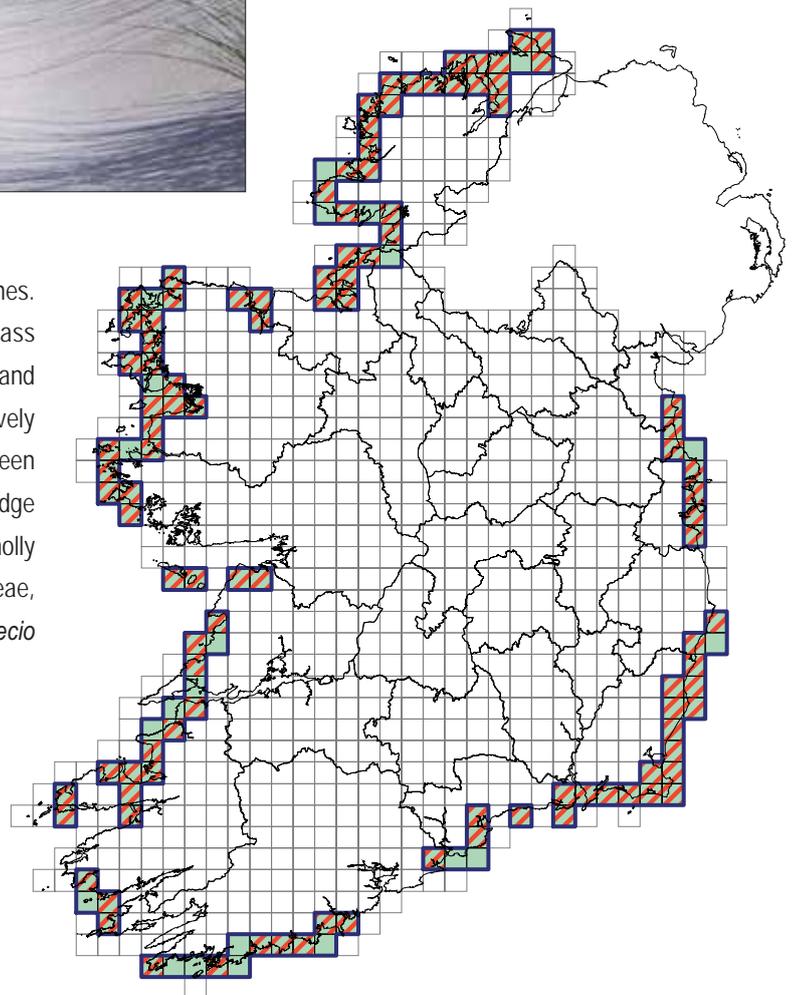
MARRAM DUNES (WHITE DUNES) (2120)



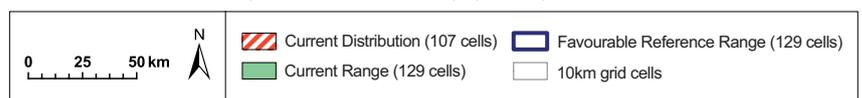
Threats to this habitat include natural and man-made pressures. A regular supply of blown sand is essential to maintain the natural mobility of marram dunes and this can be depleted by removal of beach materials, construction of coastal protection works or by sand compaction caused by motorised vehicles on the beach. High visitor pressure on dunes causes trampling, which damages the plant cover. Interference with the supply of sand at a number of sites has negatively impacted on the natural functioning of this habitat, leading to a loss of area. Therefore, the overall conservation status of marram dunes is considered to be bad.

Photograph: Dooaghtry, Co. Mayo (Richard Nairn)

Marram dunes are taller and located further inland than foredunes. They are actively created and dominated by marram grass (*Ammophila arenaria*), one of the few species that can withstand burial by blowing sand. In fact, marram growth is actively stimulated by sand accumulation. The bare sandy areas between the coarse tussocks of marram may be colonised by sand sedge (*Carex arenaria*), sea spurge (*Euphorbia paralias*) and sea-holly (*Eryngium maritimum*), along with a number of yellow Asteraceae, including cat's-ear (*Hypochaeris radicata*), groundsel (*Senecio vulgaris*) and common ragwort (*S. jacobaea*).



MARRAM DUNES (WHITE DUNES) (2120)



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SHIFTING DUNES along the shoreline with *Ammophila arenaria* (white dunes) (2120)

| | |
|----------------------|-------------|
| Range | Good |
| Area | Bad |
| Structure & Function | Bad |
| Future prospects | Bad |
| OVERALL | BAD |

FIXED DUNES (GREY DUNES) 2130

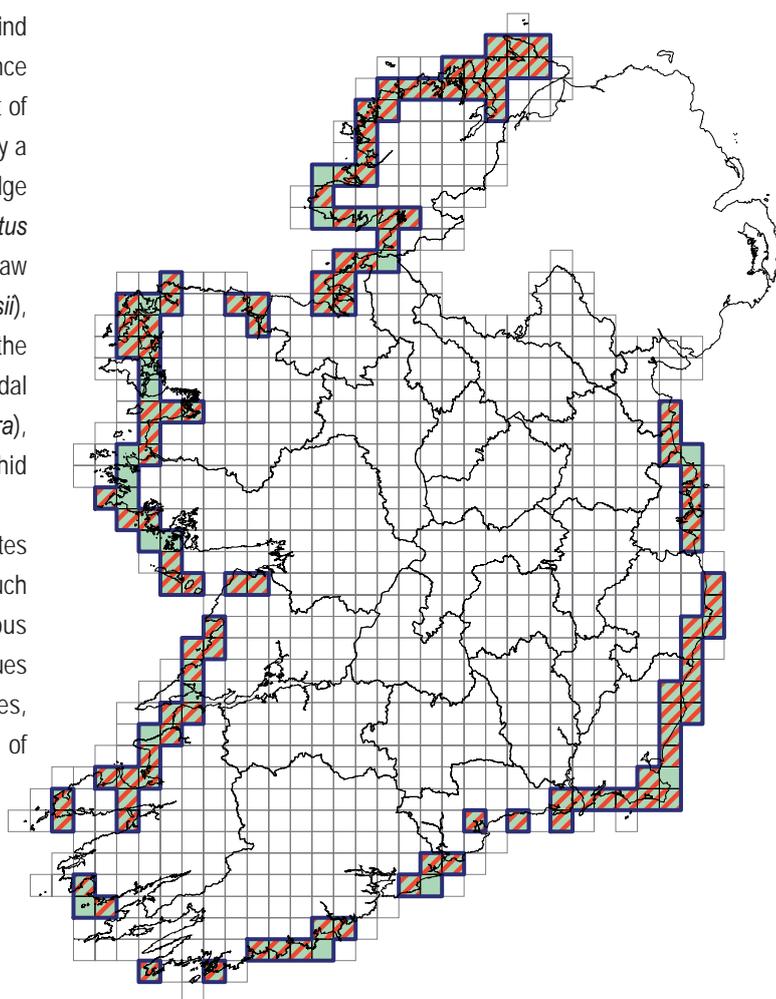


recreation. Pedestrian traffic and vehicle use can lead to the destruction of the vegetation cover, eventually leading to the exposure of bare sand, which becomes mobile. Perhaps the greatest impacts on fixed dunes today are overgrazing and undergrazing: overgrazing can lead to a reduction in species diversity, nutrient enrichment of the soil and destruction of the vegetation cover, while undergrazing can lead to development of species-poor grassland and eventual scrub encroachment. The introduction of non-native plant species, particularly sea buckthorn (*Hippophae rhamnoides*), also threatens fixed dune communities. In view of a number of recorded losses of habitat area, the poor quality of much of this habitat as a result of inappropriate grazing and recreation, as well as the continuing pressure for development, the overall conservation status of this habitat is considered bad.

Photograph: NPWS

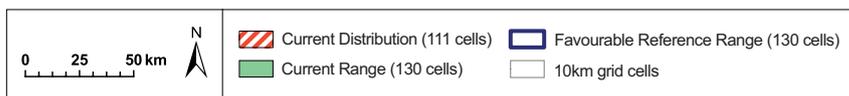
Fixed dunes refers to the more stabilised area of dune systems, located in the shelter of the mobile marram dunes, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or 'fixed' carpet of vegetation dominated by a range of sand-binding species. Typical species include sand sedge (*Carex arenaria*), red fescue (*Festuca rubra*), birdsfoot trefoil (*Lotus corniculatus*), kidney vetch (*Anthyllis vulneraria*), lady's bedstraw (*Galium verum*) and seaside pansy (*Viola tricolor* subsp. *curtisii*), along with an abundance of mosses and lichens, particularly the moss *Tortula ruralis* ssp. *ruraliformis*. Orchids, such as pyramidal orchid (*Anacamptis pyramidalis*), bee orchid (*Ophrys apifera*), autumn lady's-tresses (*Spiranthes spiralis*), and frog orchid (*Coelogossum viride*), can be locally abundant.

Fixed dunes were once widespread on sandy coasts but many sites have been significantly modified in the past for developments such as sports pitches, golf courses, caravan parks, coniferous plantations, housing, roadways and airstrips. This habitat continues to suffer intense pressure from development. Many sites, particularly those along the east coast, suffer from the impacts of



FIXED DUNES (GREY DUNES) 2130

| FIXED COASTAL DUNES with herbaceous vegetation (grey dunes) (2130) | |
|--|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Bad |
| Future prospects | Bad |
| OVERALL | BAD |



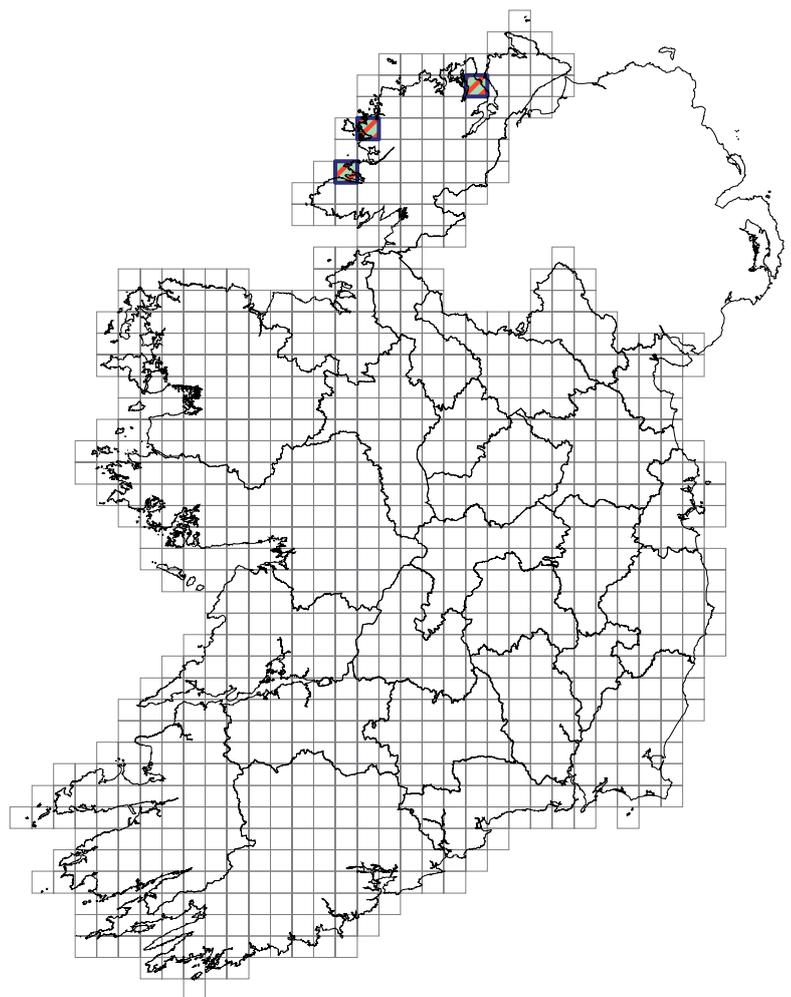
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DECALCIFIED EMPETRUM DUNES (2140)

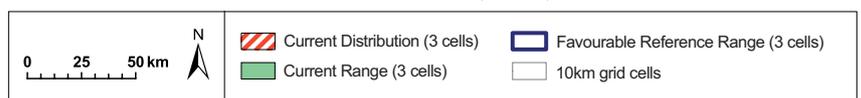
Decalcified *Empetrum* dune habitat is generally found on the landward edge of dune systems where the surface layers of sand have been leached of their calcium content, or where sand has blown up over rock that is siliceous (silica-rich) in nature. It is characterised by the presence of crowberry (*Empetrum nigrum*), which differentiates it from the other dune heath habitat - decalcified dune heath. Crowberry is found in conjunction with ling (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), common gorse (*Ulex europaeus*), western gorse (*Ulex galii*) and sand sedge (*Carex arenaria*). This heath-like habitat does not appear to be well developed in Ireland and is thought to be restricted to a small

number of sites along the north-west coast. It has recently been recorded from only three 10km squares in Co. Donegal. Further research, however, is needed to establish the exact distribution and extent of this very rare habitat.

The main pressures are agricultural improvement, overgrazing by cattle, undergrazing (leading to scrub encroachment), the development of sand quarries and competition from other dune habitats. Due to the apparent poor quality of this habitat type in Ireland its overall conservation status is considered to be bad.



DECALCIFIED EMPETRUM DUNES (2140)



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| DECALCIFIED FIXED DUNES with <i>Empetrum nigrum</i> (2140) | |
|---|------------|
| Range | Good |
| Area | Good |
| Structure & Function | Bad |
| Future prospects | Poor |
| OVERALL | BAD |

DECALCIFIED DUNE HEATH (2150)

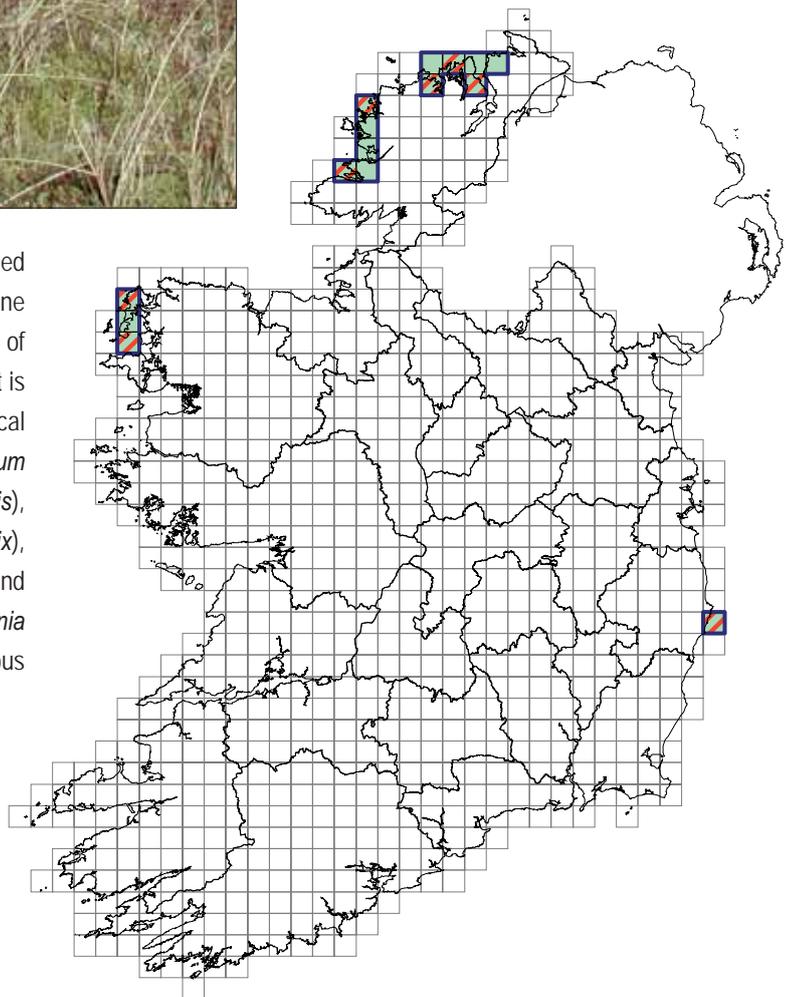


This type of dune heath is not well developed in Ireland and appears to be restricted in range to the coasts of counties Donegal and Mayo, with a couple of sites in Co. Wicklow. It has recently been confirmed from only eight 10km squares. Further research, however, is needed to establish the exact distribution and extent of this rare habitat.

The main pressures are agricultural improvement, overgrazing by cattle, undergrazing (leading to scrub encroachment), restructuring of agricultural land holdings, intensive stock feeding and the development of sand quarries. Due to the apparent poor quality of this habitat type in Ireland its overall conservation status is considered to be bad.

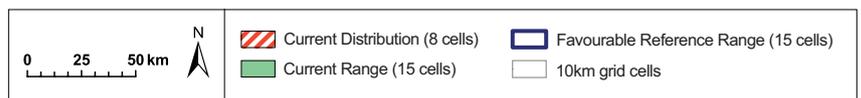
Photograph: Decalcified dune heath (Neil Lockhart)

As with the habitat Decalcified *Empetrum* dunes (2140), decalcified dune heath is generally found on the landward edge of dune systems where the surface layers of sand have been leached of their calcium content, or where sand has blown up over rock that is siliceous (silica-rich) in nature. Species present are almost identical between these two habitats, but in this case crowberry (*Empetrum nigrum*) is absent. Typical species include ling (*Calluna vulgaris*), bell heather (*Erica cinerea*), cross-leaved heath (*Erica tetralix*), common gorse (*Ulex europaeus*) western gorse (*Ulex gali*) and sand sedge (*Carex arenaria*). Lichens, particularly *Cladonia* species, can be locally abundant along with a range of herbaceous species more typically associated with fixed dunes.



| ATLANTIC DECALCIFIED FIXED DUNES (<i>Calluno-Ulicetea</i>) (2150) | |
|--|------------|
| Range | Good |
| Area | Good |
| Structure & Function | Bad |
| Future prospects | Poor |
| OVERALL | BAD |

DECALCIFIED DUNE HEATH (2150)



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DUNES WITH CREEPING WILLOW (2170)

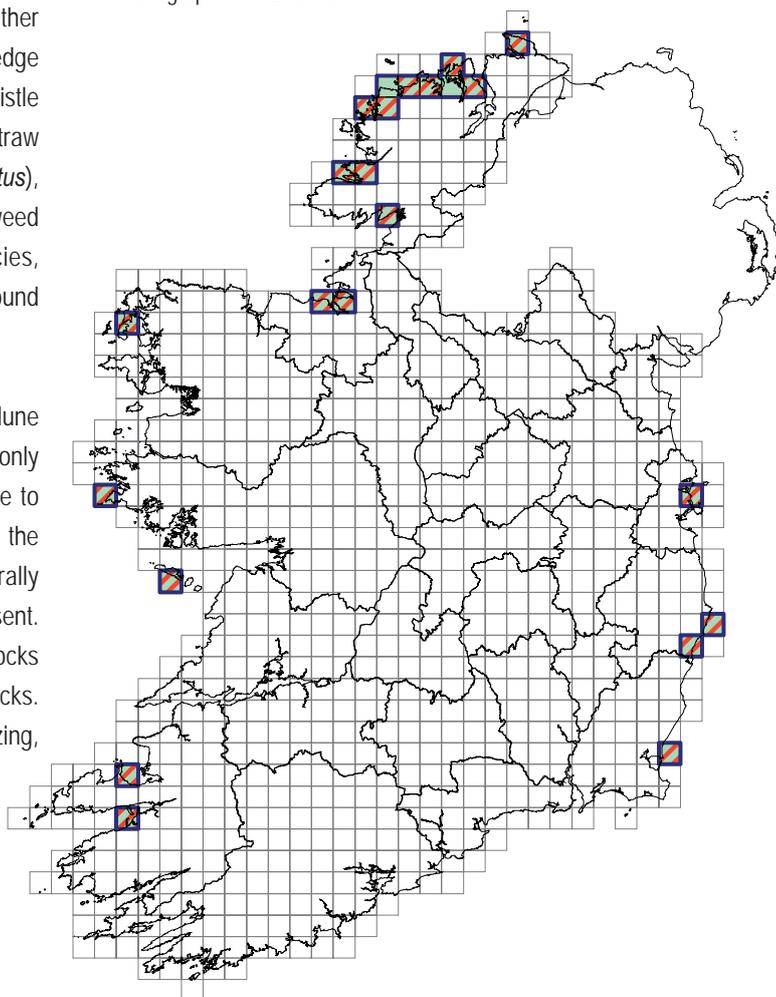


Dunes with creeping willow are found in close association with dune slacks, the wet hollows in dune systems where groundwater reaches the surface. These dunes are dominated by the shrub creeping willow (*Salix repens*), which forms a dense ground cover. Other typical species include Yorkshire-fog (*Holcus lanatus*), sand sedge (*Carex arenaria*), glaucous sedge (*Carex flacca*), carline thistle (*Carlina vulgaris*), red fescue (*Festuca rubra*), lady's bedstraw (*Galium verum*), common bird's-foot trefoil (*Lotus corniculatus*), common restharrow (*Ononis repens*) and mouse-ear hawkweed (*Pilosella officinarum*). The rare and protected species, round-leaved wintergreen (*Pyrola rotundifolia* ssp. *maritima*) is found in this habitat.

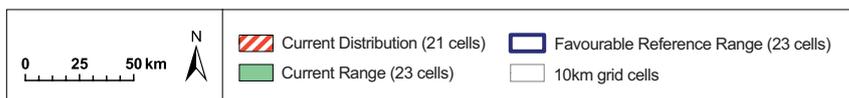
There is considerable overlap between this habitat and humid dune slacks. 'Dunes with creeping willow', however, is generally only applied to areas in slacks that are raised above the water-table to such a level that it no longer exerts a controlling influence on the vegetation. As a result, the moisture-loving plants generally associated with humid dune slacks are noticeably reduced or absent. Dunes with creeping willow are often found on sandy hummocks within slacks, or on the sides of dune ridges adjacent to slacks. The main impacts and threats to this habitat include overgrazing, undergrazing, agricultural improvement and recreation.

Owing to the continuing threat posed by these activities, the overall conservation status of this habitat is considered to be poor.

Photograph: Neil Lockhart.



DUNES WITH CREEPING WILLOW (2170)



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| DUNES with <i>Salix repens</i> spp. <i>argentea</i> (<i>Salicion arenariae</i>) (2170) | |
|--|-------------|
| Range | Good |
| Area | Good |
| Structure & Function | Poor |
| Future prospects | Poor |
| OVERALL | POOR |

HUMID DUNE SLACKS (2190)

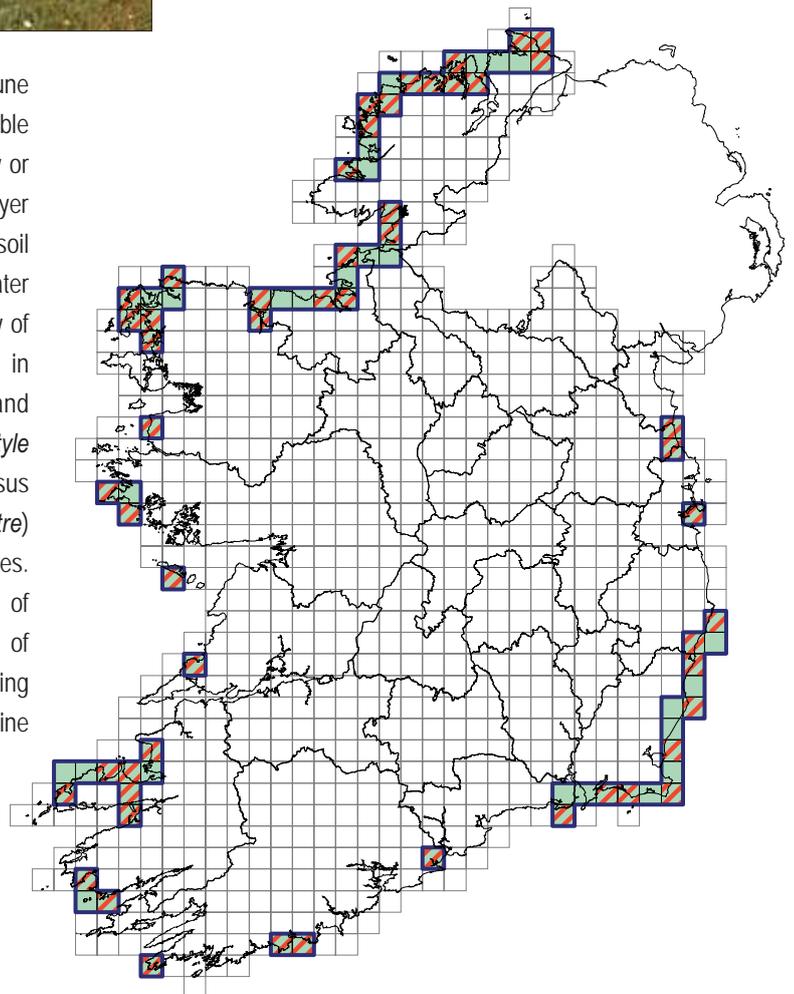


influence. As the shrub creeping willow (*Salix repens*) is found in dune slacks, there is considerable overlap between this habitat and the dunes with creeping willow (2170) habitat.

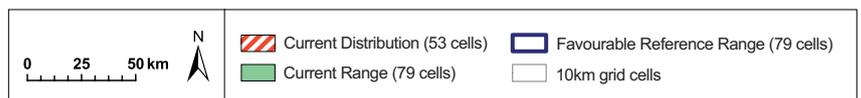
This habitat is under serious threat from a range of impacts including overgrazing, undergrazing, over-stabilisation of dunes, water abstraction and drainage, golf course developments, forestry and coastal protection works. Although the total area of the habitat is considered stable, the range of ecological variation is not. The two extreme communities (pioneer slacks and very wet slacks) are poorly represented in Ireland. Therefore, the future prospects for dune slacks, in terms of maintaining all of the ecological variation, are poor. Consequently, the overall conservation status of this habitat is considered bad.

Photograph: Castlegregory, Co. Kerry (NPWS)

Humid dune slacks are wet or moist depressions between dune ridges. They are characterised by the occurrence of a water-table that is maintained by a combination of groundwater (which may or may not be slightly saline), precipitation and an impermeable layer in the soil. In winter, the water-table normally rises above the soil surface and inundation occurs. In spring and summer, the water level drops, but the top layer of the soil remains wet. Proximity of the water-table to the surface is evidenced in the vegetation, in which rushes (*Juncus* spp.), sedges (*Carex* spp.) and moisture-loving herbs such as marsh pennywort (*Hydrocotyle vulgaris*), bog pimpernel (*Anagallis tenella*), grass-of-Parnassus (*Parnassia palustris*), common marsh-bedstraw (*Galium palustre*) and marsh helleborine (*Epipactis palustris*) are obvious features. The frequency and duration of flooding, as well as the level of salinity, determines the vegetation composition. A number of sub-communities are recognised within this habitat, including Pioneer slacks, Wet slacks, Dry mature slacks and those with saline



HUMID DUNE SLACKS (2190)



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| HUMID DUNE SLACKS (2190) | |
|--------------------------|-------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Poor |
| Future prospects | Bad |
| OVERALL | BAD |

MACHAIR (21A0)



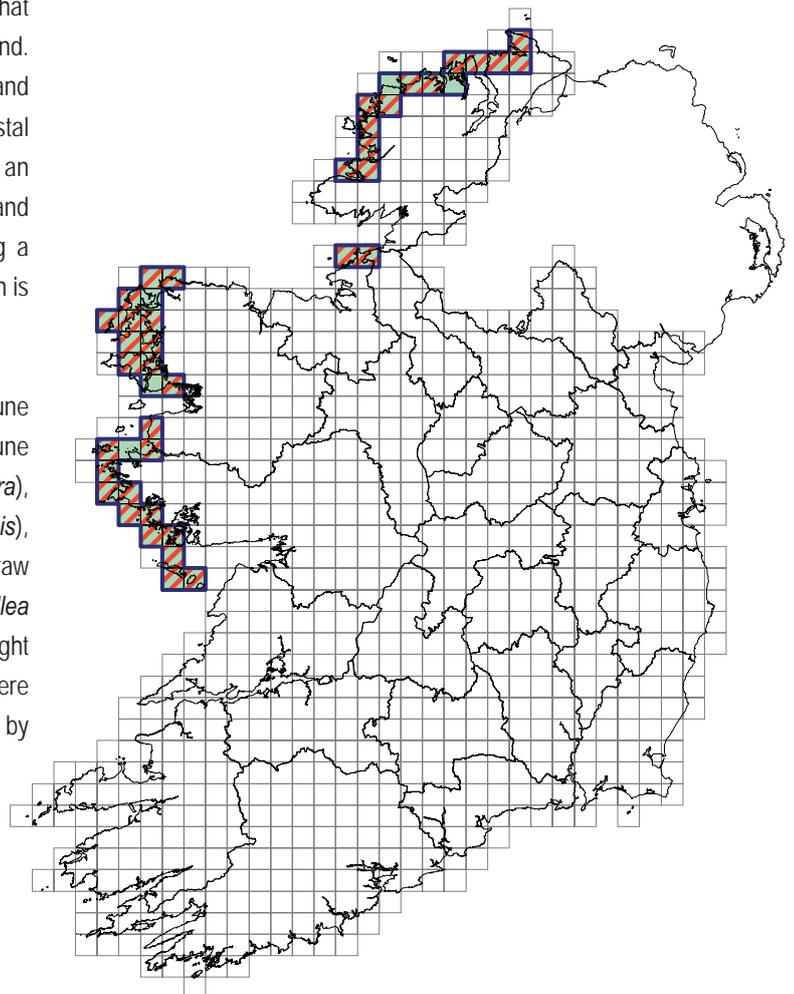
creeping bent (*Agrostis stolonifera*), sand sedge (*Carex arenaria*), glaucous sedge (*Carex flacca*), common sedge (*Carex nigra*), marsh pennywort (*Hydrocotyle vulgaris*), water mint (*Mentha aquatica*), silverweed (*Potentilla anserina*) and lesser spearwort (*Ranunculus flammula*), all of which are also found in dune slack vegetation.

The main impact and threat to this habitat is restructuring of agricultural holdings, with open commonage areas being divided and fenced. Other threats include agricultural activities such as overgrazing and improvement; recreational activities including associated vehicular traffic and trampling; housing; erosion; coastal protection works, sand and water extraction. In view of a number of recorded losses and the on-going impacts of agriculture and recreation on this intensively used habitat, the overall conservation status of machair is considered to be bad.

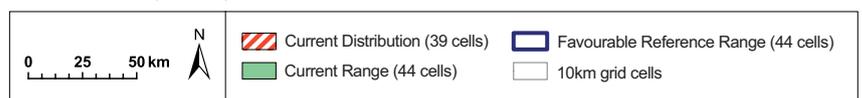
Photograph: NPWS

Machair is a highly specialised and complex sand dune habitat that is globally restricted to the northwest coasts of Ireland and Scotland. In Ireland, it is confined to an area between Galway Bay and Donegal. Machair is comprised of a more or less flat sandy coastal plain resulting partially from grazing and/or cultivation, in an oceanic location with a cool, moist climate. The windblown sand has a significant percentage of shell-derived material, forming a lime-rich soil, with pH values normally greater than 7. Vegetation is herbaceous, with a low frequency of sand-binding species.

Topographically, the machair plain is quite distinct from other dune habitats, although floristically it is very similar to fixed dune vegetation. Typical species include red fescue (*Festuca rubra*), ribwort plantain (*Plantago lanceolata*), daisy (*Bellis perennis*), common bird's-foot trefoil (*Lotus corniculatus*), lady's bedstraw (*Galium verum*), white clover (*Trifolium repens*), yarrow (*Achillea millefolium*), smooth meadow-grass (*Poa pratensis*) and eyebright (*Euphrasia officinalis* agg.). A wet form of machair is found where the water-table lies close to the surface. It is characterised by



MACHAIR (21A0)



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| MACHAIR (21A0) | |
|----------------------|------------|
| Range | Good |
| Area | Poor |
| Structure & Function | Bad |
| Future prospects | Bad |
| OVERALL | BAD |