



The Status of EU Protected Habitats and Species in Ireland



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**

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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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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)

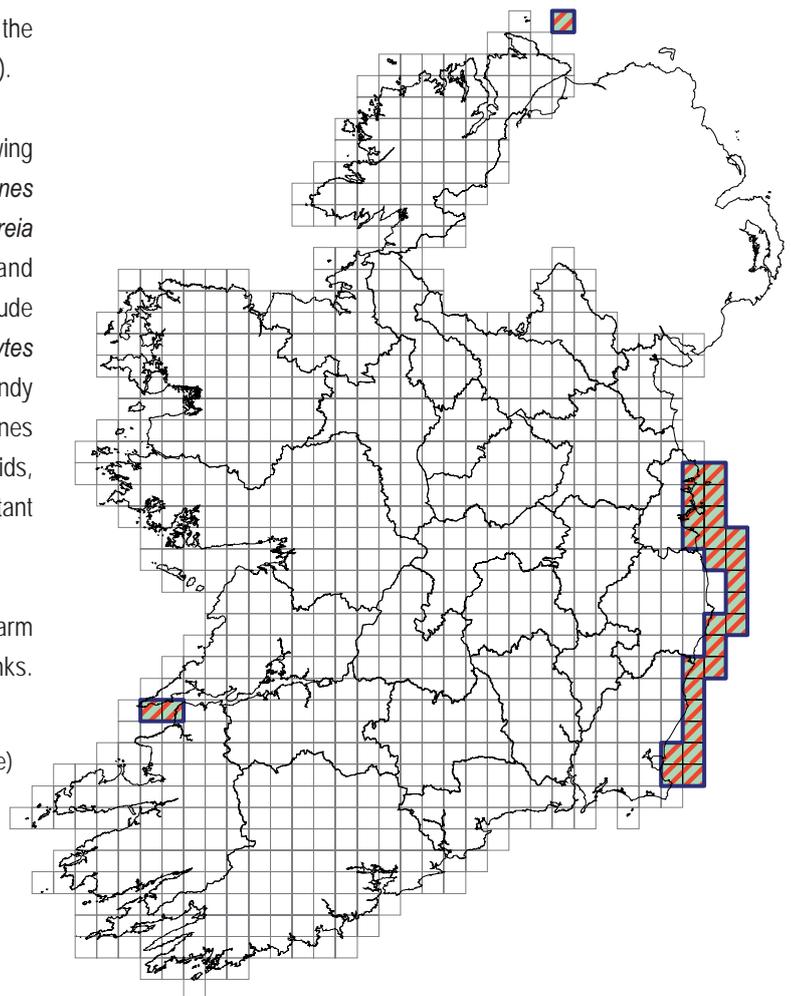


A total of 21 sandbanks have been identified around Ireland. These are mainly found in the Irish Sea with isolated examples in the Shannon Estuary (west coast) and off Lough Foyle (north coast).

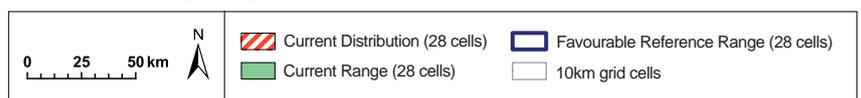
Shallow sandy sediments are typically colonised by a burrowing fauna of worms (*Glycera lapidum*, *Nephtys* spp., *Spiophanes bombyx* etc.), crustaceans (*Pontocrates arenarius*, *Bathyporeia elegans* etc.), clams (*Abra alba*, *Fabulina fibula* etc.) and echinoderms. Life at the surface of the sandbank 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)

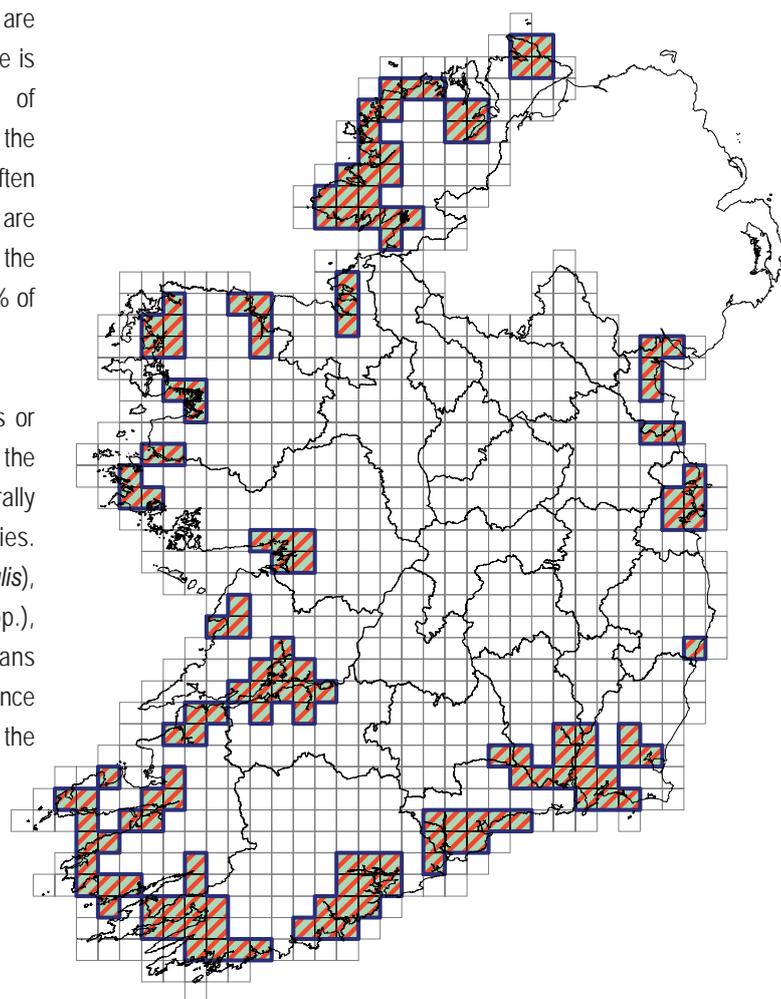


Estuaries have been poorly sampled in the past and there is insufficient data to determine the present structure and function of the habitat across Ireland. While many estuaries are regarded as having favourable future prospects some larger estuaries are considered to face significant pressures. Impacts 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)

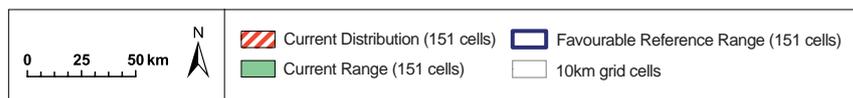
Estuaries are downstream parts of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where, unlike 'large shallow inlets and bays' there is generally a substantial freshwater influence. The mixing of freshwater and sea water and the 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)

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



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TIDAL MUDFLATS AND SANDFLATS (1140)

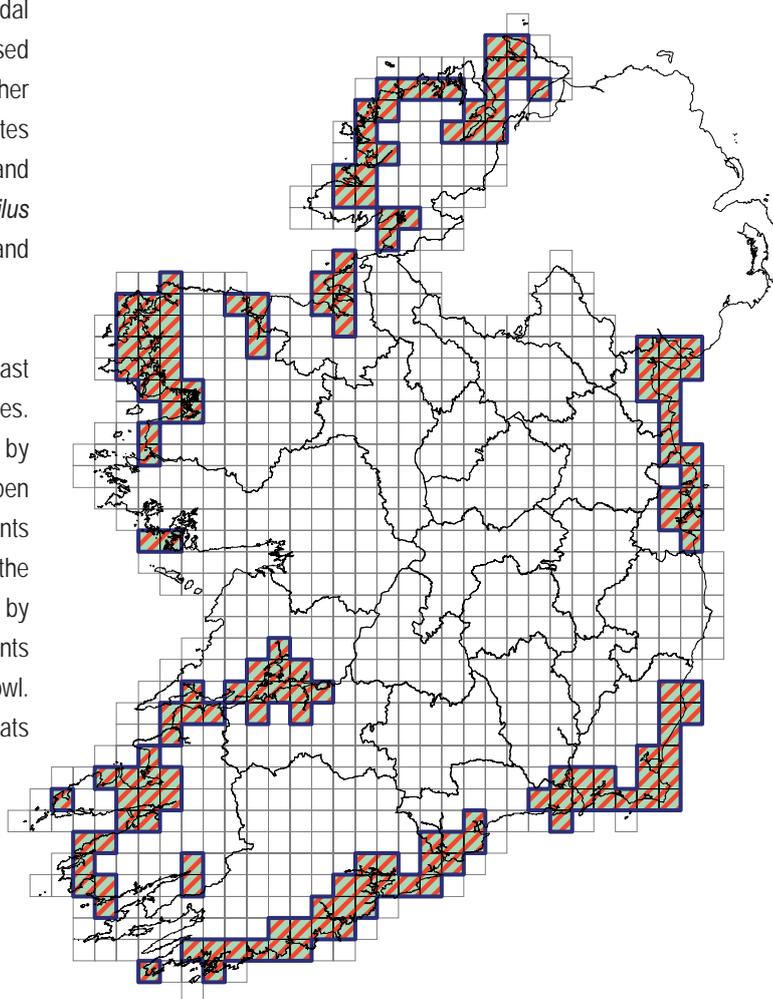


Expert judgement and the available biological information suggests that habitat structure and function is poor. The most serious threats arise from aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species, particularly cord-grass (*Spartina* 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.

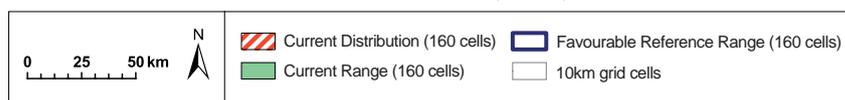
Photograph: Lough Swilly, Co. Donegal (Richard Nairn)

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)

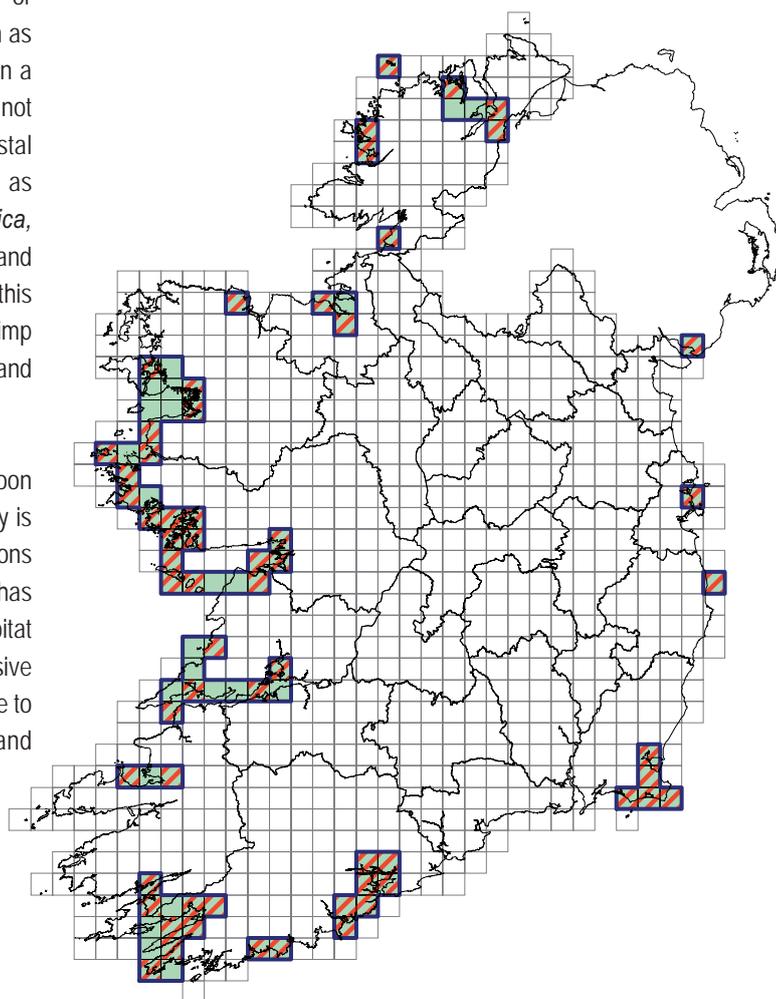


Coastal lagoons are lakes or ponds fully or partially separated from the sea by sandbanks or shingle, or less frequently by rocks. The salt content of the water (salinity) in the lagoon varies depending on rainfall, evaporation and through the addition of seawater from storms, temporary flooding by the 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*.

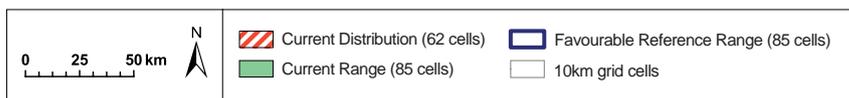
There is no evidence of any significant loss of coastal lagoon habitat range in the last 100 years. The most damaging activity is the deliberate drainage of the largest lagoon for agricultural reasons and a smaller lagoon for safety reasons. Further loss of habitat has occurred as a result of natural 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)



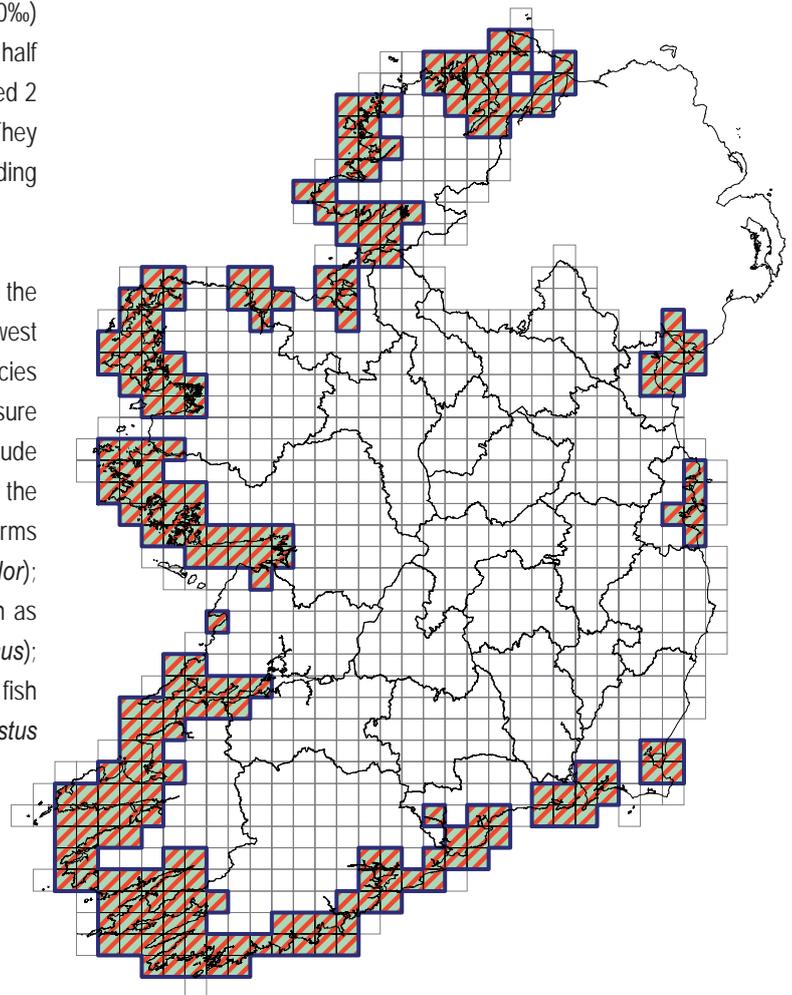
minutus); calcareous algae (*Phymatolithum calcareum*, *Lithothamnion corallioides*), and flowering plants such as eelgrass (*Zostera* spp.).

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.

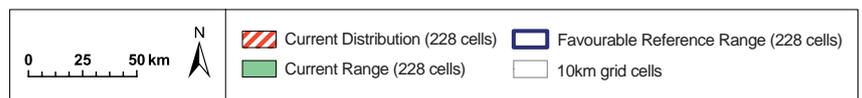
Photograph: Dublin Bay (Richard Nairn)

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)



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

REEFS (1170)

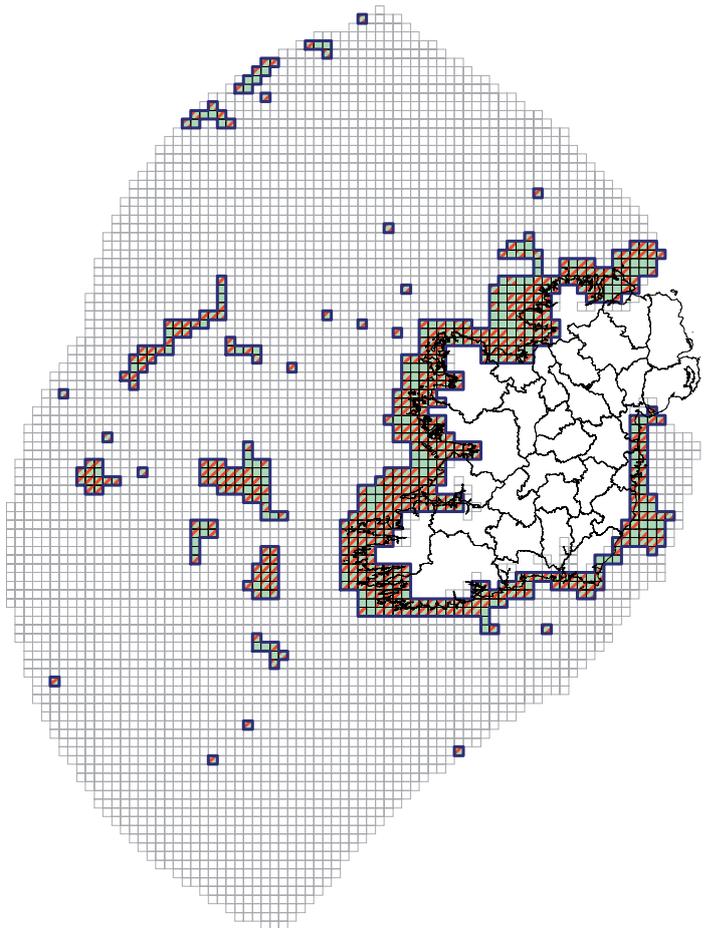


Reefs may be made of rock or constructed by animals (such reefs are called biogenic reefs). In Ireland rocky reefs are found both intertidally and subtidally, from sheltered waters through areas moderately exposed to swell and wave action, to waters exposed to the full forces of Atlantic waves. The structure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

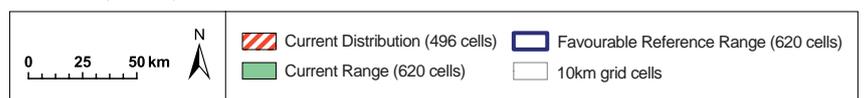
The shallowest biogenic reefs are intertidal, including honeycomb reefs made by polychaete worms and reefs made by mussel (*Mytilus edulis*). Underwater biogenic reefs in Ireland include a small number of serpulid reefs which are made by the polychaete worm *Serpula vermicularis* and sabellaria reefs, 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)



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

ANNUAL VEGETATION OF DRIFT LINES (1210)



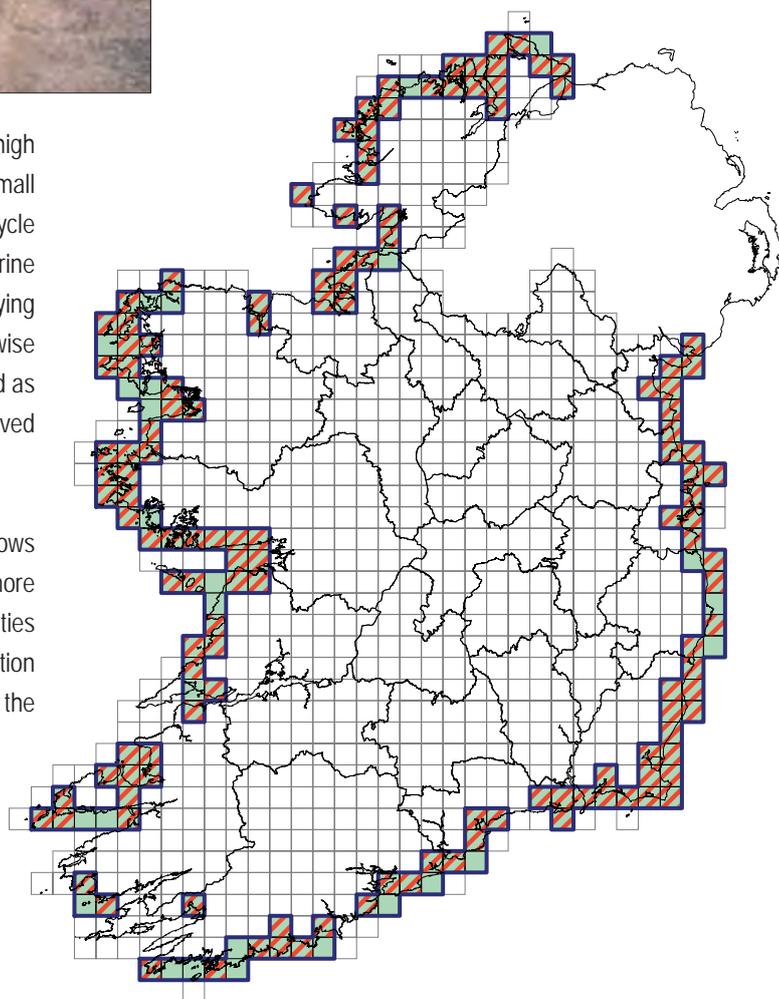
The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache (*Atriplex prostrata*), frosted orache (*Atriplex laciniata*), sea rocket (*Cakile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

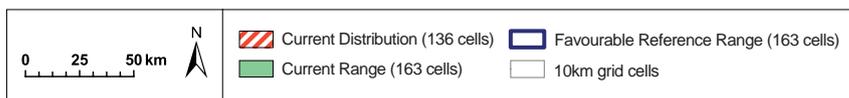
Baltray, Co. Louth (Karen Gaynor)

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)



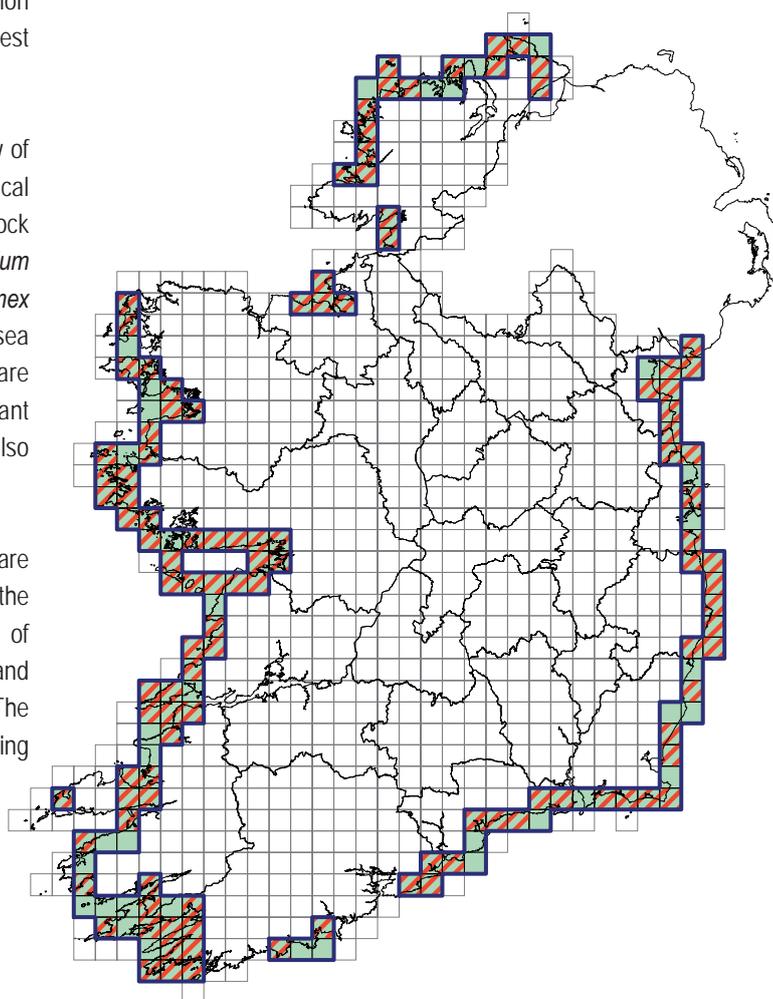
Perennial vegetation of stony banks is vegetation that is found above the high tide mark on beaches comprised of shingle (cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The habitat shows a widespread distribution along the Irish coastline 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-poppo (*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.

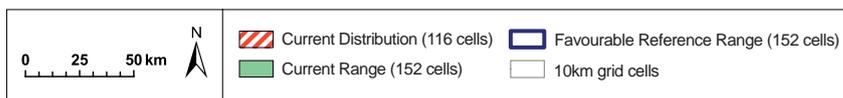
Shingle beaches are constantly changing and shingle features are rarely stable in the long term. The main impact on the habitat is the disruption of the sediment supply, owing to the interruption of coastal processes, caused by developments such as car parks and coastal defence structures such as rock 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)

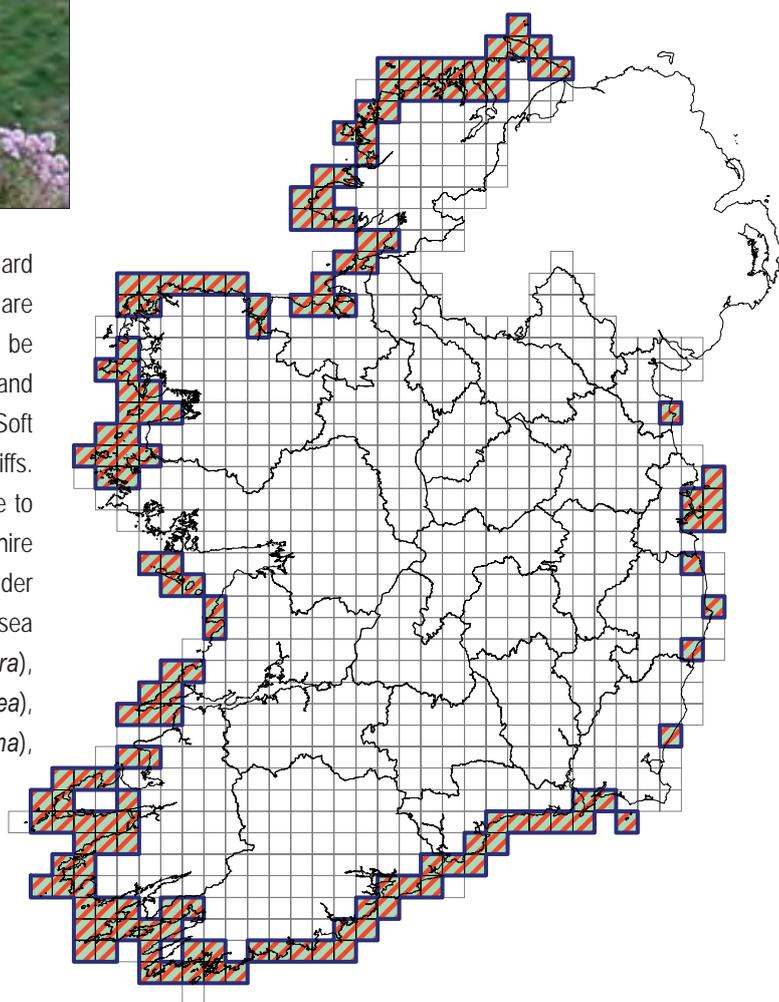


ling (*Calluna vulgaris*), and juniper (*Juniperus communis*). Coastal cliffs provide important resting, roosting and nesting areas for seabirds. The faeces produced by the birds are rich in phosphorous and nitrogen, which can influence the composition of the vegetation present. Vegetated sea cliffs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

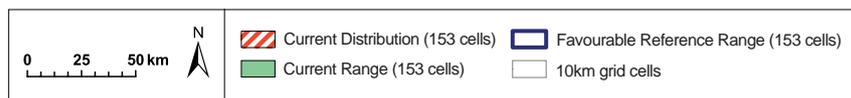
Pressures and threats on this habitat include erosion, grazing, recreational pressures, development of golf courses and housing, dumping and cutting of peat. In some cases, coastal protection works interfere with the natural functioning of sea cliffs, particularly those of the soft variety, which are 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)

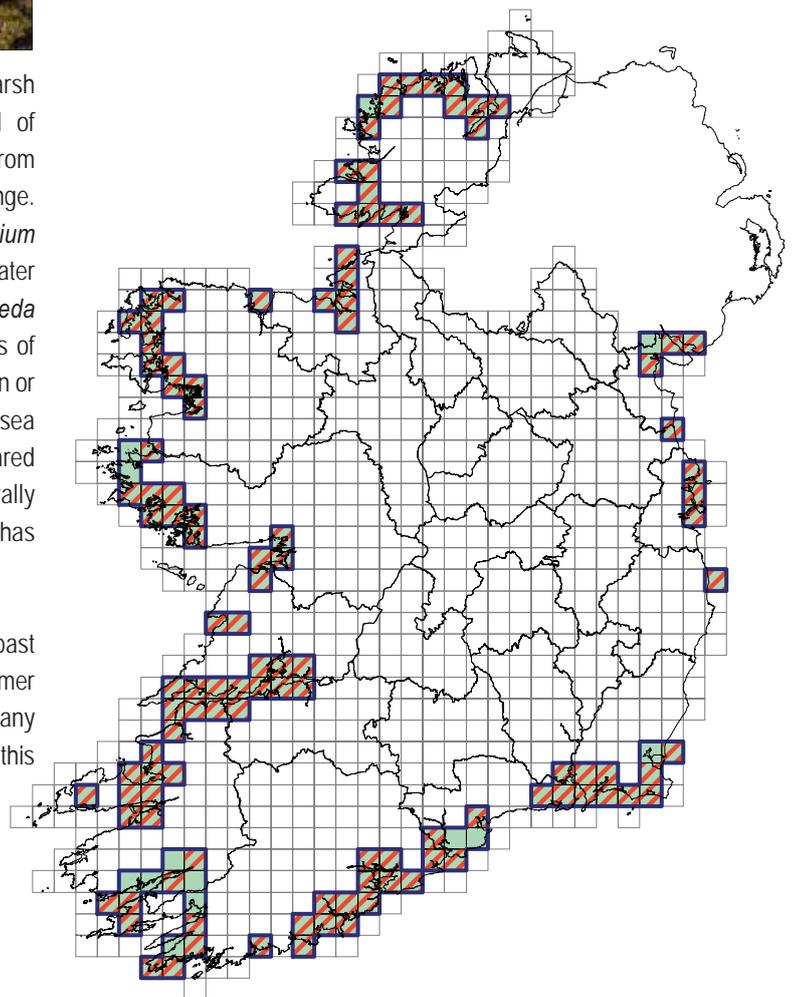


Swards of glasswort (*Salicornia* spp.) are pioneer saltmarsh communities and may occur on muddy sediment seaward of established saltmarsh. They may also form patches isolated from other saltmarsh on mudflats within a suitable elevation range. Typical species include lax-flowered sea-lavender (*Limonium 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.

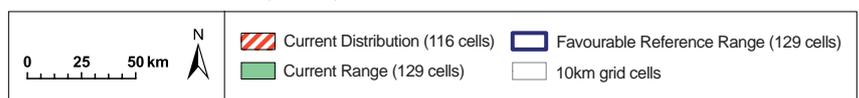
The area of *Salicornia* flats may have contracted slightly in the past due to the infilling, reclamation and embankment of some former saltmarsh and intertidal areas for agricultural purposes at many sites around the country. Very few impacts or activities affect this

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

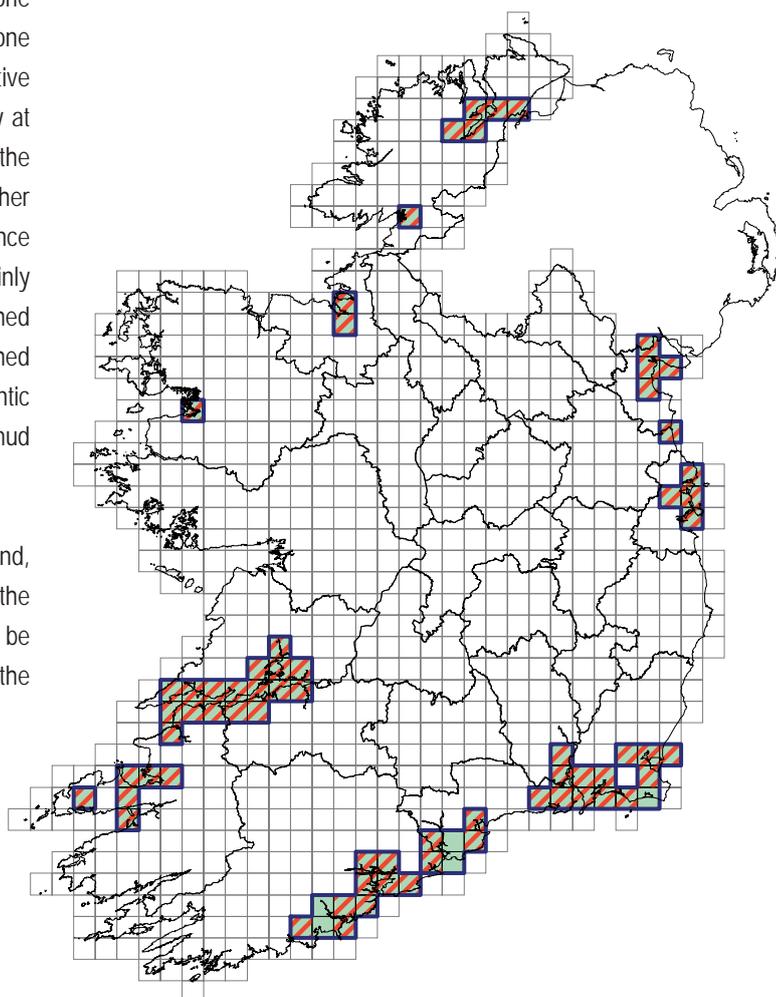
SPARTINA SWARDS (1320)



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).

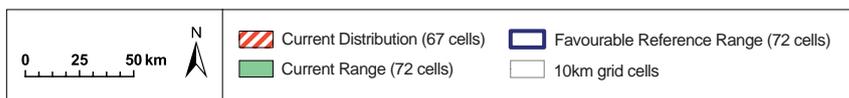
As *Spartina* is considered to be an invasive alien species in Ireland, it is assessed in a different way to other habitats. Increases in the area and extent of *Spartina* swards are actually considered to be unfavourable and as future expansion is considered likely, the overall conservation status of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

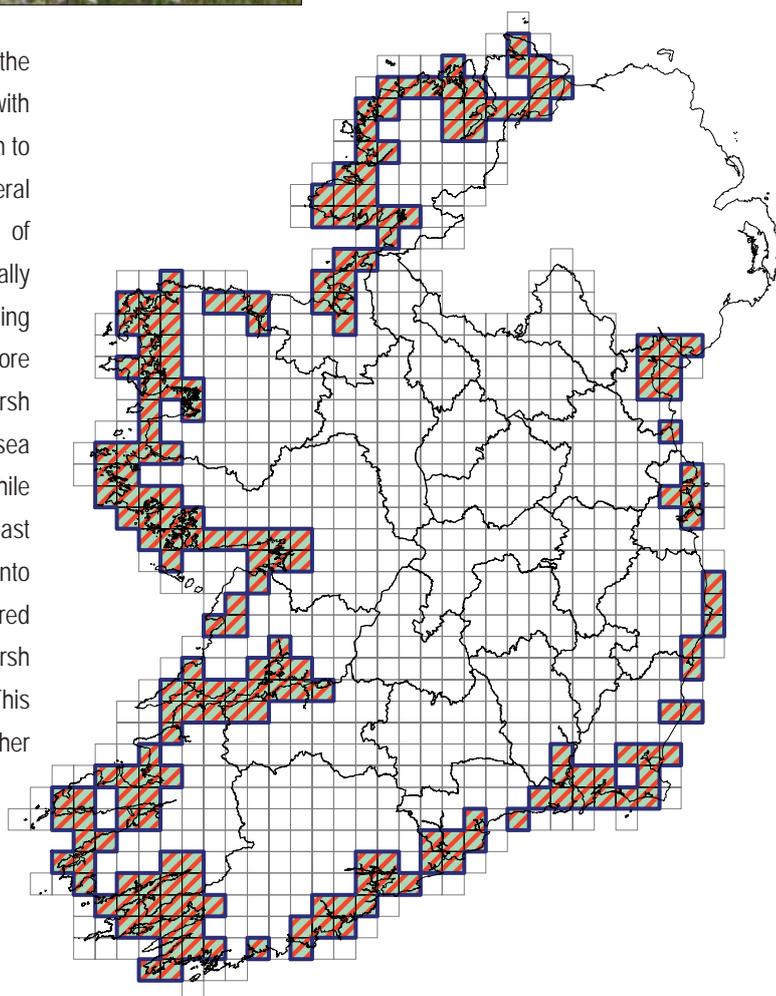


wildlife. Atlantic salt meadows display a wide geographical distribution in Ireland.

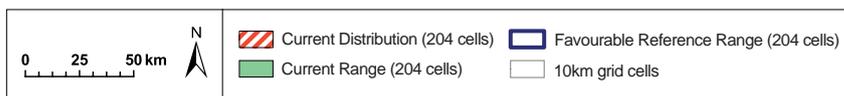
The most common impacts in the current assessment period were over-grazing by sheep or cattle, and erosion. Common cordgrass (*Spartina anglica*) is also present on many Irish saltmarshes and is considered an invasive species. There have been some minor losses of habitat during the current assessment 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

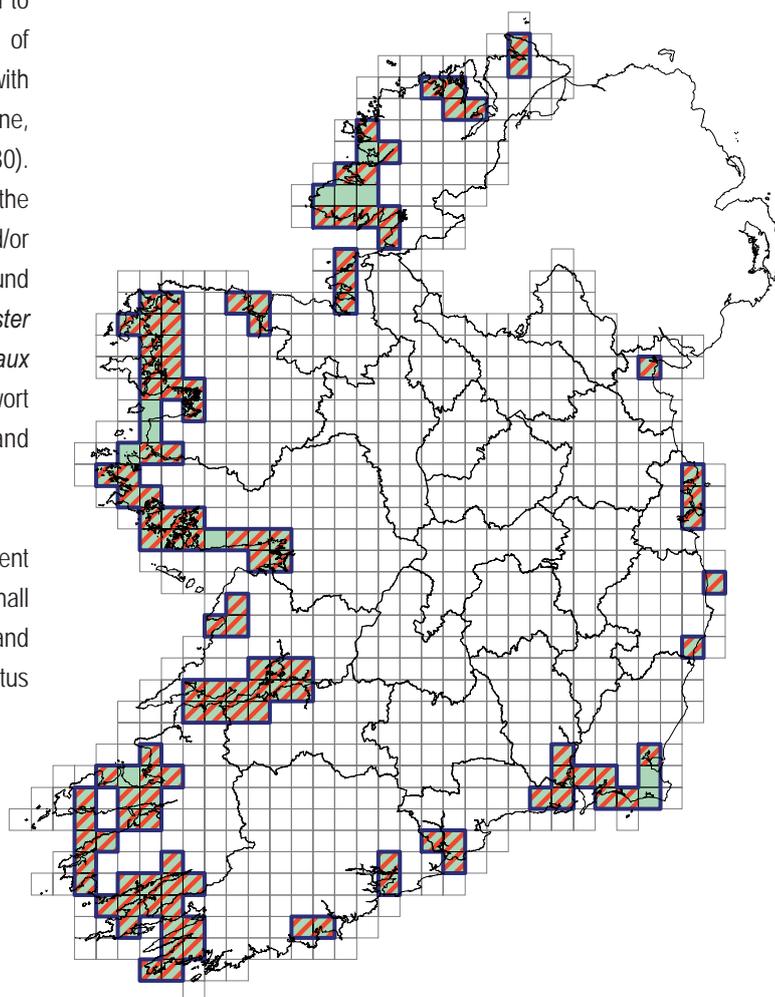
MEDITERRANEAN SALT MEADOWS (1410)



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*).

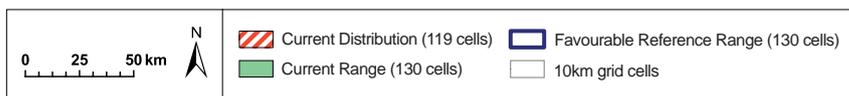
The most common impact recorded during the current assessment period was over-grazing by cattle or sheep. Owing to a small number of recorded losses caused by infilling and reclamation, and the on-going impacts of overgrazing, the overall conservation status for Mediterranean Salt Meadow habitat is poor.

Photograph: Dooaghtry, Co. Mayo (Mark McCorry)



MEDITERRANEAN SALT MEADOWS (1410)

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



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HALOPHILOUS SCRUB (1420)

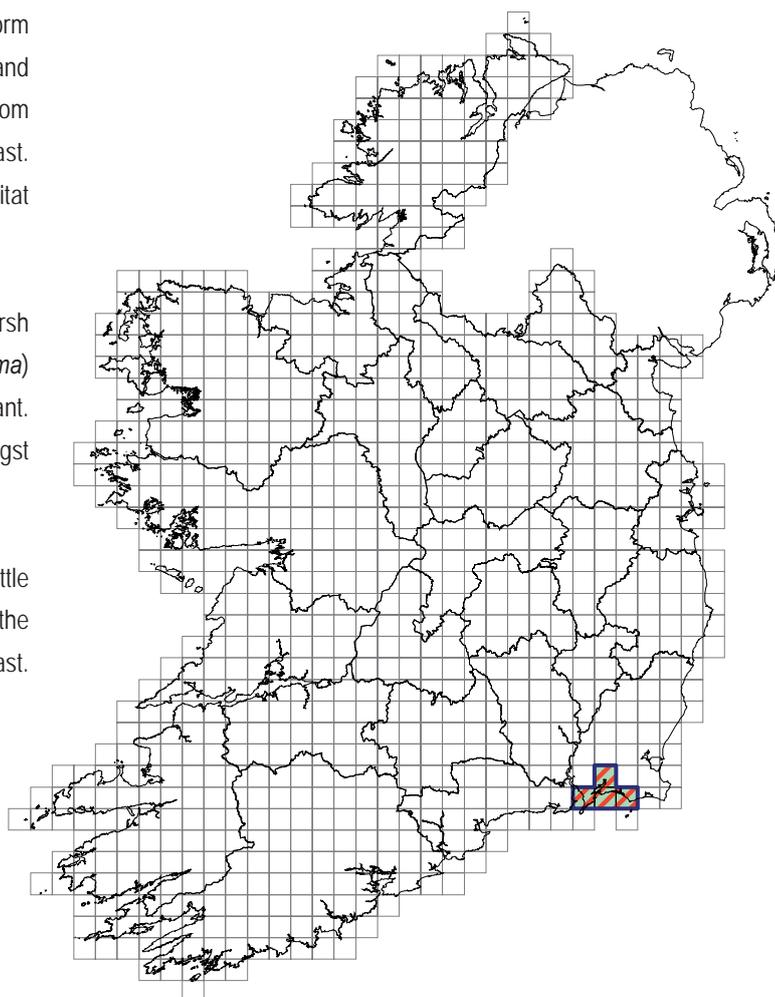


This habitat is characterised by the presence of a single species, perennial glasswort (*Sarcocornia perennis*, previously known as *Arthrocnemum perenne*) on saltmarsh. This fleshy, slightly woody perennial can grow up to 30cm tall and often extends to form tussocks up to 1m in diameter. This species 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.

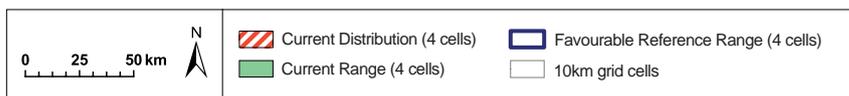
Perennial glasswort is found generally in the mid-lower saltmarsh zone, often with common saltmarsh grass (*Puccinellia maritima*) and lax-flowered sea-lavender (*Limonium humile*) predominant. It also occurs with glasswort species (*Salicornia* spp.) and amongst clumps of common cord-grass (*Spartina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

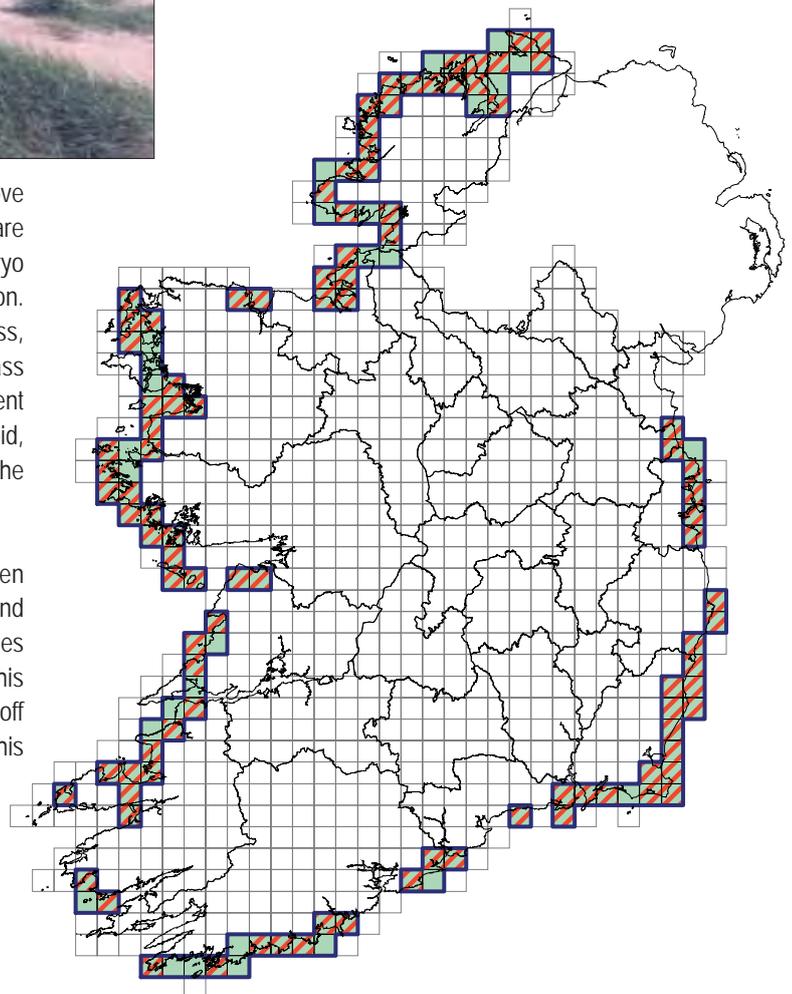


habitat. In view of a number of recent recorded losses of habitat area and the on-going pressures of recreation and coastal stabilisation, the overall conservation status of this habitat is considered to be poor.

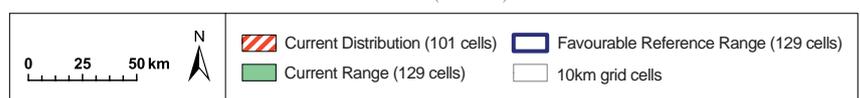
Photograph: Inch Strand, Co. Kerry (Karen Gaynor)

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

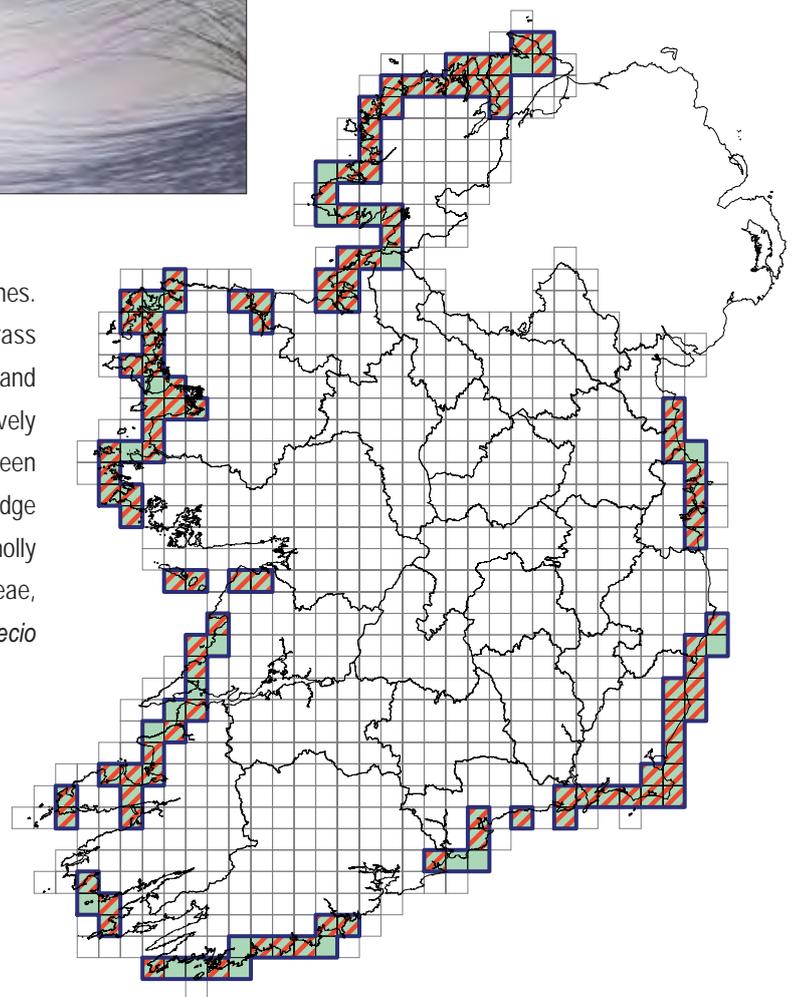
MARRAM DUNES (WHITE DUNES) (2120)



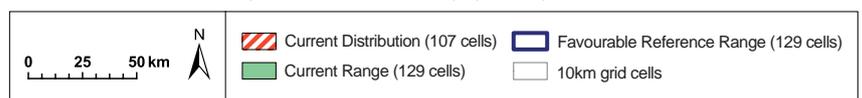
Threats to this habitat include natural and man-made pressures. A regular supply of blown sand is essential to maintain the natural mobility of marram dunes and this can be depleted by removal of beach materials, construction of coastal protection works or by sand compaction caused by motorised vehicles 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 <i>Ammophila arenaria</i> (white dunes) (2120)	
Range	Good
Area	Bad
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

FIXED DUNES (GREY DUNES) 2130

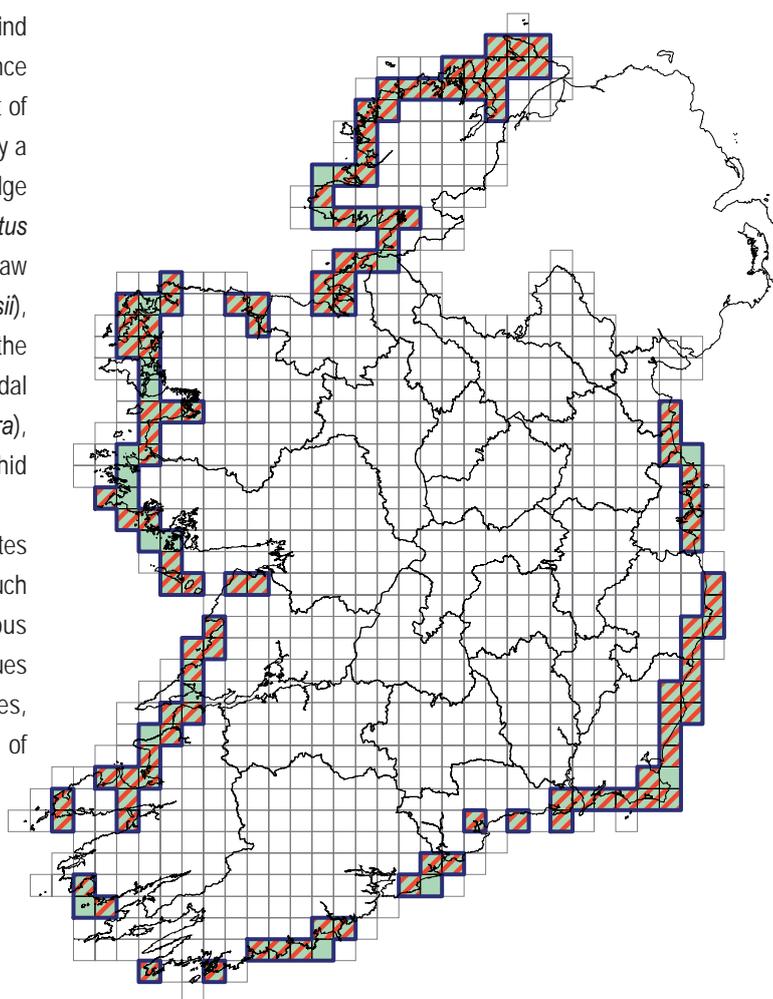


recreation. Pedestrian traffic and vehicle use can lead to the destruction of the vegetation cover, eventually leading to the exposure of bare sand, which becomes mobile. Perhaps the greatest impacts on fixed dunes today are overgrazing and undergrazing: overgrazing can lead to a reduction in species 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

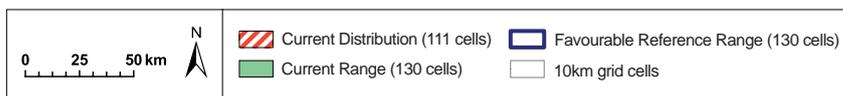
Fixed dunes refers to the more stabilised area of dune systems, located in the shelter of the mobile marram dunes, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or 'fixed' carpet 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



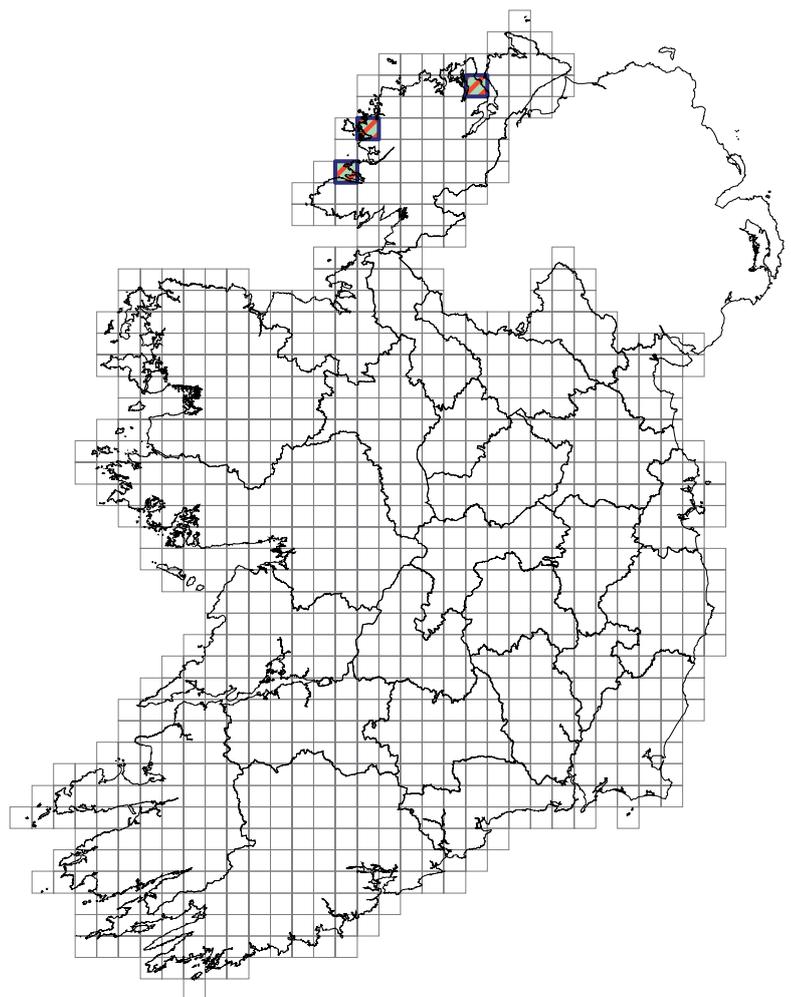
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DECALCIFIED EMPETRUM DUNES (2140)

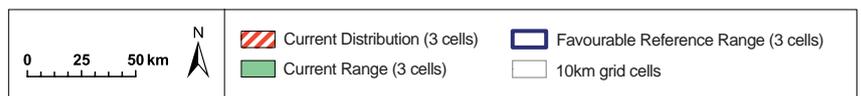
Decalcified *Empetrum* dune habitat is generally found on the landward edge of dune systems where the surface layers of sand have been leached of their calcium content, or where sand has blown up over rock that is siliceous (silica-rich) in nature. It is characterised by the presence of crowberry (*Empetrum 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)

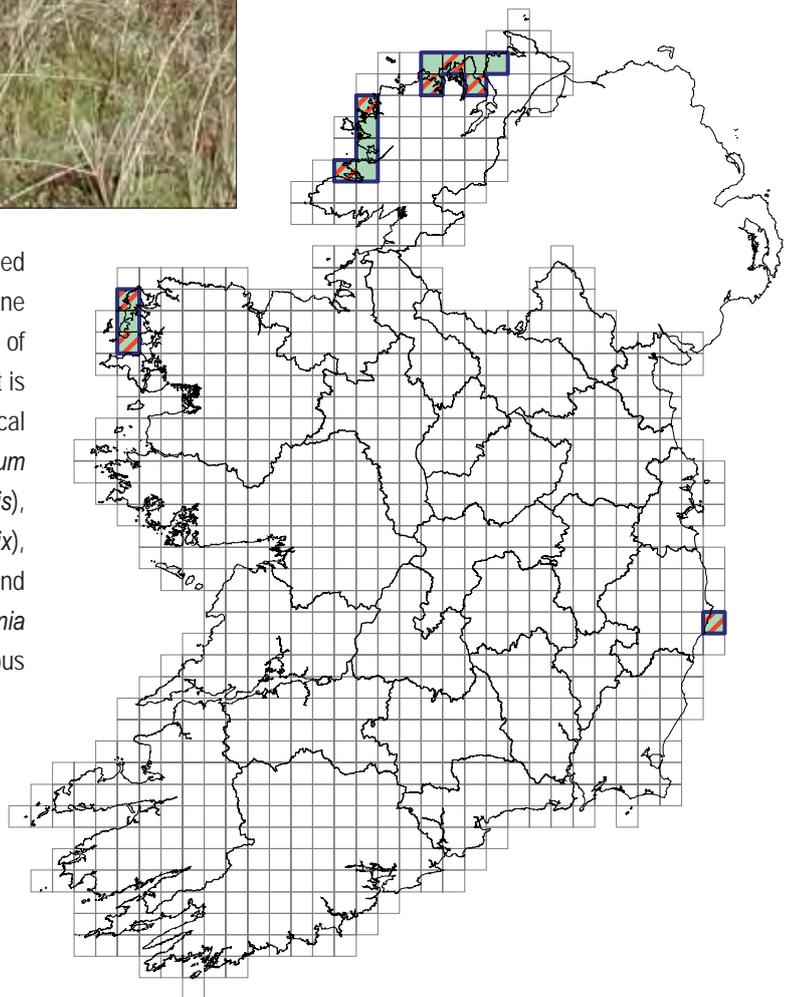


This type of dune heath is not well developed in Ireland and appears to be restricted in range to the coasts of counties Donegal and Mayo, with a couple of sites in Co. Wicklow. It has recently been confirmed from only eight 10km squares. Further research, however, is needed to establish the exact distribution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

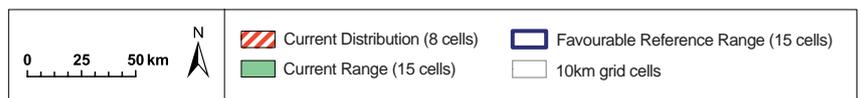
Photograph: Decalcified dune heath (Neil Lockhart)

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 galii*) 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.



DECALCIFIED DUNE HEATH (2150)

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



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DUNES WITH CREEPING WILLOW (2170)

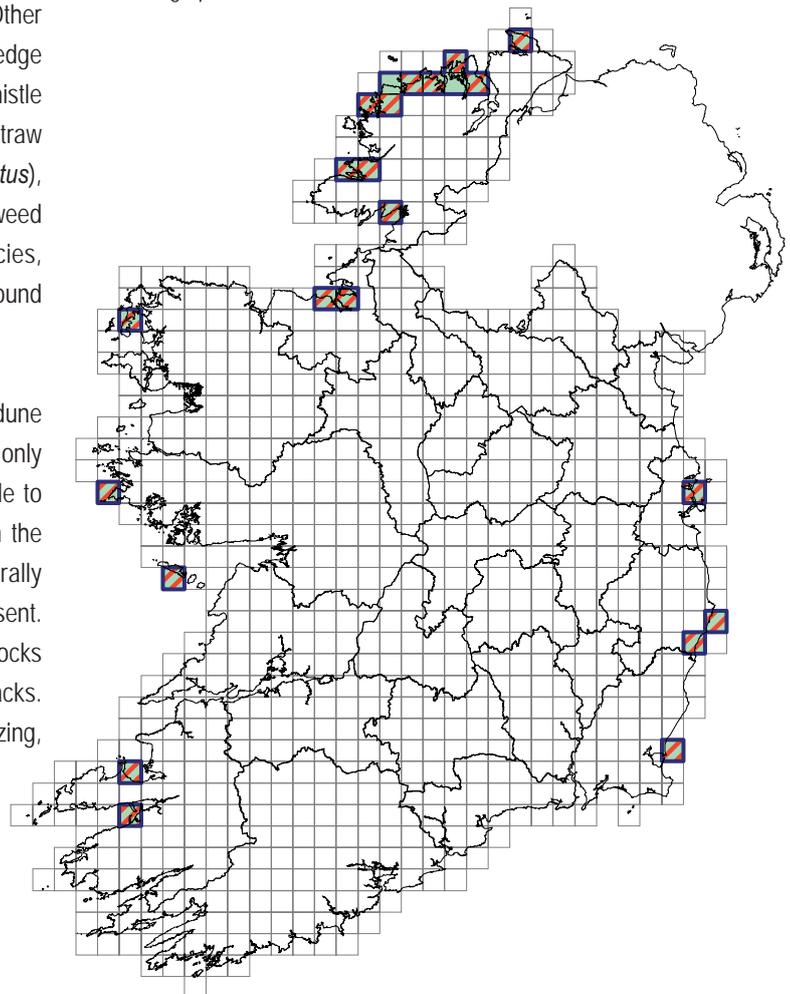


Dunes with creeping willow are found in close association with dune slacks, the wet hollows in dune systems where groundwater reaches the surface. These dunes are dominated by the shrub creeping willow (*Salix repens*), which forms a dense ground cover. Other typical species include Yorkshire-fog (*Holcus 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.

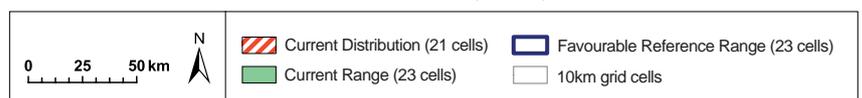
There is considerable overlap between this habitat and humid dune slacks. 'Dunes with creeping willow', however, is generally only applied to areas in slacks that are raised above the water-table to such a level that it no longer exerts a controlling influence on the vegetation. As a result, the moisture-loving 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)

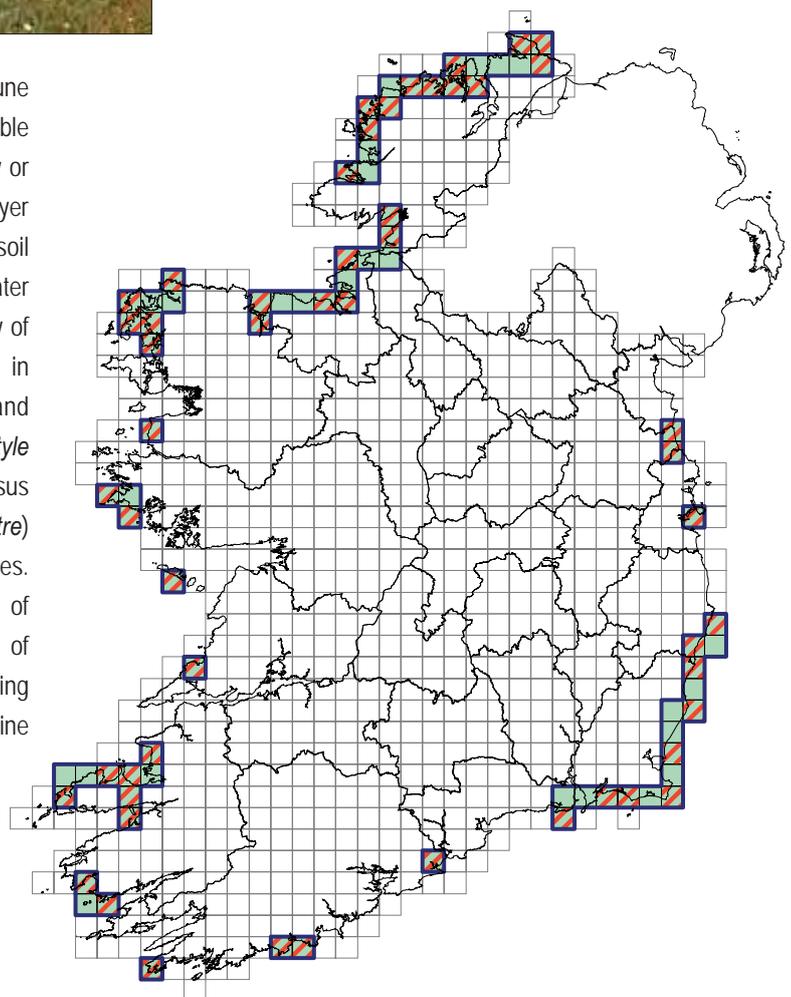


influence. As the shrub creeping willow (*Salix repens*) is found in dune slacks, there is considerable overlap between this habitat and the dunes with creeping willow (2170) habitat.

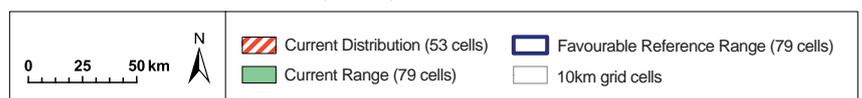
This habitat is under serious threat from a range of impacts including overgrazing, undergrazing, over-stabilisation of dunes, water abstraction and drainage, golf course developments, forestry and coastal protection works. Although the total area of the habitat is considered stable, the range of ecological 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)



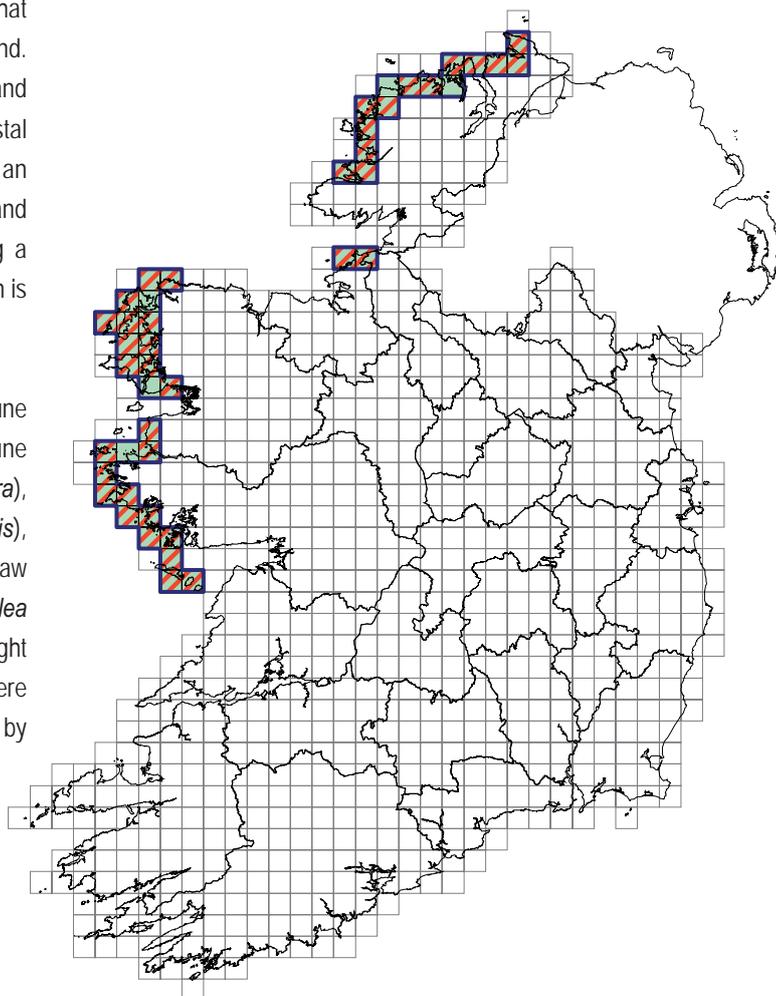
creeping bent (*Agrostis stolonifera*), sand sedge (*Carex arenaria*), glaucous sedge (*Carex flacca*), common sedge (*Carex nigra*), marsh pennywort (*Hydrocotyle vulgaris*), water mint (*Mentha aquatica*), silverweed (*Potentilla anserina*) and lesser spearwort (*Ranunculus flammula*), all of which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

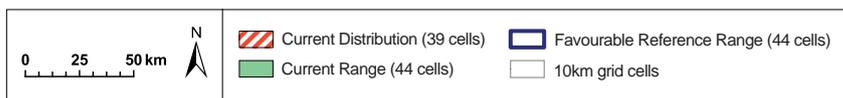
Photograph: NPWS

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

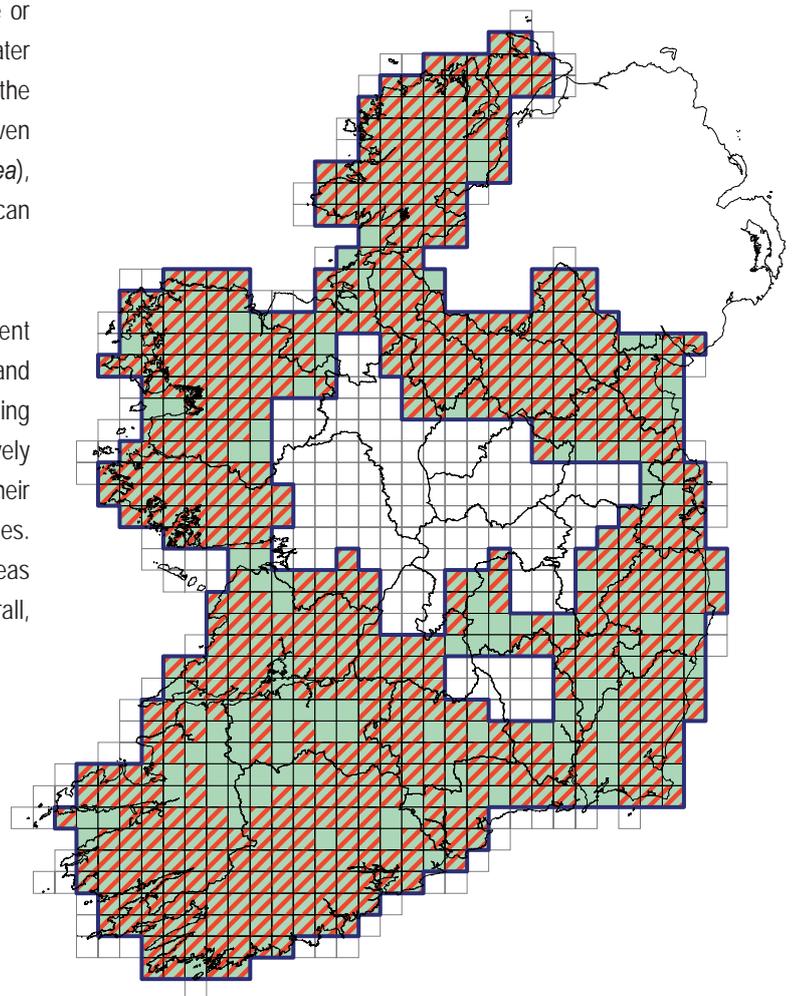
(LOWLAND) OLIGOTROPHIC LAKES (3110)



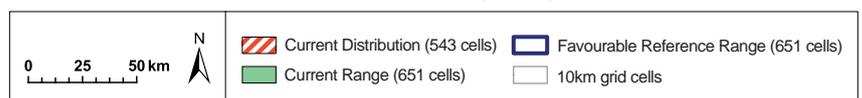
Lowland oligotrophic lakes are shallow lakes with low levels of nutrients, minerals or calcium. The vegetation consists of one or more zones, dominated by shoreweed (*Littorella* spp.) and water lobelia (*Lobelia dortmanna*), with quillwort (*Isoetes* spp.) in the deeper waters. However, all zones might not be found at a given site. Rare species such as bog hair-grass (*Deschampsia setacea*), awlwort (*Subularia aquatica*), and pillwort (*Pilularia globulifera*) can occur in this lake type.

The principal threats to oligotrophic lakes include nutrient enrichment from agricultural practices, including overgrazing and excessive fertilisation, afforestation and waste water from housing developments in rural areas. Lakes may also be negatively affected by the introduction of invasive alien species, and their utilization for an increasing number of sport and leisure activities. While the range and area of this habitat are stable, significant areas are suffering from, or are at risk from nutrient enrichment. Overall, the conservation status of this habitat is considered to be bad.

Photograph: Kiltorish Lake, Co. Donegal (Richard Nairn)



LOWLAND OLIGOTROPHIC LAKES (3110)



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OLIGOTROPHIC WATERS
containing very few minerals of sandy plains (*Littorelletalia uniflorae*) (3110)

Range **Good**

Area **Good**

Structure & Function **Bad**

Future prospects **Bad**

OVERALL **Bad**

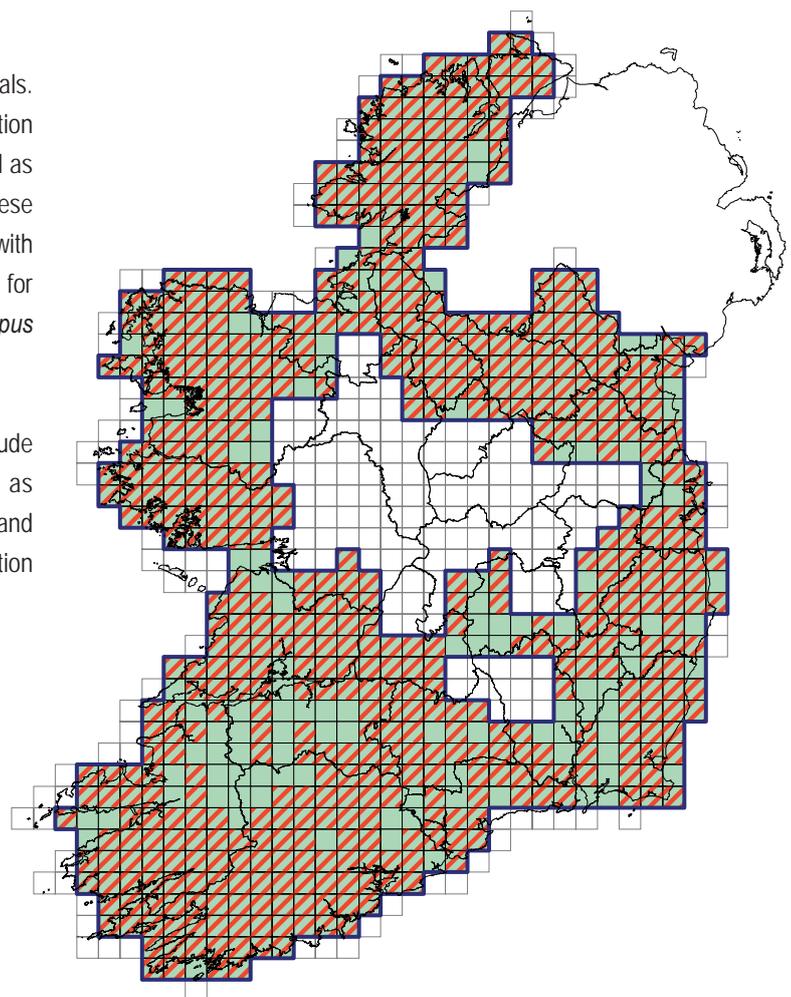
(UPLAND) OLIGOTROPHIC LAKES (3130)



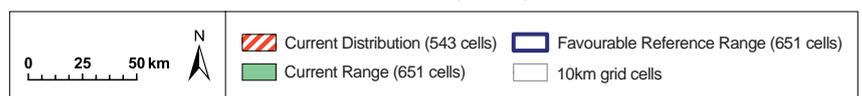
Upland oligotrophic lakes have low levels of nutrients and minerals. They contain aquatic to amphibious short perennial vegetation similar to that found in lowland oligotrophic lakes (3110), as well as annual vegetation which grows during periodic drying of these standing waters. The plants that are typically associated with oligotrophic to mesotrophic lakes, in addition to those listed for lowland oligotrophic lakes (3110), include bristle club-rush (*Isolepis setacea*) and toad rush (*Juncus bufonius*).

The principal threats to oligotrophic to mesotrophic lakes include eutrophication arising from agricultural practices such as overgrazing and excessive fertilisation, as well as afforestation and the introduction of invasive alien species. Overall the conservation status of this habitat is considered to be bad.

Photograph: Catriona Douglas



UPLAND OLIGOTROPHIC LAKES (3130)



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OLIGOTROPHIC to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and or *Isoeto - Nanojuncetæ* (3130)

Range	Good
Area	Good
Structure & Function	Bad
Future prospects	Bad
OVERALL	Bad

HARD WATER LAKES (3140)



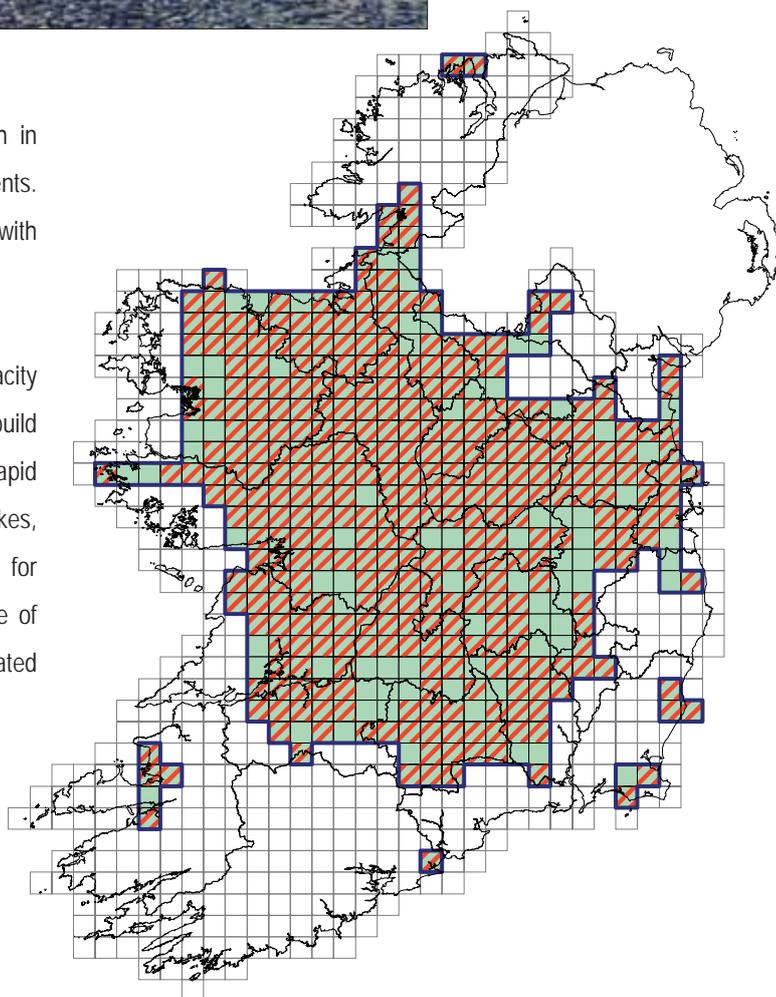
with increasing phosphorus concentrations recorded in the sediment. There is a continued threat from nutrient enrichment in these lowland lakes arising from intensification of agriculture and urban developments.

Overall the status of this habitat is considered to be bad.

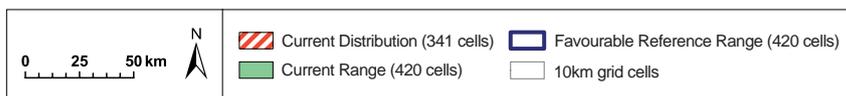
Photograph: Lough Rea, Co. Galway (Richard Nairn)

Hard water lakes are lakes and pools with waters fairly rich in dissolved bases such as calcium and with low to moderate nutrients. The bottom of these unpolluted water bodies are covered with carpets of algae such as the stoneworts *Chara* spp.

Hard water lakes are often shallow and have a natural high capacity to buffer the effects of enrichment from phosphorus. However, build up of phosphorus in the sediment of these lakes can lead to rapid shifts in ecosystem quality. Rapid loss in quality of hard water lakes, associated with nutrient enrichment, has been documented for Lough Sheelin and Lough Ennell, and there is good evidence of declines in ecological quality of the Lough Carra SAC, associated



HARD WATER LAKES (3140)



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HARD OLIGO-MESOTROPHIC WATERS with benthic vegetation of <i>Chara</i> spp. (3140)	
Range	Good
Area	Good
Structure & Function	Bad
Future prospects	Bad
OVERALL	Bad

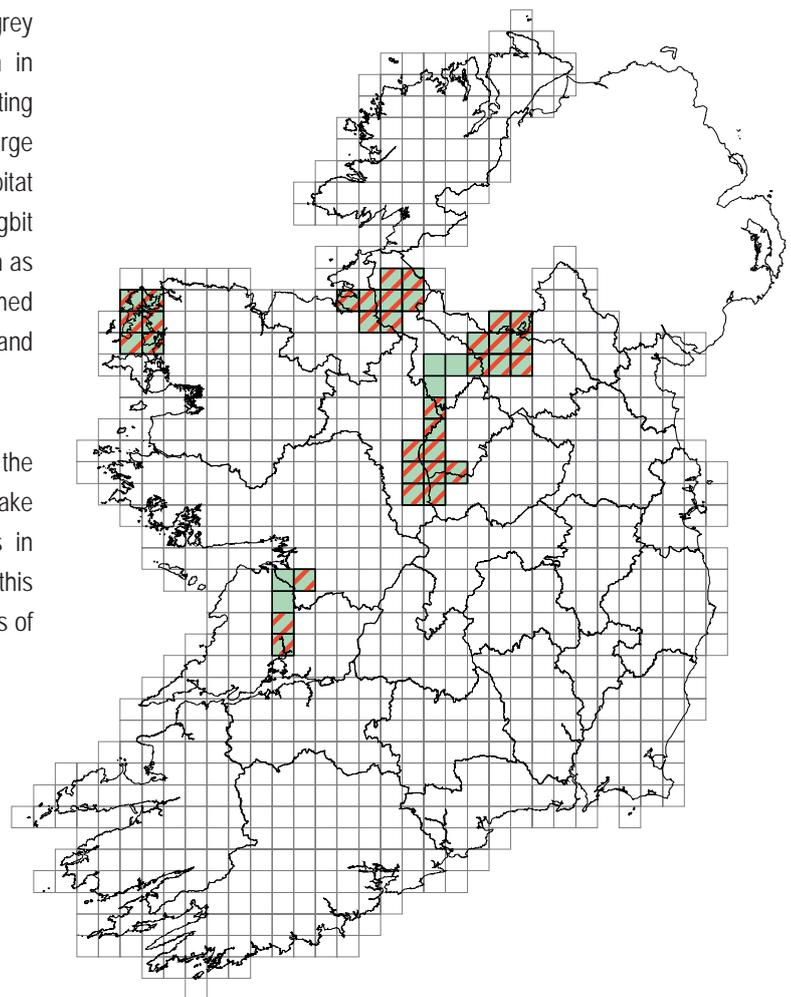
NATURAL EUTROPHIC LAKES (3150)



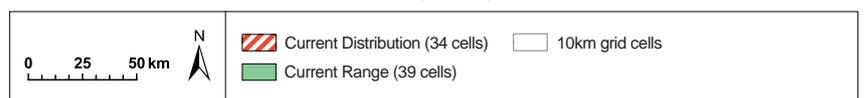
Natural eutrophic lakes are lakes and ponds with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in dissolved bases (pH usually greater than 7). They have free-floating surface communities or, in deep, open waters, associations of large pondweeds. The typical plant species associated with this habitat include duckweeds (*Lemna* and *Spirodela* spp.) and frogbit (*Hydrocharis morsus-ranae*), with large-leaved pondweeds such as shining pondweed (*Potamogeton lucens*), white-stemmed pondweed (*P. praelongus*), various-leaved pondweed (*P. zizii*), and perfoliate pondweed (*P. perfoliatus*).

The identification of this habitat type in Ireland was based on the presence of the plants listed above rather than on whether the lake was naturally eutrophic. This gave rise to some problems in identifying the natural range of this lake type. The main threat to this lake type is nutrient enrichment. The overall conservation status of this habitat is assessed as bad.

Photograph: Richard Nairn



NATURAL EUTROPHIC LAKES (3150)



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NATURAL EUTROPHIC LAKES with <i>Magnopotamion</i> or <i>Hydrocharition</i> – type vegetation (3150)	
Range	Unknown
Area	Unknown
Structure & Function	Unknown
Future prospects	Bad
OVERALL	Bad

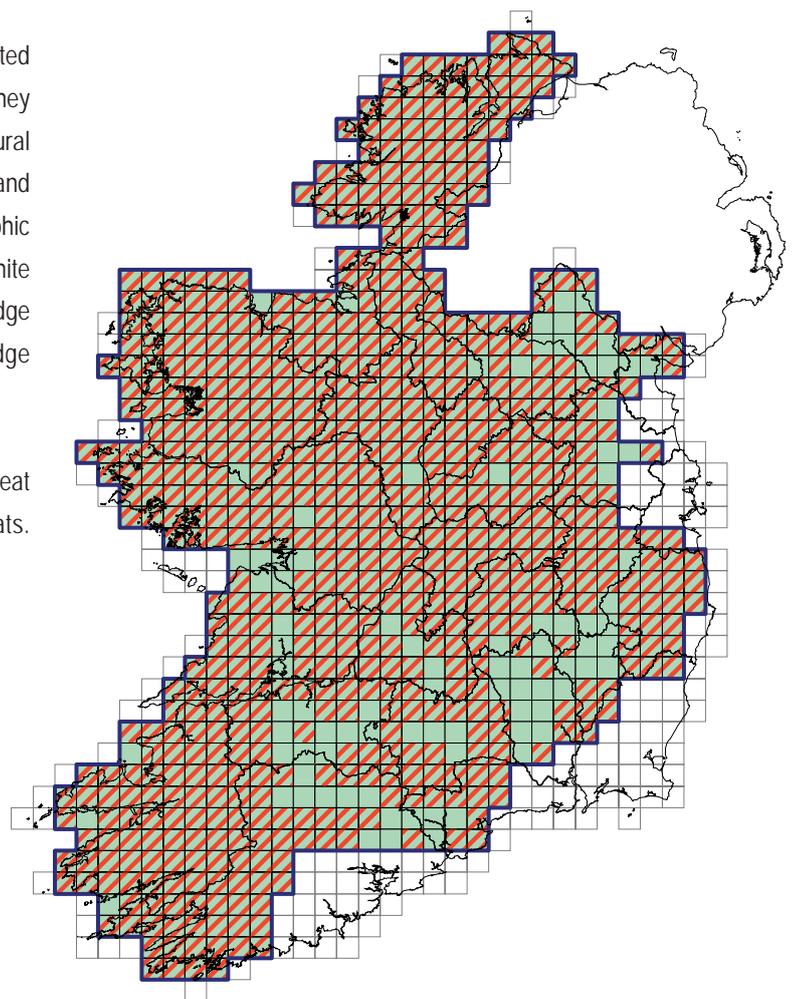
DYSTROPHIC LAKES (3160)



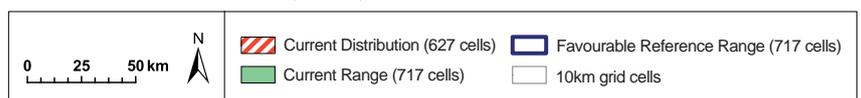
Dystrophic lakes are natural lakes and ponds with brown tinted water due to the presence of peat and humic acids. They generally occur on peaty soils in bogs or in heaths with natural evolution toward bogs. The pH is often low, usually between 3 and 6. The plants that are typically associated with natural dystrophic lakes and ponds include bladderwort (*Utricularia* spp.), white beak-sedge (*Rhynchospora alba*), more rarely brown beak-sedge (*R. fusca*), yellow water lily (*Nuphar lutea*), bottle sedge (*C. rostrata*) and *Sphagnum* species.

The principal threats to natural dystrophic lakes and ponds are peat cutting, overgrazing and afforestation of peatland habitats. Overall the status of this habitat is considered to be bad.

Photograph: Bog pool in Co. Sligo (Richard Nairn)



DYSTROPHIC LAKES (3160)



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NATURAL DYSTROPHIC LAKES and ponds (3160)	
Range	Good
Area	Unknown
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

TURLOUGHS (3180)

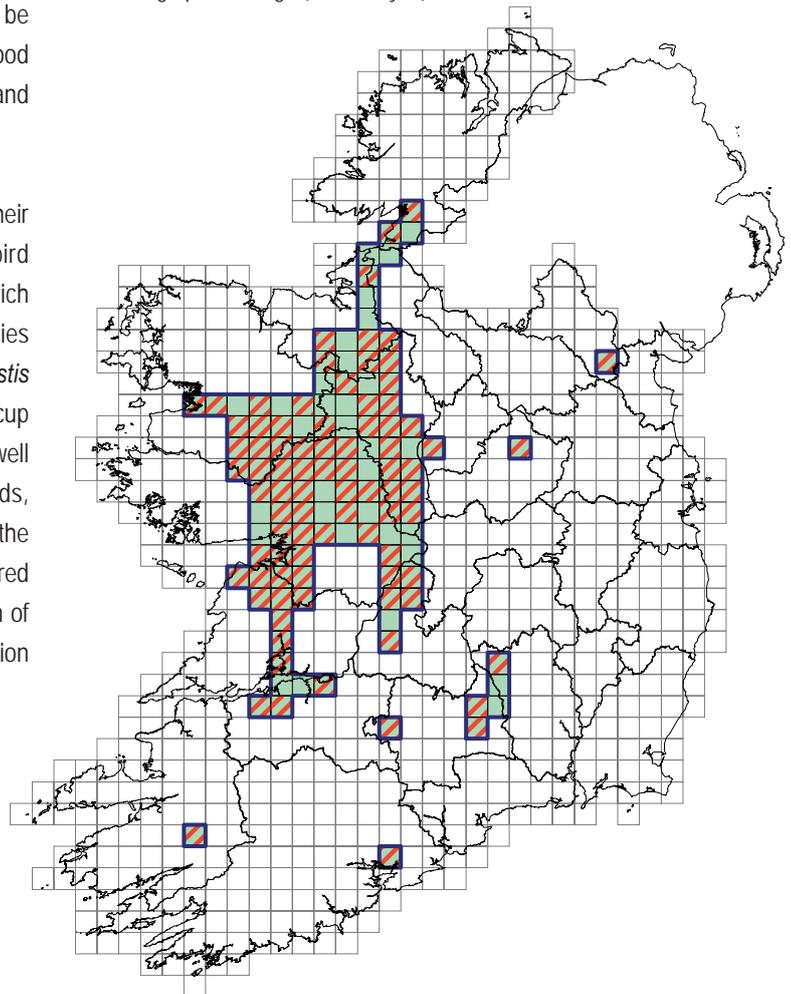


Turloughs are temporary lakes that occupy basins or depressions in limestone areas where water levels fluctuate markedly during the year. They are virtually unique to Ireland and their greatest concentration is in counties Clare, Galway and Roscommon. They generally flood in winter and dry out in summer but there may be other sporadic rises in response to high rainfall. They chiefly flood and drain via connections with groundwater, such as springs and swallow-holes.

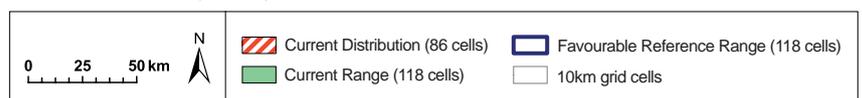
Turloughs are considered to be of high conservation value for their plant, invertebrate (both terrestrial and aquatic) and bird communities. They are grass- or sedge-dominated habitats, which often have areas of fen, marsh or permanent pond. Plant species typically found in turloughs include creeping bent grass (*Agrostis stolonifera*), silverweed (*Potentilla anserina*), creeping buttercup (*Ranunculus repens*) and smooth black sedge (*Carex nigra*) as well as various freshwater invertebrates such as gastropods, cladocerans, insect larvae and amphipods. The presence of the moss *Cinclidotus fontinaloides* on walls and trees is considered typical of turloughs. Many turloughs show a distinctive zonation of herbaceous perennials which relates to the depth and duration of flooding.

Nutrient enrichment and inappropriate grazing regimes are the main threats to turlough habitats in Ireland. Overall the status of this habitat is considered to be poor.

Photograph: Turlough (Deirdre Lynn)



TURLOUGHS (3180)



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TURLOUGHS (3180)	
Range	Good
Area	Good
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

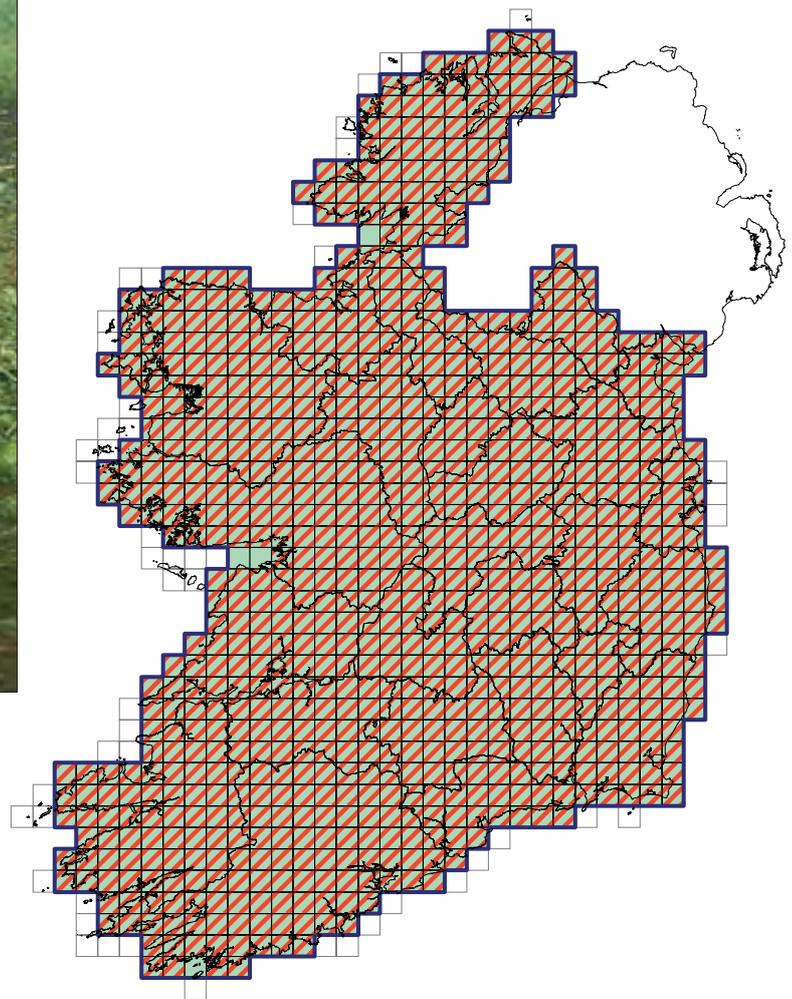
FLOATING RIVER VEGETATION (3260)



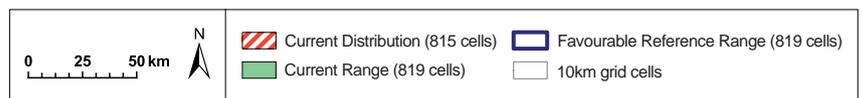
Floating river vegetation occurs in virtually every Irish river and watercourse. Typical plant species include various water-crowfoot species (*Ranunculus* spp.), water-milfoil (*Myriophyllum* spp.), water-starwort (*Callitriche* spp.), horned pondweed (*Zannichellia palustris*), pondweeds (*Potamogeton* spp.) and water moss (*Fontinalis antipyretica*).

There is little evidence of a significant decline in the primary pressures of eutrophication, overgrazing, excessive fertilisation, afforestation and the introduction of invasive alien species. Almost two thirds of the rivers assessed by the Environmental Protection Agency (EPA) are at risk of failing to meet their environmental objectives. The conservation status of this habitat is therefore considered to be bad.

Photograph: Floating River Vegetation (Richard Nairn)



FLOATING RIVER VEGETATION (3260)



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WATER COURSES of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation (3260)

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

CHENOPODIUM RUBRI (3270)

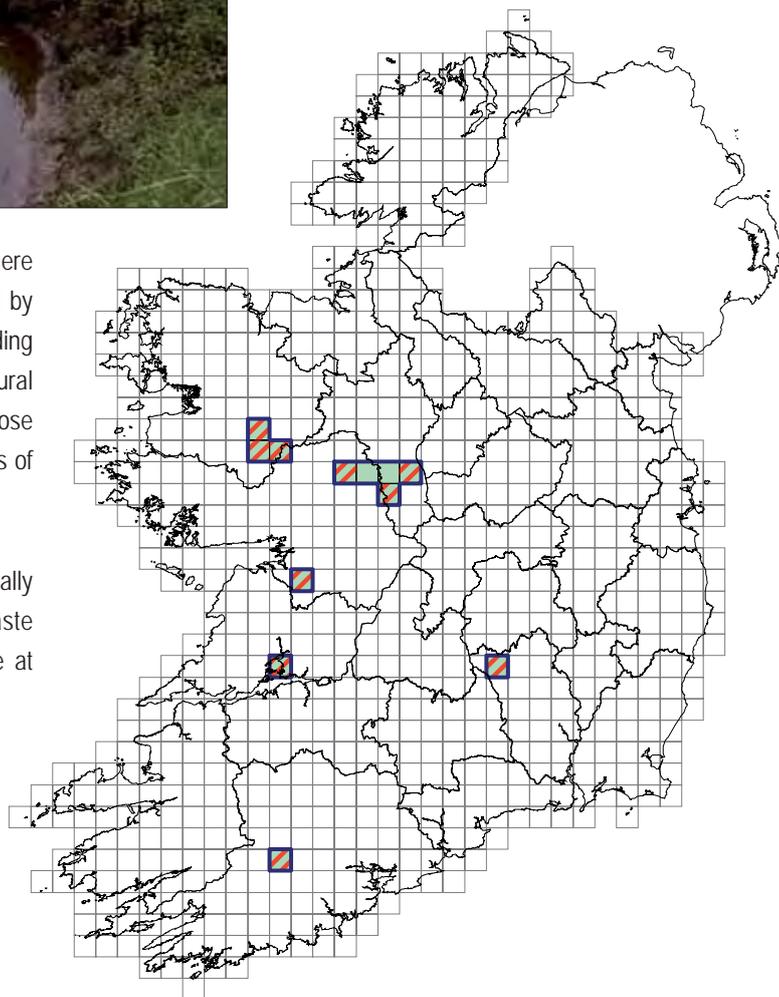


riverine turloughs (those in the path of drainage from a large catchment) which are naturally eutrophic. Typical plant species are redshank (*Polygonum persicaria*), water-pepper (*P. hydropiper*), small water-pepper (*P. minus*), marsh cudweed (*Gnaphalium uliginosum*), northern yellow-cress (*Rorippa islandica*), marsh yellow-grass (*R. palustris*), thread-leaved water-crowfoot (*Ranunculus trichophyllus*), red goosefoot (*Chenopodium rubrum*), trifold bur-marigold (*Bidens tripartite*), and toad rush (*Juncus bufonius*). Impacts to this habitat come from changes in the flooding regime, a decline in nutrient inputs or the removal of farm animals. The overall conservation status for this habitat in Ireland is good.

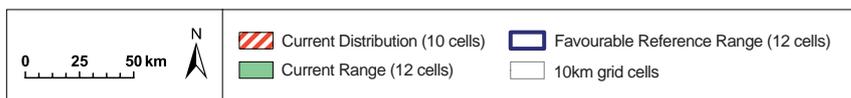
Photograph: *Chenopodium rubri*, Coole Park, Co. Galway (Naomi Kingston)

Chenopodium rubri habitat requires damp, nutrient-rich soils where the vegetation is kept open by some means and is dominated by annual plants. The conditions are produced naturally by flooding which extends into the spring months (April/May). The only natural habitats with late flooding are turloughs – fluctuating lakes whose level is controlled by groundwater but which may have channels of water flow on their floors during summer.

This community is only found in nutrient-rich turloughs and usually where animal treading and dunging (or occasionally waste disposal) add to the waterborne nutrients. Its main sites are at



CHENOPODIUM RUBRI (3270)



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RIVERS WITH MUDDY BANKS with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation (3270)	
Range	Good
Area	Good
Structure & Function	Good
Future prospects	Good
OVERALL	GOOD

WET HEATH (4010)

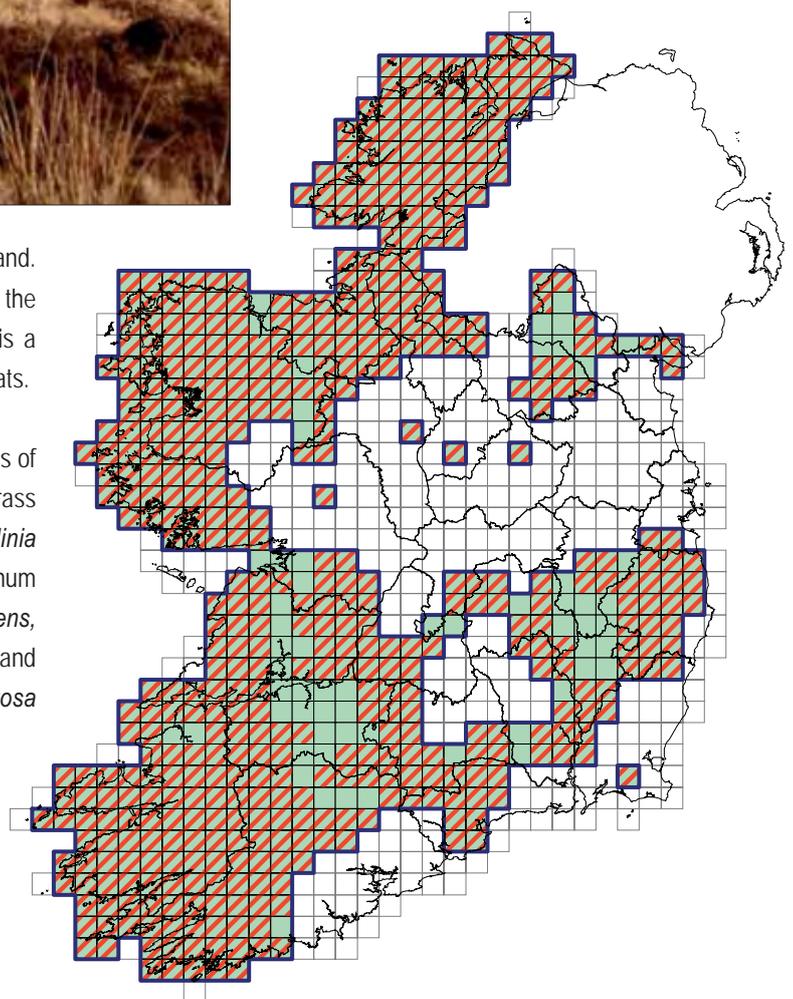


Reclamation, afforestation and burning have resulted in extensive loss of wet heath. Overstocking has also degraded large areas of the habitat, especially in uplands of the wettest western regions, through overgrazing and trampling. This has depleted heather and other plant cover and allowed invasion by non-heath species, or exposure of peat to severe erosion. Although various schemes to initiate recovery of damaged habitat through more sustainable stocking rates have been in operation for a number of years, recovery has been slow. Overall the conservation status of this habitat is considered to be bad.

Photograph: Wet heath (Catriona Douglas)

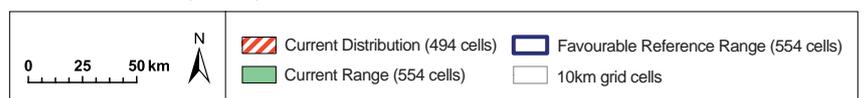
Wet heath is widespread in the uplands and in western Ireland. It occurs on areas of relatively shallow peat, generally where the peat is between 30cm and 80cm in depth, and where there is a fluctuating water table rather than permanently waterlogged peats.

Wet heath vegetation in Ireland is dominated by varying mixtures of ling (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), deergrass (*Trichophorum cespitosum*) and purple moorgrass (*Molinia caerulea*). The most frequent lower plants are the Sphagnum mosses *Sphagnum capillifolium*, *S. papillosum*, *S. subnitens*, *S. tenellum*; feather mosses such as *Hylocomium splendens* and *Pleurozium schreberi*; and the lichens *Cladonia portentosa* and *C. ciliata var. tenuis*.



WET HEATH (4010)

NORTH ATLANTIC WET HEATHS with <i>Erica tetralix</i> (4010)	
Range	Good
Area	Unknown
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD



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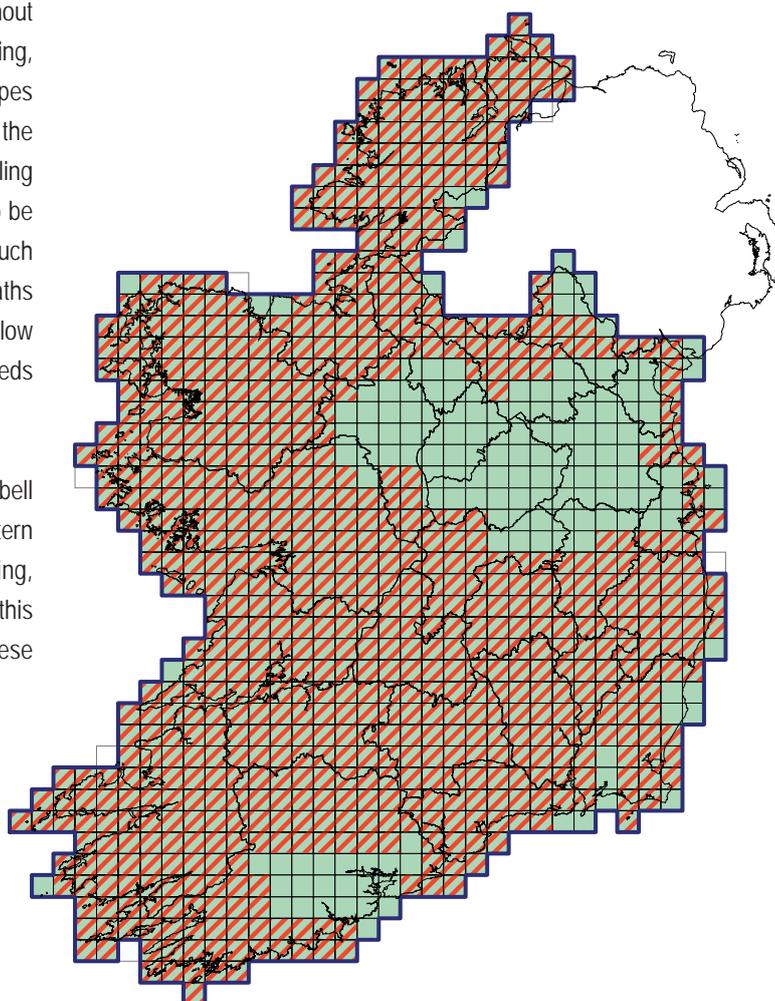
DRY HEATH (4030)



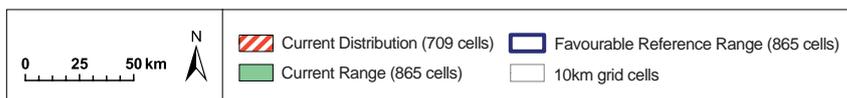
Dry heath is widespread and occurs in a variety of forms throughout Ireland. The most common variant is found on freely draining, nutrient-poor acidic soils associated with upland or lowland slopes with an angle of between 5 and 20 degrees. This form of the habitat is dominated by ericaceous dwarf shrubs such as ling (*Calluna vulgaris*), and gorse (*Ulex* spp.). The habitat may also be found on base-rich substrates where leaching has occurred, such as in the Burren or on hilltops within the midlands. Dry heaths usually have a history of grazing and/or burning and it is such low intensity management which has maintained them over hundreds of years.

Typical species of dry heath include ling (*Calluna vulgaris*), bell heather (*Erica cinerea*), bilberry (*Vaccinium myrtillus*) and Western gorse (*Ulex gallii*). Afforestation, over-burning, over-grazing, under-grazing and bracken invasion pose the main threats to this habitat. For these reasons, the overall conservation status of these habitats is considered to be poor.

Photograph: Dry heath, Connemara, Co. Galway (Richard Nairn)



DRY HEATH (4030)



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EUROPEAN DRY HEATH (4030)	
Range	Good
Area	Good
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

ALPINE AND SUB-ALPINE HEATH (4060)



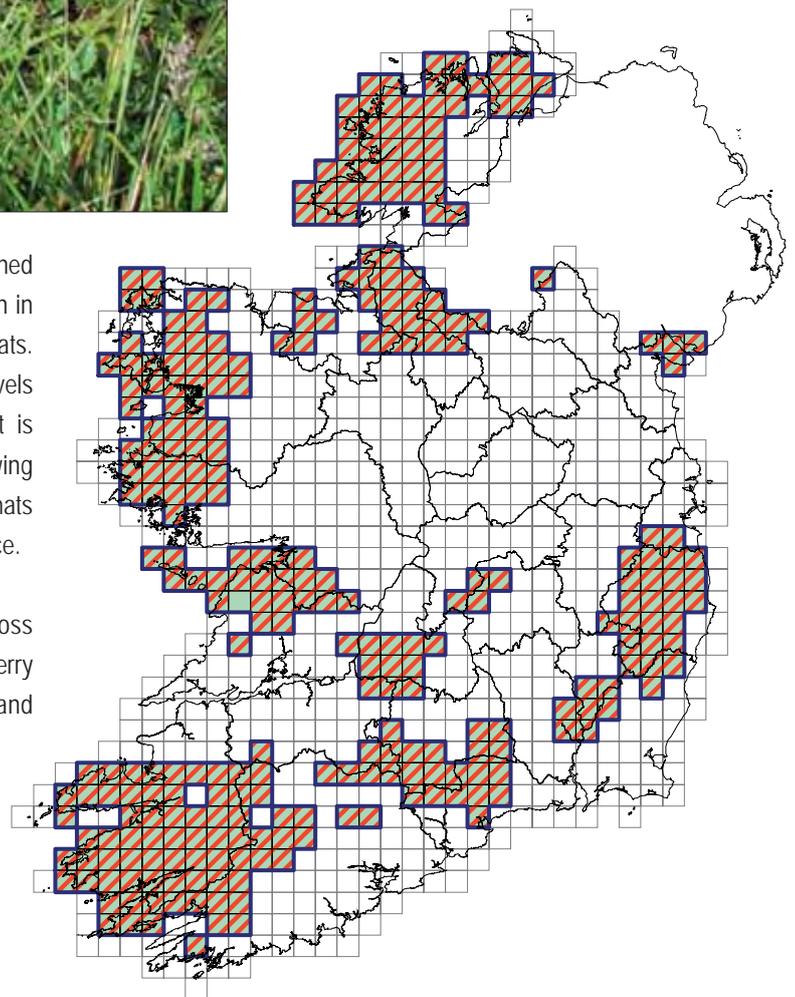
cowberry (*Vaccinium vitis-idae*). Associated species often found in the habitat include: ling (*Calluna vulgaris*), bilberry (*Vaccinium myrtillus*), green-ribbed sedge (*Carex binervis*), juniper (*Juniper communis*), mountain avens (*Dryas octopetala*) and woolly moss (*Racomitrium lanuginosum*).

This habitat is increasingly under threat from afforestation, burning, sheep grazing and leisure activities including hill-walking and use of quad motors. Quarrying in the Burren has also had an impact. For these reasons the overall conservation status of the habitat is considered poor.

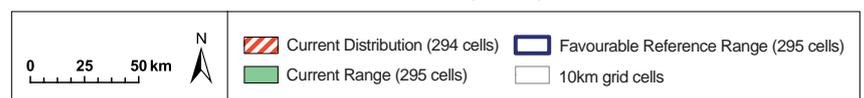
Photograph: Mountain avens near sea level in the Burren, Co. Clare (Ciaran O’Keeffe)

Alpine heath is relatively widespread in Ireland. It is mostly confined to the summits and slopes of the mountains above 350m, often in small pockets as part of a larger mosaic of upland habitats. However, in the north and west it occurs at somewhat lower levels and also occurs near sea level in the Burren. The habitat is characterised by dwarf-shrubs interspersed with low-growing grasses, sedges, herbs, mosses and lichens. In the Burren, mats of woody mountain avens (*Dryas octopetala*) occur in abundance.

Typical species of alpine heath include: alpine clubmoss (*Diphasiastrum alpinum*), dwarf willow (*Salix herbacea*), cowberry (*Empetrum nigrum*), bearberry (*Arctostaphylos uva-ursi*) and



ALPINE AND SUB-ALPINE HEATH (4060)



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ALPINE AND SUB-ALPINE HEATH (4060)	
Range	Good
Area	Poor
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

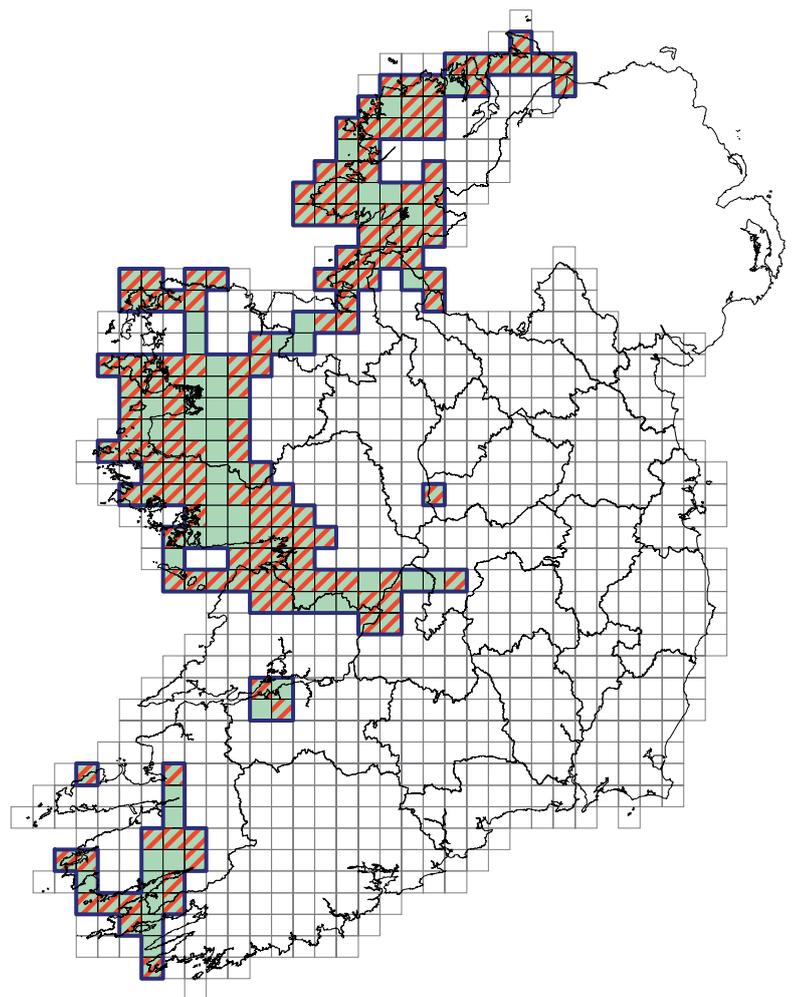
JUNIPER SCRUB (5130)



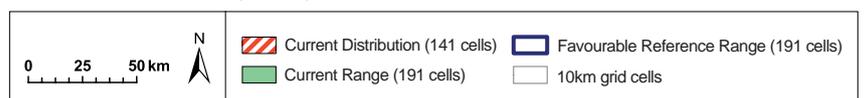
Juniper scrub has a western distribution in Ireland and is found in a wide variety of plant communities from sea level to the highest mountains. Juniper (*Juniperus communis*) is a light-demanding species and it occurs in open sites on both acidic and alkaline soils. It is generally intolerant of wet soil conditions.

Overgrazing, fire, agricultural expansion and poor regeneration are all threats to the habitat. For these reasons the overall conservation status of the habitat is assessed as poor.

Photograph: Ciaran O'Keeffe



JUNIPER SCRUB (5130)



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<i>JUNIPERUS COMMUNIS</i> formations on heaths or calcareous grasslands (5130)	
Range	Good
Area	Poor
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

CALAMINARIAN GRASSLAND (6130)

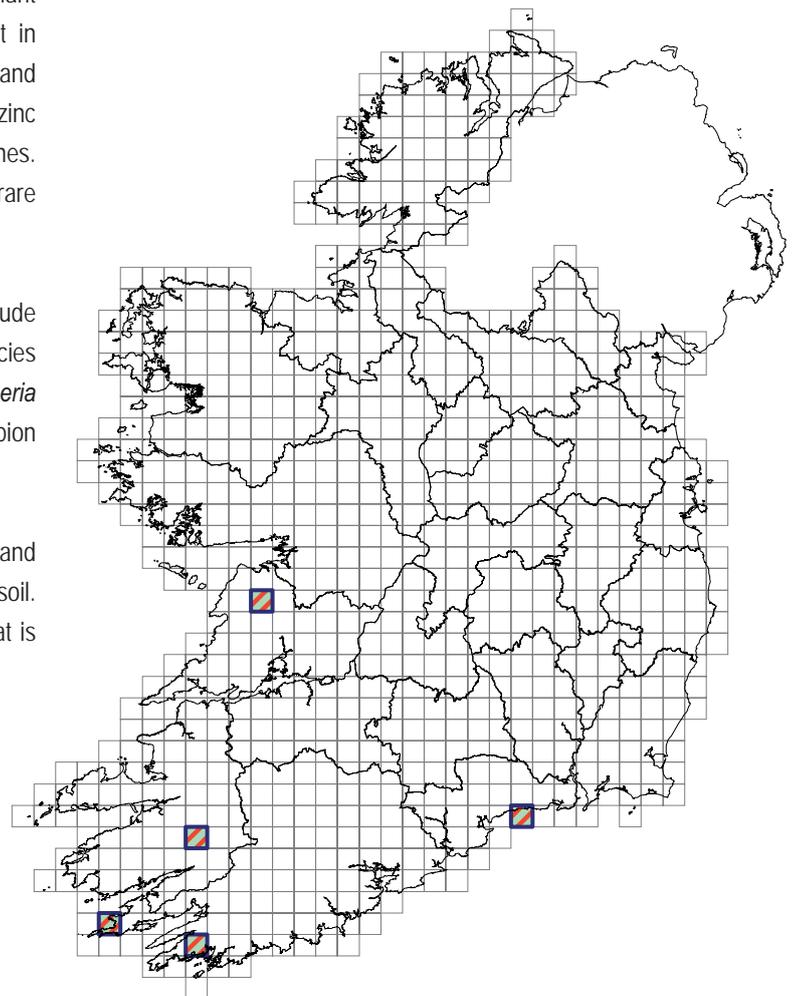


Calaminarian grassland is an uncommon habitat found in association with levels of heavy metals that are toxic to most plant species. There is a naturally occurring form of this habitat in Europe. However, in Ireland, known sites are semi-natural and located in the south west on or adjacent to old copper, lead or zinc mines or associated with lake shore gravels close to mines. The sites are generally species-poor though many support rare mosses and liverworts.

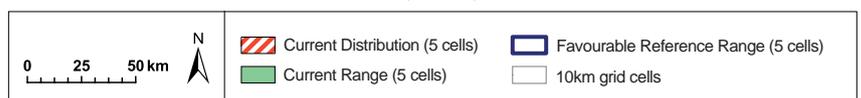
Typical species occurring in Calaminarian grasslands include liverwort species of the genus *Cephaloziella* spp.; the moss species *Ditrichum cornubicum* and *Scopelophila cataractae*; thrift (*Armeria maritima*), spring sandwort (*Minuartia verna*) and sea campion (*Silene uniflora*).

The greatest threats to this habitat are succession over time and reclamation by levelling and tidying of mine spoil using topsoil. For these reasons the overall conservation status of the habitat is considered poor.

Photograph: Calaminarian grassland (Deirdre Lynn)



CALAMINARIAN GRASSLAND (6130)



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CALAMINARIAN GRASSLANDS of the <i>Violetalia calaminariae</i> (6130)	
Range	Good
Area	Good
Structure & Function	Good
Future prospects	Poor
OVERALL	POOR

ORCHID-RICH GRASSLAND/CALCAREOUS GRASSLAND (6210)



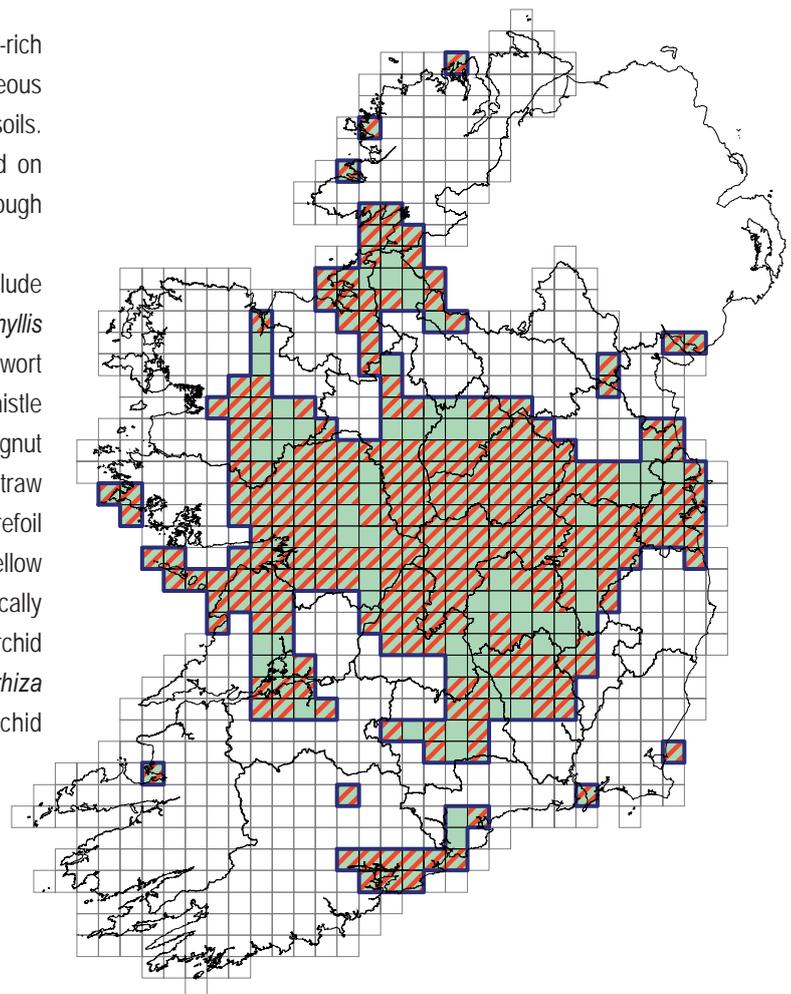
(*Gymnadenia conopsea*), common twayblade (*Listera ovata*), dense-flowered orchid (*Neotinea maculata*), bee orchid (*Ophrys apifera*), early-purple orchid (*Orchis mascula*), green-winged orchid (*Orchis morio*), butterfly-orchids (*Platanthera* spp.) and autumn lady's tresses (*Spiranthes spiralis*). Species associated with the Burren grasslands include squinancywort (*Asperula cynanchica*), dropwort (*Filipendula vulgaris*), bloody crane's-bill (*Geranium sanguineum*), spring gentian (*Gentiana verna*), hoary rock-rose (*Helianthemum canum*), dense-flowered orchid (*Neotinea maculata*) and blue moor-grass (*Sesleria albicans*).

The greatest threats to this habitat are abandonment of traditional agricultural practices on these marginal lands and reclamation. The area of the habitat has decreased over time. For these reasons the overall conservation status of the habitat is considered bad.

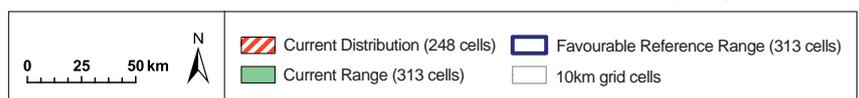
Photograph: All Saints Esker, Co. Offaly (John Cross)

Both of these habitats are described together as the orchid-rich variant occurs within calcareous grassland. Species-rich calcareous grassland is found on dry, shallow, base-rich nutrient-poor soils. The best examples are located in the Burren grasslands and on those eskers of the midlands which are lightly grazed although pockets are also found throughout the midlands.

Vascular plant species typically occurring in these habitats include mountain everlasting (*Antennaria dioica*), kidney vetch (*Anthyllis vulneraria*), downy oat-grass (*Avenula pubescens*), yellow-wort (*Blackstonia perfoliata*), quaking-grass (*Briza media*), carline thistle (*Carlina vulgaris*), greater knapweed (*Centaurea scabiosa*), pignut (*Conopodium majus*), wild carrot (*Daucus carota*), lady's bedstraw (*Galium verum*), field scabious (*Knautia arvensis*), bird's-foot trefoil (*Lotus corniculatus*), salad burnet (*Sanguisorba minor*) and yellow oat-grass (*Trisetum flavescens*). Orchid species which typically occur include pyramidal orchid (*Anacamptis pyramidalis*), frog orchid (*Coeloglossum viride*), common spotted-orchid (*Dactylorhiza fuchsii*), heath spotted-orchid (*D. maculata*), fragrant orchid



ORCHID-RICH GRASSLAND/CALCAREOUS GRASSLAND (6210)



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SEMI-NATURAL DRY GRASSLANDS
and scrubland facies on calcareous
substrates (*Festuco-Brometalia*) (6210)

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

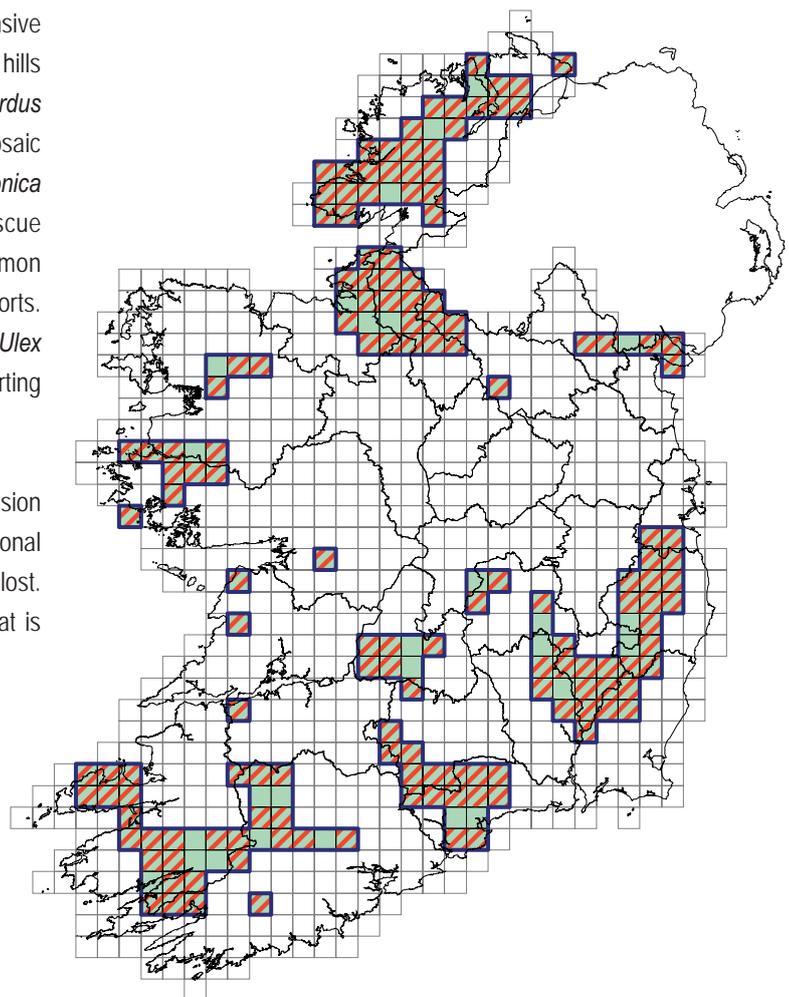
SPECIES-RICH NARDUS UPLAND GRASSLAND (6230)



Species-rich *Nardus* grassland is an upland habitat found on free-draining acid soils that may be dry or humid but not waterlogged. The best examples are found in association with calcareous bands through the mainly siliceous bedrock. The habitat is most extensive near (above and below) the upper limit of enclosed farmland on hills and mountains. Swards of *Nardus* grassland with mat-grass (*Nardus stricta*) are maintained by grazing and consist of a complex mosaic of grasses and small herbs including heath speedwell (*Veronica officinalis*), heath bedstraw (*Galium saxatile*), sheep's-fescue (*Festuca ovina*), common bent (*Agrostis capillaris*), common milkwort (*Polygala vulgaris*), and various mosses and liverworts. Ericaceous shrubs such as ling (*Calluna vulgaris*) and gorse (*Ulex* spp.) are often present over less than 25% of the terrain supporting the habitat.

The greatest threats to this habitat are over-grazing and succession over time to dry heath due to the abandonment of traditional agricultural practices. Areas of the habitat have already been lost. For these reasons the overall conservation status of the habitat is considered bad.

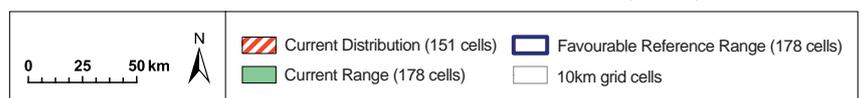
Photograph: Knocknacloghogue, Co. Wicklow (Paul Green).



SPECIES-RICH NARDUS UPLAND GRASSLAND (6230)

SPECIES-RICH NARDUS GRASSLANDS on siliceous substrates in mountain areas (6230)

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



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MOLINIA MEADOWS (6410)



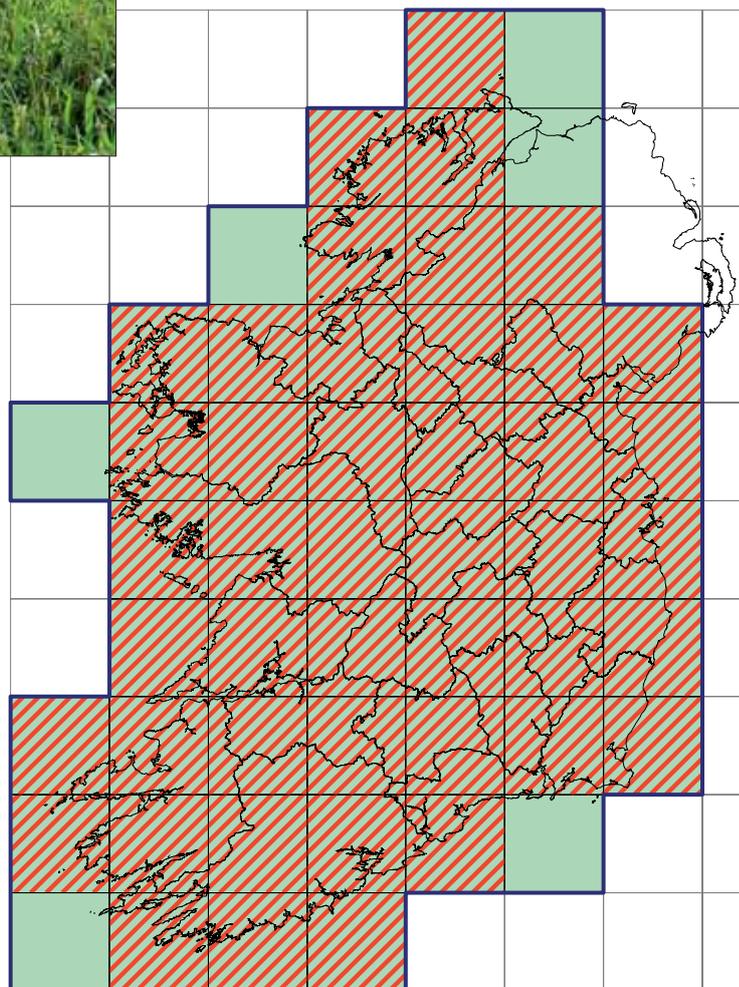
(*Filipendula ulmaria*), ragged-robin (*Lychnis flos-cuculi*), purple-loosestrife (*Lythrum salicaria*), silverweed (*Potentilla anserina*), creeping buttercup (*Ranunculus repens*), lesser spearwort (*Ranunculus flammula*), marsh ragwort (*Senecio aquaticus*), and devil's-bit scabious (*Succisa pratensis*). Orchids may also occur.

Agricultural intensification over the past century, drainage and more recently, abandonment of pastoral systems, which contributes to rank vegetation and scrub encroachment, all lead to the loss of some typical flora and to a reduction in the area of the habitat. For these reasons the overall conservation status of the habitat is considered bad.

Photograph: Clonmacnoise, Co. Offaly (NPWS)

Molinia meadow is a widespread but localised grassland habitat which is often associated with fluctuating water tables in the lowlands, occurring largely but not exclusively in the west on acid substrates. On these heavy acidic soils, rushes are abundant. Along the callows and other similarly managed floodplains of the midlands, the sub-type of calcareous soils is species-rich. This grassland may often be found in mosaic with fen meadow.

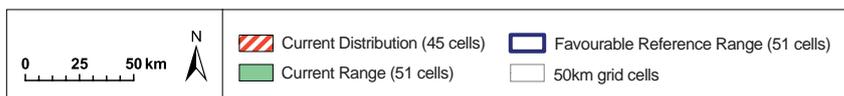
Typical species occurring in this habitat include purple moor-grass (*Molinia caerulea*), other grasses such as creeping bent (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), abundant sedges (*Carex* spp.) and rushes (*Juncus* spp.). The proportion of broadleaved herbs is often high; species which commonly occur in this habitat include cuckooflower (*Cardamine pratensis*), meadowsweet



MOLINIA MEADOWS
on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) (6410)

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

MOLINIA MEADOWS (6410)



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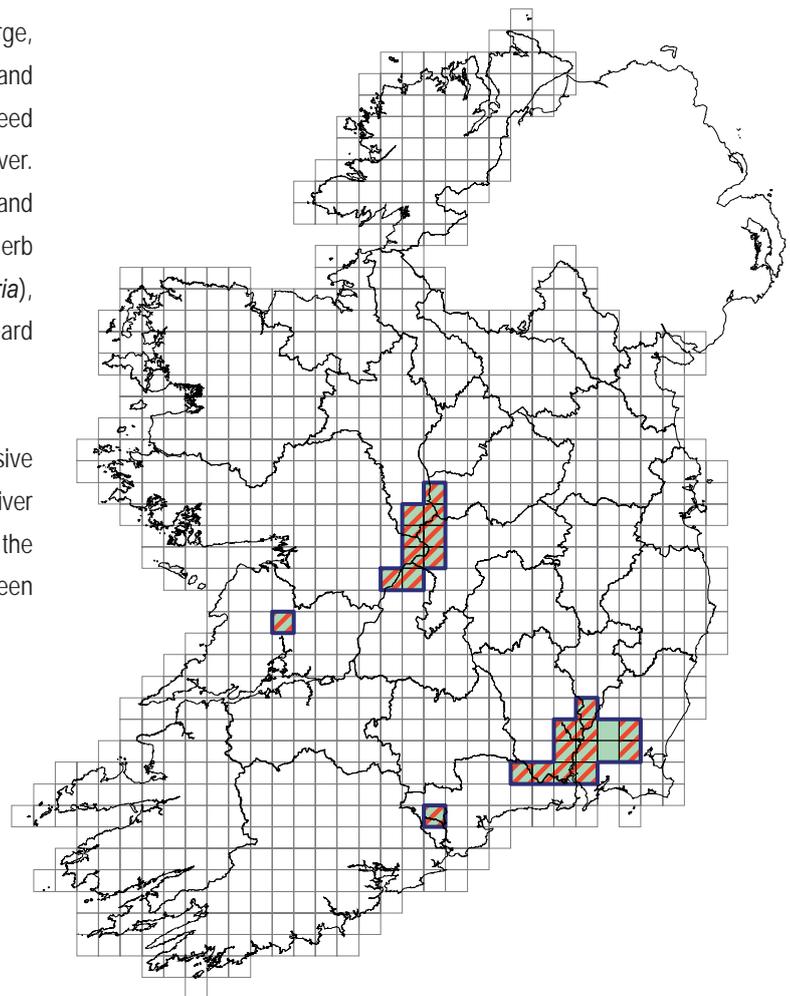
HYDROPHILOUS TALL HERB (6430)



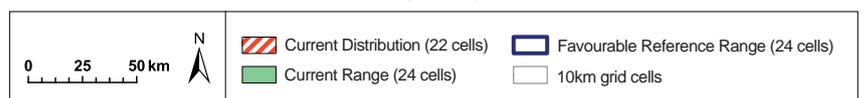
Hydrophilous tall herb is found along unmanaged edges of large, slow-flowing rivers where nutrient levels may be naturally high and where flooding or water-logging in the summer is unusual. Reed beds or tall sedge community may be present further into the river. The habitat may also be found along watercourses at woodland edges. Some characteristic species include great willowherb (*Epilobium hirsutum*), meadowsweet (*Filipendula ulmaria*), purple-loosestrife (*Lythrum salicaria*) and marsh hawk's-beard (*Crepis paludosa*).

The main threats to this habitat include the spread of invasive species, arterial drainage and agricultural improvement at the river edge. For these reasons the overall conservation status of the habitat is considered poor although the habitat has not been surveyed in detail in Ireland.

Photograph: NPWS



HYDROPHILOUS TALL HERB (6430)



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HYDROPHILOUS TALL HERB
fringe communities of plains and of
the montane to alpine levels (6430)

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

LOWLAND HAY MEADOWS (6510)



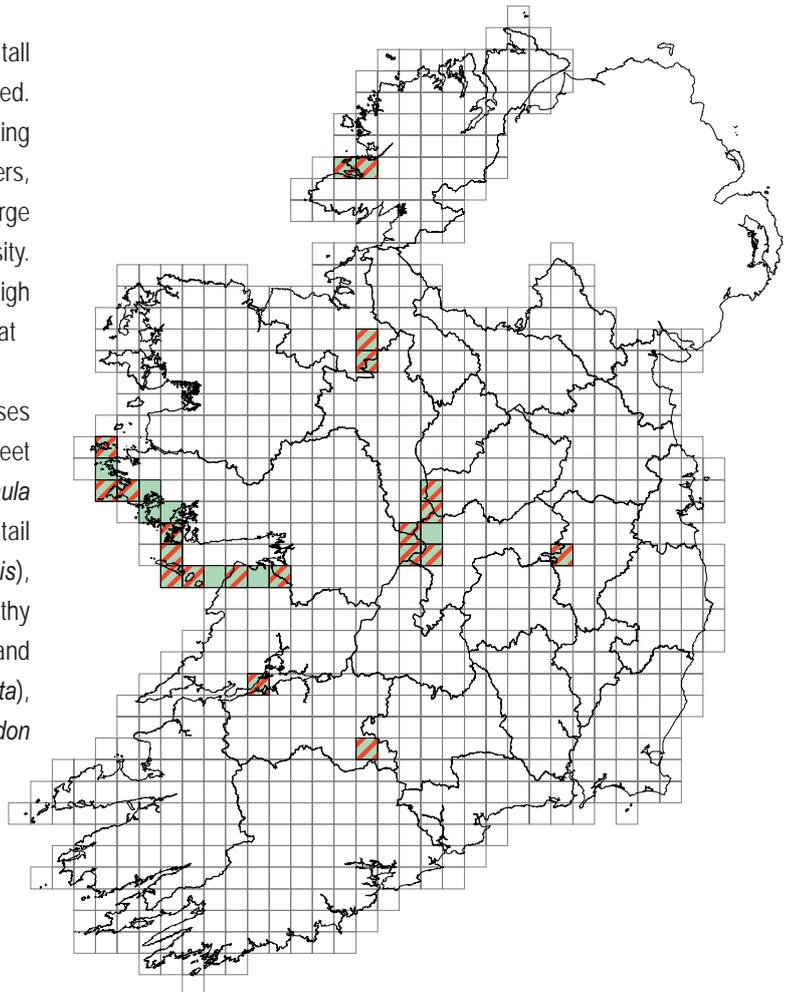
hispidus), oxeye daisy (*Leucanthemum vulgare*), ribwort plantain (*Plantago lanceolata*), meadow buttercup (*Ranunculus acris*), red clover (*Trifolium pratense*) and rough hawk's-beard (*Crepis biennis*).

Agricultural intensification over the past century, drainage and more recently, abandonment of pastoral systems, which contributes to rank vegetation and scrub encroachment, all lead to the loss of some typical flora and to a reduction in the area of the habitat. For these reasons the overall status of the habitat is considered bad.

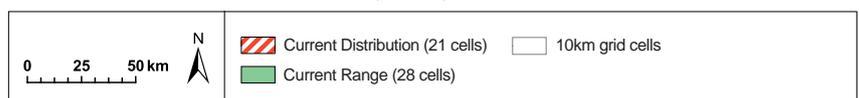
Photograph: NPWS

Lowland Hay Meadows are extensively managed species-rich tall grasslands, mown in mid-summer after the vegetation has flowered. The meadows are often grazed after cutting. The best remaining examples of the habitat are along the floodplains of large rivers, notably the Shannon. Wet meadows close to the water merge inland to drier meadow communities with increased biodiversity. Where low-intensity management is still present there is a high degree of conservation of the structure and function of the habitat

Typical species of the drier variant include the bent grasses (*Agrostis* spp.), meadow foxtail (*Alopecurus pratensis*), sweet vernal-grass (*Anthoxanthum odoratum*), downy oat-grass (*Avenula pubescens*), brome grasses (*Bromus* spp.), crested dog's-tail (*Cynosurus cristatus*), meadow fescue (*Festuca pratensis*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*), timothy (*Phleum pratense*), smooth meadow-grass (*Poa pratensis*) and rough meadow-grass (*Poa trivialis*). Hairy sedge (*Carex hirta*), common knapweed (*Centaurea nigra*), rough hawkbit (*Leontodon*



LOWLAND HAY MEADOWS (6510)



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LOWLAND HAY MEADOWS (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510)

Range	Bad
Area	Bad
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

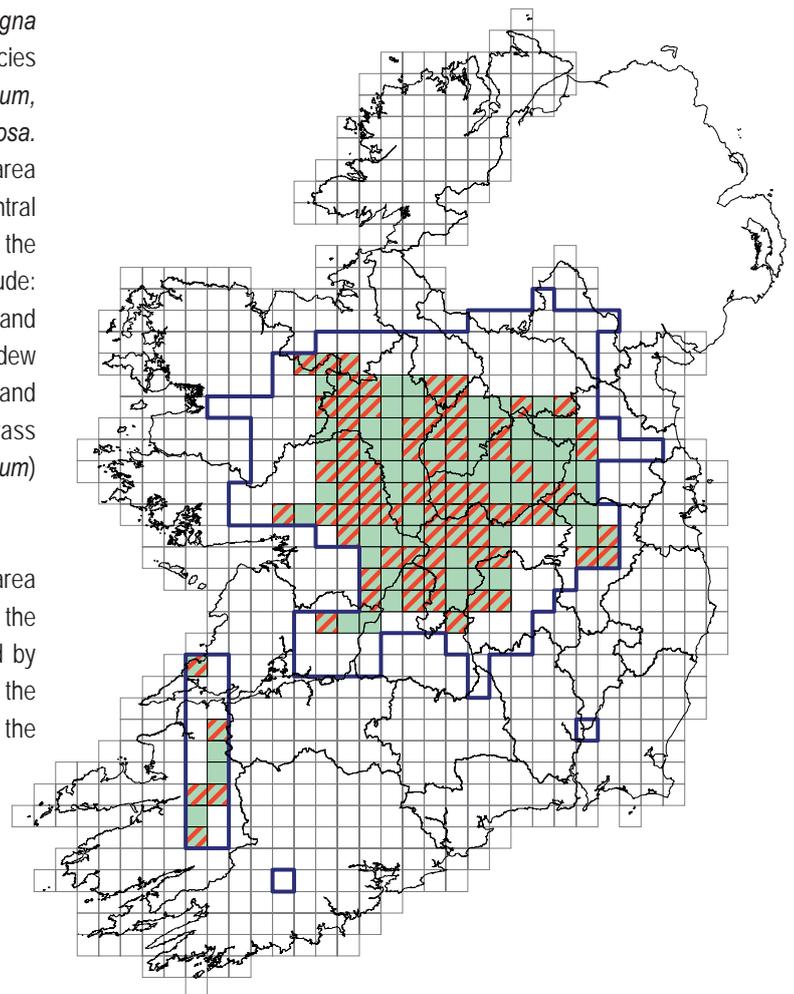
RAISED BOG (ACTIVE) (7110)



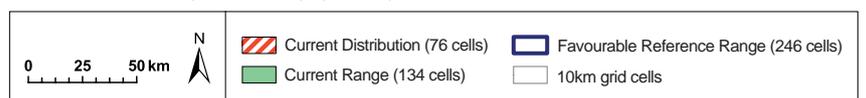
Photograph: NPWS

Raised bogs are poor in mineral nutrients and sustained mainly by rainwater with a water level generally higher than the surrounding areas. The vegetation is dominated by colourful *Sphagna* hummocks which allow for the growth of the bog. Indicator species include the bog mosses *Sphagnum fuscum*, *S. imbricatum*, *S. cuspidatum*, *S. auriculatum* and the lichen *Cladonia portentosa*. The term “active” means that peat is still forming in a significant area of the bog. Raised bogs are concentrated in the lowlands of central and mid-west Ireland with small isolated areas occurring in the south-west. Vascular plant species occurring in this habitat include: bog rosemary (*Andromeda polifolia*), ling (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*), the carnivorous great sundew (*Drosera anglica*), oblong-leaved sundew (*D. intermedia*) and round-leaved sundew (*D. rotundifolia*), common cottongrass (*Eriophorum angustifolium*), hare’s-tail cottongrass (*E. vaginatum*) and cranberry (*Vaccinium oxycoccos*).

Intact active raised bog is extremely rare, having decreased in area by over 35% in the last 10 years. Ongoing deterioration of the hydrological conditions of raised bogs at current rates caused by peat cutting, drainage, forestry and burning severely threatens the viability of the habitat at most locations. Consequently the conservation status of this habitat is considered to be bad.



RAISED BOG (ACTIVE) (7110)



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ACTIVE RAISED BOG (7110)

Range	Bad
Area	Bad
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

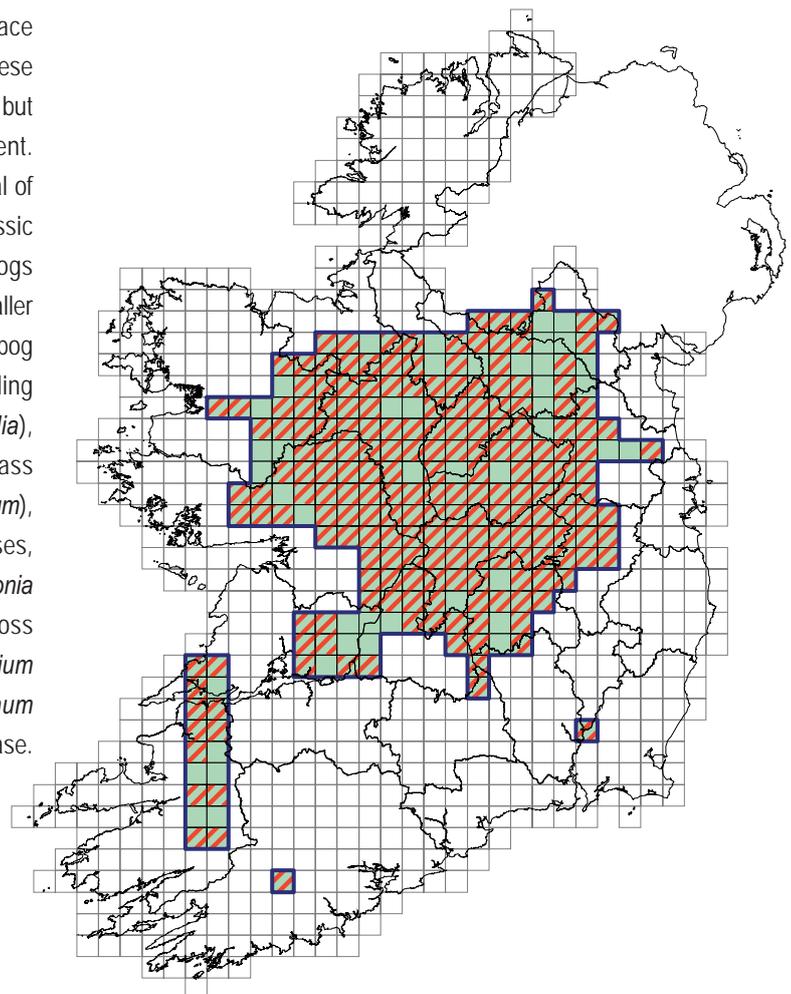
DEGRADED RAISED BOGS (7120)



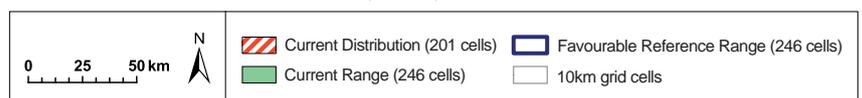
The remaining wet depressions or hollows typically have common cottongrass (*Eriophorum angustifolium*), bog asphodel (*Narthecium ossifragum*), white beak-sedge (*Rhynchospora alba*), brown beak-sedge (*R. fusca*), and more tolerant *Sphagnum* species such as *Sphagnum magellanicum* and *S. papillosum*. These sites are considered to be still capable of natural regeneration if their hydrology can be repaired. With appropriate management there is a reasonable expectation of re-establishing vegetation with peat-forming capability within 30 years. This habitat is concentrated in the lowlands of central and mid-west Ireland, with isolated areas occurring in the south-west. Two isolated records are found in counties Carlow and Cork. Overall the status of this habitat is considered to be poor.

Photograph: Degraded raised bog (Richard Nairn)

Degraded raised bogs are those where there has been disruption to the natural hydrology of the peat body, leading to surface desiccation and/or species change or loss. Vegetation on these sites usually contains the same species as active raised bogs but the relative abundance of individual species is different. In particular, the amount of bog mosses, especially those typical of wetter areas, is greatly decreased. In addition the classic hummock/hollow topography characteristic of active bogs deteriorates with the loss of the wetter hollows and the taller hummocks. Typical vascular plant species of drier parts of the bog increase including: bog-rosemary (*Andromeda polifolia*), ling (*Calluna vulgaris*), round-leaved sundew (*D. rotundifolia*), cross-leaved heath (*Erica tetralix*), hare's-tail cottongrass (*Eriophorum vaginatum*), bog asphodel (*Narthecium ossifragum*), and deergrass (*Trichophorum cespitosum*). Various mosses, liverworts and lichens including *Cladonia* species such as *Cladonia ciliata* and reindeer lichen (*C. portentosa*), cushion moss (*Leucobryum glaucum*) and ribbed bog moss (*Aulacomnium palustre*), and *Sphagnum* species including (*Sphagnum capillifolium*, *S. magellanicum*, *S. subnitens*) can also increase.



DEGRADED RAISED BOGS (7120)



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DEGRADED RAISED BOG still capable of regeneration (7120)	
Range	Good
Area	Good
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

BLANKET BOG (ACTIVE) (7130)



(*Drosera* spp.) and butterworts (*Pinguicula* spp.). Bog-pools contain aquatic *Sphagnum* species, bogbean (*Menyanthes trifoliata*) and locally pipewort (*Eriocaulon aquaticum*) and water lobelia (*Lobelia dortmanna*).

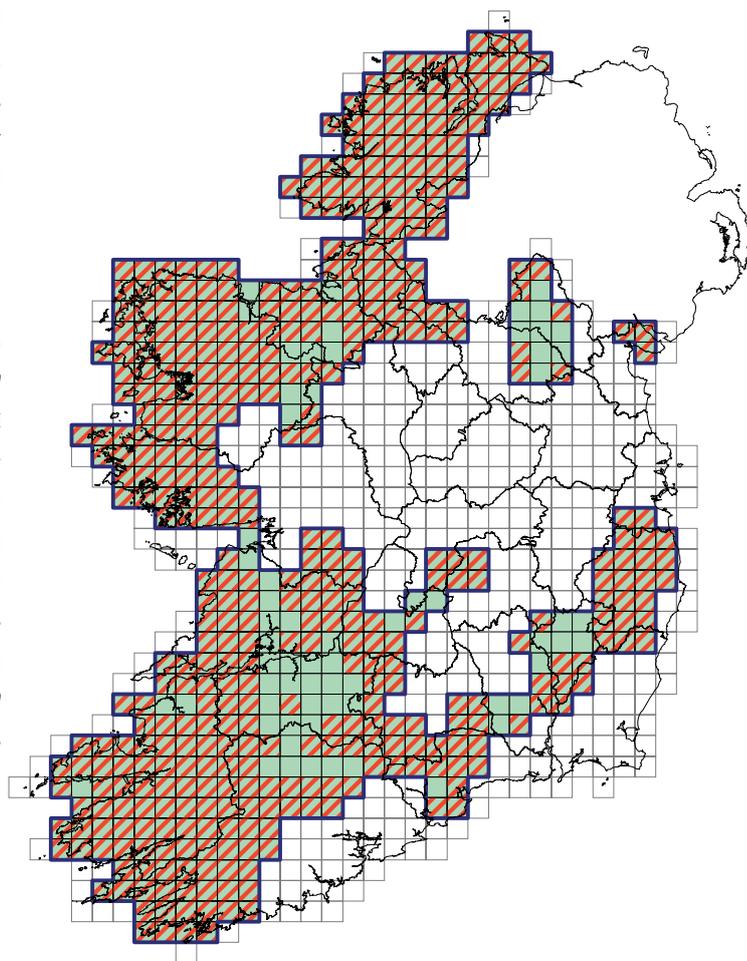
Blanket bogs depend to a large degree on maintenance of surface water flow patterns at a landscape scale and hence are dependent on sensitive land management practices. Extensive areas have been removed or highly modified (chiefly through reclamation, peat extraction, afforestation but also via erosion and even landslides triggered by human activity). Current pressures include overstocking, peat extraction, drainage, burning and infrastructural developments.

This conservation assessment applies to blanket bog (and not to cutaway bog and/or bog converted to grassland or forest). The overall status of this habitat is considered to be bad.

Photograph: Blanket bog (Catriona Douglas)

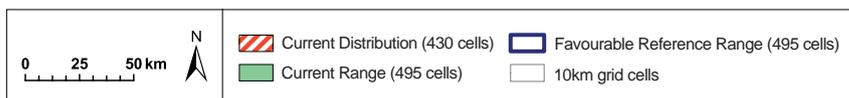
Blanket bog occurs on flat or sloping land with poor surface drainage, in cool, wet, oceanic climates. It occurs on lowlands and uplands on Ireland's Atlantic coast but elsewhere in the country, it is restricted to uplands. Active (i.e. growing) blanket bog occurs throughout the entire blanket bog range. Extensive expanses occur in lowlands districts of Mayo, Galway and to a lesser extent Donegal and Kerry, while the habitat is rather fragmented in the midland, eastern and southern uplands.

Typical species occurring in this habitat include the moss *Campylopus atrovirens*, silver-haired moss (*Racomitrium lanuginosum*), a range of *Sphagnum* mosses, and the liverwort *Pleurozia purpurea*. Branched lichens of the *Cladonia* group are also typical. Characteristic vascular plants include black bog rush (*Schoenus nigricans*), purple moorgrass (*Molinia caerulea*), ling (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), common cottongrass (*Eriophorum angustifolium*), hare's tail cottongrass (*E. vaginatum*), deergrass (*Trichophorum caespitosum*), bog lousewort (*Pedicularis sylvatica*), bog asphodel (*Narthecium ossifragum*), white-beaked sedge (*Rhynchospora alba*), sundews



BLANKET BOG (and Active Blanket Bog) (7130)	
Range	Good
Area	Bad
Structure & Function	Poor
Future prospects	Bad
OVERALL	BAD

BLANKET BOG (ACTIVE) (7130)



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TRANSITION MIRES (7140)



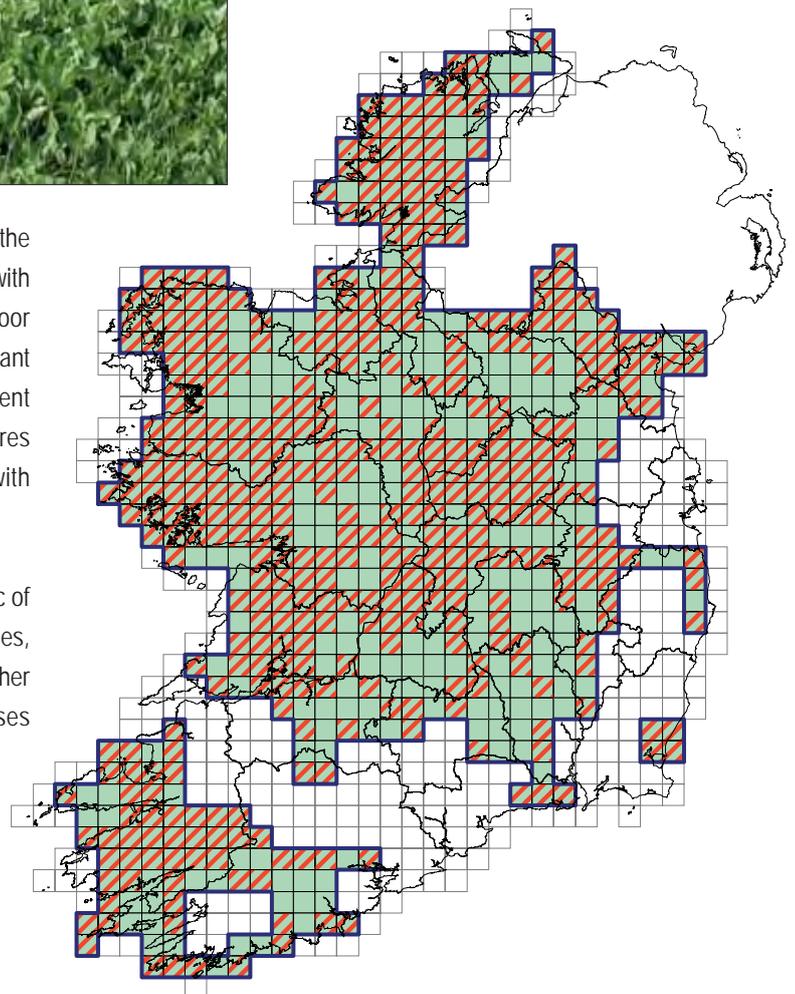
(*Eriophorum angustifolium*, and the much rarer *E. gracile*), creeping bent (*Agrostis stolonifera*), purple moor-grass (*Molinia caerulea*), and a range of broad-leaved wetland herbs. Extensive moss cover is characteristic; *Sphagnum* spp., *Calliergon* spp. and *Scorpidium scorpioides* are usually abundant.

In some cases the mire occupies a physically transitional location between bog and fen vegetation, for example on the margin of a raised bog, or may be associated with certain valley and basin mires. Because of drainage, infilling, reclamation and pollution, the status of this habitat is considered to be bad.

Photograph: Transition mire (Neil Lockhart)

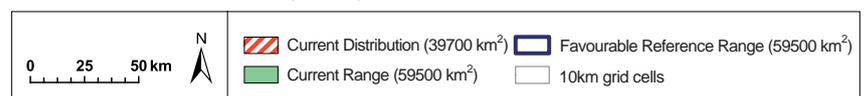
Transition mires are peat-forming communities developed at the surface of waters with little or moderate amounts of nutrients, with characteristics intermediate between rich (alkaline) and poor (acidic) fen types. They present a large and diverse range of plant communities. In large peaty systems, the most prominent communities are swaying swards, floating carpets or quaking mires formed by medium-sized or small sedges, associated with *Sphagnum* or brown mosses.

The vegetation typically comprises species that are characteristic of bog, fen and open water habitats. Small to medium sedges, mainly *Carex* spp. usually dominate and may occur together with white beak-sedge (*Rhynchospora alba*), cotton grasses



TRANSITION MIRES (7140)

TRANSITION MIRE and quaking bogs (7140)	
Range	Good
Area	Good
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD



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RHYNCHOSPORION DEPRESSIONS (7150)

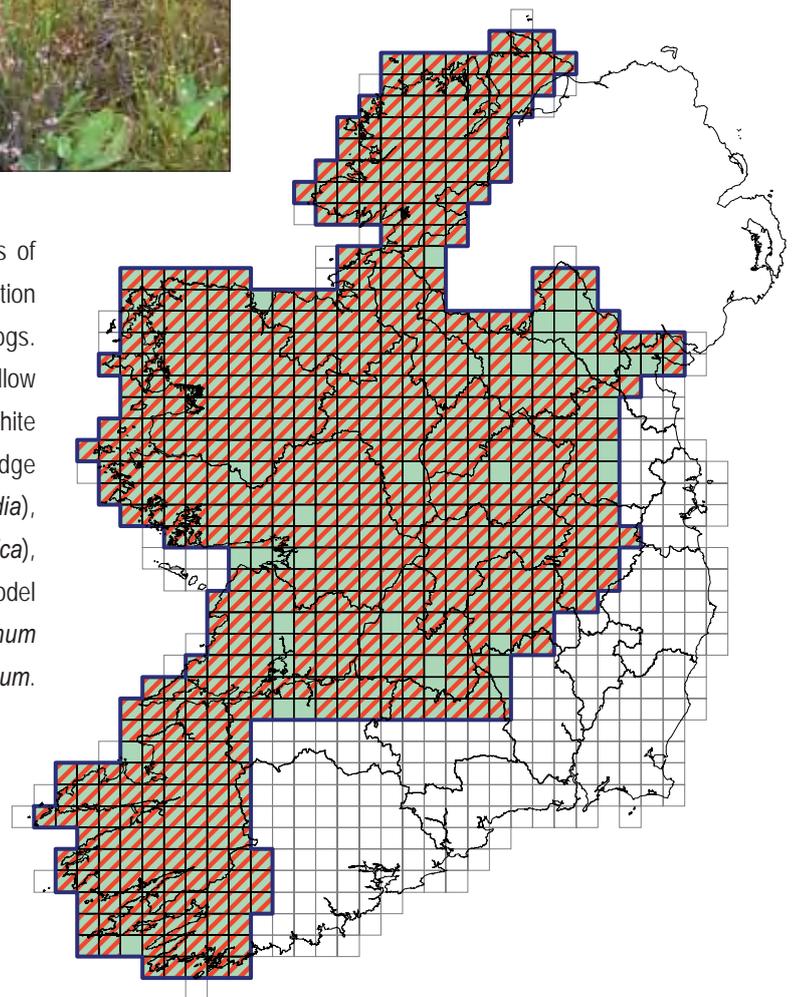


The habitat is associated with raised bog in the lowlands of central and mid-west Ireland, and with lowland blanket bog and wet heath in western Ireland. The habitat becomes rare above 300m although it is recorded at higher elevations in the south-west.

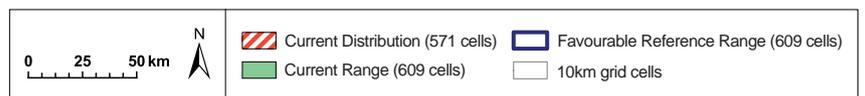
The overall habitat conservation status assessment is good despite the unfavourable assessment given to the habitats within which it occurs (e.g. raised bog, blanket bog and wet heath). This is mainly related to the pioneer and transitional nature of the habitat, and capacity of the species to exploit more degraded situations.

Photograph: Rhynchosporion depression (NPWS).

Rhynchosporion depressions are highly constant communities of humid exposed peat or sometimes sand, with the vegetation forming on stripped areas of blanket bogs or raised bogs. The communities are similar and closely related to those of shallow bog hollows and of transition mires. Typical species include white beak-sedge (*Rhynchospora alba*), and brown beak-sedge (*R. fusca*), oblong-leaved sundew (*Drosera intermedia*), round-leaved sundew (*D. rotundifolia*), great sundew (*D. anglica*), common cottongrass (*Eriophorum angustifolium*), bog asphodel (*Narthecium ossifragum*), and mosses including *Sphagnum cuspidatum*, *S. auriculatum*, *S. magellanicum*, and *S. papillosum*.



RHYNCHOSPORION DEPRESSIONS (7150)



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DEPRESSIONS on peat substrates of the <i>Rhynchosporion</i> (7150)	
Range	Good
Area	Good
Structure & Function	Good
Future prospects	Good
OVERALL	GOOD

CLADIUM FENS (7210)



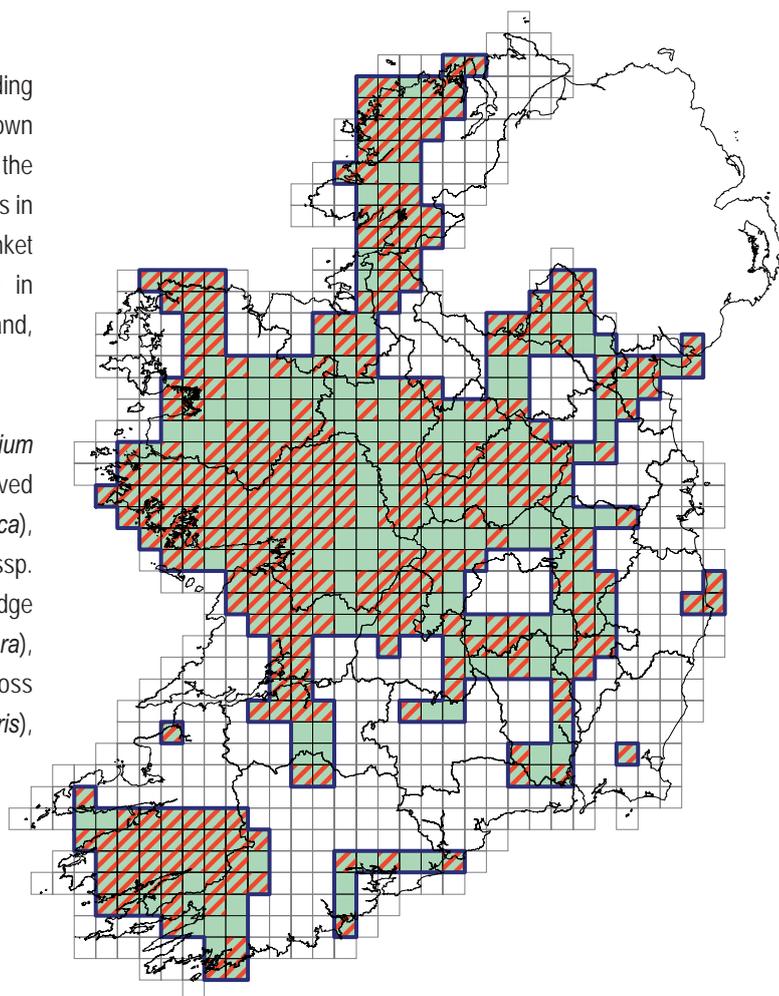
Fens are usually peat-forming wetlands that receive mineral nutrients from sources other than precipitation. Cladium fens are characteristic of flat ground and are often dominated by the saw sedge (*Cladium mariscus*). The broader view is that this habitat is wetter than alkaline fens (7230) with the water table at or above the surface, though fluctuations in water table are less.

In Ireland, Cladium fens occur in a variety of situations including fens found in valleys or depressions, floodplains, overgrown ditches, extensive wet meadows, within tall reed beds, on the landward side of lakeshore communities, calcium-rich flush areas in blanket bogs, dune slack areas, fens adjacent to raised and blanket bogs, in turlough sites and wet hollows in machair, often in association with alkaline fen. They are found throughout Ireland, most commonly in midlands, west and south-east.

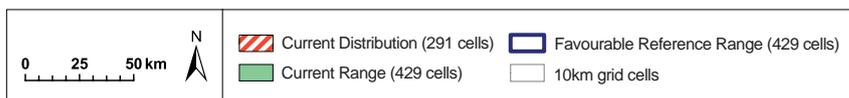
Typical species occurring in this habitat include saw sedge (*Cladium mariscus*), black bog rush (*Schoenus nigricans*), wide-leaved cottongrass (*Eriophorum latifolium*), dioecious sedge (*Carex dioica*), yellow sedges (*C. viridula* ssp. *brachyrrhyncha*, and *C. viridula* ssp. *oedocarpa*), blunt-flowered rush (*Juncus subnodulosus*), flea sedge (*C. pulicaris*), five-flowered spike-rush (*Eleocharis quinqueflora*), fen orchid (*Dactylorhiza traunsteineri*), lesser clubmoss (*Selaginella selaginoides*), marsh helleborine (*Epipactis palustris*),

grass-of-Parnassus (*Parnassia palustris*) and common butterwort (*Pinguicula vulgaris*). Due to ongoing deterioration of Cladium fen habitat caused by drainage, land reclamation, peat cutting and forestry, the overall conservation assessment for this habitat is bad.

Photograph: Cladium fen (Peter Foss)



CLADIUM FENS (7210)



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CALCAREOUS FENS with *Cladium mariscus* and species of the *Caricion davallianae* (7210)

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

PETRIFYING SPRINGS (7220)



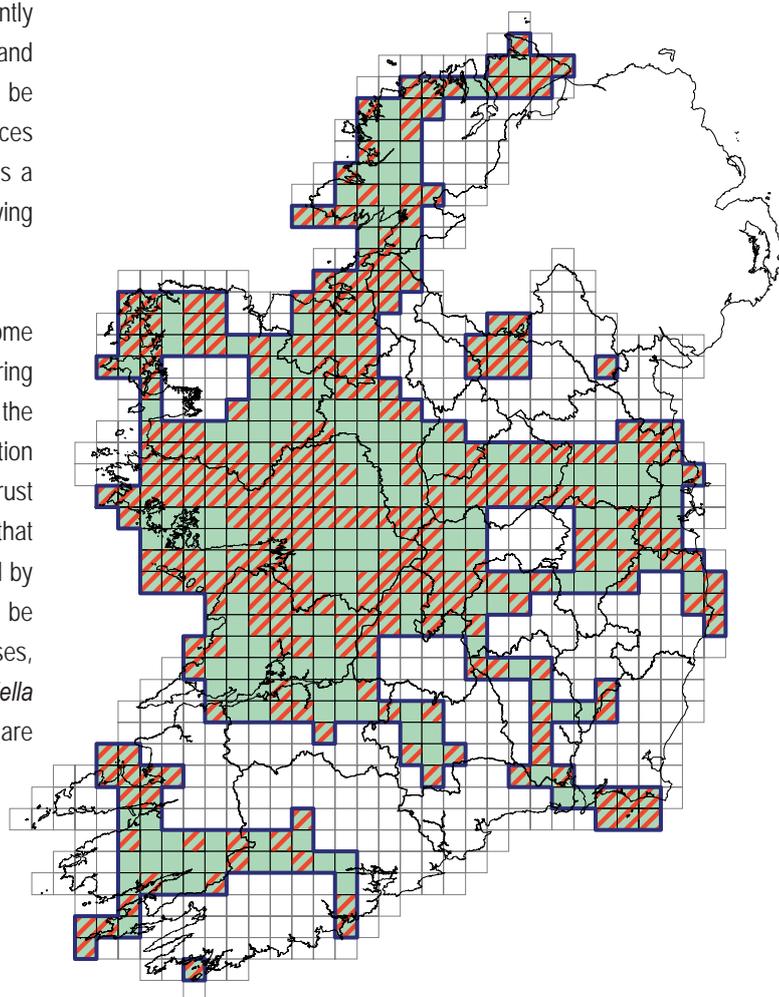
Petrifying springs occur in lowland and upland areas and may be associated with a variety of different habitats such as alkaline fen, woodland, heathland, grassland, limestone-rich boulder clay, gravel deposits or exposed rock. Petrifying springs are permanently irrigated and kept moist by water that is calcareous (lime-rich) and oligotrophic (nutrient-poor) in nature. The water supply may be from upwelling groundwater sources, or from seepage sources or sometimes from geo-thermal sources. A key requirement is a steady flow of water, though this may dry up periodically. Petrifying springs occur on shallow peaty or skeletal mineral soils.

Springs are often very small features covering no more than some tens of metres. On contact with the atmosphere at the spring head, carbon dioxide is lost from the water. This results in the precipitation of a calcium bicarbonate marl or tufa. The vegetation in such areas and especially mosses may be coated in a thick crust of lime. Larger petrifying springs may form tufa cones that constitute a singular habitat. Spring vegetation is characterised by an abundant or dominant moss cover and may or may not be peat-forming calcareous springs are typically dominated by mosses, and by *Cratoneuron* spp. in particular; hook moss (*Palustriella commutata*), and marsh bryum (*Bryum pseudotriquetrum*) are

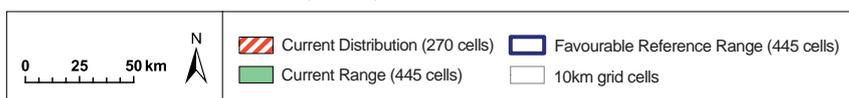
also characteristic. Other common components of the vegetation include grasses such as red fescue (*Festuca rubra*) and quaking-grass (*Briza media*); sedges including dioecious sedge (*Carex dioica*), long-stalked yellow sedge (*C. viridula* subsp. *brachyrhyncha*), flea sedge (*C. pulicaris*), glaucous sedge (*C. flacca*), common sedge (*C. nigra*); common butterwort (*Pinguicula vulgaris*) and marsh horsetail (*Equisetum palustre*). The relatively rare yellow saxifrage (*Saxifraga aizoides*) can occur in calcareous springs and is diagnostic of this habitat.

Negative actions such as land reclamation, turf cutting, and drainage continue to impact on the habitat, degrading its structure and functions. Only limited measures have been introduced to address these damaging activities, which are likely to have increased in severity since the 1990's. The overall conservation status for petrifying spring habitat is bad.

Photograph: Pollardstown Fen (Katharine Duff)



PETRIFYING SPRINGS (7220)



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PETRIFYING SPRINGS with tufa formation (*Cratoneuron*) (7220)

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

ALKALINE FENS (7230)

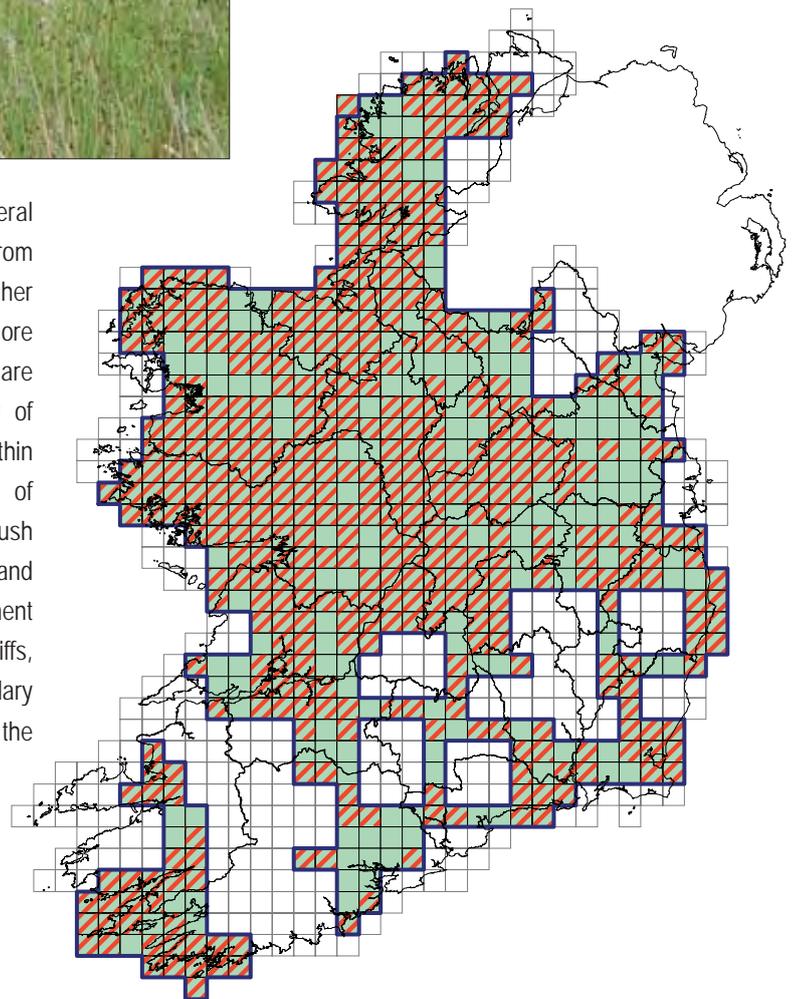


fen peat layer. Some typical species of alkaline fens include black bog-rush (*Schoenus nigricans*), blunt-flowered rush (*Juncus subnodulosus*), devil's bit scabious (*Succisa pratensis*), hemp agrimony (*Eupatorium cannabinum*) and purple moor-grass (*Molinia caerulea*).

Like most peatland types in Ireland, fens have experienced a decline in quality, mostly as a result of activities such as peat mining, draining for cropland, infilling, and fertiliser pollution and eutrophication. Only limited measures have been introduced to address these damaging activities, which are likely to have increased in severity since the 1990's. The overall conservation status for alkaline fen habitat is bad.

Photograph: Fen in Co. Monaghan (Peter Foss)

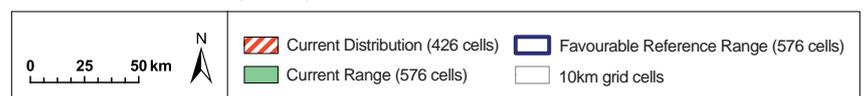
Alkaline fens are peat-forming wetlands that receive mineral nutrients from sources other than precipitation. Fens differ from bogs because they are less acidic and have relatively higher mineral levels. They are therefore able to support a much more diverse plant and animal community. In Ireland, alkaline fens are fed by calcium-rich groundwater. They occur in a variety of situations including valleys or depressions, valley head fens, within transition mire and tall reed beds, on the landward side of hard-water oligotrophic lakeshore communities, calcium-rich flush areas in blanket bogs, dune slack areas, fens adjacent to raised and blanket bogs, in turlough sites, depressions in limestone pavement and wet hollows in machair, and spring fed habitats including cliffs, and even saltmarsh. Alkaline fen may also occur as a secondary habitat on mined out bog sites which have been excavated to the



ALKALINE FEN (7230)

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

ALKALINE FENS (7230)



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SILICEOUS SCREE (8110)



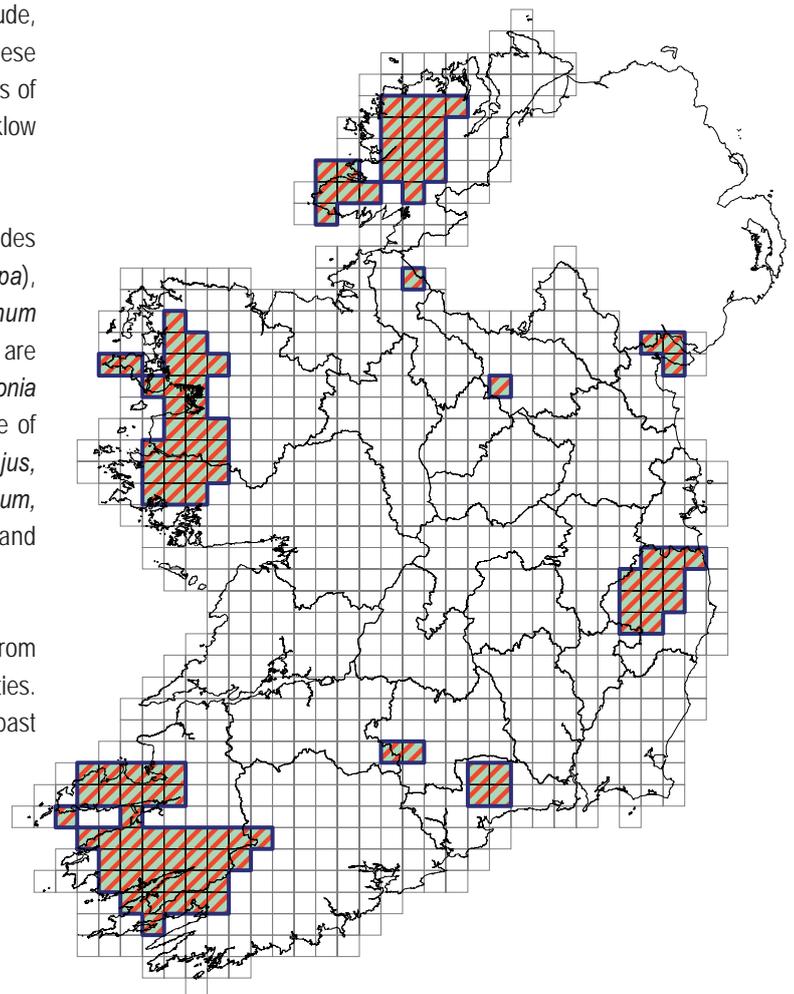
Siliceous scree habitats consist of rock fragments covering exposed upland summits or accumulating on slopes below cliffs. Lack of nutrients in the soil, extreme steepness and the mobility of the screes prevent most plants from rooting. In an Irish context the habitat is found in those upland areas on acidic substrates such as quartzite, granite and sandstone, generally above 350m in altitude, where specialist alpine plants have adapted and survive these harsh conditions. Such upland sites are found in the mountains of Donegal, Galway, Mayo, Cork, Kerry, Tipperary, Waterford, Wicklow and Louth.

Typical vegetation associated with this habitat in Ireland includes plant species such as parsley fern (*Cryptogramma crispera*), mountain sorrel (*Oxyria digyna*), alpine bistort (*Polygonum viviparum*), and dwarf willow (*Salix herbacea*). Also typical are lichens such as *Cladonia furcata*, *Cladonia impexa*, *Cladonia squamosa*, and *Cladonia uncialis*, and the frequent occurrence of mosses including *Campylopus paradoxus*, *Dicranum majus*, *Dicranum scoparium*, *Hypnum cupressiforme*, *Mnium hornum*, *Polytrichum formosum*, *Racomitrium lanuginosum*, and *Rhytidiadelphus loreus*.

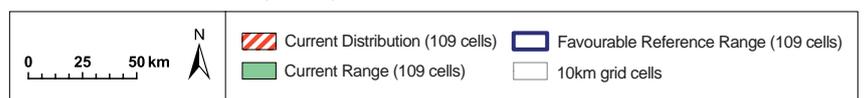
This habitat, though remote, is increasingly under threat from rock-climbing, hill-walking and various other recreational activities. The effects of these activities and damage by grazing in the past

have not yet been fully assessed in terms of impacts to the area and structure and function of the habitat. For these reasons the status for the habitat is assessed as poor.

Photograph: Scree slopes near Maghery, Co. Donegal (Neil Lockhart)



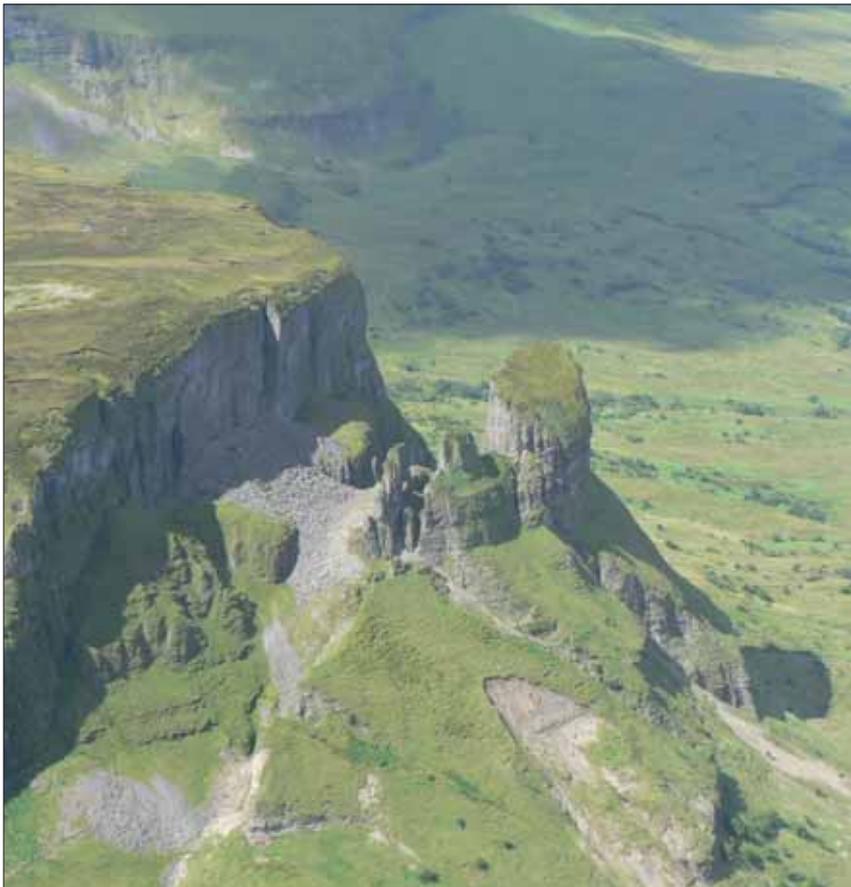
SILICEOUS SCREE (8110)



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SILICEOUS SCREE of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsetalia ladani</i>) (8110)	
Range	Good
Area	Poor
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

CALCAREOUS SCREE (8120)



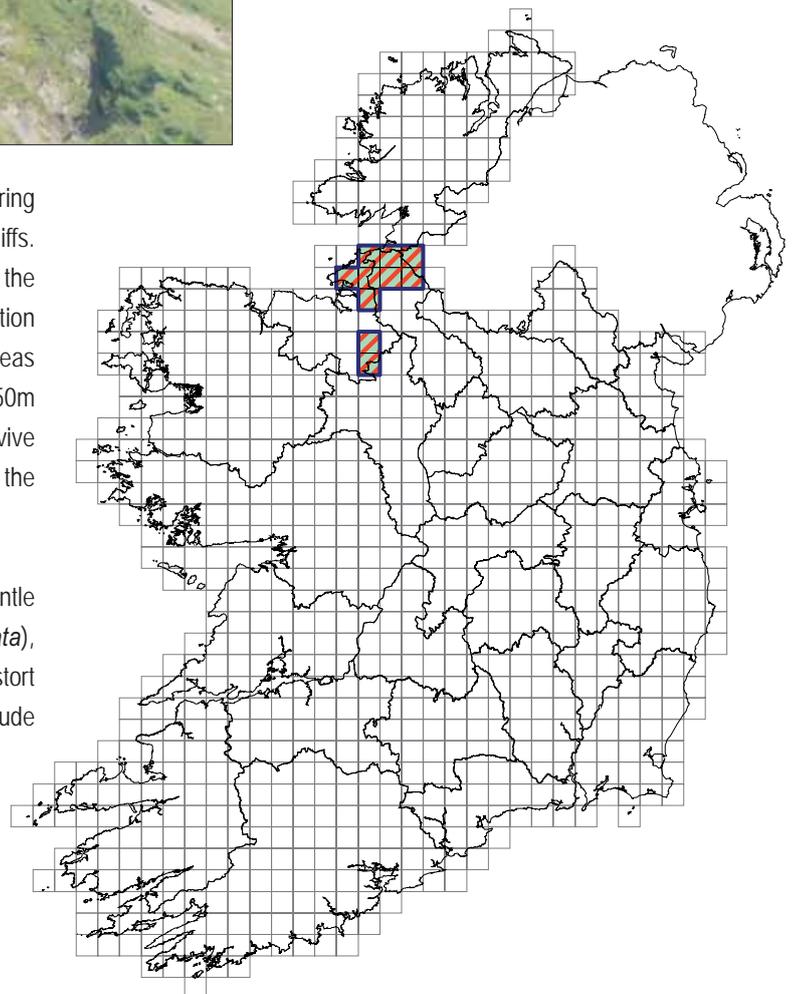
hairy rock-cress (*Arabis hirsuta*), brittle bladder-fern (*Cystopteris fragilis*), hoary whitlowgrass (*Draba incana*) and Irish eyebright (*Euphrasia salisburgensis*), as well as various mosses and lichens such as *Cladonia* spp., and *Racomitrium* spp.

This habitat, though remote, is increasingly under threat from rock-climbing, hill-walking and similar activities. The effects of these activities and damage by grazing in the past have not yet been fully assessed in terms of impacts to the area and structure and function of the habitat. For these reasons the status for the habitat is assessed as poor.

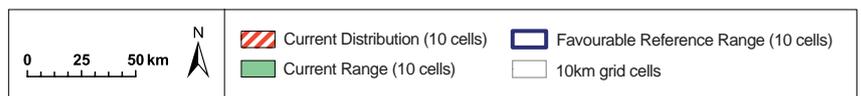
Photograph: NPWS

Calcareous scree habitats consist of rock fragments covering exposed upland summits or accumulating on slopes below cliffs. Lack of nutrients in the soil, extreme steepness and mobility of the screes prevents most plants from rooting, and inhibits colonisation by animals. In an Irish context the habitat is found in upland areas on base-rich rocks such as limestone, generally greater than 350m in altitude, where specialist alpine plants have adapted and survive these harsh conditions. Such upland sites are found in the mountains of Sligo and Leitrim.

Species characteristic of calcareous scree include lady's-mantle (*Alchemilla glaucescens*), fringed sandwort (*Arenaria ciliata*), northern rock-cress (*Cardaminopsis petraea*) and alpine bistort (*Polygonum viviparum*). Other species occurring may include



CALCAREOUS SCREE (8120)



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CALCAREOUS AND CALCHIST SCREES of the montane to alpine levels in Ireland (*Thlaspietea rotundifolii*) (8120)

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

CALCAREOUS ROCKY SLOPES (8210)



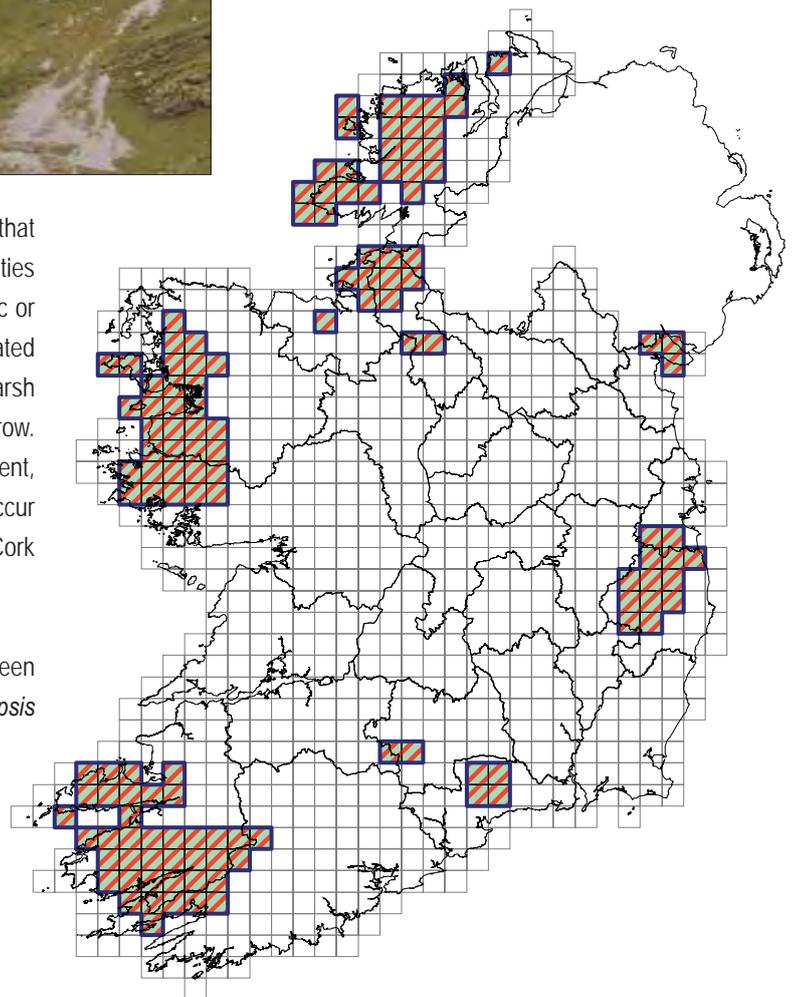
petraea), alpine hair-grass (*Deschampsia caespitosa* ssp. *alpina*), Hart's saxifrage (*Saxifraga hartii*), alpine saxifrage (*S. nivalis*), purple saxifrage (*S. oppositifolia*) and alpine meadow-rue (*Thalictrum alpinum*). Other species that may occur include hairy rock-cress (*Arabis hirsuta*), harebell (*Campanula rotundifolia*), brittle bladder-fern (*Cystopteris fragilis*) and hoary whitlowgrass (*Draba incana*).

This habitat, though remote, is increasingly under threat from rock-climbing, hill-walking and similar activities. The effects of these activities and damage by grazing in the past have not yet been fully assessed in terms of impacts to the area and structure and function of the habitat. For these reasons the status of this habitat is assessed as poor.

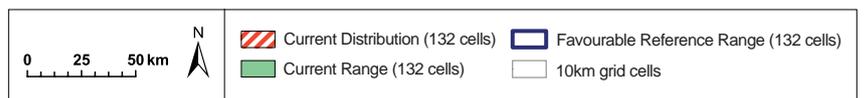
Photograph: Benwisken, Co Sligo (Richard Nairn)

"Chasmophytic vegetation" consists of plant communities that colonise the cracks and fissures of rock faces. The communities found are determined by the nature of the rocks, whether acidic or basic. In Ireland the habitat on calcareous rocky slopes is located in the upland areas above 350m where exposure and harsh conditions allow a specialised suite of arctic-alpine plants to grow. The calcareous habitat occurs where upland limestone is present, either as large areas of bedrock or where calcareous bands occur within other mainly siliceous upland rocks, such as in west Cork and Kerry.

Plant species typically occurring in this habitat include green spleenwort (*Asplenium viride*), northern rock-cress (*Cardaminopsis*



CALCAREOUS ROCKY SLOPES (8210)



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CALCAREOUS ROCKY SLOPES with chasmophytic vegetation (8210)	
Range	Good
Area	Poor
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

SILICEOUS ROCKY SLOPES (8220)

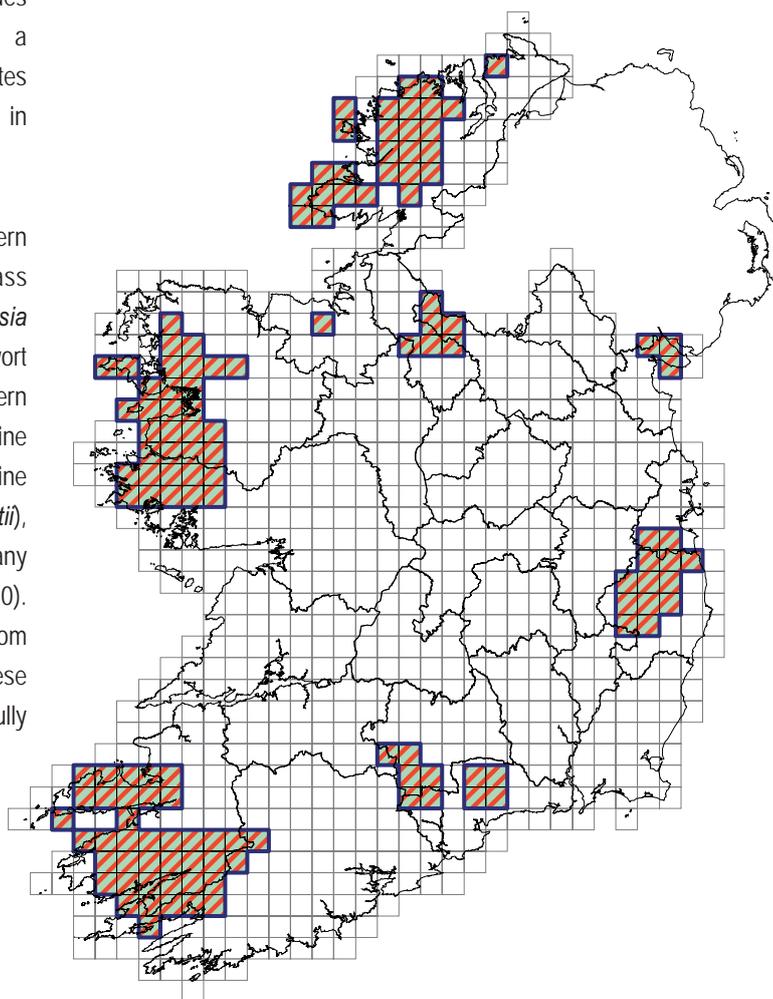


“Chasmophytic” vegetation consists of plant communities that colonise the cracks and fissures of upland rock faces. The communities found are determined by the nature of the rocks, whether acidic or basic. In Ireland the habitat of siliceous rocky slopes is found on acidic rocks located in upland areas at altitudes above 350m, where exposure and harsh conditions allow a specialised suite of arctic-alpine plants to grow. Such upland sites are widespread in Ireland though the habitat is localised in its occurrence.

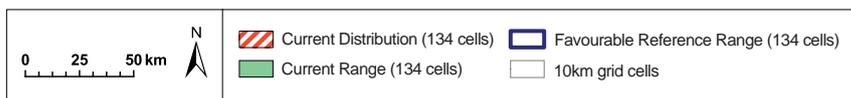
Species characteristic of siliceous rocky slopes include northern rock-cress (*Cardaminopsis petraea*), alpine hair-grass (*Deschampsia caespitosa* ssp. *alpina*), eyebright (*Euphrasia frigida*), viviparous fescue (*Festuca vivipara*), recurved sandwort (*Minuartia recurva*), mountain sorrel (*Oxyria digyna*), beech fern (*Phegopteris connectilis*), alpine meadow-grass (*Poa alpina*), alpine bistort (*Polygonum viviparum*), dwarf willow (*Salix herbacea*), alpine saw-wort (*Saussurea alpina*), Hart’s saxifrage (*Saxifraga hartii*), Irish saxifrage (*S. rosacea*), starry saxifrage (*S. stellaris*) and many of the mosses and lichens listed for siliceous scree (8110). This habitat, though remote, is increasingly under threat from rock-climbing, hill-walking and similar activities. The effects of these activities and damage by grazing in the past have not yet been fully

assessed in terms of impacts to the area and structure and function of the habitat. For these reasons the status for the habitat is assessed as poor.

Photograph: Djouce Mountain (John Cross)



SILICEOUS ROCKY SLOPES (8220)



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SILICEOUS ROCKY SLOPES with chasmophytic vegetation (8220)	
Range	Good
Area	Poor
Structure & Function	Poor
Future prospects	Poor
OVERALL	POOR

LIMESTONE PAVEMENT (8240)



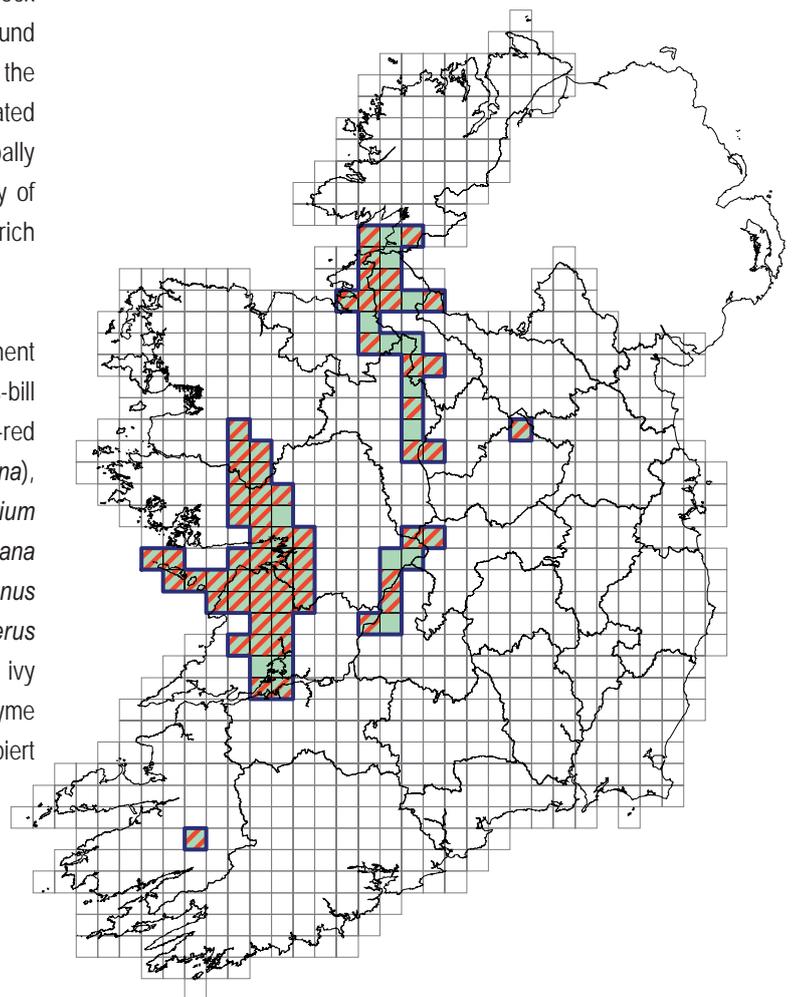
(*Aphanes arvensis*), hairy rock-cress (*Arabis hirsuta*), mossy saxifrage (*Saxifraga hypnoides*), mountain everlasting (*Antennaria dioica*). Ferns which occur in this habitat include *Asperula cynanchica*, *Cystopteris fragilis*, *Dryopteris filix-mas*, *D. affinis*, maidenhair spleenwort (*Asplenium trichomanes*), wall rue (*A. ruta-muraria*), Hart's-tongue (*Phyllitis scolopendrium*), rustyback (*Ceterach officinarum*) and maidenhair fern (*Adiantum capillus-veneris*). Bryophytes which may occur include *Breutelia chrysocoma* and *Neckera crispa*.

The area of limestone pavement habitat has been reduced slightly across the range by quarrying and reclamation for agriculture. Reduced farming activity is causing scrub to spread over some areas, resulting in the loss of some of the typical flora. Intensive agriculture and domestic/municipal waste sources in the vicinity of pavement may threaten groundwater. For these reasons the status of this habitat is assessed as poor.

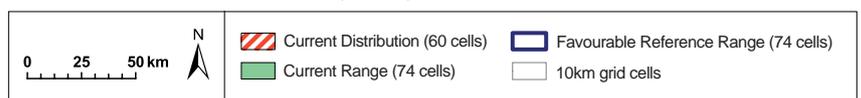
Photograph: Burren, Co. Clare (John Cross)

Limestone pavement is formed where glacial activity has stripped soil away from limestone bedrock leaving either bare rock or rock covered with just a very thin layer of soil. The habitat is found mainly in counties Clare, Galway and Mayo, most famously in the Burren and the Aran Islands. The landscape, flora and associated fauna have evolved in response to millennia of farming, principally grazing. It supports a very rich flora and fauna and a variety of vegetation types which form a mosaic, including orchid-rich grassland, limestone heath and hazel scrub.

Species of plant which typically occur on limestone pavement include blue moor-grass (*Sesleria albicans*), bloody crane's-bill (*Geranium sanguineum*), herb-robert (*G. robertianum*), dark-red helleborine (*Epipactis atrorubens*), wild madder (*Rubia peregrina*), burnet rose (*Rosa pimpinellifolia*), wood sage (*Teucrium scorodonia*), quaking-grass (*Briza media*), spring gentian (*Gentiana verna*), mountain avens (*Dryas octopetala*), blackthorn (*Prunus spinosa*), buckthorn (*Rhamnus cathartica*), juniper (*Juniperus communis*), heather (*Calluna vulgaris*), yew (*Taxus baccata*), ivy (*Hedera helix*), early dog-violet (*Viola reichenbachiana*), wild thyme (*Thymus praecox*), hawthorn (*Crataegus monogyna*), parsley-piert



LIMESTONE PAVEMENT (8240)



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LIMESTONE PAVEMENTS (8240)

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

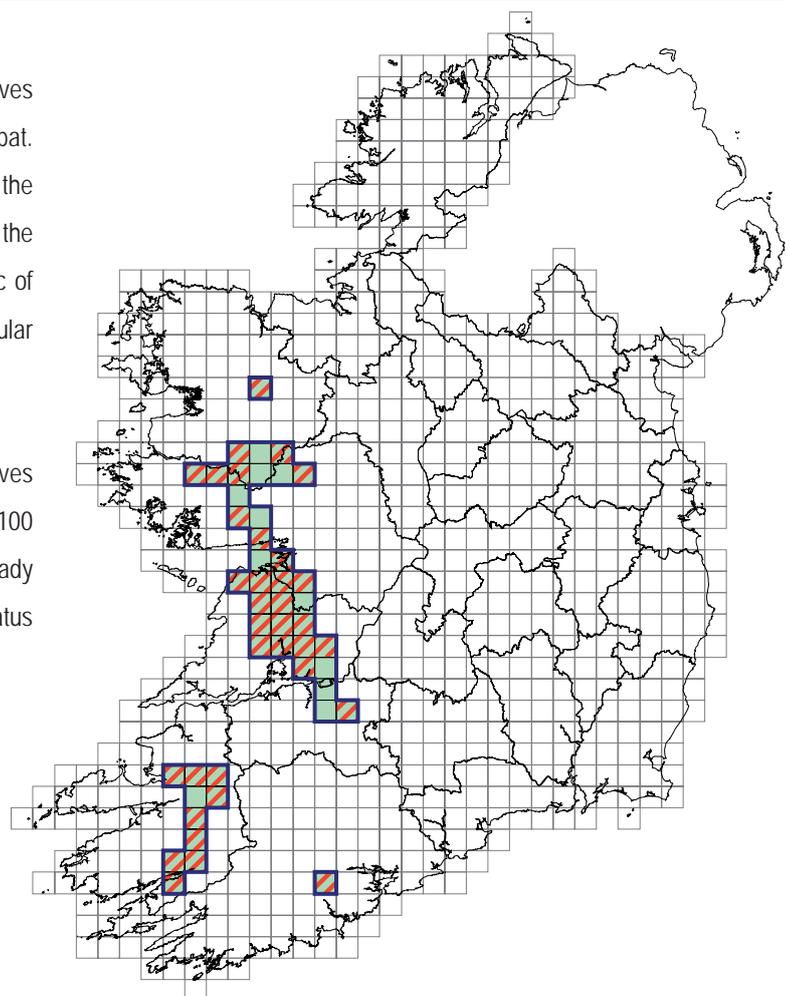
CAVES (8310)



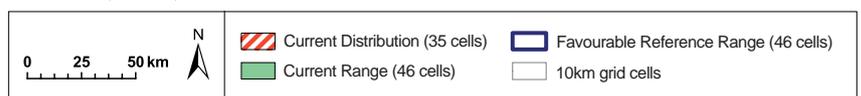
The EU-protected habitat caves, is confined in Ireland to caves that host important winter numbers of lesser horseshoe bat. This species, and hence this habitat, is restricted to the west of the country. It is known that a constant low temperature throughout the winter and an absence of human disturbance are characteristic of good caves, but further work is required to establish the particular factors that make caves suitable for lesser horseshoe bats.

Given that lesser horseshoe bats continue to occupy caves throughout their range in Ireland, with many sites holding over 100 bats, and that many of the most important bat caves are already protected from disturbance through grilling, the conservation status of this habitat is considered good.

Photograph: Lesser horseshoe bat leaving a cave (Frank Greenaway)



CAVES (8310)

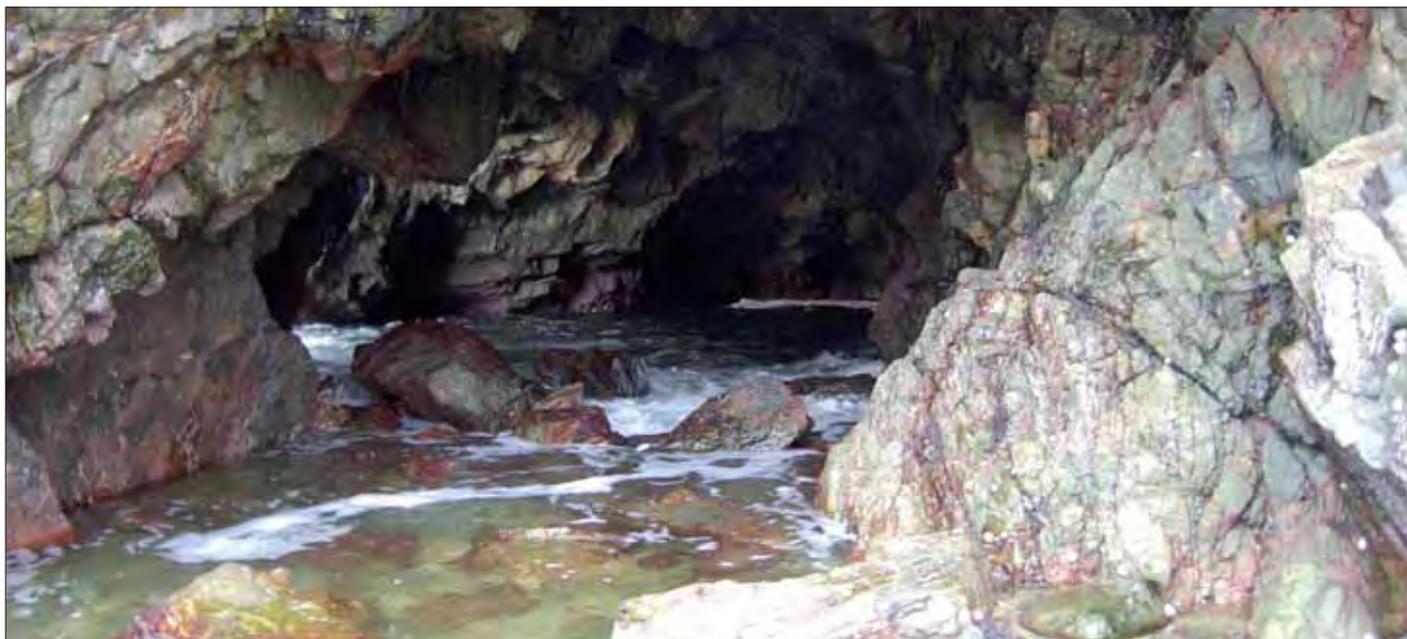


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CAVES not open to the public (8310)

Range	Good
Area	Unknown
Structure & Function	Good
Future prospects	Good
OVERALL	GOOD

SEA CAVES (8330)

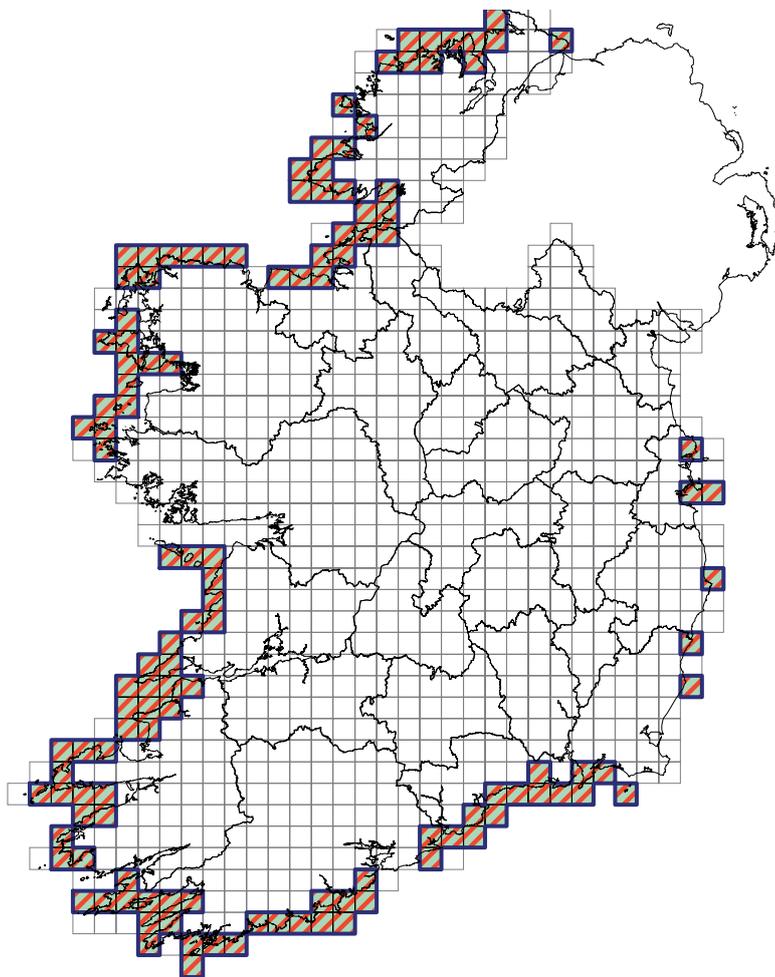


Sea caves are situated under the sea or opened to it, at least at high tide. The habitat includes partially submerged sea caves. Their bottom and sides harbour communities of marine invertebrates and algae.

The walls and roofs of sea caves are typically densely covered in encrusting sponges such as *Leuconia nivea*, *Clathrina coriacea*, *Dysidea fragilis* and *Dercitus bucklandi*, which is characteristic of caves and crevices. Other species commonly present in sea caves include hydroids such as *Tubularia indivisa*, anthozoans *Corynactis viridis* and *Phellia gausapata*, bryozoans *Crisia* spp. and *Scrupocellaria reptans*, the sea squirt *Dendrodoa grossularia* and various encrusting coralline algae.

The conservation status of this habitat is considered good.

Photograph: Ardroom, Co. Cork (Richard Nairn)



Submerged or partially submerged
SEA CAVES (8330)

Range **Good**

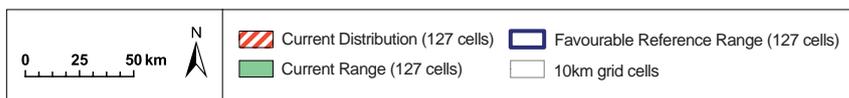
Area **Unknown**

Structure & Function **Good**

Future prospects **Good**

OVERALL GOOD

SEA CAVES (8330)



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OLD OAK WOODLANDS (91A0)



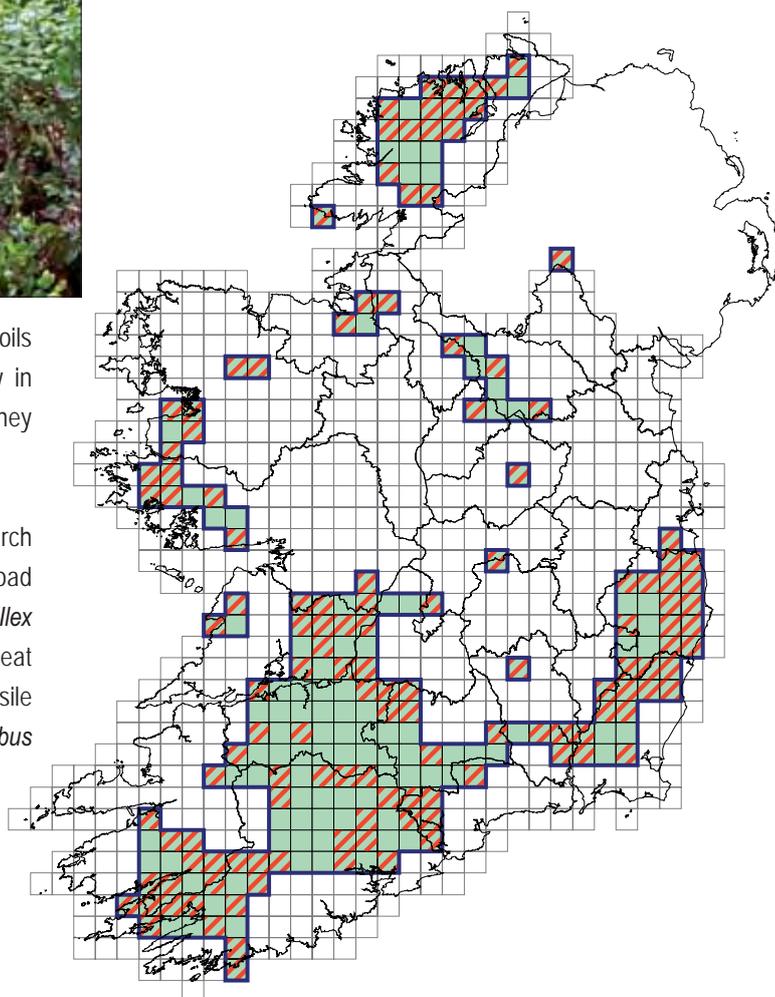
Sessile oak (*Quercus petraea*) woodlands occur on acidic soils mostly in upland areas throughout the country but especially in Wicklow and west Cork/south Kerry, including the Killarney National Park.

Typical plant species of old oak woodlands include downy birch (*Betula pubescens*), hard fern (*Blechnum spicant*), broad buckler-fern (*Dryopteris dilatata*), ivy (*Hedera helix*), holly (*Ilex aquifolium*), honeysuckle (*Lonicera periclymenum*), great wood-rush (*Luzula sylvatica*), bracken (*Pteridium aquilinum*), sessile oak (*Quercus petraea*), bramble (*Rubus fruticosus*), rowan (*Sorbus*

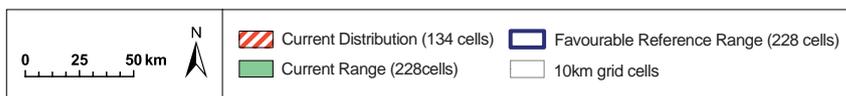
aucuparia) and bilberry (*Vaccinium myrtillus*). A range of bryophytes are also typical of this habitat, including *Calypogeia muellerana*, *Dicranum scoparium*, *Diplophyllum albicans*, *Hylocomium brevirostre*, *Hypnum* spp. *Isoetecium myosuroides*, *Kindbergia praelongum*, *Mnium hornum*, *Plagiothecium undulatum*, *Polytrichastrum formosum*, *Pseudotaxiphyllum elegans*, *Rhytidiadelphus loreus*, *Saccogyna viticulosa*, *Scapania gracilis* and *Thuidium tamariscinum*.

Old oak woodlands are very fragmented and the area of this habitat has declined slightly as a result of clearance, although new woodland is developing where grazing pressure has decreased. Invasive alien species are a threat to many stands and sub-optimal grazing is a feature of many woods. For these reasons the overall conservation status of this habitat is bad.

Photograph: Tomnafinnoge Wood, Co. Wicklow (John Cross)



OLD OAK WOODLAND (91A0)



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OLD SESSILE OAK WOODS with <i>Ilex</i> and <i>Blechnum</i> (91A0)	
Range	Good
Area	Bad
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

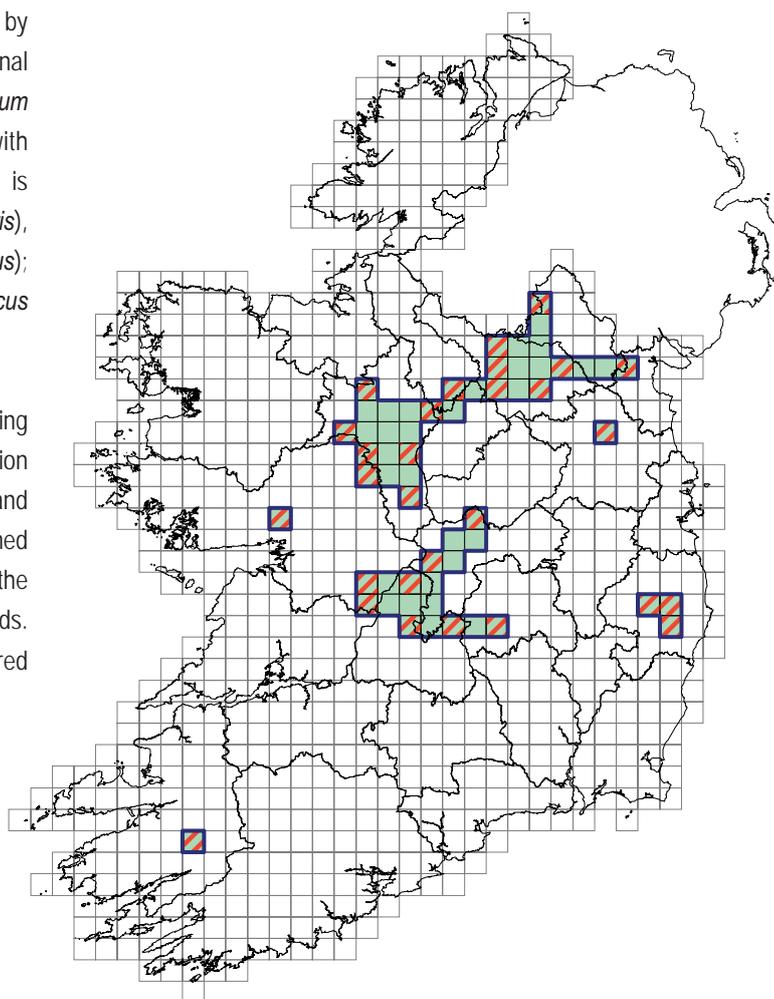
BOG WOODLAND (91D0)



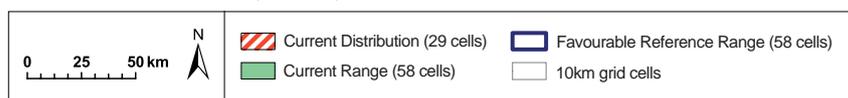
Bog woodlands are very distinctive. They are dominated by birch - mostly downy birch (*Betula pubescens*) - with occasional willows. A characteristic feature is the ground cover of *Sphagnum* moss species which often form deep carpets, usually with *Polytrichum* mosses and occasional lichens. The field layer is poorly developed, consisting mostly of ling (*Calluna vulgaris*), purple moor grass (*Molinia caerulea*), bilberry (*Vaccinium myrtillus*); sedges such as bottle sedge (*Carex rostrata*); soft rush (*Juncus effusus*) and a few ferns such as hard fern (*Blechnum spicant*).

Bog woodlands are closely associated with raised bogs, occurring either on intact bogs, on cutaway or on transition mires (transition between fen and bog). They are found mostly in the central and north midlands. Their total area is uncertain. They are threatened by drainage, peat cutting, burning and development; although in the long term it is believed that they will expand as cutaway re-floods. The overall conservation status of this habitat is considered to be poor.

Photograph: Annagh Wood, Co. Cavan (Katharine Duff)



BOG WOODLAND (91D0)



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BOG WOODLAND (91D0)

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

ALLUVIAL FORESTS (91E0)

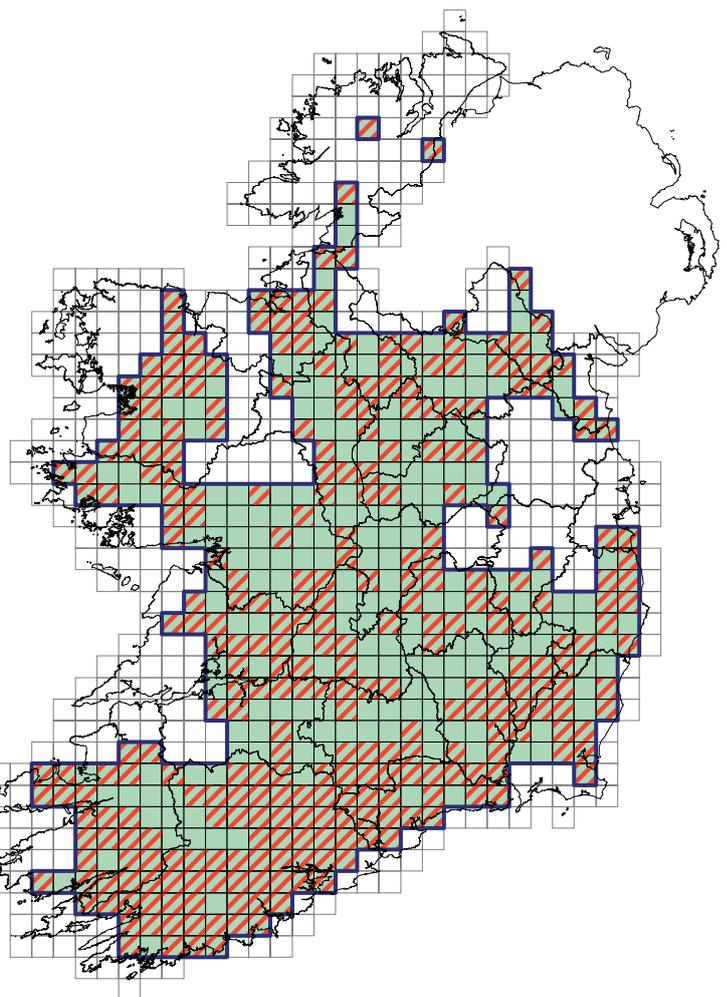


Alluvial Forests are typically woodlands of alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*), often with willows (*Salix* spp.) and sometimes oak (*Quercus robur*). This habitat occurs in areas subject to periodic flooding along rivers and on lake shores.

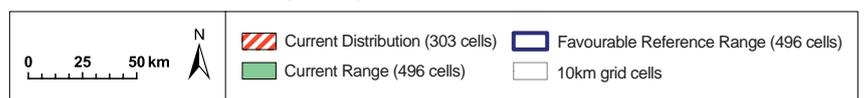
A species-rich and often luxuriant flora is associated with these woodlands, including creeping bent (*Agrostis stolonifera*), remote sedge (*Carex remota*), meadow-sweet (*Filipendula ulmaria*), reed-grass (*Phalaris arundinacea*) and water mint (*Mentha aquatica*). They occur widely throughout the country usually as small and isolated stands with the most extensive areas in the south-west.

The area of alluvial forests has declined and this, together with their fragmented nature, abundance of alien invasive species and sub-optimal grazing regimes and drainage, gives them a bad overall conservation status.

Photograph: Muckross, Killarney, Co. Kerry (John Cross)



ALLUVIAL FORESTS (91E0)



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ALLUVIAL FORESTS with *Alnus glutinosa* and *Fraxinus excelsior* (91E0)

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

YEW WOODLANDS (91J0)



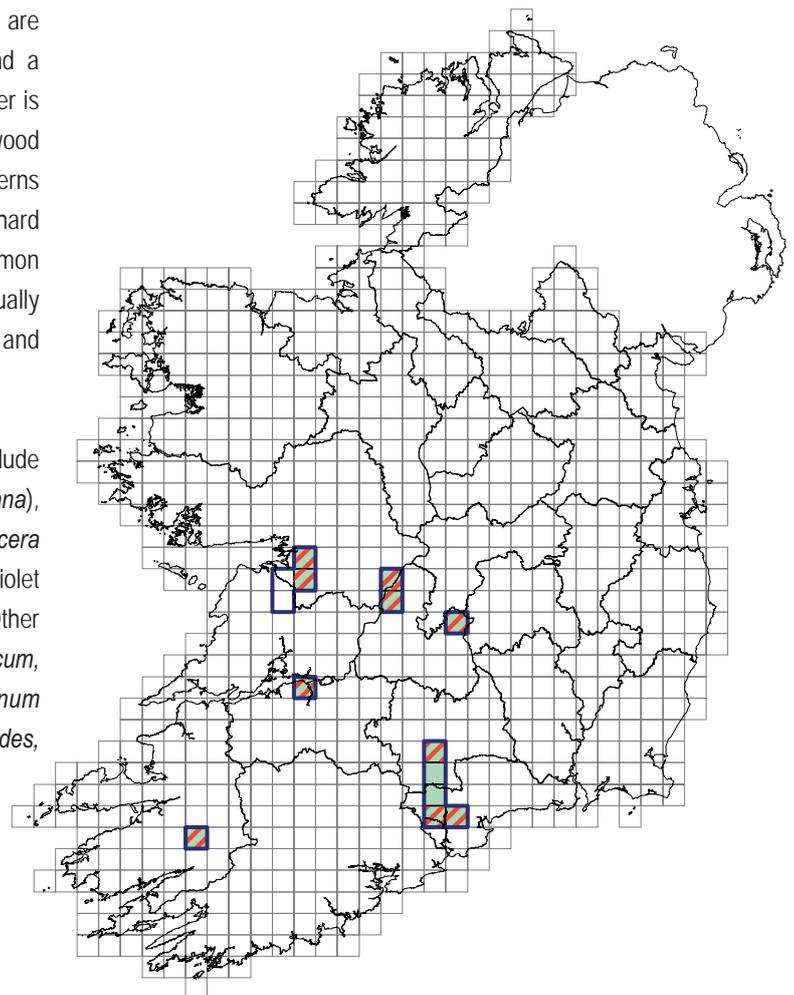
Marchesinia mackaii, *Plagiochila asplenoides*, *Plagiomnium undulatum*, *Rhynchostegiella tenella*, *Rhytidiadelphus triquetrus*, *Thuidium tamarascinum*, and *Tortella tortuosa*.

Yew woodlands are very restricted in their distribution with only 10 known sites in the south-west. The stands are mostly small and widely dispersed and in most places there is no suitable habitat into which they can expand. However, there is potential for them to develop on the eastern edge of the Burren. Invasive aliens are a threat to many sites, although in several stands these are being removed. For these reasons their overall status is considered to be bad.

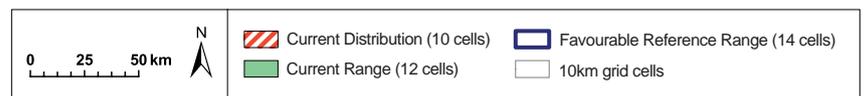
Photograph: Muckross, Killarney, Co. Kerry (John Cross)

Yew woodlands occur largely on outcrops of limestone. They are dominated by yew (*Taxus baccata*) with occasional ash and a poorly developed shrub layer of holly and hazel. The field layer is also poorly developed with wild arum (*Arum maculatum*), wood violets (*Viola* spp.), barren strawberry (*Potentilla sterilis*) and ferns such as Hart's tongue fern (*Phyllitis scolopendrium*) and hard shield-fern (*Polystichum aculeatum*) being the most common species. In contrast, the moss layer is well developed but usually species-poor, with species such as *Neckera complanata* and *Thamnobryum alopecurum* typically dominant.

Other plant species typically found in yew woodland habitat include false brome (*Brachypodium sylvaticum*), hazel (*Corylus avellana*), ivy (*Hedera helix*), holly (*Ilex aquifolium*), honeysuckle (*Lonicera periclymenum*), bramble (*Rubus fruticosus*), common dog-violet (*Viola riviniana*), and early dog-violet (*V. reichenbachiana*). Other bryophyte species which may occur include *Ctenidium molluscum*, *Eurhynchium striatum*, *Loeskeobryum brevirostre*, *Hypnum cupressiforme*, *Isothecium alopecuroides*, *Isothecium myosuroides*,



YEW WOODLANDS (91J0)



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<i>Taxus baccata</i> WOODS (91J0)	
Range	Bad
Area	Bad
Structure & Function	Bad
Future prospects	Bad
OVERALL	BAD

3 . S P E C I E S





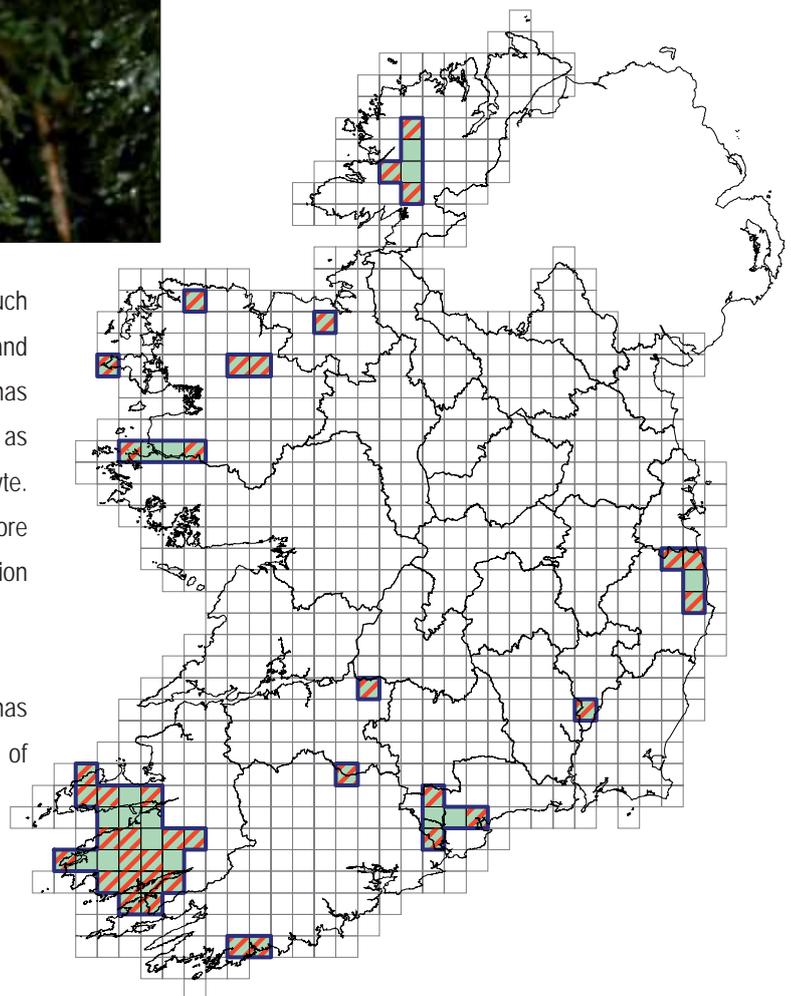
gametophyte populations in the 1990s has increased the known range of the species. Specialised microhabitat requirements mean that modifications to a site's hydrology, through pollution or woodland clearance, remain a threat.

As the range and population size are stable, and the habitats where the species occurs are well protected, the future prospects and overall conservation status for this species are good.

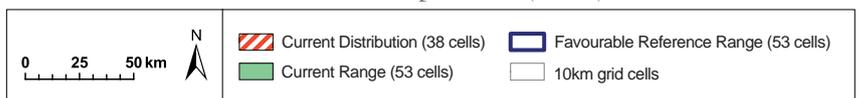
Photograph: Killarney Fern (Naomi Kingston)

Killarney fern is a large filmy fern, of deeply shaded habitats such as dripping caves, crevices on cliffs, gullies by waterfalls, and occasionally on damp woodland floors. This slow growing fern has a typical two-stage life cycle; the second fern-like stage known as the sporophyte, and the first moss-like stage the gametophyte. These can live independently, with sporophytes having a more limited distribution than gametophytes, possibly due to collection during Victorian times.

Despite historical collection, the size of sporophyte populations has remained stable since the 1960s, and the discovery of



KILLARNEY FERN - *Trichomanes speciosum* (1421)



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KILLARNEY FERN <i>Trichomanes speciosum</i> (1421)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



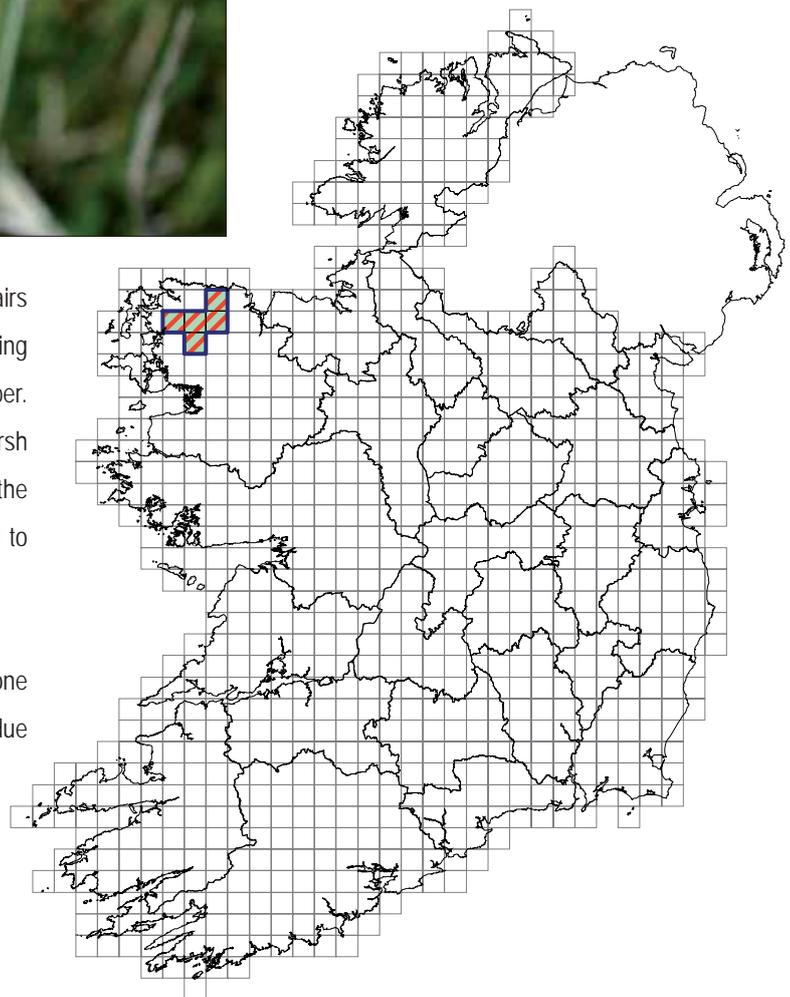
to drainage and peat removal. In the Republic of Ireland, marsh saxifrage is currently found only in County Mayo with eight sites documented. All known sites lie within five Irish 10km² squares.

As the range and population size are stable, and the sites where the species occurs are well protected, the future prospects and overall conservation status for this species are good.

Photograph: Marsh saxifrage (Neil Lockhart)

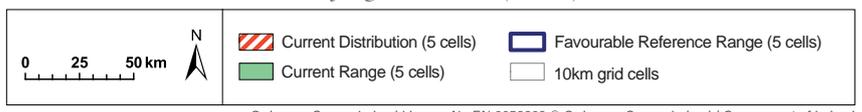
Marsh saxifrage is a small perennial plant with orange/brown hairs on the stem, opposite leaves and an erect yellow flower. Flowering in Ireland begins in mid July and continues until early October. Now declining and threatened throughout Europe, the marsh saxifrage once had a relatively wide distribution across the European Union. In Ireland, the plant appears to be restricted to mineral flushes in what is otherwise rain-fed blanket bog.

By the 1970s, *the Irish Red Data Book* recorded only two sites, one in Mayo and one in Antrim, with midlands sites having been lost due



MARSH SAXIFRAGE <i>Saxifraga hirculus</i> (1528)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

MARSH SAXIFRAGE - *Saxifraga hirculus* (1528)



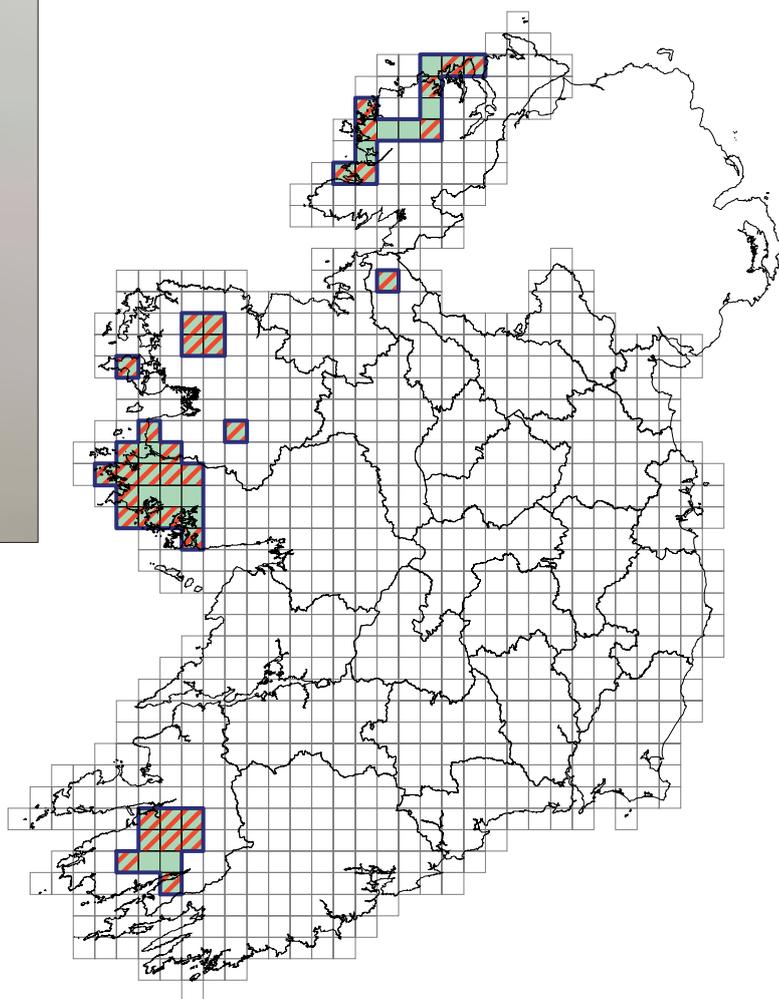
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Slender naiad is a submerged aquatic plant that occurs mainly in western lakes in Ireland. It grows in deep water, has slender, branching stems and is usually seen as fragments washed up on lake shores. 36 populations of this species have been recorded in Ireland since 1999. 10 additional populations are of uncertain status and there are three known extinctions since 19th century. It is probable that further populations may be discovered

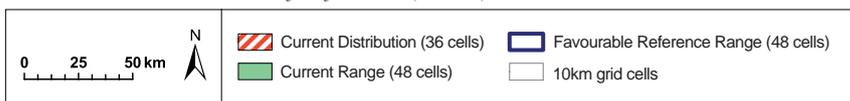
The main pressure is eutrophication, due to inputs from domestic sources, agricultural use of fertilisers and manure spreading. The spread of invasive species may be detrimental to this species. The overall conservation status of this species is considered poor.

Photograph: Slender naiad (Noeleen Smyth)



SLENDER NAIAD <i>Najas flexilis</i> (1833)	
Range	Good
Population	Poor
Habitat	Poor
Future prospects	Good
OVERALL	POOR

SLENDER NAIAD - *Najas flexilis* (1833)



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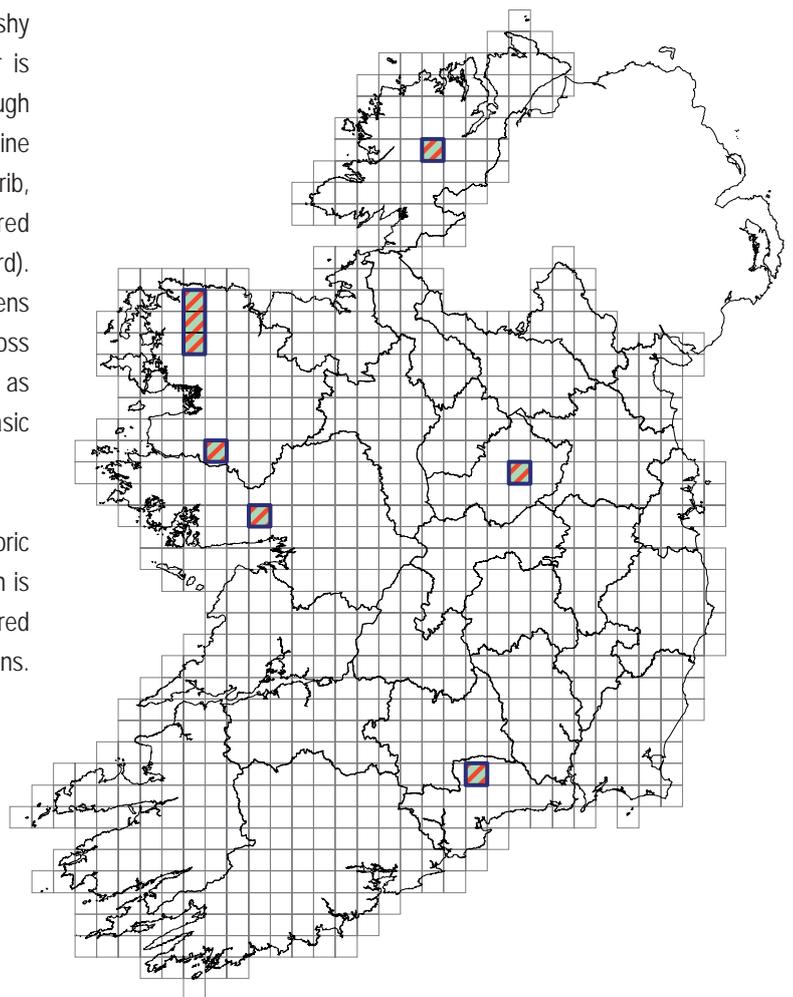
SLENDER GREEN FEATHER-MOSS -*Hamatocaulis vernicosus* (1393) Annex II, IV



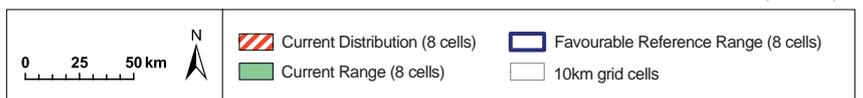
Slender green feather-moss is a straggling moss of wet marshy ground such as that typical of fens, where the groundwater is mineral-rich but not strongly calcareous. First reported from Lough Bray in County Wicklow in 1872, it is currently known from nine localities, with large populations in the lowlands (at Lough Corrib, Lough Mask and Scragh Bog) and smaller more scattered populations in the uplands (in Donegal, Mayo and Waterford). It appears to be sensitive to eutrophication, and the sorts of fens where it grows can often become dominated by another moss *Calliergonella cuspidata* at the expense of rarer species such as slender green-feather moss. In both more acidic and more basic flushes it seems to be somewhat more resilient.

Although its population has almost certainly declined in historic times, due to the loss of intact peatlands, its current population is still substantial. The habitats that support this moss are considered to be in good condition and several hold extensive populations. Consequently, its conservation status is considered good.

Photograph: Slender green feather-moss (Neil Lockhart)



SLENDER GREEN FEATHER-MOSS -*Hamatocaulis vernicosus* (1393)



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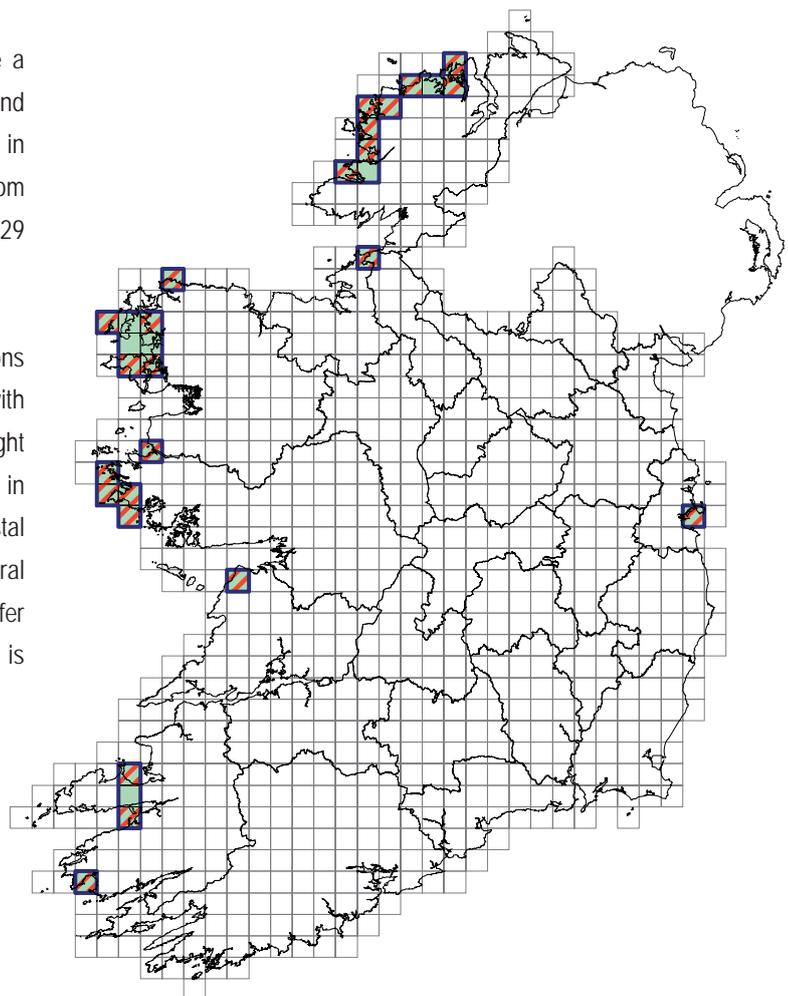
SLENDER GREEN FEATHER-MOSS <i>Hamatocaulis vernicosus</i> (1393)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



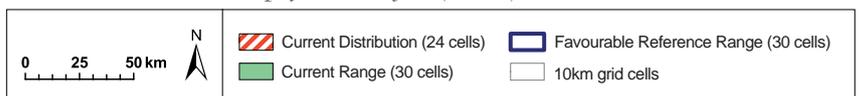
Petalwort is a small liverwort (a type of moss) that looks like a miniature cabbage (about 1 cm across). It grows in lime-rich sand at the coast where it is confined to damp areas which may flood in winter. It prefers well-grazed areas. First recorded in Ireland from Malahide, north Dublin, in 1861, it is now known to occur at 29 localities, mainly on the west coast.

Recent surveys have shown that some substantial populations occur on machairs (coastal sandy plains) in Galway and Mayo (with more than five million plants at Slyne Head). Ireland is now thought to contain the largest populations of petalwort found anywhere in the world. Although suitable habitat has been lost due to coastal developments such as golf courses, caravan parks and agricultural improvement, the overgrazed conditions of its remaining sites offer ideal conditions for petalwort and its conservation status is considered good.

Photograph: Petalwort (Neil Lockhart)



PETALWORT - *Petalophyllum ralfsii* (1395)



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PETALWORT <i>Petalophyllum ralfsii</i> (1395)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

**MAERL - *Lithothamnion corallioides* (1376)
- *Phymatolithon calcareum* (1377)**

Annex V

Annex V

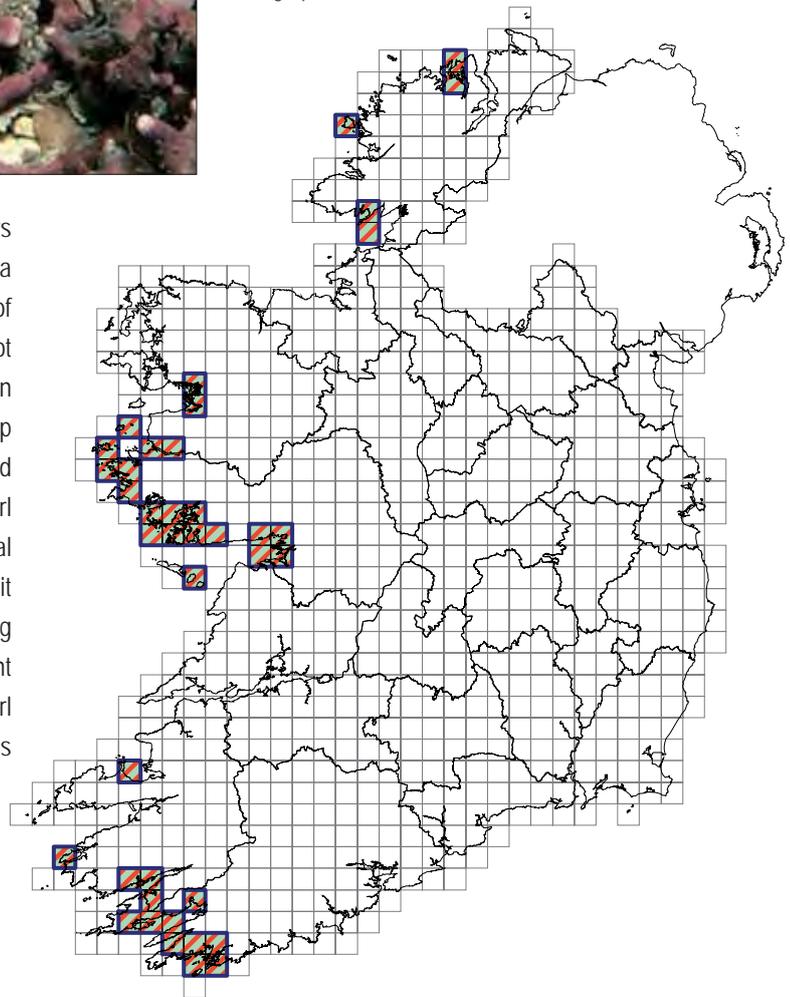


those with live material present. Maerl is extremely slow growing (1-2 mm per year) and so maerl gravel must be considered to be a geological feature that is non-renewable. It is not known whether a population of live maerl will recover if removed. As improved knowledge on the distribution and extent becomes available, the known range of the species may increase.

Fishing impacts are likely to continue to have some effect on maerl beds. The two species can be difficult to tell apart as colour is not very reliable and during survey work they are generally not distinguished. Consequently the same assessment and map covers both species. The overall conservation status of both species is poor.

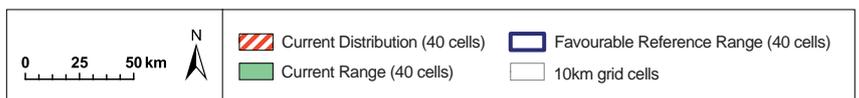
Photograph: Maerl (BioMar)

Maerl is a marine calcareous alga which lives in shallow waters ranging from 3 to 20 metres in depth. Living maerl is pink due to a combination of photosynthetic pigments. The distribution of *Lithothamnion corallioides* and *Phymatolithon calcareum* has not been mapped in detail although the primary maerl beds have been mapped. These two species form a thin veneer on the surface up to about 20cm in depth. Beneath this veneer is a deposit of dead maerl gravel with varying degrees of mud. Biodiversity in maerl beds is often very rich, varying according to the three dimensional structure of the living veneer and the composition of the deposit below it. Dead maerl gravel may also be found away from living beds. It is not known whether these beds are formed by movement of the gravel by wave action, or whether they supported live maerl in the past. Beds of maerl gravel are as ecologically important as



MAERL - *Lithothamnion corallioides* (1376)
- *Phymatolithon calcareum* (1377)

MAERL <i>Lithothamnion coralloides</i> <i>Phymatolithon calcareum</i> (1376, 1377)	
Range	Good
Population	Unknown
Habitat	Unknown
Future prospects	Poor
OVERALL	POOR



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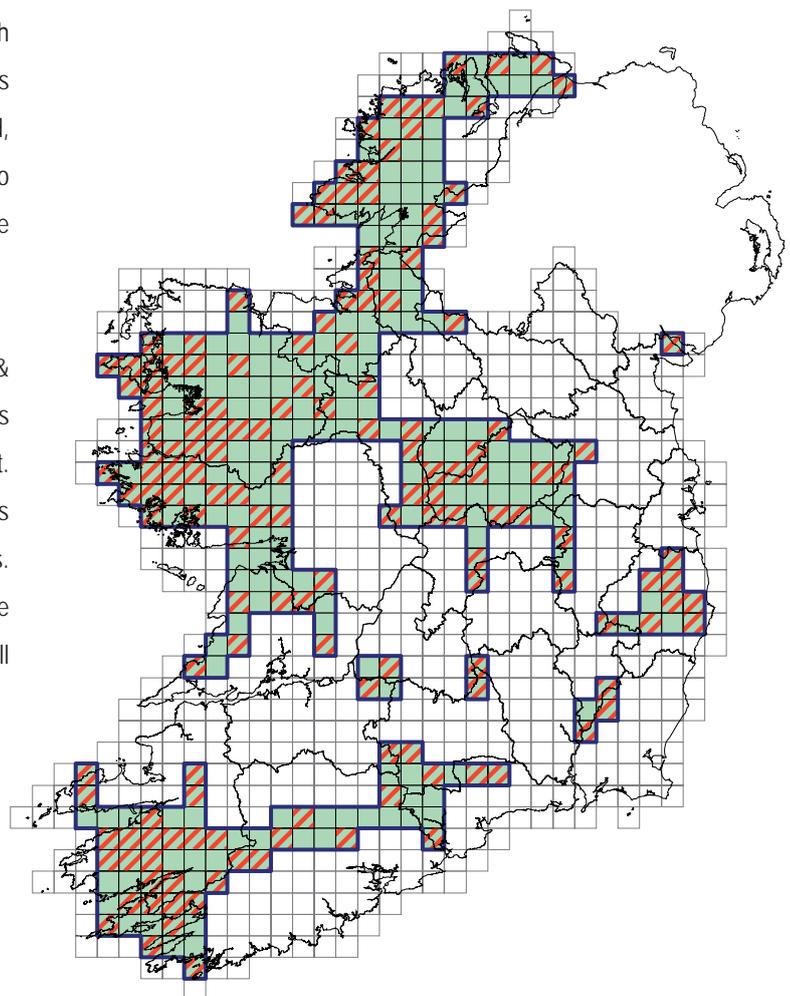
WHITE CUSHION MOSS - *Leucobryum glaucum* (1400) Annex V



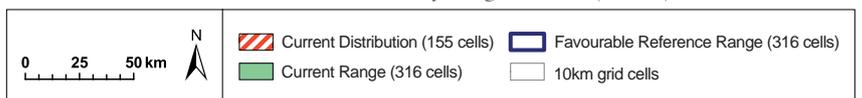
White cushion moss is densely tufted, forming cushions which can extend to one metre across and up to 15cm high. It grows commonly on rocks, tree stumps and on the ground in woodland, forest plantations, heath and bogs. The substrate is acid to strongly acid. The plant is porous and can hold water like a sponge.

A study was commissioned in 2006 by the National Parks & Wildlife Service to investigate wildlife trade in Ireland. There was no evidence of exploitation of this species presented in the report. However, the quality of many of the habitats in which the species occurs is considered poor due to inappropriate grazing regimes. As this species occurs in a wide variety of habitat types its future prospects are considered to be good, however its overall conservation status is poor.

Photograph: Josef Hlasek



WHITE CUSHION MOSS - *Leucobryum glaucum* (1400)



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WHITE CUSHION MOSS <i>Leucobryum glaucum</i> (1400)	
Range	Good
Population	Good
Habitat	Poor
Future prospects	Good
OVERALL	POOR

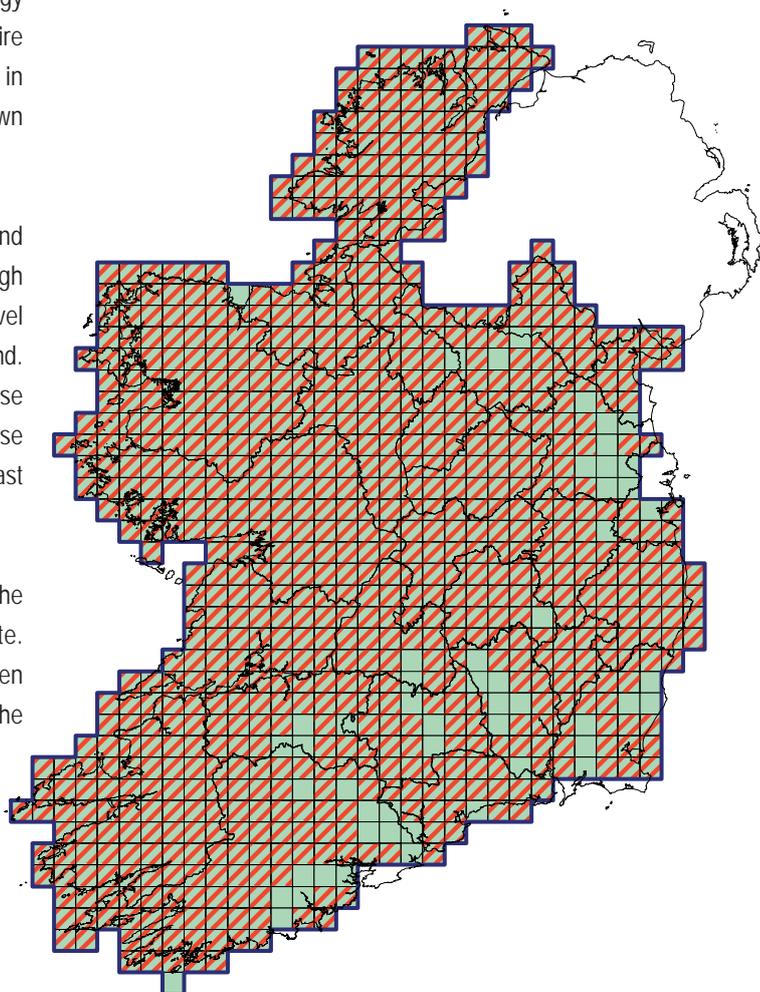


Photograph: *Sphagnum* (Neil Lockhart)

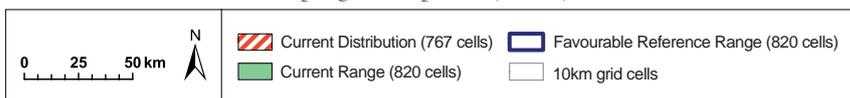
Sphagnum mosses are the key peat-forming species in most acid bogs, including raised bogs and blanket bogs. The mosses form carpets made up of vertically growing shoots. Their morphology depends on the wetness and exposure of the habitat but all require high rainfall to survive. There are over 20 species of *Sphagnum* in Ireland. Many *Sphagnum* species have distinguishing red or brown colours which are especially conspicuous late in the summer.

A study was commissioned in 2006 by the National Parks and Wildlife Service to investigate wildlife trade in Ireland. Although some trade in moss species was noted, it appeared to be low-level and, with one exception, did not involve plants collected in Ireland. Collection of these species was not widespread and unlikely to pose a conservation problem. *Sphagnum* was formerly collected for use in hanging baskets; however this has not been prevalent in the last ten years.

Although this genus occurs in many widespread habitats, the condition of these habitats is considered to be inadequate. The conservation assessments for blanket bog, raised bog and fen habitats were taken into consideration for this assessment and the species group was assessed as poor.



SPHAGNUM GENUS - *Sphagnum* species (1409)



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SPHAGNUM GENUS <i>Sphagnum</i> spp. (1409)	
Range	Good
Population	Good
Habitat	Poor
Future prospects	Poor
OVERALL	POOR

LYCOPODIUM GROUP - *Lycopodium* (and related genera) (1413) Annex V



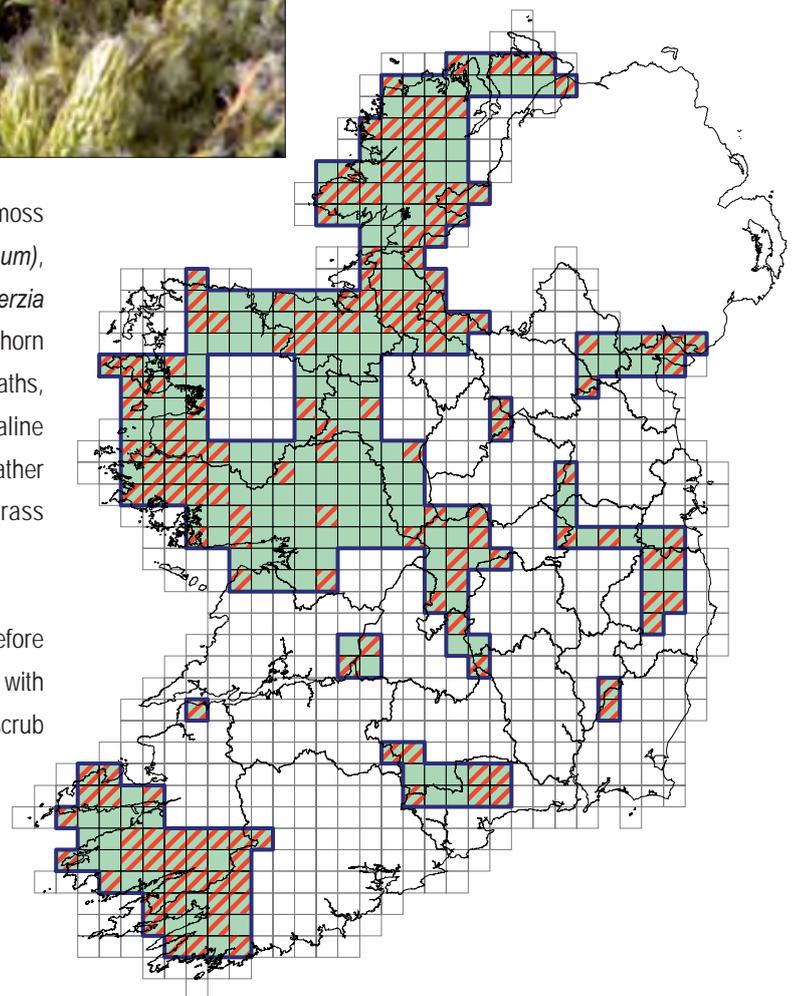
and agricultural improvement. However many apparent losses for all species reported in the *New Atlas of the British and Irish Flora (2002)* may be due to under-recording. A study was commissioned in 2006 by the National Parks and Wildlife Service, to investigate wildlife trade in Ireland. There was no evidence of collection of any species from this group for trade in Ireland.

Although this group of species occurs in a variety of habitat types, e.g. alpine heath, wet heath, species-rich *Nardus* grassland and blanket bog, the condition of these habitats is considered to be poor, and therefore the overall status of this group is considered poor.

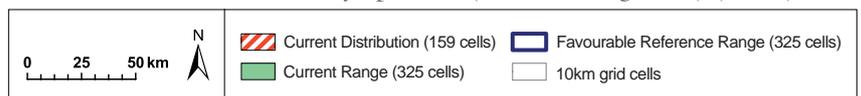
Photograph: *Lycopodium clavatum* (Steve Waldren)

The Lycopodium group in Ireland includes the stag's horn clubmoss (*Lycopodium clavatum*), alpine clubmoss (*Diphasiastrum alpinum*), marsh clubmoss (*Lycopodiella inundata*) and fir clubmoss (*Huperzia selago*). Probably the best known of these is the stag's horn clubmoss, which is a prostrate, evergreen perennial moss of heaths, moors and mountains. It can be frequent on alkaline mica-containing soils but also occurs on more acidic heather (*Calluna spp.*) dominated heath and upland mat-grass (*Nardus stricta*) dominated grassland.

Many lowland sites of the stag's horn clubmoss were lost before 1930 and the populations elsewhere are somewhat transient, with losses owing to overgrazing, heather burning, conversion to scrub



LYCOPODIUM GROUP - *Lycopodium* (and related genera) (1413)



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LYCOPODIUM GROUP <i>Lycopodium</i> (and related genera) (1413)	
Range	Good
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR



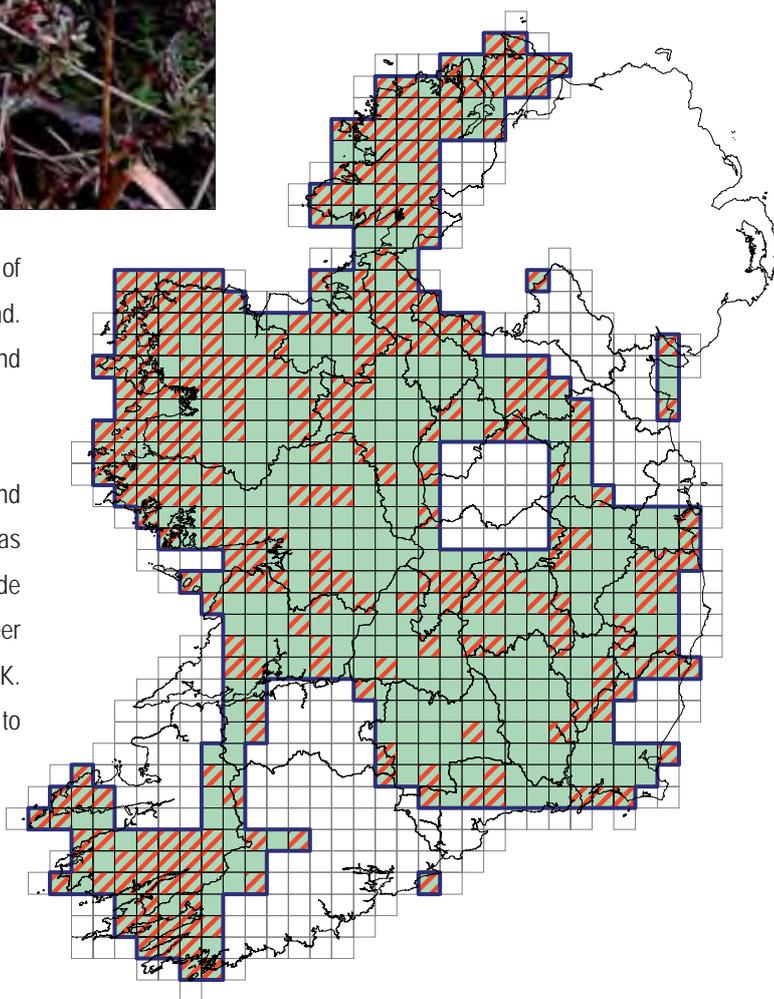
create miniature model trees and hedges. However, the material is bought packaged and spray-painted from suppliers in the UK and Europe. There is no indication of any Irish enterprise supplying this trade.

Although this group of lichens occurs in many widespread habitats, the condition of these habitats is considered to be inadequate. The conservation assessments for fixed dunes, blanket bog and raised bog habitats were taken into consideration for the assessment of this group which is poor.

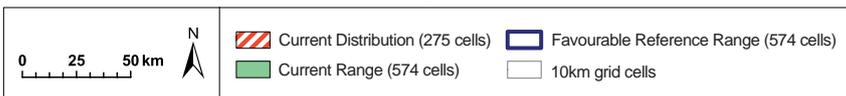
Photograph: *Cladonia subgenus Cladina* (Naomi Kingston)

The *Cladonia* species are a diverse group of lichens. Some of these lichens are common while others are quite rare in Ireland. They occur in a wide range of habitats from exposed mountain and bog to sand dunes and even urban areas.

A study was commissioned in 2006 by the National Parks and Wildlife Service to investigate wildlife trade in Ireland. There was no evidence of collection of any species from this grouping for trade in Ireland. Of the 17 garden centres visited one stocked reindeer moss (*Cladonia rangiferina*), which was sourced in the UK. *Cladonia* is also used in modelling by architects and hobbyists to



CLADONIA SPECIES *Cladonia subgenus Cladina* (5113)



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CLADONIA SPP. <i>Cladonia subgenus Cladina</i> (5113)	
Range	Good
Population	Good
Habitat	Poor
Future prospects	Poor
OVERALL	POOR

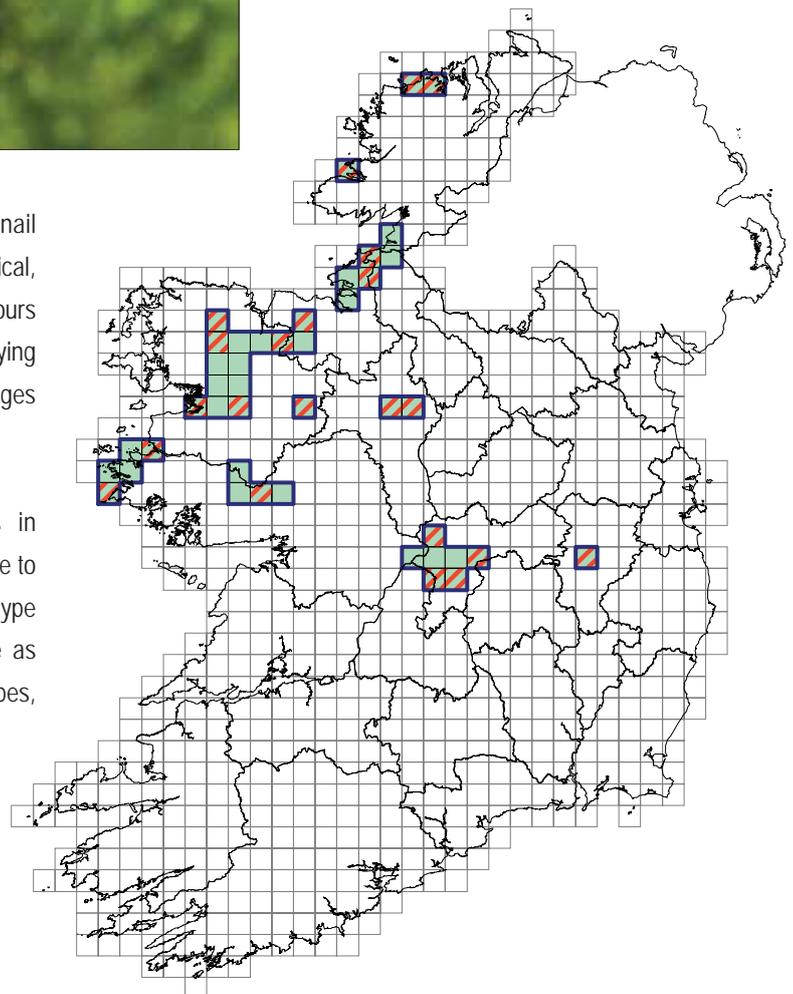


Geyer's whorl snail has been recorded from 36 separate sites in 10 Irish counties: Donegal, Galway, Kildare, Laois, Leitrim, Mayo, Offaly, Roscommon, Sligo and Tipperary. Large sites, such as Ben Bulbin, may support numerous populations across a network of flushes over a wide area. Geyer's whorl snail is considered to be under threat in Ireland but more information on its ecology is required in order to make a more confident and informed assessment in the future. The overall conservation status of this species is considered poor.

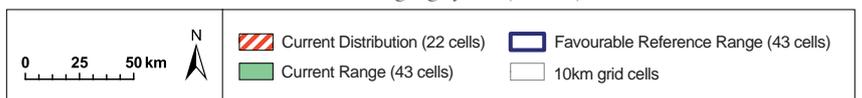
Photograph: Geyer's whorl snail (Eddie Dunne)

Geyer's whorl snail is one of eight species of whorl snail (genus *Vertigo*) living in Ireland. It is a tiny mollusc with a conical, reddish-brown shell, and regular growth lines. This species favours saturated fen habitats, where it lives mostly in moss and decaying vegetation. Geyer's whorl snail is particularly sensitive to changes in hydrology.

Geyer's whorl snail requires saturated water conditions in calcareous, groundwater-fed flushes that are often limited in size to a few metres square. These are generally found within fen-type habitats, which can occur within habitats that are as diverse as raised bog, transition mires, lake shores, hill or mountain slopes, and wetlands associated with coastal dunes and machair.



GEYER'S WHORL SNAIL - *Vertigo geyeri* (1013)



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GEYER'S WHORL SNAIL <i>Vertigo geyeri</i> (1013)	
Range	Good
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR



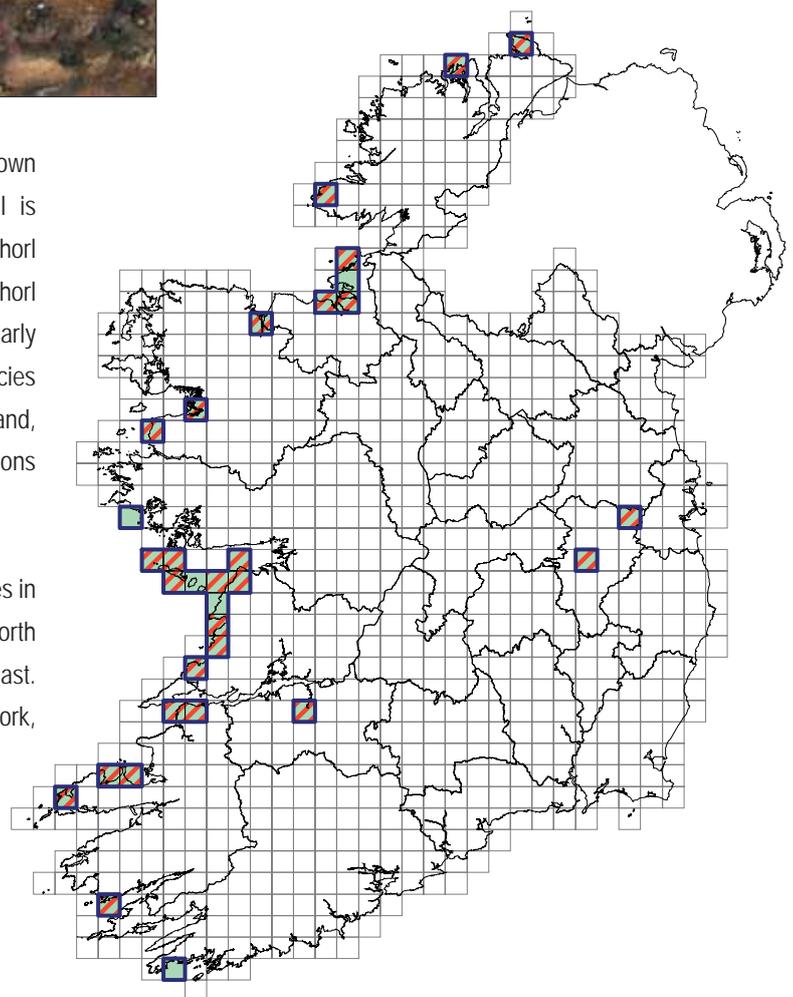
Donegal, Galway, Kerry, Kildare, Kilkenny, Limerick, Mayo and Sligo.

In Ireland, the main loss of narrow-mouthed whorl snail sites appears to be a result of loss of riverside and canal-side habitat, exploitation of esker sites and drainage of wetlands, and sheep grazing and over-exploitation of dune sites. More data is required to provide a definitive assessment for this species. However, considering the impacts, pressures and threats to *Vertigo angustior* in the Republic of Ireland today, the overall conservation status for the species is considered poor.

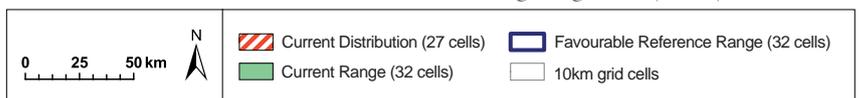
Photograph: Narrow-mouthed whorl snail (Derek Rands)

Narrow-mouthed whorl snail is a tiny mollusc with a yellow-brown coloured shell covered with fine growth ridges. The shell is unusual in being sinistral, that is the mouth faces the left. All whorl snails favour damp or wet habitats. Some of the species of whorl snails (including the narrow-mouthed whorl snail) are particularly sensitive to changes in hydrology. At a broad level, this species appears to be present in a very wide range of habitats: grassland, fen, marsh, salt marsh and flood plain; however the exact conditions which it requires are rare.

The narrow-mouthed whorl snail has been recorded from 36 sites in Ireland, mostly along the western seaboard from west Cork to north Donegal. Additional sites are known inland in the south-east. To date, it has been found in 11 Irish counties: Carlow, Clare, Cork,



NARROW-MOUTHED WHORL SNAIL - *Vertigo angustior* (1014)



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NARROW-MOUTHED WHORL SNAIL <i>Vertigo angustior</i> (1014)	
Range	Good
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR



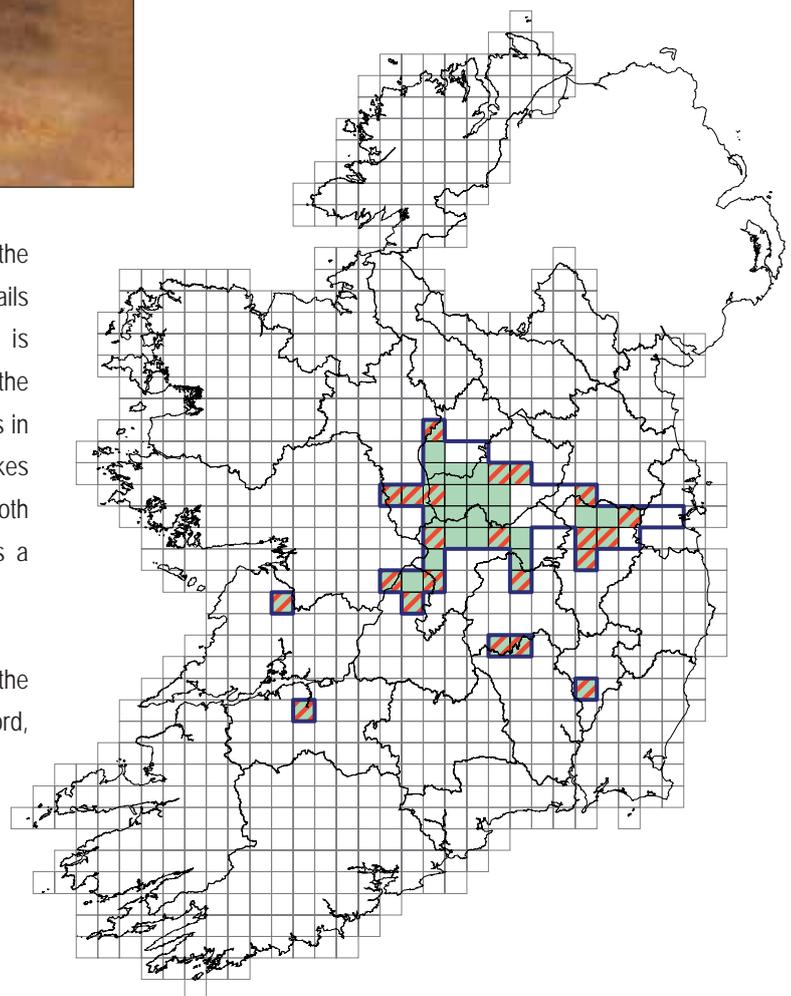
with old records from outlying sites in areas of old calcareous wetland from Limerick in the west to Wicklow in the east. There are also postglacial fossil records from Counties Mayo, Dublin and Tipperary.

In Ireland, the greatest loss of sites for this species has been through drainage of wetlands and riparian management of the Grand and Royal Canals. Further pressure on habitats through spread of urban development is likely. Given its former known range, the small size and vulnerability of some existing sites and the poor future prospects of some populations, strict conservation policies for protected sites and their regular monitoring are important. The overall conservation assessment for this species is bad.

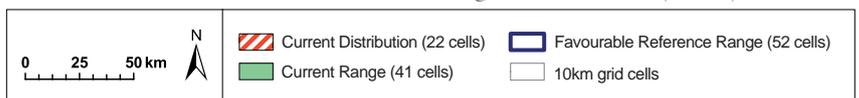
Photograph: Desmoulin's whorl snail (Derek Rands)

Desmoulin's whorl snail, with a shell height of about 2.5mm, is the largest of this group of whorl snails in Ireland. All whorl snails favour damp or wet habitats. Desmoulin's whorl snail is particularly sensitive to changes in water levels. In Ireland, the species mainly inhabits calcareous, lowland wetlands. It occurs in swamps, fens and marshes usually bordering rivers, canals, lakes and ponds where very humid conditions prevail. It lives on both living and dead stems and leaves of tall plants and requires a stable water-table.

Desmoulin's whorl snail has been recorded mostly from sites in the Midlands and the Shannon Basin from Lough Derg to Longford,



DESMOULIN'S WHORL SNAIL - *Vertigo moulinsiana* (1016)



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DESMOULIN'S WHORL SNAIL <i>Vertigo moulinsiana</i> (1016)	
Range	Bad
Population	Bad
Habitat	Poor
Future prospects	Bad
OVERALL	BAD

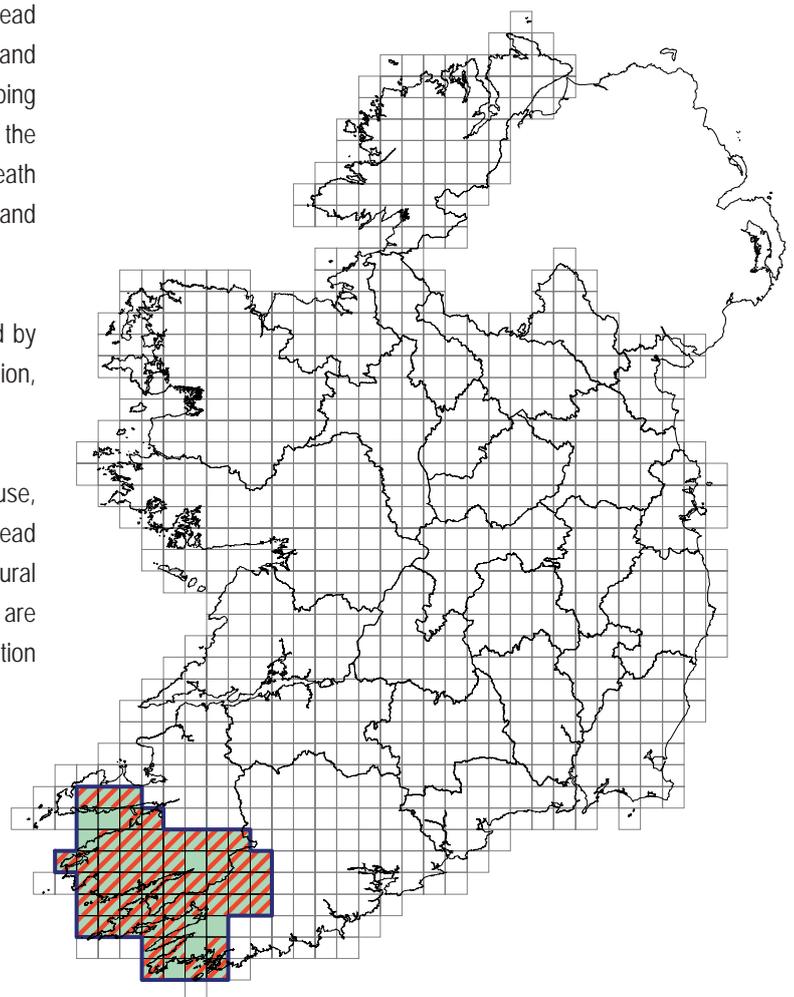


Photograph: Kerry slug (Eddie Dunne)

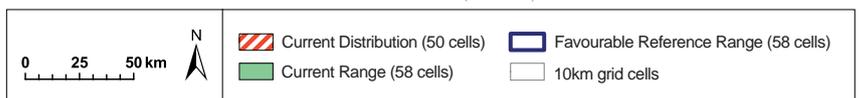
Kerry slug is a large distinctively spotted mollusc, found only in the Old Red Sandstone areas of west Cork and Kerry. It is widespread within two broad habitats types - deciduous woodlands and peatlands. The woodland habitat is often sloping, with outcropping rock or boulders scattered amongst the trees. The slugs graze the lichens and mosses that grow on the trees and rocks. In open heath and blanket bog they are found on sandstone outcrops and boulders, where they feed on lichens and mosses.

The range of the Kerry slug in Ireland appears to be restricted by habitat and has not undergone any recent expansion or contraction, although local extinctions may have occurred.

The threats to this species include intensification of land use, tourism, expansion of coniferous plantation forestry and the spread of invasive species such as *Rhododendron* into its semi-natural woodland habitat. However, its current range and population are considered to be stable and the future prospects and conservation status are considered good.



KERRY SLUG - *Geomalacus maculosus* (1024)



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KERRY SLUG <i>Geomalacus maculosus</i> (1024)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



and all of those known to have reproduced successfully since the 1970s. All populations failed the assessment due to very low levels of recruitment and recent kills resulting from suboptimal water quality levels, and the conclusion was that no population of the freshwater pearl mussel in the Republic of Ireland can be considered viable.

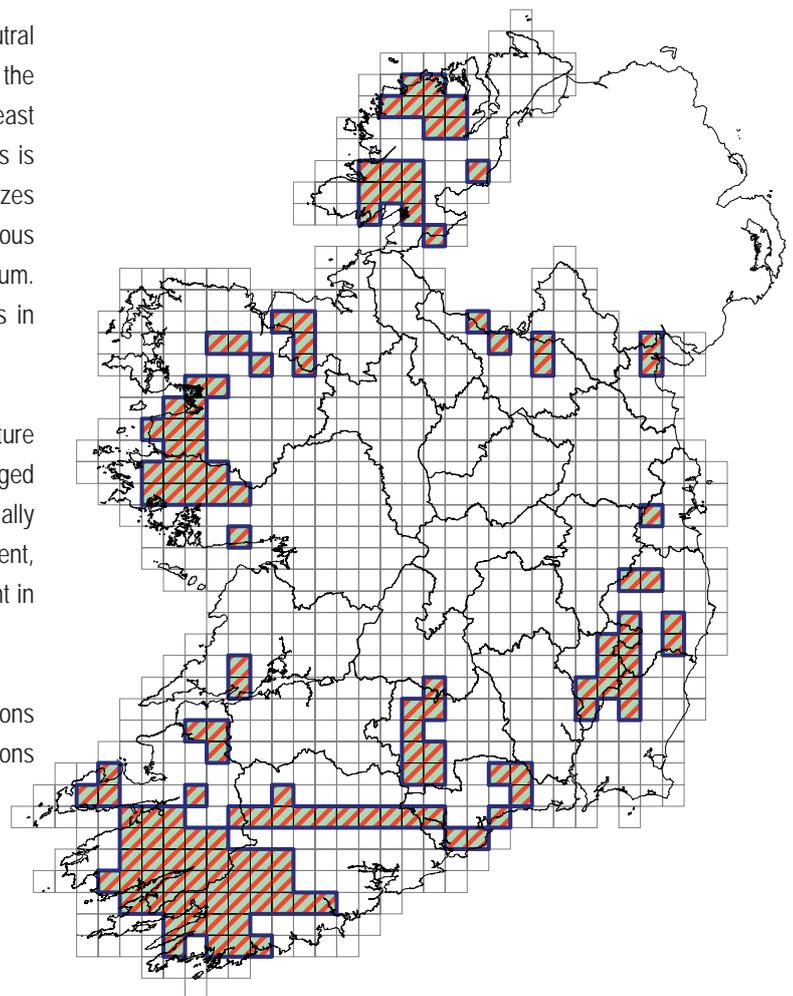
The principal threat to this species is poor substrate quality due to increased growth of algal and macrophyte vegetation as a result of severe nutrient enrichment, as well as physical siltation. Freshwater pearl mussel is listed as critically endangered in the Republic of Ireland in the most recent review of local IUCN threat status of Irish molluscs. Its overall conservation status is bad.

Photograph: Freshwater pearl mussel (Evelyn Moorkens)

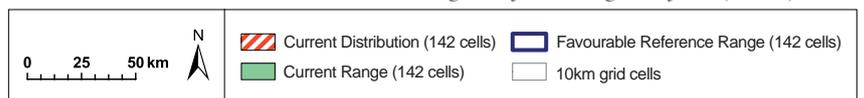
The freshwater pearl mussel lives in nutrient-poor, acid to neutral waters of rivers flowing over granite or sandstone rock, mainly in the western part of Ireland, but also in areas of the south and south east where geological conditions allow. The ecology of the species is particularly notable in that individuals can grow to very large sizes relative to other freshwater molluscs, building up thick calcareous shells, in rivers which have soft water with low levels of calcium. Their shell building is consequently very slow, and individuals in natural conditions live to over a hundred years of age.

Freshwater pearl mussels have a complex life cycle. They mature between seven and 15 years of age and can have a prolonged fertile period lasting into old age. The larvae (glochidia) initially attach to the gills of salmonid fish hosts which provide nourishment, before they become large enough for independent development in the river bed.

Population structure and viability assessments for 23 populations have been completed. These included all of the largest populations



FRESHWATER PEARL MUSSEL - *Margaritifera margaritifera* (1029)



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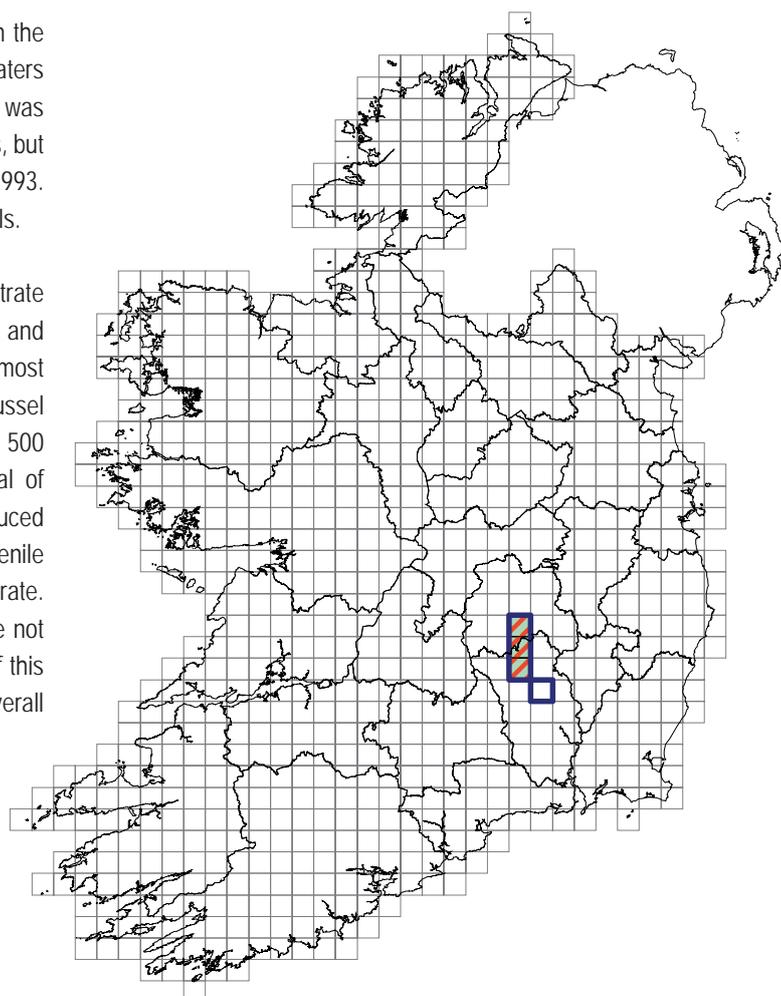
FRESHWATER PEARL MUSSEL <i>Margaritifera margaritifera</i> (1029)	
Range	Good
Population	Bad
Habitat	Bad
Future prospects	Bad
OVERALL	BAD



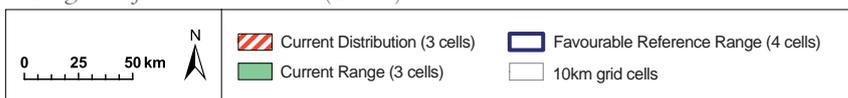
The Nore freshwater pearl mussel is currently only known from the lime-rich waters of the River Nore and does not live in acid waters like its close relative, *Margaritifera margaritifera*. This species was previously known from the Barrow, Nore and Suir main channels, but living specimens have not been found outside the Nore since 1993. Surveys of the River Suir from 1991-1993 found only dead shells.

It is presumed that juvenile mussels bury into the river bed substrate in the same way as all other members of the pearl mussel family, and spend at least five years within the interstitial habitat. The most recent estimate of the total number of extant Nore pearl mussel adults in Ireland, based on surveys from 1991 to 2005, is 500 individuals. This represents a decline of 75% from the total of 2,000 individuals found in 1991. The species has not reproduced successfully in the River Nore since 1970. Recruitment of juvenile mussels is being prevented by the poor quality of the river substrate. The population continues to age, as older mussels die and are not replaced. The conclusion is that the single extant population of this species is un-viable and on the verge of extinction. Its overall conservation status is bad.

Photograph: Nore freshwater pearl mussel (Eddie Dunne)



NORE FRESHWATER PEARL MUSSEL
- *Margaritifera durrovensis* (1990)



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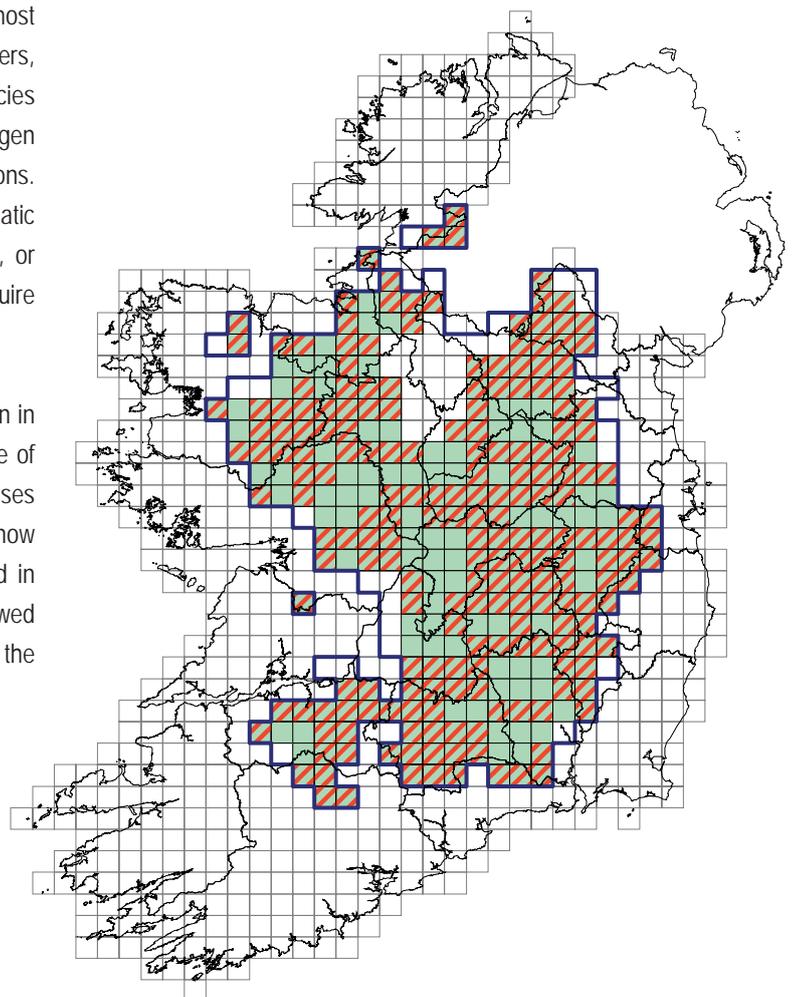
NORE FRESHWATER PEARL MUSSEL <i>Margaritifera durrovensis</i> (1990)	
Range	Bad
Population	Bad
Habitat	Bad
Future prospects	Bad
OVERALL	BAD



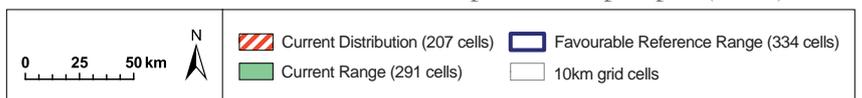
The white-clawed crayfish elsewhere in Europe is usually found in small streams at the headwaters of rivers but, in Ireland, it most commonly occurs in small and medium-sized lakes, large rivers, streams and drains, wherever there is sufficient lime. The species prefers relatively cool temperatures and adequate dissolved oxygen and lime, although it is capable of tolerating significant fluctuations. Juveniles live among submerged tree-roots, gravel or aquatic plants, while larger crayfish must have stones to hide under, or earthen banks in which to burrow. Females carrying eggs require undisturbed shelter over a prolonged winter-spring period.

Recent river surveys carried out by the EPA indicate a reduction in the range of white-clawed crayfish in the North midlands. One of the main threats to this species is the introduction of diseases transmitted by introduced American crayfish, which are now spreading across Europe but have not been reliably recorded in Ireland. The overall conservation status of the white-clawed crayfish in Ireland is poor, due to the reduction of range and the continuing pressures that it faces.

Photograph: White-clawed crayfish (Eddie Dunne)



WHITE CLAWED CRAYFISH - *Austropotamobius pallipes* (1092)



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WHITE-CLAWED CRAYFISH <i>Austropotamobius pallipes</i> (1092)	
Range	Poor
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR

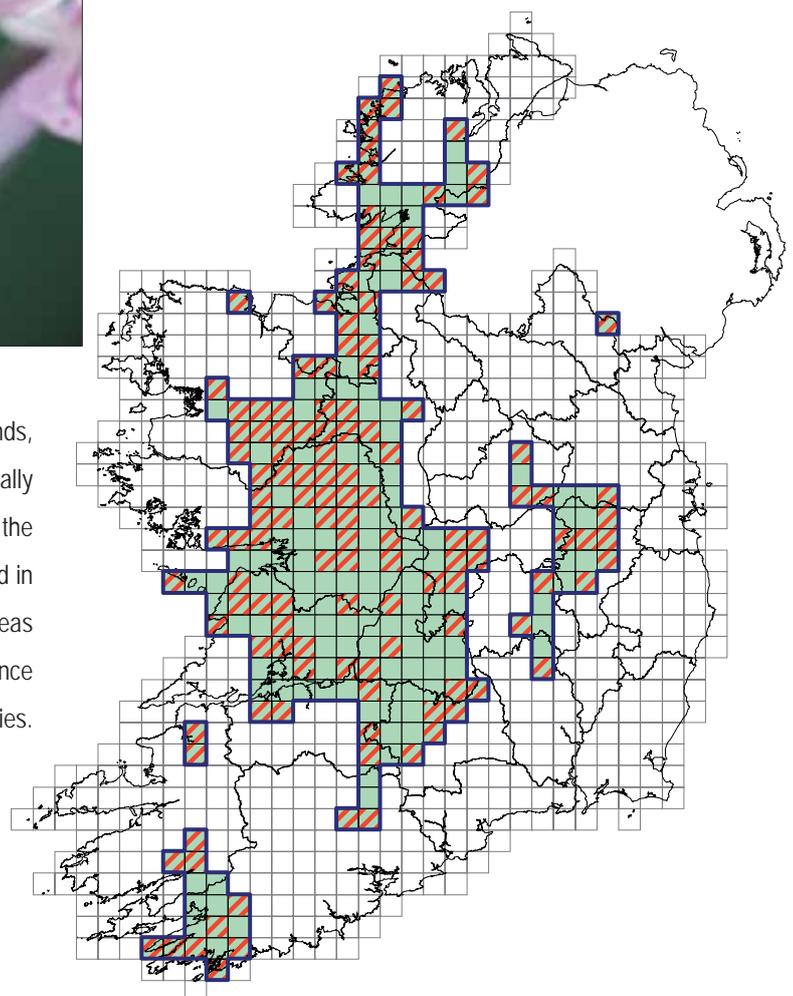


Although there is likely to be enough habitat for the species to occupy, the quality of the habitat is declining due to inappropriate management.

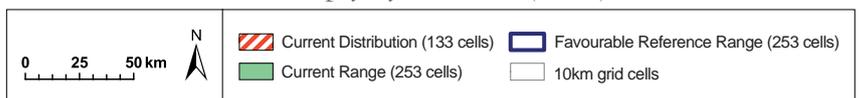
Marsh fritillary is declining across Europe and in Ireland there have been extensive habitat losses in the east of the country. This butterfly relies on a mosaic of suitable habitat patches and appropriate management is essential to produce an uneven patchwork of short and tussocky vegetation. Although there has been no reduction in range, there have been losses in the number of populations. Optimal habitat conditions are difficult to manage, and the overall conservation status of this species has been assessed as poor.

Photograph: Marsh fritillary (Eddie Dunne)

The marsh fritillary butterfly occurs in damp, flower-rich grasslands, dunes and wet heath. It has a relatively weak flight and is usually restricted to quite small areas. The main food source for the caterpillar, devil's-bit scabious (*Succisa pratensis*), is widespread in Ireland. This species occurs in a variety of habitats, including areas dominated by bare peat. There is evidence that ground disturbance through burning or other activities is beneficial for this species.



MARSH FRITILLARY - *Euphydryas aurinia* (1065)



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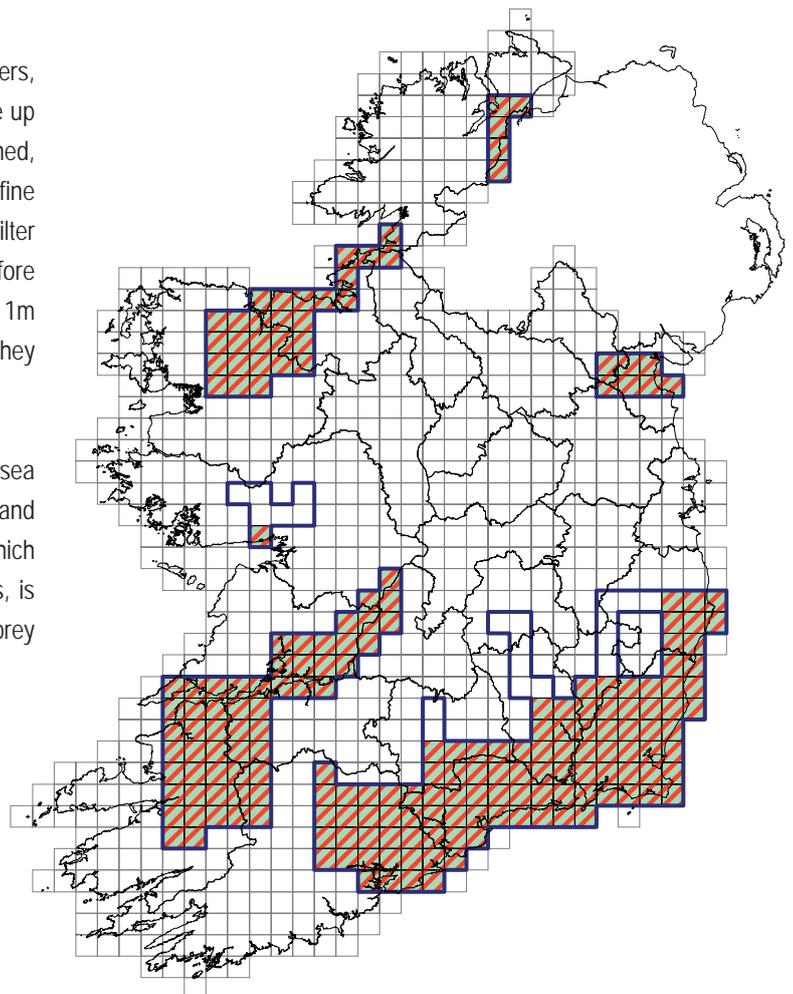
MARSH FRITILLARY <i>Euphydryas aurinia</i> (1065)	
Range	Good
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR



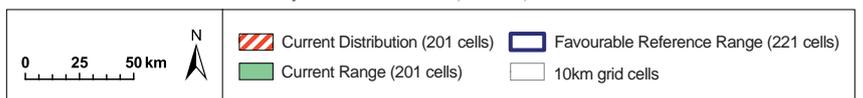
Sea lampreys spend their adult life in marine and estuarine waters, living as external parasites on other fish species. They migrate up rivers to spawn in areas of clean gravels. Once they have spawned, they die. After hatching, the young larvae settle in areas of fine sediment in still water, where they burrow. They live as filter feeders and may remain in fine sediments for several years before transforming into adult fish. Sea lamprey, which can grow up to 1m in length, are widely distributed around the coast. However they tend to occur in low densities.

On several rivers, weirs are known to block upstream migrating sea lampreys, thereby limiting the species to the lower stretches and restricting access to spawning beds. Channel maintenance, which removes the silt deposits and gravel shoals used by lampreys, is also a concern. Overall, the conservation status of the sea lamprey is considered to be poor.

Photograph: Sea lamprey (Eddie Dunne)



SEA LAMPREY - *Petromyzon marinus* (1095)



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SEA LAMPREY <i>Petromyzon marinus</i> (1095)	
Range	Poor
Population	Poor
Habitat	Poor
Future prospects	Poor
OVERALL	POOR

RIVER LAMPREY - *Lampetra fluviatilis* (1099)
BROOK LAMPREY - *Lampetra planeri* (1096)

Annex II, V
Annex II



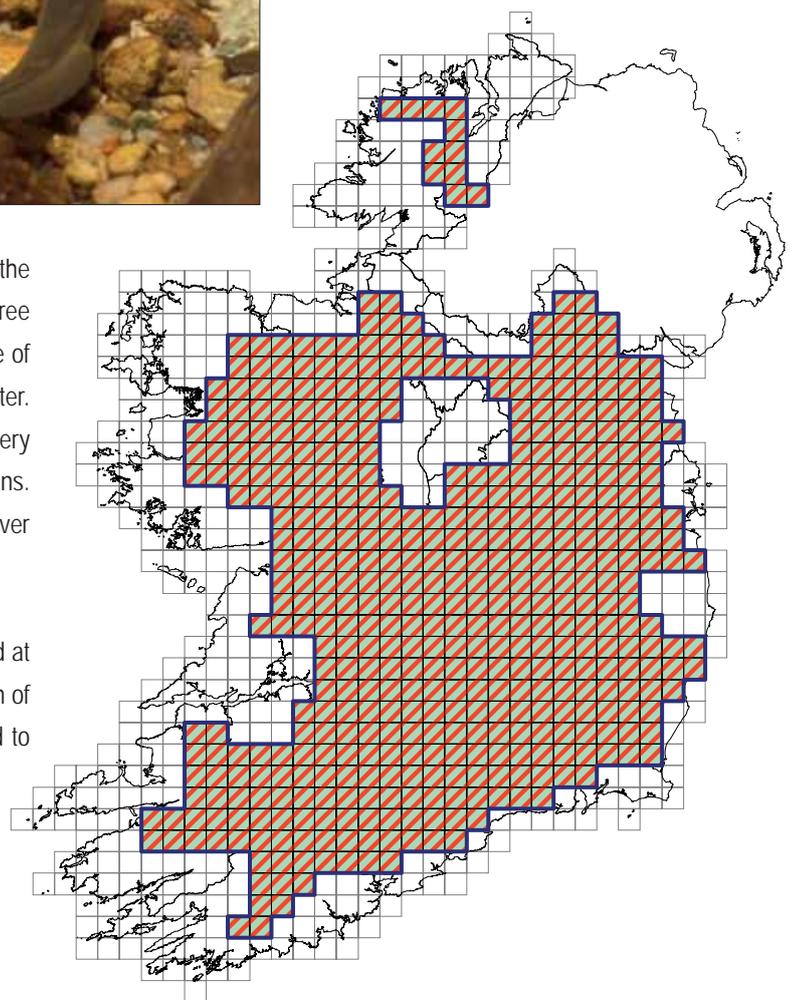
be patchily distributed within catchments, but can occur in high densities (100/m²) where habitat and flow regimes are suitable.

While recognising the difficulties distinguishing the smaller lamprey species in the field, it would appear that the brook lamprey is certainly widespread throughout the country and that the river lamprey is not as restricted by weirs as the sea lamprey. The current status and future prospects of these species appears to be good.

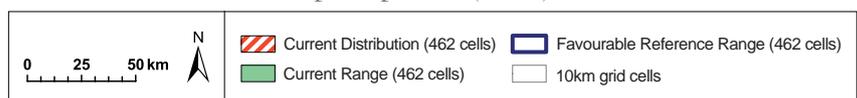
Photograph: Brook lamprey (Eddie Dunne)

The river lamprey grows to 30cm and has a similar life history to the sea lamprey. The brook lamprey is the smallest of the three lampreys native to Ireland at 15 to 20cm. It is also the only one of the three which is non-parasitic and spends all its life in freshwater. Despite the difference in ecology, brook and river lamprey are very similar genetically and cannot be distinguished by visual means. As a result, for the purposes of this assessment, the brook and river lampreys have been treated together.

Records of adult lampreys are sparse, with most fieldwork aimed at juveniles. Recent field surveys point to a widespread distribution of juvenile river/brook lamprey, throughout the country. They tend to



RIVER LAMPREY - *Lampetra fluviatilis* (1099)
 BROOK LAMPREY - *Lampetra planeri* (1096)



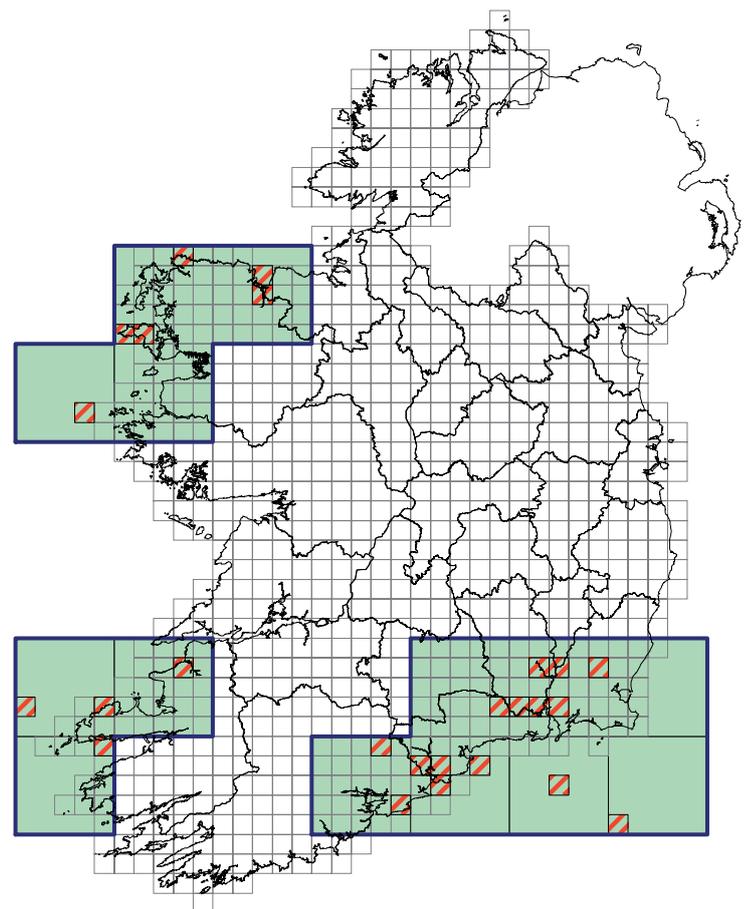
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RIVER LAMPREY <i>Lampetra fluviatilis</i> BROOK LAMPREY <i>Lampetra planeri</i> (1099,1096)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	GOOD

Allis shad spend their adult life at sea or in the lower reaches of estuaries, ascending to freshwater to spawn in early summer. The spawning females shed their eggs into the water where they either drop into the gravelled bed or begin to drift downstream. Those eggs that fall into gravels hatch after several days and then drift downstream. The young fish may remain in estuarine waters during their second year before finally going to sea where they mature.

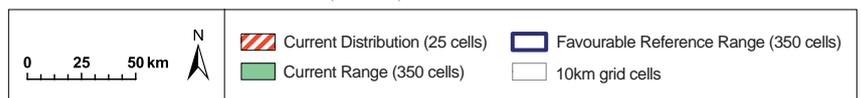
Recent records of allis shad are concentrated in the south-east with some records from the south-west and west coasts. As well as marine records, this species has also been identified from the Suir, Munster Blackwater and Barrow. Nonetheless, spawning of this species has yet to be confirmed from any Irish river.

The end of drift netting has removed one source of by-catch for this species. Improvement of fish passage in the big south coast rivers would further improve its prospects. As it is unclear to what extent allis shad rely on Irish coastal waters or estuaries for part of their life cycle, no definitive statement about the conservation status of this species can be made – it is considered unknown.



ALLIS SHAD <i>Alosa alosa</i> (1102)	
Range	Good
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

ALLIS SHAD - *Alosa alosa* (1102)



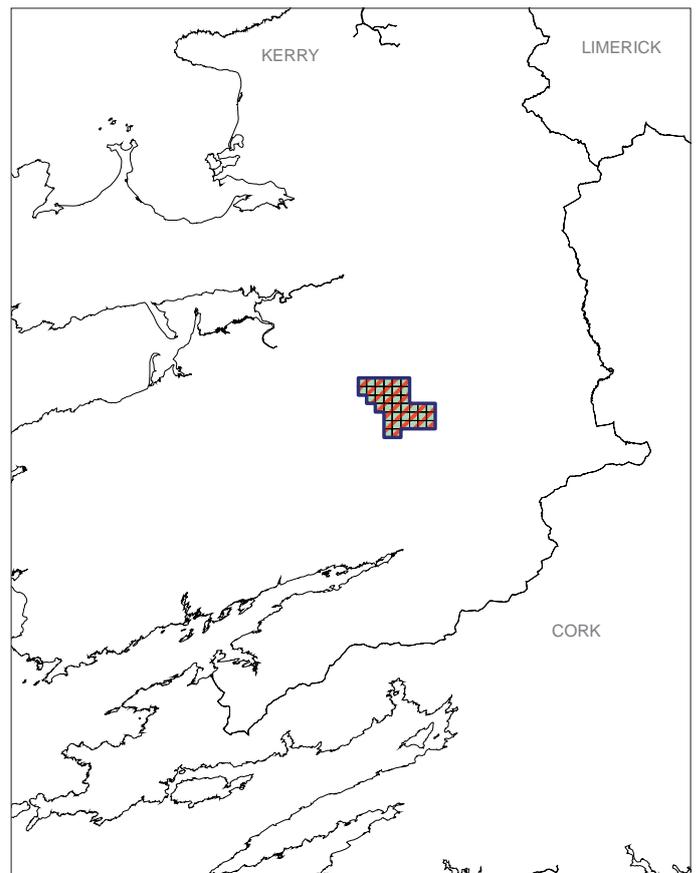
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Shad are herring-like fish which spawn in freshwater, but spend much of their lives at sea. The Killarney Shad, however, is a landlocked species which spends its entire life in freshwater. It is only found in Lough Leane in Killarney. These fish are reported to spawn on gravel bars and gravelled shallows surrounding the larger islands in the lake, although the exact spawning locations are unknown. They feed almost exclusively on zooplankton.

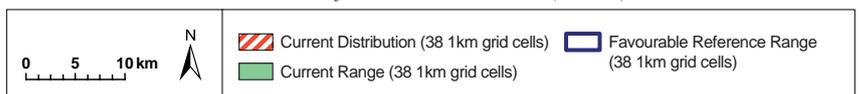
In spite of water quality problems in Lough Leane over the past 30 years, recent surveys have found healthy shad populations (more than 20,000 adult fish) and with the water quality in the lake now improving, the overall conservation status of this species is considered good.

Photograph: Lough Leane (NPWS)



KILLARNEY SHAD <i>Alosa fallax killarnensis</i> (5046)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	GOOD

KILLARNEY SHAD - *Alosa fallax killarnensis* (5046)



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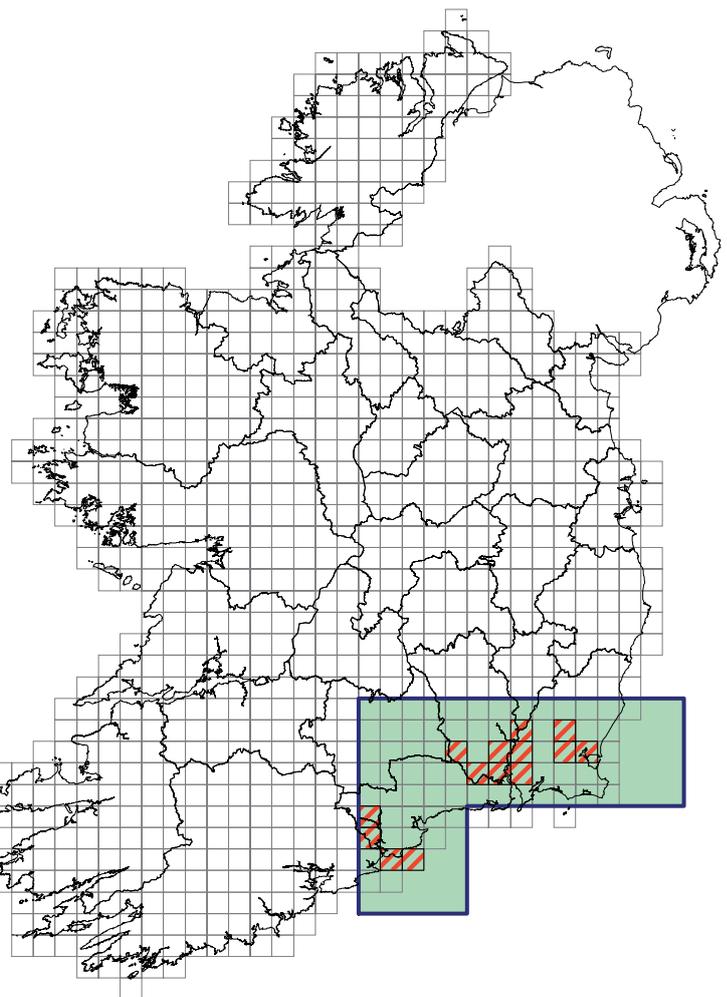


Photograph: Hans Hillewaert

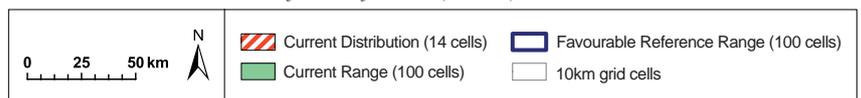
Twaite shad spend their adult life at sea or in the lower reaches of estuaries and normally spawn near the tidal limits. Unimpeded access from the sea through the estuarine and tidal areas to the spawning grounds is essential. Spawning grounds comprise deep pool areas and backwaters for adults to rest and gravelled areas where eggs are laid. Gravel must be clear of algal growths and the interstitial spaces in the gravels free of fine deposits. The most suitable rivers have substantial lengths of tidal channel or estuary downstream of the spawning areas to enable development of the juvenile stages prior to going to sea.

There are sporadic sightings of twaite shad from the west coast, but spawning activity has only been recorded in five large rivers in the south-east: the Barrow, Munster Blackwater, Suir, Nore and Slaney. Even in these rivers, population levels are thought to be low and no spawning has been recorded in recent years in the Slaney or Nore.

Further information is required on the ecology and habitat of this species, but restricted access to spawning grounds due to weirs is thought to be the main problem for the twaite shad. Without intervention, the future prospects of the twaite shad are considered poor and overall the conservation status of this species is bad.



TWAITE SHAD - *Alosa fallax fallax* (1103)



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TWAITE SHAD <i>Alosa fallax fallax</i> (1103)	
Range	Good
Population	Bad
Habitat	Unknown
Future prospects	Poor
OVERALL	BAD

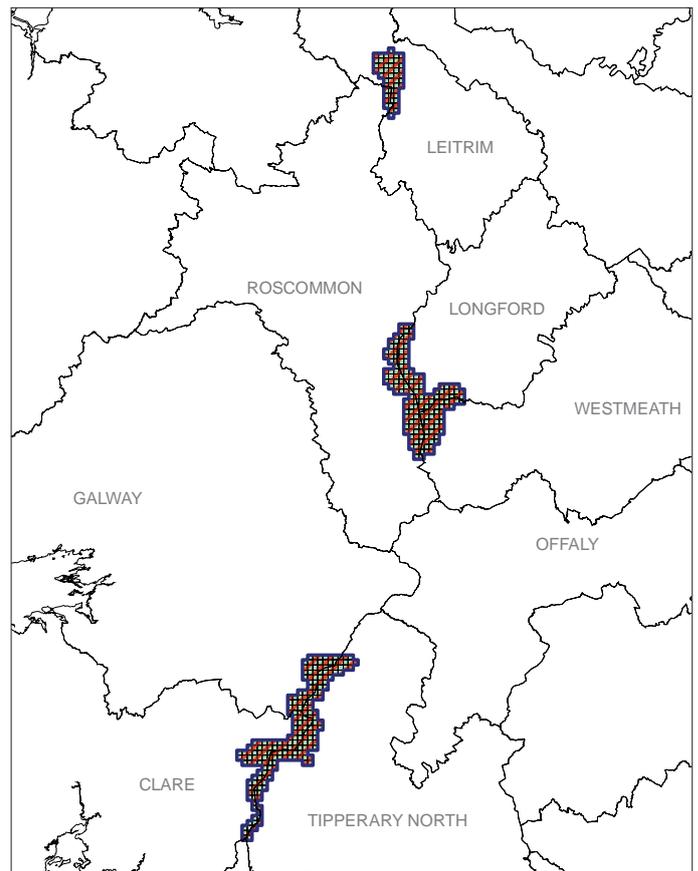


Photograph: Pollan (Robert Rosell)

The Irish population of pollan is the only one in western Europe and is almost unique in being non-migratory and confined to freshwater lakes. Ireland is at the southern limit of its breeding range. Pollan is a cold water specialist; spawning occurs in shallow waters in winter and the fish move into deeper areas to escape rising temperatures in spring.

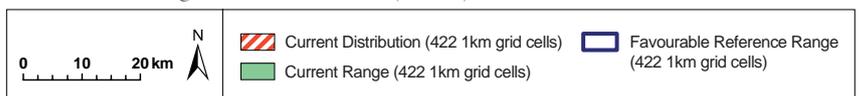
Pollan is confined to five large lakes on the island of Ireland. Three of these, Lough Derg, Lough Ree and Lough Allen, are in the River Shannon catchment in the Republic of Ireland. The other two, Lough Neagh and Lough Erne, are in Northern Ireland. It was once found in large numbers in the Shannon lakes but habitat deterioration may have adversely affected all of the Irish populations during the twentieth century.

Pollan populations are now at critically low levels with only hundreds or very low thousands of fish remaining in each of the three Shannon lakes. Eutrophication, climate change, introduced fish species and the zebra mussel (*Dreissena polymorpha*) are now considered to be the main threats for this species. Given the continuing threats to the already critically small populations of this species, the overall conservation assessment for the pollan is bad.



POLLAN <i>Coregonus autumnalis</i> (5076)	
Range	Good
Population	Bad
Habitat	Poor
Future prospects	Poor
OVERALL	BAD

POLLAN-*Coregonus autumnalis* (5076)

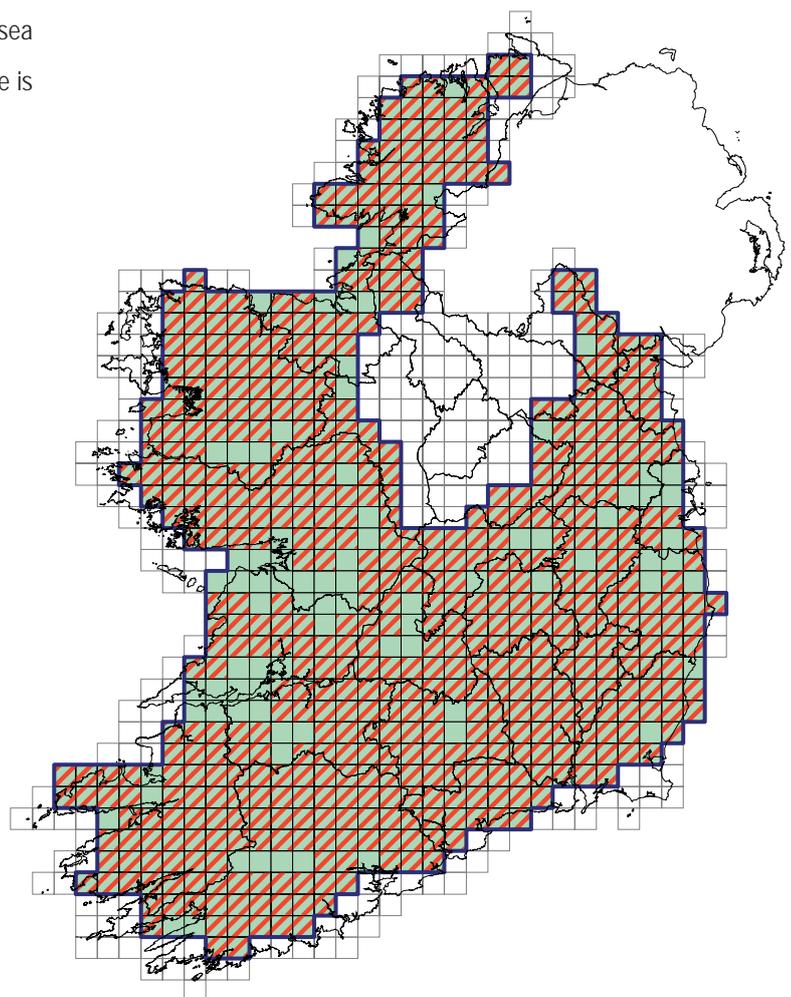


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The salmon breeds in freshwater, but spends much of its life at sea. The salmon population in Ireland has declined by 75% in recent decades and although salmon still occur in 148 Irish rivers only 43 of these have healthy populations. There are numerous factors which impact negatively on salmon, the most important of which are reduced marine survival (probably as a result of climate change), poor river water quality (resulting from factors such as inadequate sewage treatment, agricultural enrichment, acidification, erosion and siltation), forestry-related pressures and over-fishing. The current estimates suggest that less than 10% of the wild smolts that go to sea from Irish rivers are surviving.

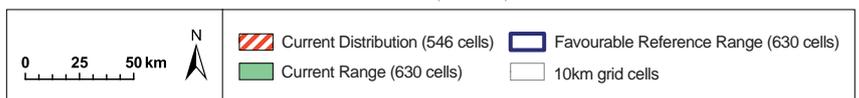
There are real concerns relating to factors causing mortality at sea such as diseases, parasites and marine pollution; however there is insufficient information on all factors at this stage.

There have been some recent positive developments: the drift net fishery for salmon was closed in 2007 and water quality in Irish rivers and lakes in general is improving. However, the overall conservation status of salmon is still considered bad.



ATLANTIC SALMON <i>Salmo salar</i> (1106)	
Range	Good
Population	Bad
Habitat	Poor
Future prospects	Poor
OVERALL	BAD

ATLANTIC SALMON - *Salmo salar* (1106)



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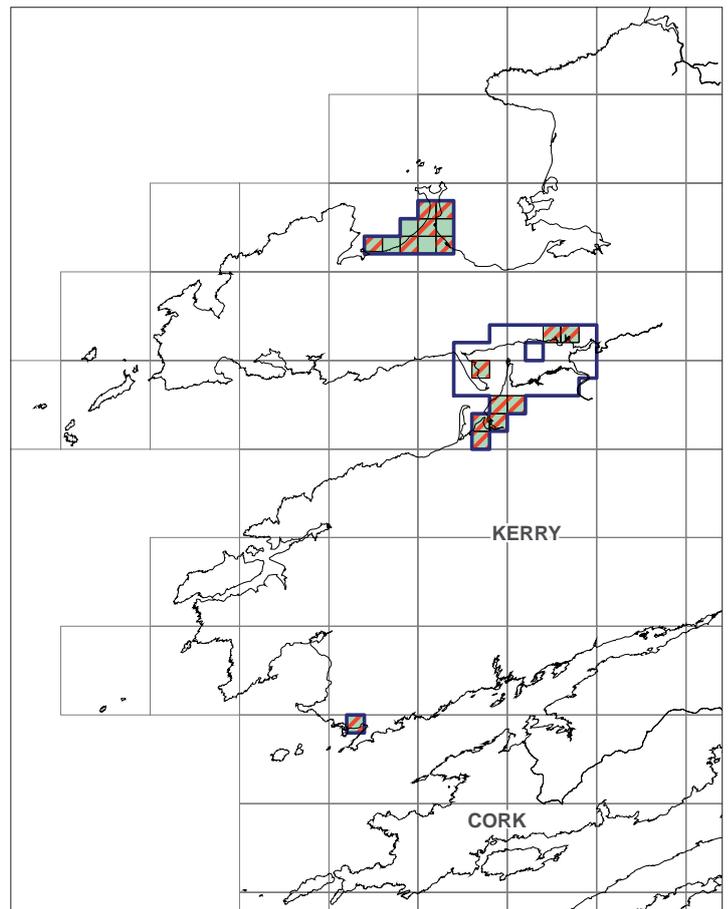


Photograph: Natterjack toad (NPWS)

The natterjack toad is found in a small number of coastal sites around the Dingle and Iveragh peninsulas in Kerry. A small translocated population also persists on the Raven dunes in Wexford. The toad breeds in shallow ponds and lakes and recent surveys put the population at c.12,000 adults. This toad is adapted to breeding in temporary water bodies and while dry years lead to mass mortalities of tadpoles, good years can see thousands of juveniles emerge successfully.

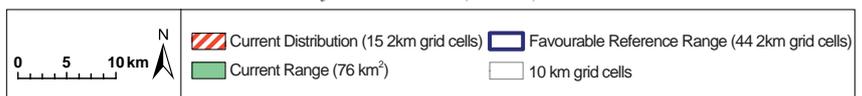
The first half of the 20th century saw a significant range contraction of the toad, particularly around Castlemaine Harbour, due to the loss of breeding ponds following land drainage. Its range has remained stable since then. However, a three-year monitoring study carried out between 2004-2006 indicated that the range is at risk of contracting further, with very poor and irregular breeding activity recorded at Fermoyle, the most westerly part of their current range on the Dingle peninsula, despite the creation of two additional pools there in 2003.

A programme of pond creation and managed grazing is now underway in areas around Castlemaine Harbour and at Fermoyle, in an effort to restore the toads' range. However this project will take many years to bear fruit, and the current conservation status of the species is considered bad.



NATTERJACK TOAD <i>Bufo calamita</i> (1202)	
Range	Bad
Population	Bad
Habitat	Poor
Future prospects	Poor
OVERALL	BAD

NATTERJACK TOAD - *Bufo calamita* (1202)



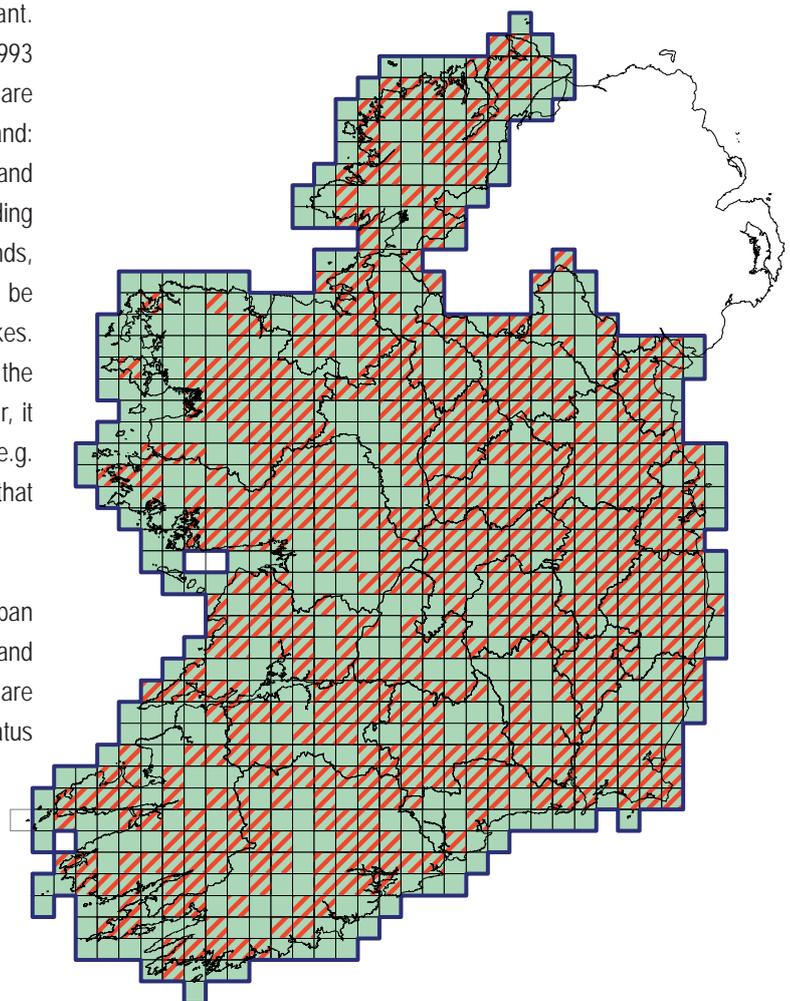
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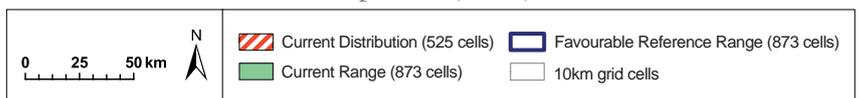
Photograph: Common frog (Naomi Kingston)

The common frog is the most frequently encountered amphibian in Ireland. The species is known to be widespread throughout the country and, where habitat is suitable, is often abundant. The combined data from three surveys carried out between 1993 and 2007 suggests that the species is present in every 10km square in the country. Frogs occur in a wide variety of habitats in Ireland: upland, lowland, woodland, farmland, marsh, bog, coastal and urban. Frogs are extremely adaptable in their choice of breeding site and can rapidly colonise new water bodies including fire ponds, drainage ditches, gardens and golf course ponds. They can be found spawning in all types of water bodies from puddles to lakes. However, some ponds are favoured over others. Features of the surrounding terrestrial habitats are also important. In particular, it has been shown that the availability of suitable microhabitats (e.g. deadwood, patches of scrub) around a pond make it more likely that frogs will breed there.

However, wetland drainage and intensive urban and suburban development, particularly around cities, has removed terrestrial and aquatic habitats once used by frogs and some local extinctions are thought to have occurred. Because of this, the conservation status of the frog is considered poor.



COMMON FROG - *Rana temporaria* (1213)



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COMMON FROG <i>Rana temporaria</i> (1213)	
Range	Good
Population	Good
Habitat	Poor
Future prospects	Good
OVERALL	POOR

LEATHERBACK TURTLE - *Dermochelys coriacea* (1223) Annex IV

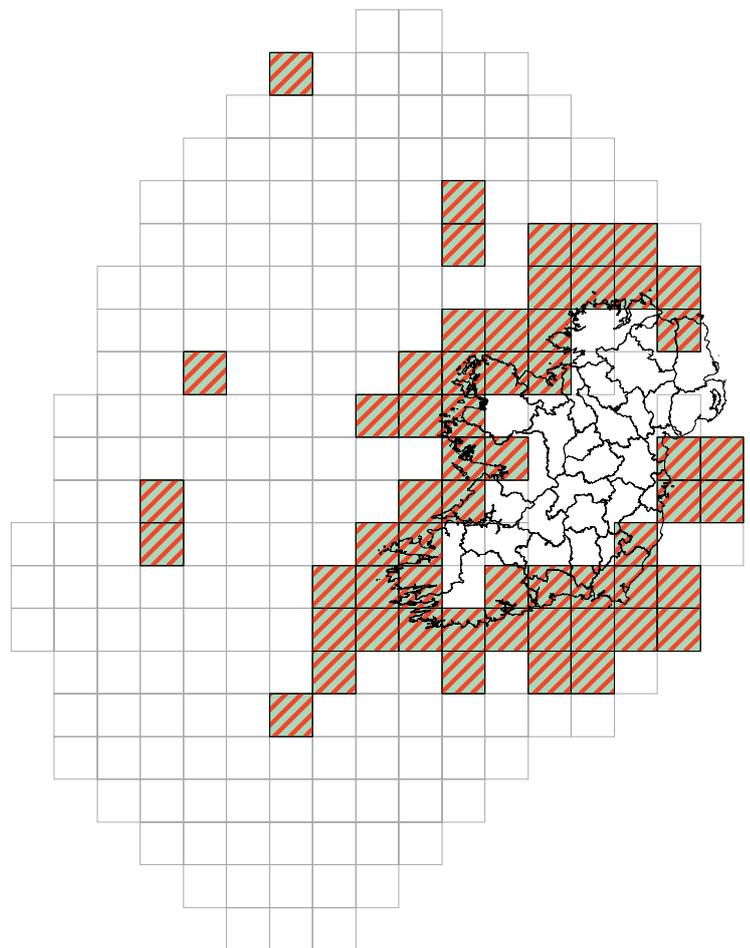


Accidental ingestion of plastic (which they can mistake for jellyfish) and by-catch in long line fisheries and in lobster/crab pot ropes are the main cause of mortality for the species in the North Atlantic. Egg collecting and killing of adults at nesting beaches in the tropics is another major concern. Recent work has provided some insight into migration patterns of leatherbacks in the north-east Atlantic. However, more work is required on habitat use, feeding behaviour and population dynamics. Given the global decline of this species, the conservation assessment for the leatherback is considered poor.

Photograph: Nesting leatherback female, Gabon (Karl Partridge)

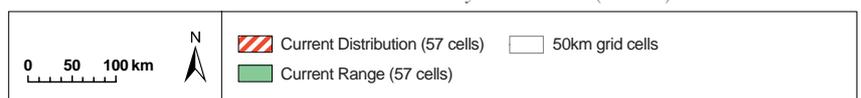
Leatherback turtles nest in the tropics and subtropics but migrate into the North Atlantic and Irish waters during the summer where they feed on jellyfish. Roughly 2-5 % of the Atlantic population (about 2,500 animals) pass through Irish waters annually.

During the summer months their range is at its greatest extent with individuals probably located throughout the entire north Atlantic, whereas during the winter months their range is restricted to areas where the sea surface temperature is greater than 15°C. Recent studies have shown that after nesting in the tropics the majority of west Atlantic female leatherbacks head north towards cooler temperate waters. These movements are associated with animals moving from nesting areas where food is scarcer to areas where food is more abundant. The seasonal decline in food resources in the autumn is thought to drive these individuals south where they over-winter in warmer waters. Nesting takes place every two or three years, on tropical and sub-tropical beaches extending from French Guyana to Florida in the west Atlantic and from Angola to Senegal on the African coast.



LEATHERBACK TURTLE <i>Dermochelys coriacea</i> (1223)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Poor
OVERALL	POOR

LEATHERBACK TURTLE - *Dermochelys coriacea* (1223)



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LESSER HORSESHOE BAT - *Rhinolophus hipposideros* (1303) Annex II, IV

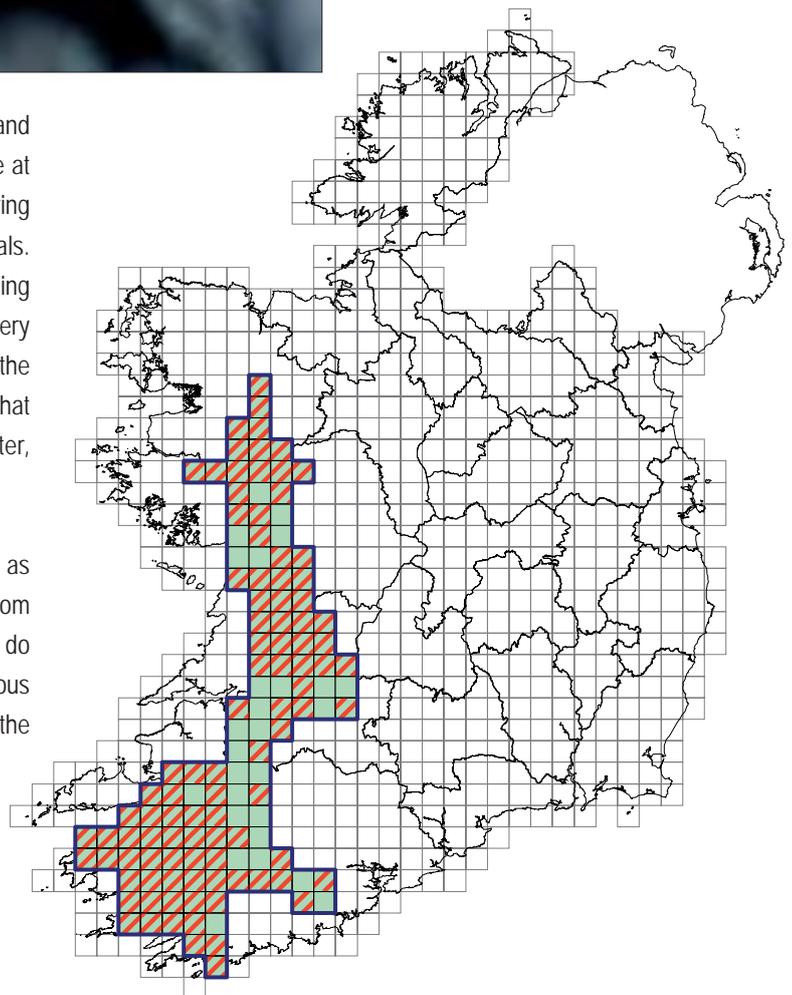


Lesser horseshoe bats are very sensitive to disturbance and normally do not occupy the same buildings as humans. Loss of suitable summer and winter roosting sites due to the deterioration / renovation of derelict buildings, loss of commuting routes linking roosts to foraging sites, and loss of suitable foraging sites are the major threats to this species. However the population, range and area of suitable habitat are all stable or increasing for the lesser horseshoe bat and thus the conservation assessment is good.

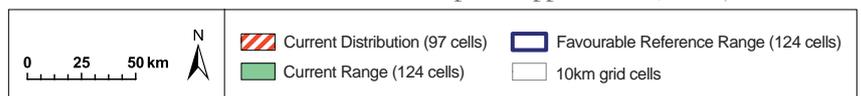
Photograph: Lesser horseshoe bat (NPWS)

Lesser horseshoe bats are confined to western counties in Ireland - Cork, Kerry, Limerick, Clare, Galway and Mayo. Here they are at the northern limit of their European distribution. Detailed monitoring puts the national population at approximately 12,500 animals. At summer roosting sites, females gather in large numbers forming maternity colonies where they give birth to just one young every second year. They are faithful to a roost site and will return to the same site each year. The hibernation sites are structures that maintain a constant low temperature throughout the winter, typically caves, souterrains, cellars and icehouses.

Lesser horseshoe bats rely on linear landscape features such as treelines, stonewalls and hedgerows to navigate and commute from roosts to feeding sites, because unlike other bat species, they do not fly out in the open. The bats forage predominantly in deciduous woodland and riparian vegetation normally within 3km of the maternity roost.



LESSER HORSESHOE BAT - *Rhinolophus hipposideros* (1303)



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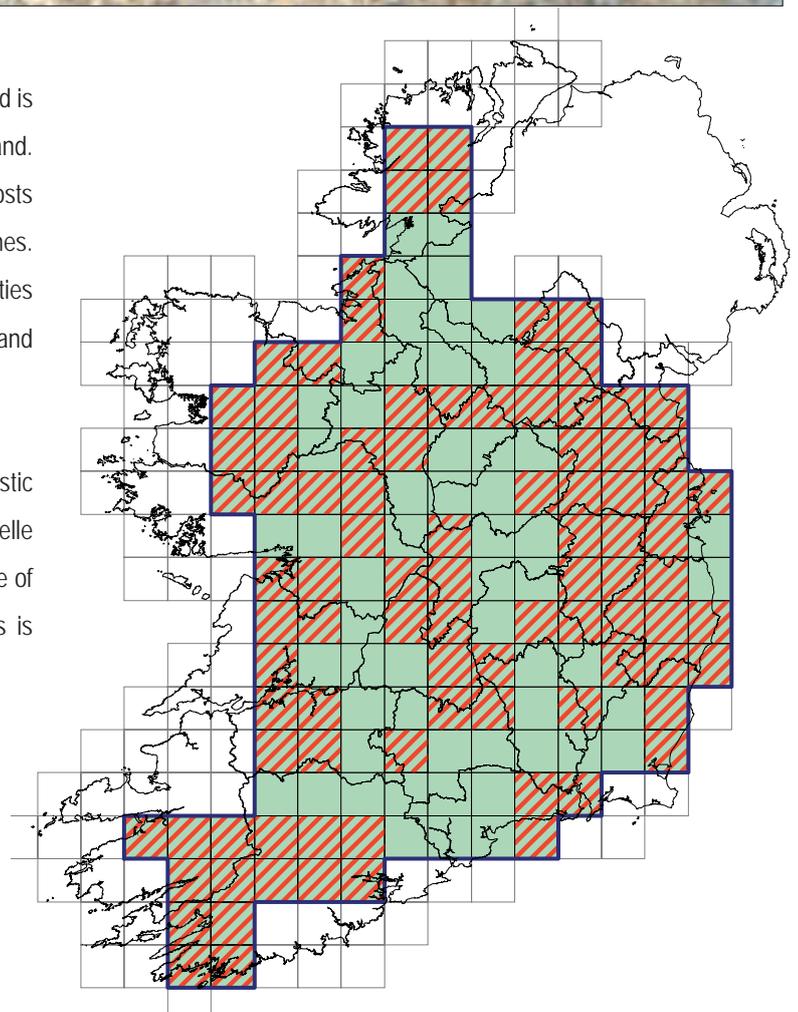
HORSESHOE BAT <i>Rhinolophus hipposideros</i> (1303)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	GOOD



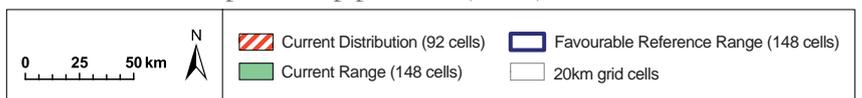
The common pipistrelle is widespread throughout the country and is one of the most commonly encountered mammal species in Ireland. It forages widely in both rural and urban settings. Maternity roosts are often in buildings, typically in the attics of houses and churches. The roosts often occur in very confined spaces such as wall cavities and behind fascia boards. Bats normally disperse in autumn and hibernate over winter.

Despite some concerns about roost disturbance in domestic buildings, the area of suitable habitat for the common pipistrelle (e.g. woodland) is generally increasing. It is adaptable in its use of roosting and foraging habitat and thus its conservation status is considered good.

Photograph: Common pipistrelle (Frank Greenaway)



PIPISTRELLE - *Pipistrellus pipistrellus* (1309)



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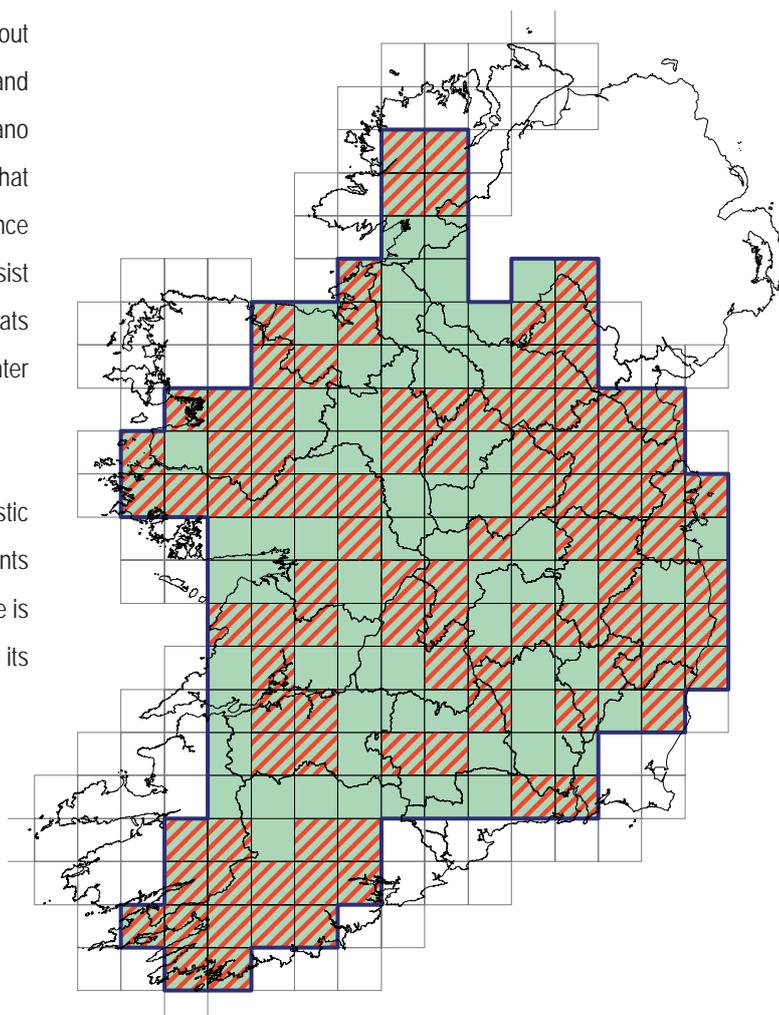
COMMON PIPISTRELLE <i>Pipistrellus pipistrellus</i> (1309)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



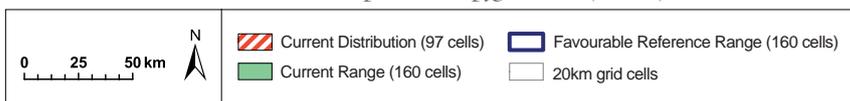
The soprano pipistrelle is widespread and common throughout Ireland. It forages along hedgerows and treelines and in woods and wetlands. Studies have shown that maternity roosts of the soprano pipistrelle most typically occur within 2 km of water (especially that with woodland or hedgerow on banks) highlighting the importance of aquatic insects to this species' diet. Maternity roosts can consist of over 1000 individuals and are usually in buildings. The bats normally disperse in autumn and are seldom seen during winter when they hibernate.

Despite some concerns about roost disturbance in domestic buildings, the increasing area of forestry and general improvements in water quality are good for this species. The soprano pipistrelle is adaptable in its use of roosting and foraging habitat and thus its conservation status is considered good.

Photograph: Soprano pipistrelle (Frank Greenaway)



SOPRANO PIPISTRELLE - *Pipistrellus pygmaeus* (5009)



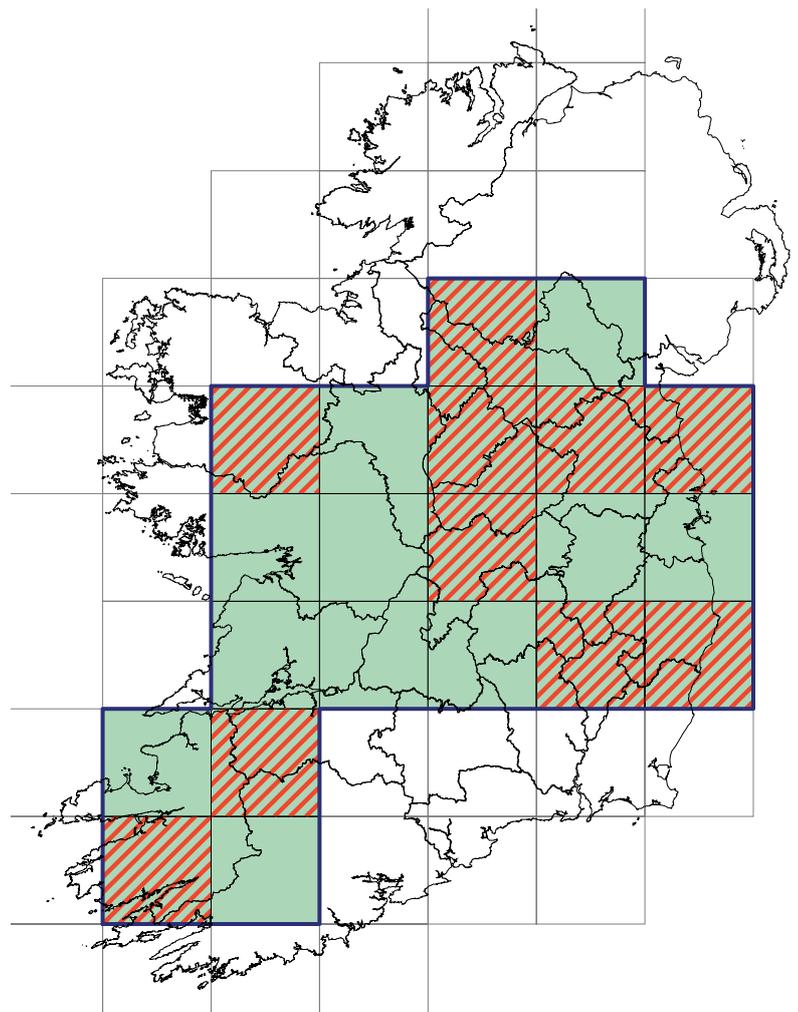
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SOPRANO PIPISTRELLE <i>Pipistrellus pygmaeus</i> (5009)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

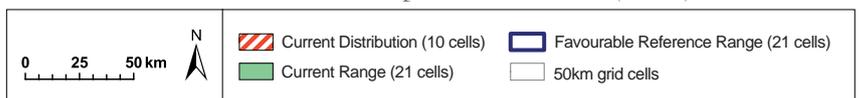


Nathusius' pipistrelle is a recent addition to the Irish fauna. It has been recorded at various locations around Ireland, but it has not yet been confirmed breeding in the Republic of Ireland. Little is known of its ecology in Ireland, but on the European continent this species uses hollow trees, bat and bird boxes, churches and buildings during summer and crevices in cliffs, hollow trees and buildings in winter. In Northern Ireland it has been found roosting in crevices in the stone and brickwork of an old farm building. Nathusius' pipistrelle feeds on insects along paths, deciduous and conifer woodland edge, meadows and water, but avoids built up areas. The Irish bat monitoring programme suggests that this species is spreading rapidly south and west across Ireland. It appears to have found a niche in Ireland and its conservation status is considered to be good.

Photograph: Nathusius' pipistrelle (Frank Greenaway)



NATHUSIUS' PIPISTRELLE - *Pipistrellus nathusii* (1317)



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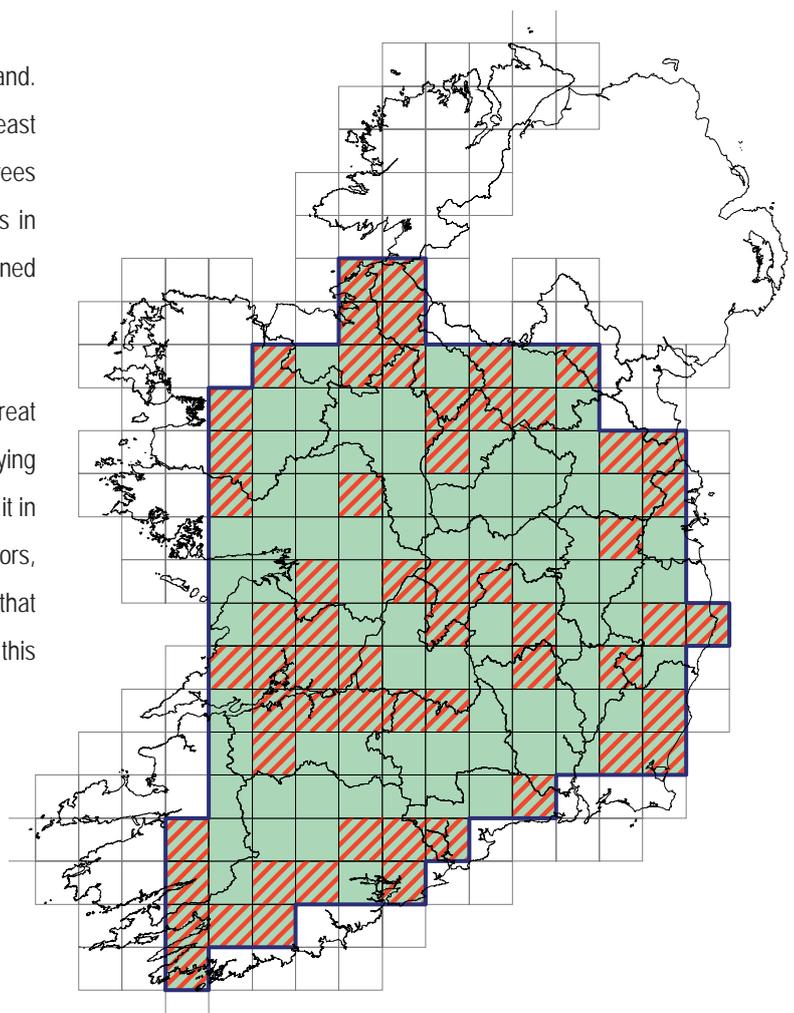
NATHUSIUS' PIPISTRELLE <i>Pipistrellus nathusii</i> (1317)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



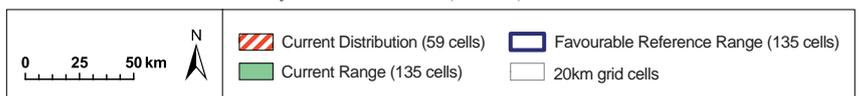
Natterer's bat is one of four *Myotis* bat species found in Ireland. Although this species is widely distributed, it is one of the least recorded bats in Ireland. Natterer's bat is found in buildings, in trees and under bridges during the summer, roosting in tight spaces in small numbers. Cold hibernation sites such as caves, ruined buildings, mines and bridges are used in winter.

The broad wings of the Natterer's bat enable it to fly with great manoeuvrability and agility. It specialises in catching non-flying insects, often gleaning its prey from foliage rather than catching it in the air. Deciduous and pine woodlands, tree-lined river corridors, ponds and grassland are favoured hunting habitats. Given that woodland habitats are increasing, the conservation status of this species is considered good.

Photograph: Natterer's bat (Frank Greenaway)



NATTERER'S BAT - *Myotis nattereri* (1322)



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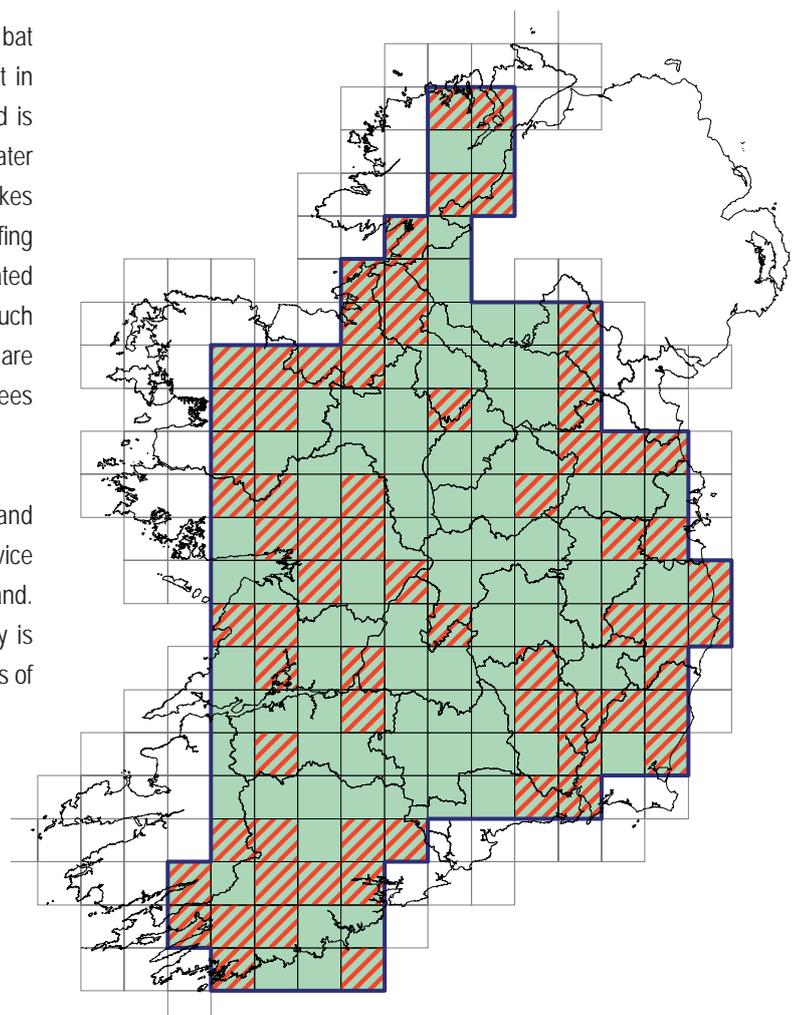
NATTERER'S BAT <i>Myotis nattereri</i> (1322)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



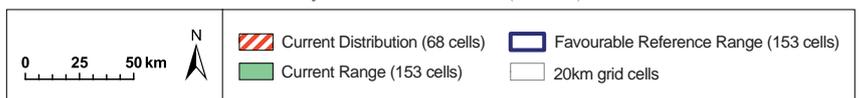
Daubenton's bat is one of the most widespread and common bat species in Ireland, recorded at 91% of all sites surveyed for it in 2006. It forages low over rivers, canals, lakes and ponds and is often referred to as the "water bat". It skims above the water feeding on caddis flies, mayflies and midges, and also takes pre-adult forms of these insects from the water surface by gaffing with its large feet and tail membrane. Although strongly associated with water, Daubenton's bat may also forage in other habitats, such as woodland. Stone bridges and old stone buildings near water are favoured roosting sites, but they will also use caves and trees as roosts.

Daubenton's bats are monitored annually via the all-Ireland waterways survey, funded by the National Parks & Wildlife Service and Waterways Ireland and managed by Bat Conservation Ireland. As large-scale wetland drainage has ceased and water quality is generally improving, the future prospects and conservation status of Daubenton's bat are considered to be good.

Photograph: Daubenton's bat (Frank Greenaway)



DAUBENTON'S BAT - *Myotis daubentoni* (1314)



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DAUBENTON'S BAT <i>Myotis daubentoni</i> (1314)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

WHISKERED BAT - *Myotis mystacinus* (1330)
BRANDT'S BAT - *Myotis brandtii* (1320)

Annex IV
Annex IV



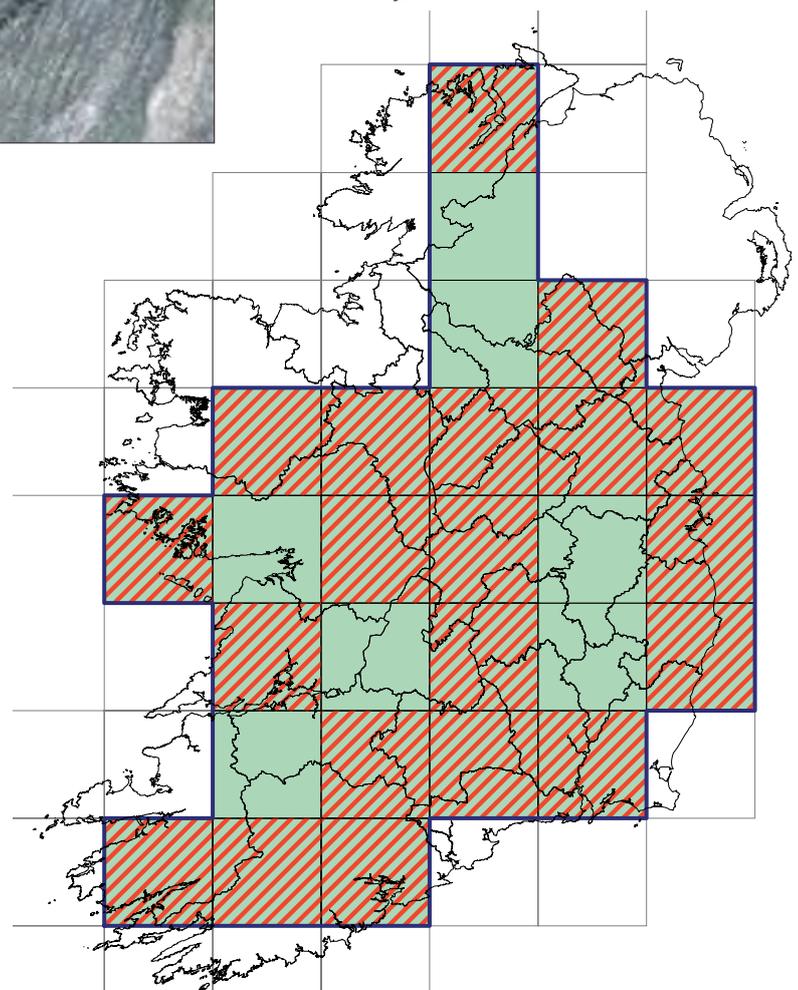
other species such as pipistrelles. Whiskered bats forage over parkland, meadows, flowing water, woodland and gardens. Brandt's bats feed in woodland and along woodland edge, often in close proximity to water. Nothing is currently known about the diet of either species in Ireland.

Despite their rarity in Ireland and the limited data on their numbers, the future prospects of these two species are considered good. There are no overwhelming threats facing these species and the area of their main foraging habitat, woodland, is increasing. Thus the overall conservation status is considered to be good.

Photograph: Whiskered bat, mother and young (Frank Greenaway)

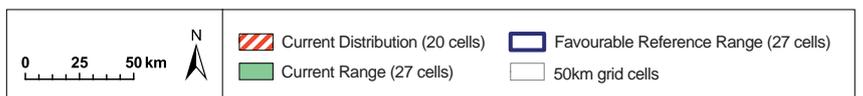
The whiskered bat and Brandt's bat are very difficult to tell apart and it was only recently recognised that the latter occurs in Ireland. Although both species appear to be distributed throughout Ireland, there are relatively few records of either.

Whiskered bats are found in houses during the summer, roosting in small numbers in tight spaces within the roof space, and are regularly found roosting with other bat species. They will also roost under masonry bridges. Whiskered bats hibernate in a range of underground sites in winter. Brandt's bats roost in buildings and trees during the summer months. They prefer crevices, and are found roosting in cavity walls and behind vertically hanging tiles. They also use bat boxes. Brandt's bats retreat to caves and cellars in small groups for the winter. They roost mainly in crevices, often in close proximity to



WHISKERED BAT - *Myotis mystacinus* (1330)
BRANDT'S BAT - *Myotis brandtii* (1320)

WHISKERED BAT <i>Myotis mystacinus</i> BRANDT'S BAT <i>Myotis brandtii</i> (1330, 1320)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



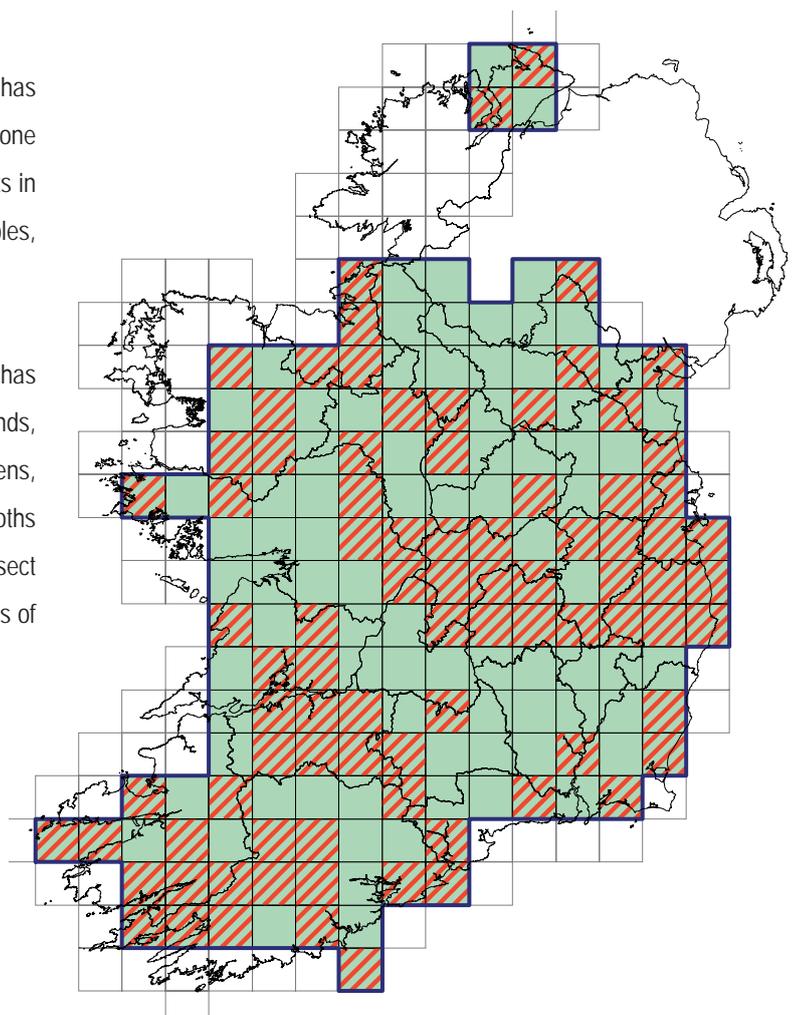
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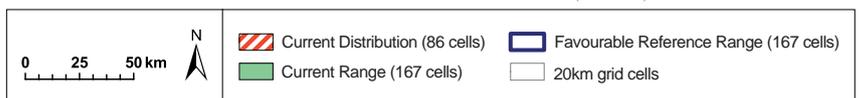
The brown long-eared bat is widespread throughout Ireland - it has even been recorded on several off-shore islands. It is probably one of the most abundant bat species in Ireland. This species roosts in large open attics where the bats cluster together, and in tree holes, farm buildings and bat boxes.

The brown long-eared bat preys on a wide range of insects and has broad habitat preferences, foraging in broad-leaved woodlands, along tree lines, in scrub, conifer plantations, mature gardens, parkland and orchards. Larger prey items such as noctuid moths are taken to a feeding perch, recognisable by the piles of insect remains which accumulate underneath. The conservation status of the brown long-eared bat in Ireland is considered to be good.

Photograph: Brown long-eared bat (Frank Greenaway)



BROWN LONG-EARED BAT - *Plecotus auritus* (1326)



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BROWN LONG-EARED BAT <i>Plecotus auritus</i> (1326)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

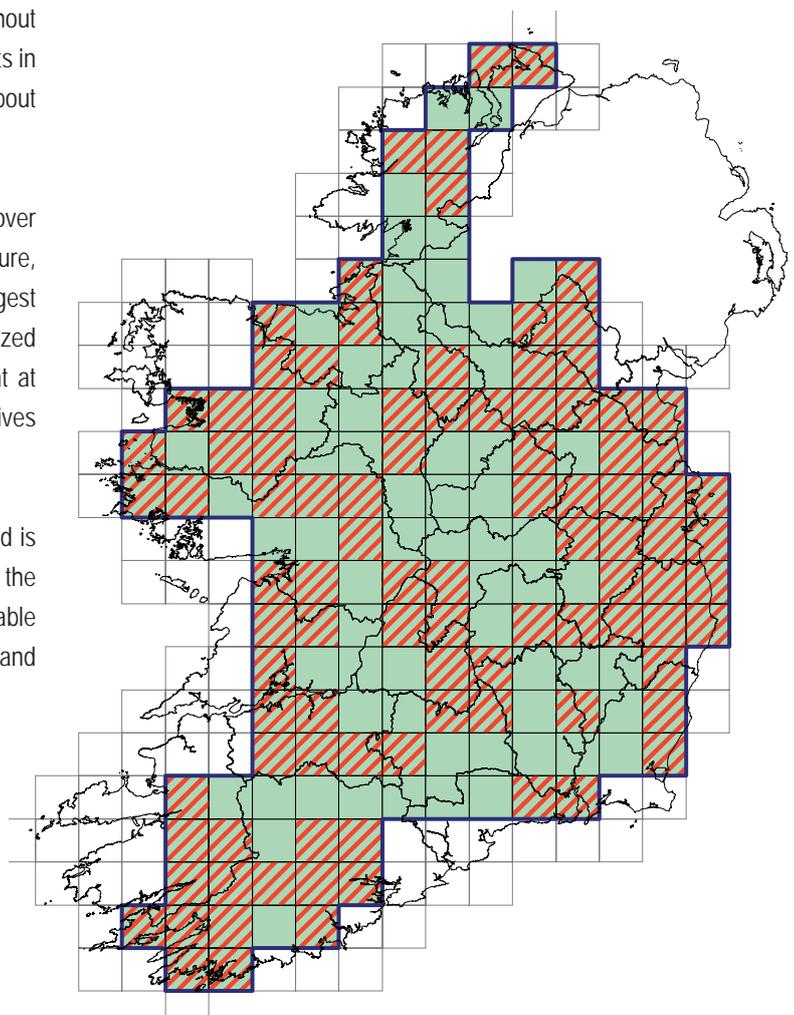


Leisler's bat is relatively widespread and common throughout Ireland. Nursery colonies are usually in buildings although roosts in tree holes and bat boxes are not uncommon. Little is known about where Leisler's bats hibernate.

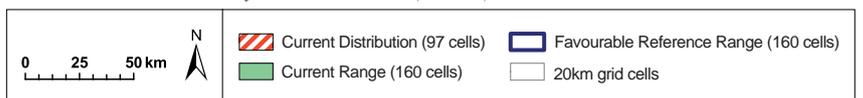
Leisler's bats forage in a wide variety of habitats including over water, hedgerows, street lamps, orchards, mature trees, pasture, farmland, railway embankments and streams. Although the largest bat species in Ireland, its prey is mainly small to medium-sized swarming insects. The Leisler's bat has distinctive level flight at greater heights than the other Irish species, from which it dives down after dung flies and beetles.

Leisler's bat is rare in Britain and the rest of Europe, but Ireland is generally considered to be a stronghold for the species. In the absence of any other similar-sized bat here it shows considerable flexibility in habitat use. It has adapted to roosting in buildings and thus its conservation status is considered good.

Photograph: Leisler's bat (Frank Greenaway)



LEISLER'S BAT - *Nyctalus leisleri* (1331)



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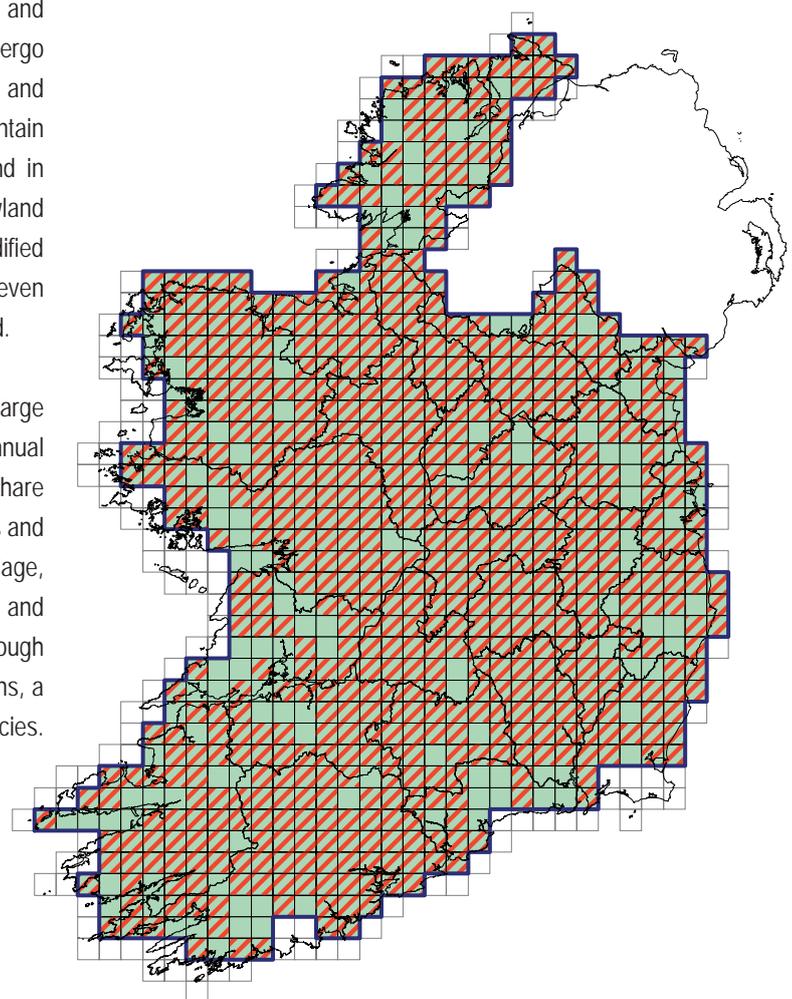
LEISLER'S BAT <i>Nyctalus leisleri</i> (1331)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good



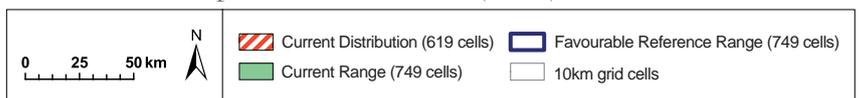
Photograph: Irish hare (Eddie Dunne)

The Irish hare is a distinct, endemic subspecies of the mountain hare. One of the notable differences between the Irish hare and mountain hare in other regions is that the former does not undergo complete winter whitening. It is widespread in both upland and lowland habitats throughout Ireland. As well as the typical mountain hare habitats such as upland heath and bog, it is also found in agricultural pastoral and arable landscapes and other lowland habitats such as coastal sand dune systems. Highly modified grasslands such as those found on golf courses, airports and even around industrial complexes are also utilised by hares in Ireland.

Recent surveys show that Irish hare populations are capable of large and rapid fluctuations; however the reasons for such multi-annual fluctuations are poorly understood. Factors likely to reduce hare numbers locally include loss of refuge areas such as hedgerows and rushy fields, the conversion of semi-natural grassland to silage, increased urbanisation and hunting. A reduction in the extent and quality of hare habitats has occurred over recent decades. Although the hare population can grow quickly under favourable conditions, a better understanding of population cycles is required for this species. Overall, the conservation status of the hare is considered poor.



IRISH HARE - *Lepus timidus hibernicus* (1334)



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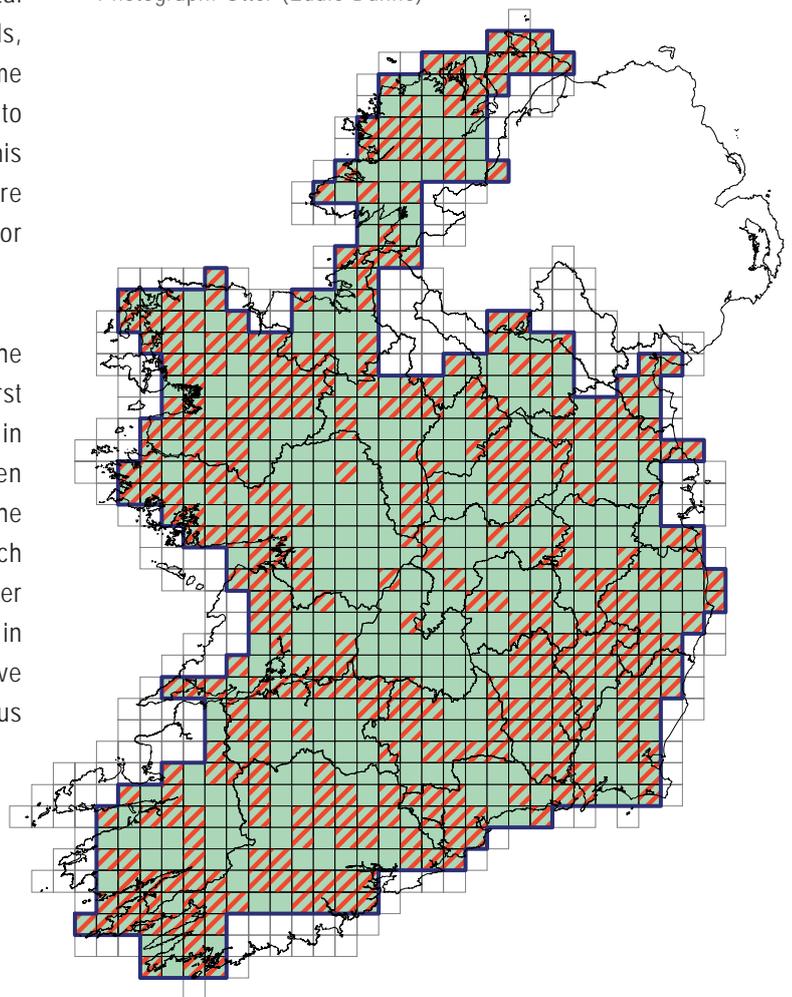
IRISH HARE <i>Lepus timidus</i> (1334)	
Range	Good
Population	Unknown
Habitat	Poor
Future prospects	Good
OVERALL	POOR



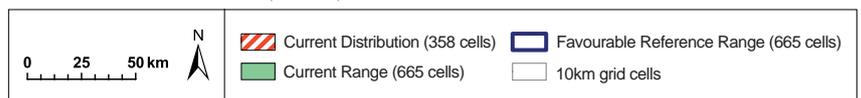
Photograph: Otter (Eddie Dunne)

The otter is widespread in Irish freshwater and coastal habitats. Its main prey includes sticklebacks, salmonids, frogs, crayfish and eels. While there has been some localised reduction in otter habitat quality, due mainly to water pollution and clearance of riparian vegetation, this has been balanced by the reduced occurrence of severe water pollution episodes and reduced river corridor disturbance.

The otter population in Ireland is estimated to be in the region of 10,000 to 20,000 adults. Between the first national survey in 1980/81 and the most recent survey in 2004/05, a net population loss of 23.7% has been estimated, with the majority of this decline occurring in the first ten years. Many otters are killed on the roads each year; a smaller number are killed in fishing nets and lobster pots. Although the otter has remained widespread in Ireland, national surveys suggest that otter densities have declined since 1980 and consequently conservation status is considered poor.



OTTER - *Lutra lutra* (1355)



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OTTER <i>Lutra lutra</i> (1355)	
Range	Good
Population	Poor
Habitat	Good
Future prospects	Good
OVERALL	POOR

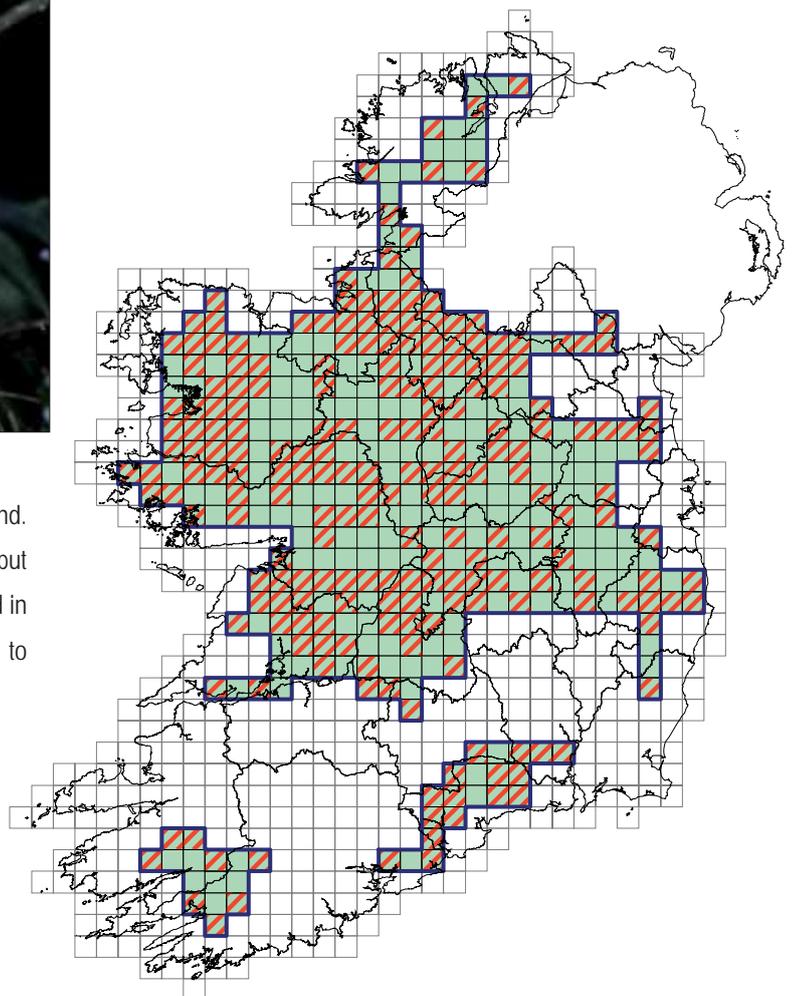


There are three principal factors for the increased distribution of pine martens in Ireland in recent years. Firstly, the area covered by forestry has almost doubled since the 1980s. Secondly, statutory protection since the 1970s has reduced persecution of the species. Prior to this, general predator control programs using poisoned baits and snares, and direct persecution of pine martens for their pelts, contributed to their decline. The third factor that has influenced the current distribution range is deliberate release into regions where they were historically present but were thought to have been locally extirpated.

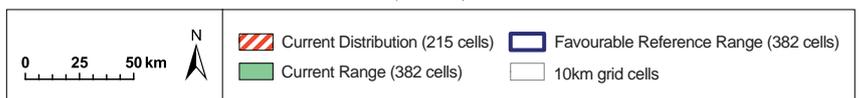
Although the population is still probably less than 10,000 animals, the increasing range of the pine marten renders its overall conservation status good.

Photograph: Pine marten (Eddie Dunne)

The pine marten lives in woodland, forest and scrub in Ireland. It eats a wide variety of small animal prey (mice, frogs, birds) but also fruit and carrion. The pine marten was formerly widespread in Ireland but suffered serious decline in the 17th century due to deforestation and in the 19th century due to persecution.



PINE MARTEN - *Martes martes* (1357)



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PINE MARTEN <i>Martes martes</i> (1357)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

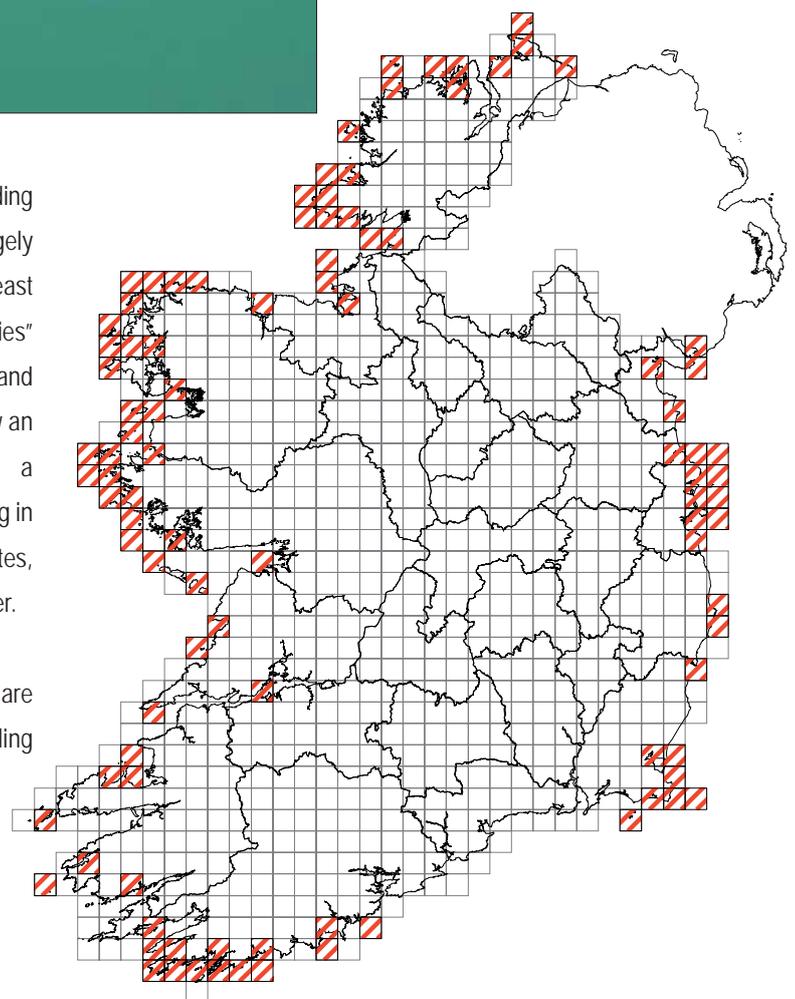


beaches for about three weeks prior to weaning. Up to the 1970s bounties were offered for killing seals and there have been occasional illegal culling incidents at the major breeding colonies since then. The total population estimate for grey seals in 2005 in the Republic of Ireland was 5,509-7,083 animals of all ages. Overall, population trends of the grey seal in Ireland are stable or increasing in colonies studied since 1994. The conservation status for this species is considered good.

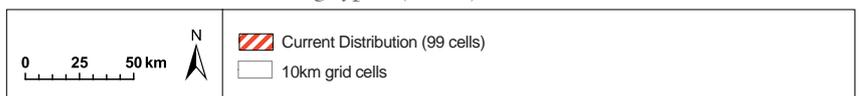
Photograph: Grey seal (Ciaran O'Keeffe)

The grey seal is found widely on Irish coastlines in the breeding season but its range throughout the rest of the year is largely unknown. It is part of a larger population inhabiting the north-east Atlantic. Grey seals are gregarious, forming terrestrial "colonies" where they come ashore ('haul out') to breed, rest, socialise and moult. Local populations in Ireland, as in western Europe, follow an annual cycle with an autumn/winter breeding season, a winter/spring moult and summer foraging period at sea. Breeding in Ireland takes place on offshore islands and isolated mainland sites, predominantly between the months of September and November.

Grey seals have been hunted for centuries and their pups are particularly vulnerable as they are confined to the breeding



GREY SEAL - *Halichoerus grypus* (1364)



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GREY SEAL <i>Halichoerus grypus</i> (1364)	
Range	Unknown
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

COMMON (HARBOUR) SEAL - *Phoca vitulina* (1365) Annex II, V

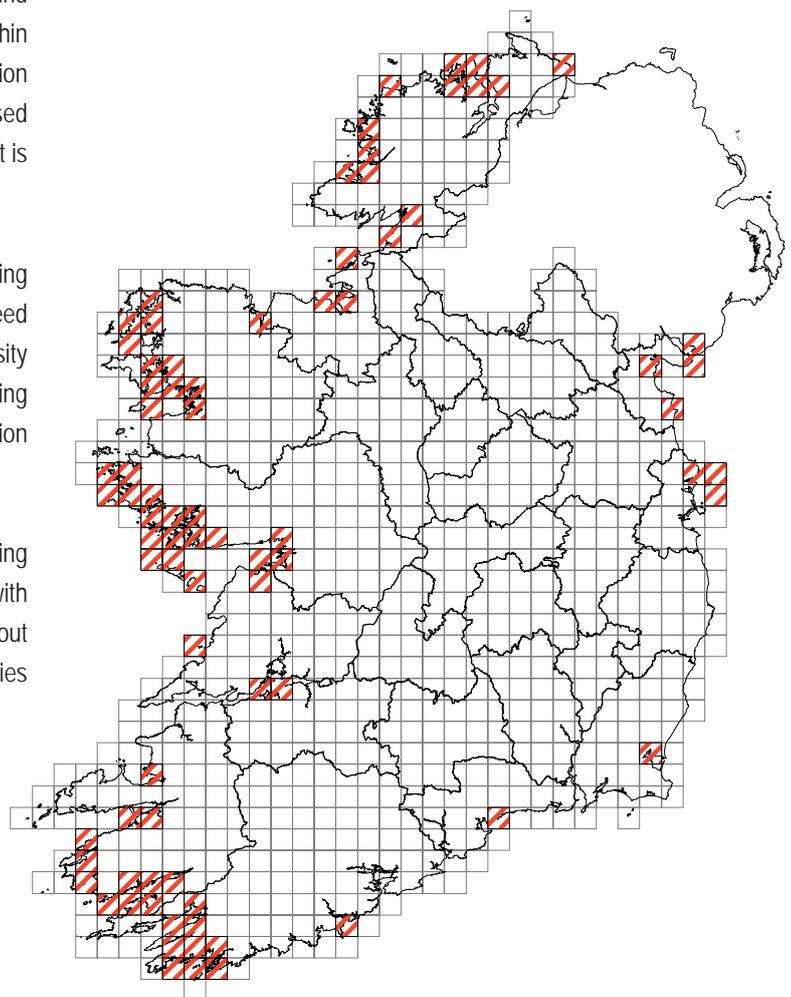


The common (harbour) seal is found widely on Irish coastlines and mainly uses inter-tidal rocky shores, sand and mud bars within sheltered bays, coves and estuaries. The minimum population estimate in the Republic of Ireland of 2,905 harbour seals is based on the most recent national survey carried out in August 2003. It is most abundant on the west coast from Donegal to West Cork.

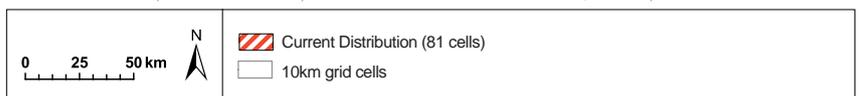
Pupping takes place in sheltered areas in June-July with moulting in August and dispersal during the autumn months. The seals feed on a variety of fish and crustaceans. Changes in fishing intensity and practices have led to reduced antagonism from the fishing industry towards the species. The seal haul-outs are an attraction for tourist boats in a number of locations in Ireland.

The main threats to the species are continued by-catch in fishing gear, occasional illegal culling, competition for prey resources with fisheries and disturbance at key breeding and moulting haul-out sites. The overall conservation assessment for this species is good.

Photograph: Common (harbour) seal (Eddie Dunne)



COMMON (HARBOUR) SEAL - *Phoca vitulina* (1365)



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COMMON (HARBOUR) SEAL <i>Phoca vitulina</i> (1365)	
Range	Unknown
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	Good

HUMPBACK WHALE - *Megaptera novaeangliae* (1345) Annex IV



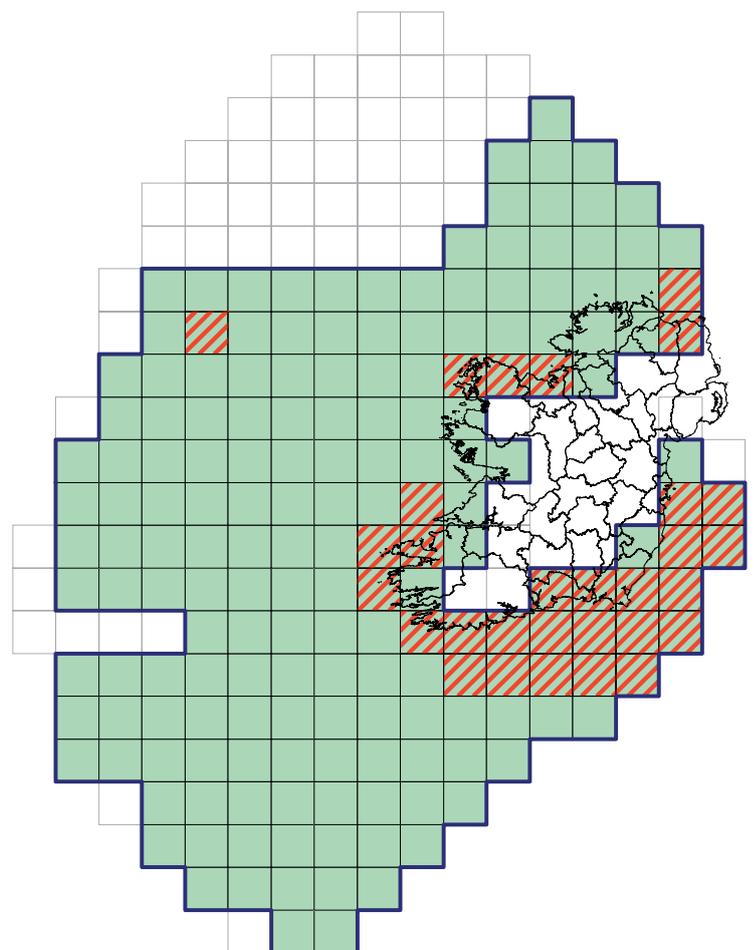
Humpback whales have been observed off all Irish coasts, mainly in late summer, autumn and winter. They are very acrobatic and are commonly seen breaching and slapping the surface of the water with their tails and pectoral fins. The outline and colour pattern on the underside of the tail is unique and may be used to identify individuals. They feed on small shoaling fish and krill.

The western seaboard of Ireland is known to be an important migratory corridor for large baleen whales including blue, fin and humpback whales. There is high site fidelity and individual humpback whales re-visit the same inshore areas year after year along the south coast from County Wexford to County Cork, suggesting the occurrence of important feeding habitats in these areas. Studies off the south coast have shown that some individuals remain inshore for many months.

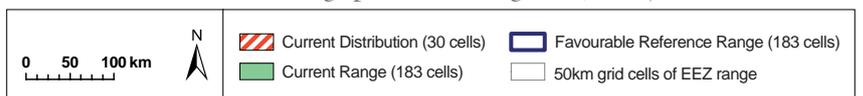
The humpback whale would appear to have good future prospects if the current increase in range continues. The overall conservation status of this species in Irish waters is unknown.

Photograph: Humpback whale (Padraig Whooley, IWDG)

HUMPBACK WHALE <i>Megaptera novaeangliae</i> (1345)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



HUMPBACK WHALE - *Megaptera novaeangliae* (1345)



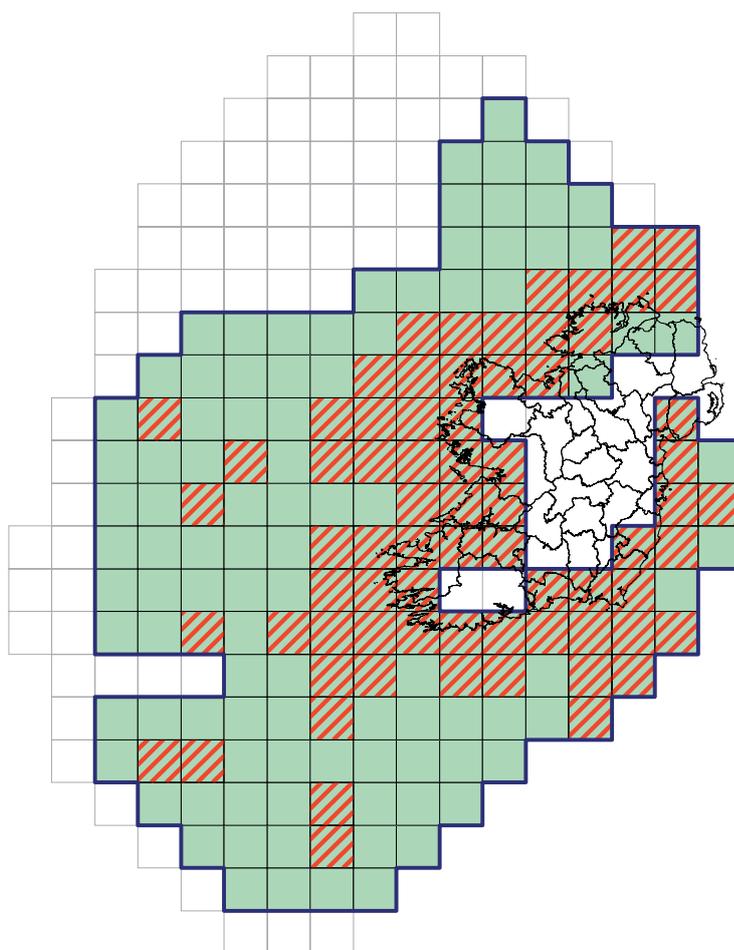
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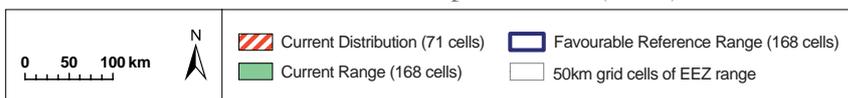
Bottle-nosed dolphins are probably the best known dolphin species in Ireland. They can be very acrobatic and often leap high out of the water. They feed mainly on small fish and squid. This species can be seen inshore from all Irish coasts, though mainly along the west and south coast. Also encountered offshore, they have been seen beyond the continental shelf in Irish waters. There is a resident group in the Shannon Estuary and bottle-nosed dolphins are regularly seen off the north-west coast.

The main threats to this species are similar to those for other cetaceans. This includes by-catch in fishing gear, pollution of the marine environment and habitat degradation. There is a growing interest in dolphin watching boat trips, both for individual animals (as at Dingle Harbour) or for resident groups (as in the Shannon Estuary). However there is potential for dolphin watching to cause disturbance and degradation of their habitat. The overall conservation status of the species is good.

Photograph: Bottle-nosed dolphin (Simon Berrow, IWDG)



BOTTLE-NOSED DOLPHIN - *Tursiops truncatus* (1349)



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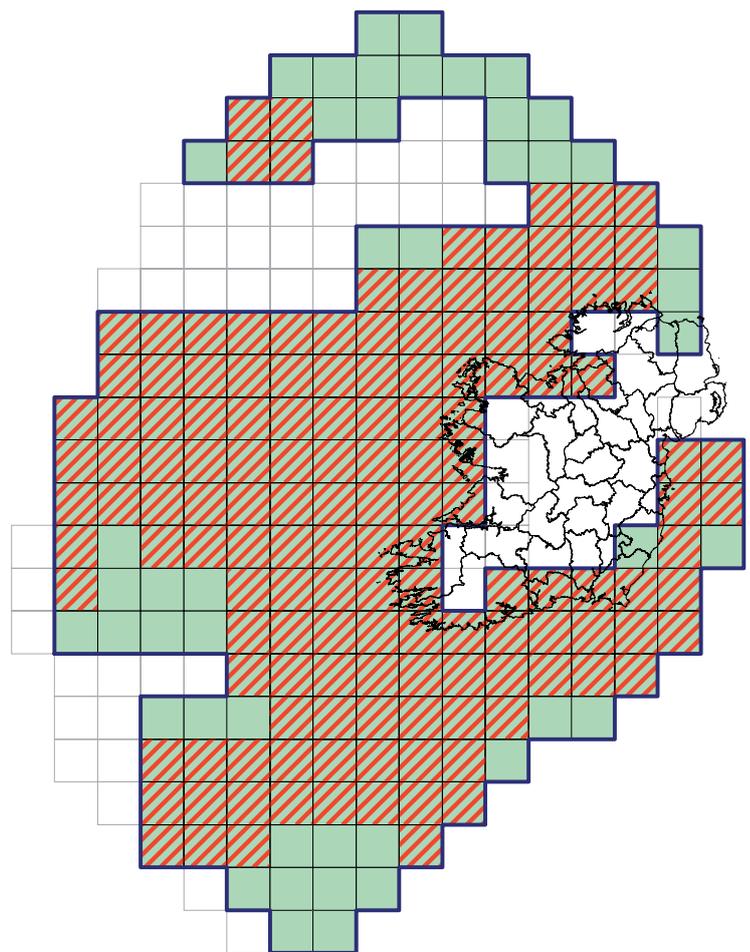
BOTTLE-NOSED DOLPHIN <i>Tursiops truncatus</i> (1349)	
Range	Good
Population	Unknown
Habitat	Good
Future prospects	Good
OVERALL	GOOD



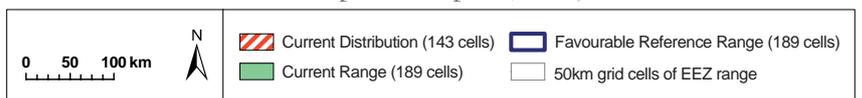
Common dolphins are found in all Irish waters and mainly off the west, south-west and south coasts of Ireland. They are the most frequently sighted cetacean species and the number of common dolphins seen increases noticeably during autumn and winter along the south coast. They are the second most frequently stranded species in Ireland. They are rarely seen alone, occurring in schools ranging in size from just a few to over 1,000, and feed mainly on small fish and squid.

The main threat to common dolphins in Irish waters is fisheries by-catch. Habitat degradation and potential competition with fisheries for food resources are also threats to the species. Recent abundance estimates suggest the presence of 27,560 individuals in Irish waters; however the viable population is unknown. The overall conservation status for this species in Irish waters is good.

Photograph: Common dolphin (Padraig Whooley, IWDG)



COMMON DOLPHIN - *Delphinus delphis* (1350)



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COMMON DOLPHIN <i>Delphinus delphis</i> (1350)	
Range	Good
Population	Unknown
Habitat	Good
Future prospects	Good
OVERALL	GOOD

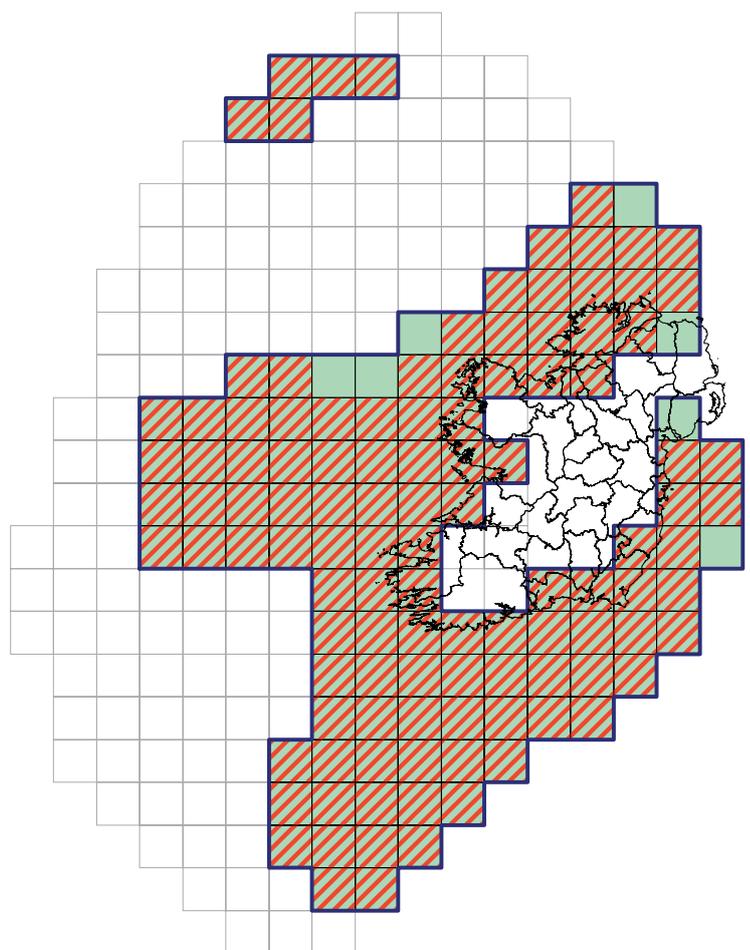


Harbour porpoises are widespread and abundant around the entire Irish coast, feeding mainly on small fish caught near the sea bed. They are very small and shy of boats, making them difficult to spot. Although they may be seen alone, they are generally found in small scattered groups of less than ten individuals; however on occasion as many as 50 or 60 may be seen together. Harbour porpoises are usually only found in shallow water but have been observed up to 200km out in the sea. They are thought to move offshore to calf in spring

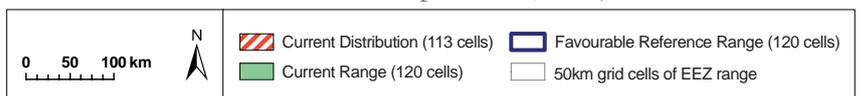
The main threats to this species are similar to those for other cetaceans. This includes by-catch in fishing gear, pollution of the marine environment and habitat degradation. An estimated 2,200 harbour porpoises and 230 common dolphins were killed annually by bottom set gillnets in the Celtic Sea in 1993/94, but this fishery is no longer active. Acoustic deterrents (pingers) are now required in many gill-net fisheries to reduce harbour porpoise by catch. The overall conservation status for this species is good.

Photograph: Harbour porpoise (Randall Counihan, IWDG)

HARBOUR PORPOISE <i>Phocoena phocoena</i> (1351)	
Range	Good
Population	Good
Habitat	Good
Future prospects	Good
OVERALL	GOOD



HARBOUR PORPOISE - *Phocoena phocoena* (1351)



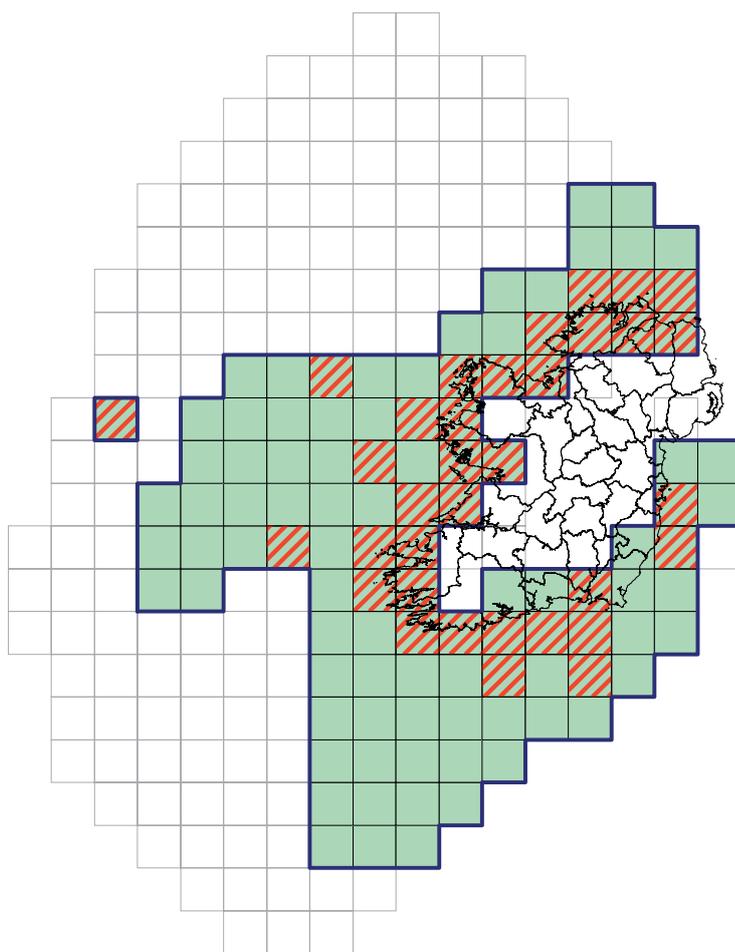
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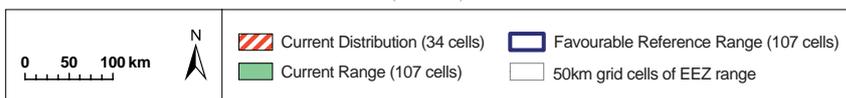
Killer whales have been seen all around the coast of Ireland. They are generally seen close to land, either singly or in small groups. They have been recorded off the continental shelf and over offshore banks, as well as entering harbours and estuaries on a number of occasions. Inshore sightings of killer whales tend to increase during late summer and autumn. They feed on fish and various sea mammals, and often hunt as a team.

Threats to killer whales in Irish waters are similar to those for other cetaceans, including habitat degradation and marine pollution. The overall conservation status for killer whales in Irish waters is unknown.

Photograph: Killer whale (Graeme Cresswell)



KILLER WHALE - *Orcinus orca* (2027)



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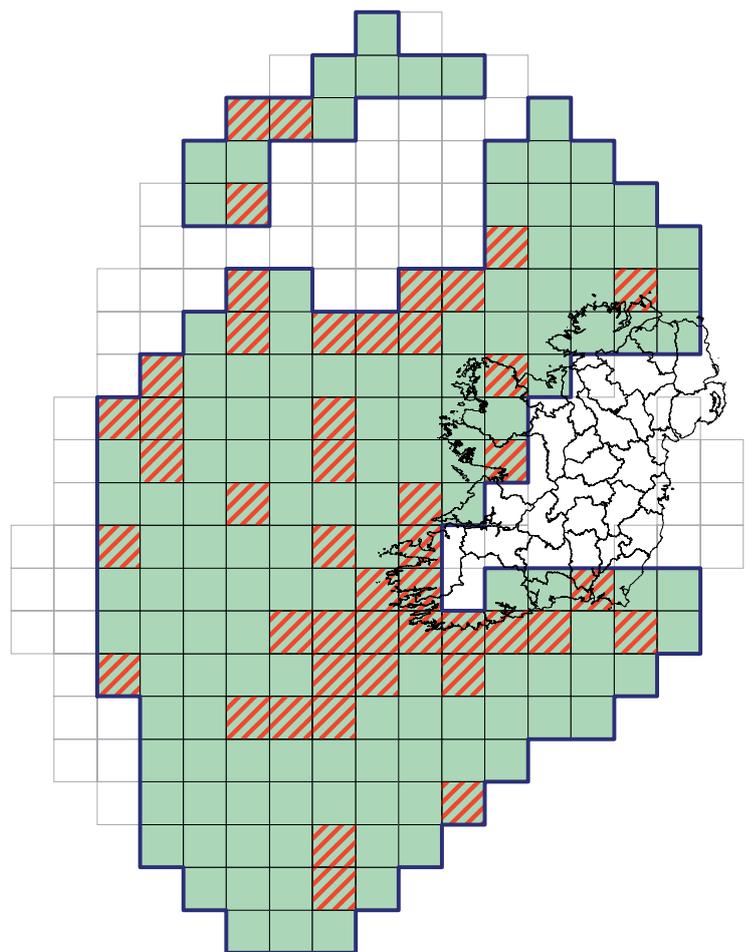
KILLER WHALE <i>Orcinus orca</i> (2027)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



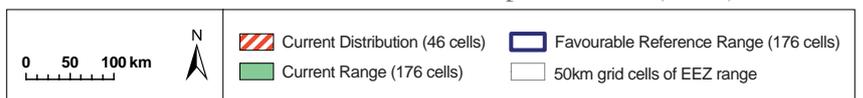
Long-finned pilot whales are usually seen along the edge of and beyond the continental shelf, and are rarely seen inshore except when live strandings occur. Sightings in Irish waters are most often recorded between June and August. This species regularly strands alive, sometimes in large groups. Long-finned pilot whales usually travel in groups of 50 or more individuals, and may be seen in association with dolphin species such as bottle-nosed and white-sided dolphins. They feed mainly on squid and sometimes on small fish.

The principal threat to long-finned pilot whales off the Irish coast is incidental capture in fishing nets. The overall conservation status of this species in Irish waters is unknown.

Photograph: Long-finned pilot whales, Tarifa, Spain (Matt Hobbs)



LONG-FINNED PILOT WHALE - *Globicephala melas* (2029)



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LONG-FINNED PILOT WHALE <i>Globicephala melas</i> (2029)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

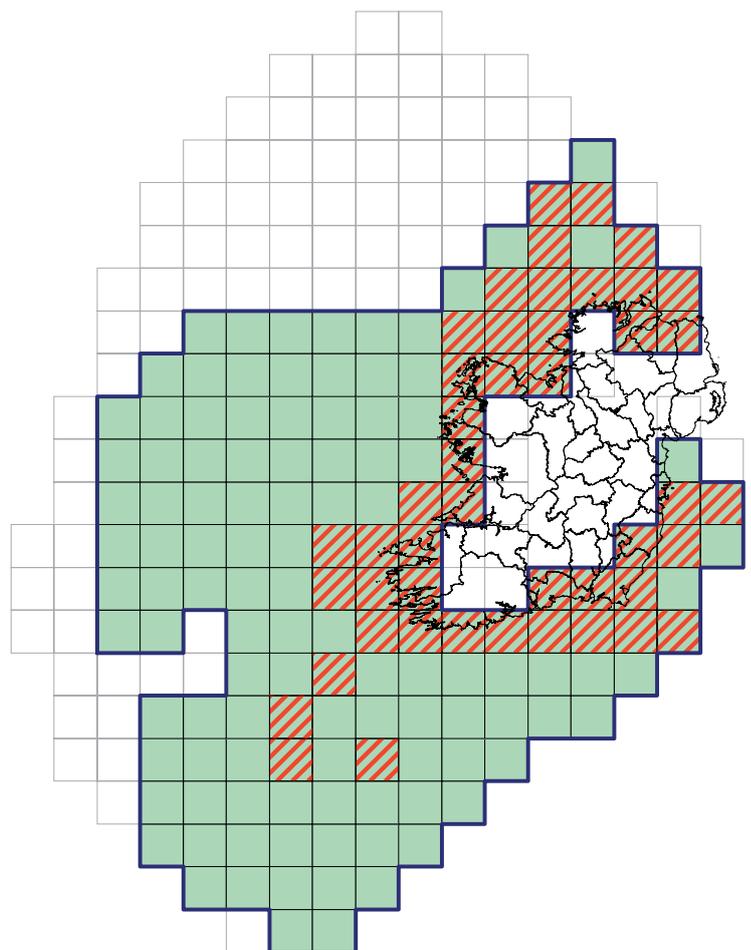


Risso's dolphins have been recorded in Irish waters at all times of the year. They are regularly seen off the south and west coasts both inshore and out to sea, usually within the extent of the continental shelf, and may move closer inshore during the summer. They also occur regularly in the Irish Sea. Risso's dolphins are typically seen either alone or in small family groups close to shore, with larger groups occurring further out to sea. They sometimes associate with other dolphin and whale species, such as bottle-nosed dolphins and long-finned pilot whales. They mainly feed on squid, octopus and cuttlefish.

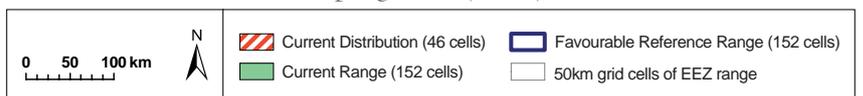
The main threat to Risso's dolphin in Irish waters is incidental by-catch in fishery nets. Potential disturbance may also arise from increased seismic activity generated by seabed mapping techniques, which may displace Risso's dolphin from its preferred habitats. The overall conservation status of this species in Irish waters is unknown.

Photograph: Risso's dolphin (Graeme Cresswell)

RISSE'S DOLPHIN <i>Grampus griseus</i> (2030)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



RISSE'S DOLPHIN - *Grampus griseus* (2030)



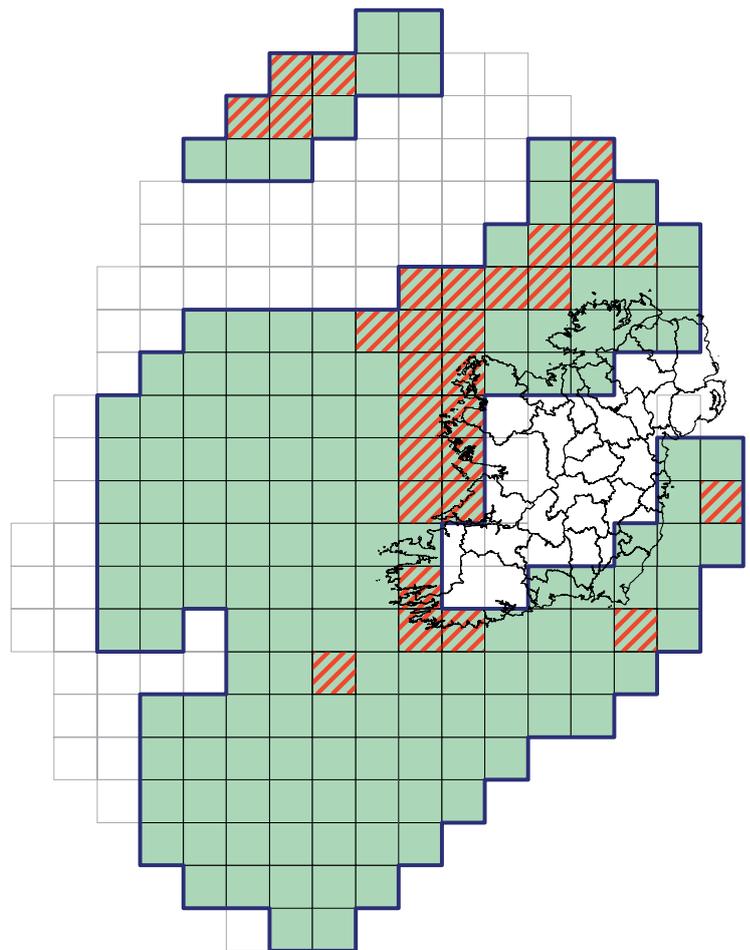
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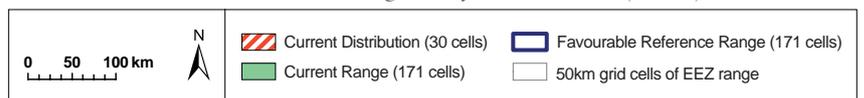
The white-sided dolphin is not very common in Irish waters, mainly recorded in spring and summer off the north and north-west coasts of Ireland. It is usually seen in groups and often associates with other dolphin and whale species, and long-finned pilot whales in particular. The white-sided dolphin feeds primarily on squid, herring and other small fish.

The main threat to white-sided dolphins off Irish coasts is incidental capture in fishery nets. Marine pollution is also a threat, with low-level organochlorine contamination recorded in white-sided dolphins from Irish waters. Recent abundance estimates suggest the presence of about 5,490 individuals in Irish waters; however the viable population is unknown. The overall conservation status of this species is good.

Photograph: White-sided dolphin (Graeme Cresswell)



WHITE-SIDED DOLPHIN - *Lagenorhynchus acutus* (2031)



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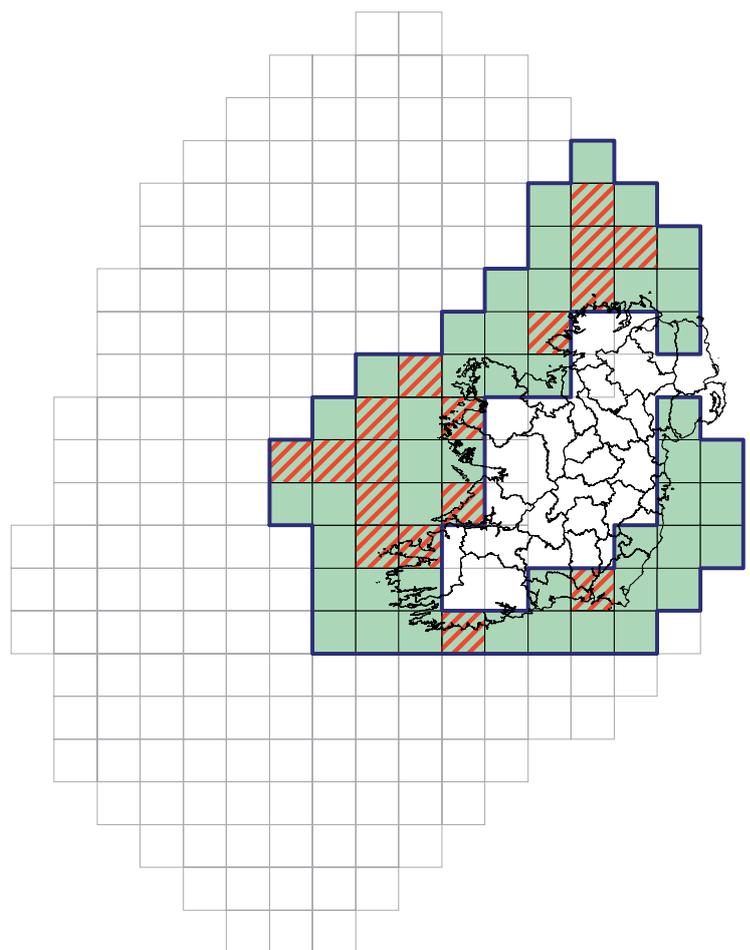
WHITE-SIDED DOLPHIN <i>Lagenorhynchus acutus</i> (2031)	
Range	Good
Population	Unknown
Habitat	Good
Future prospects	Good
OVERALL	GOOD



White-beaked dolphins are rarely seen in Irish waters; usually off the west and north coast, both off the continental shelf and farther out to sea. Strandings are infrequent but have been recorded on all Irish coasts. White-beaked dolphins are rarely seen alone, usually travelling in groups of up to 50 individuals, and have been recorded in association with other dolphins and whales. They feed mainly on squid and small fish.

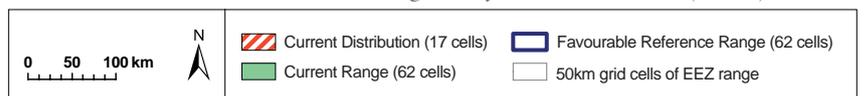
The main threats to white-beaked dolphins are similar to those for other cetaceans. This mainly includes incidental capture in fishery nets, and also habitat degradation and marine pollution. The white-beaked dolphin is thought to be particularly susceptible to the effects of increasing water temperatures as a result of climate change, due to its limited global range and preferred habitat over the continental shelf. Recent abundance estimates suggest the presence of about 1,350 individuals in Irish waters; however the viable population is unknown. The overall conservation status of this species in Irish waters is unknown.

Photograph: White-beaked dolphin (Graeme Cresswell)



WHITE-BEAKED DOLPHIN <i>Lagenorhynchus albirostris</i> (2032)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

WHITE-BEAKED DOLPHIN - *Lagenorhynchus albirostris* (2032)



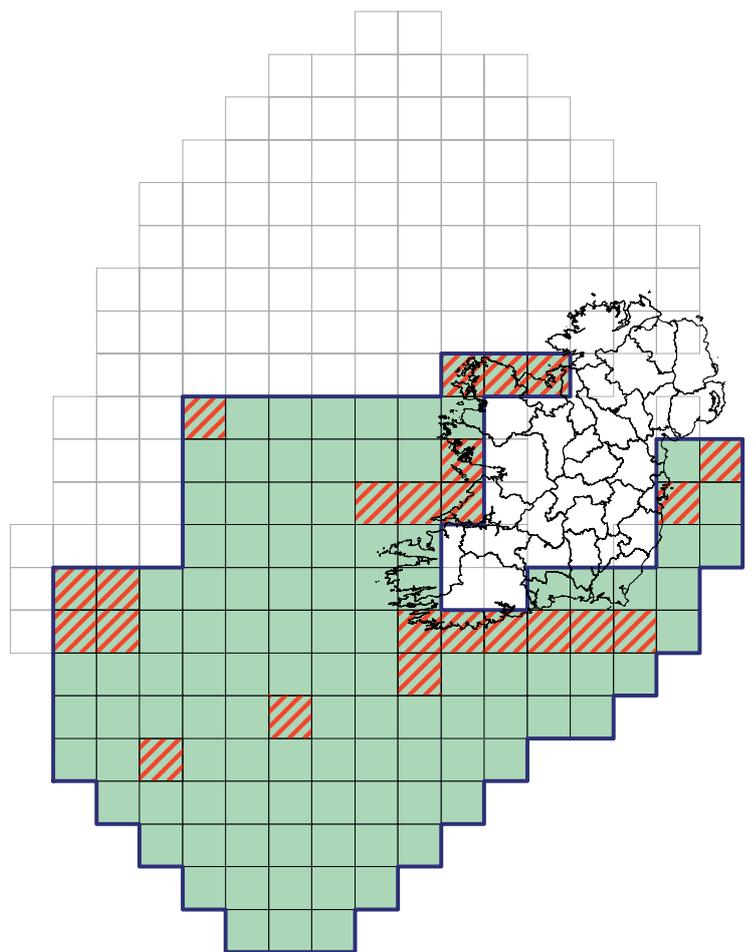
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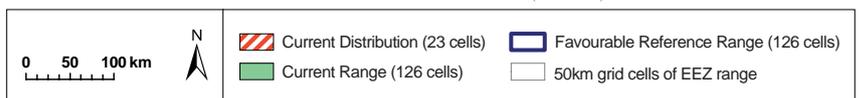
Striped dolphins are rarely seen in Irish waters, but may be under recorded due to their superficial resemblance to common dolphins. They are one of the most frequently stranded dolphin species in Ireland, with strandings mainly occurring on the north and west coasts. Striped dolphins are generally sighted far out to sea, and there is evidence to suggest that climate change is likely to increase their occurrence in Irish waters. They feed mainly on small fish, squid and shrimp.

Little is known of the range, population numbers and habitat preferences of the striped dolphin, and the overall conservation status of this species in Irish waters is unknown.

Photograph: Striped dolphin (Graeme Cresswell)



STRIPED DOLPHIN - *Stenella coeruleoalba* (2034)



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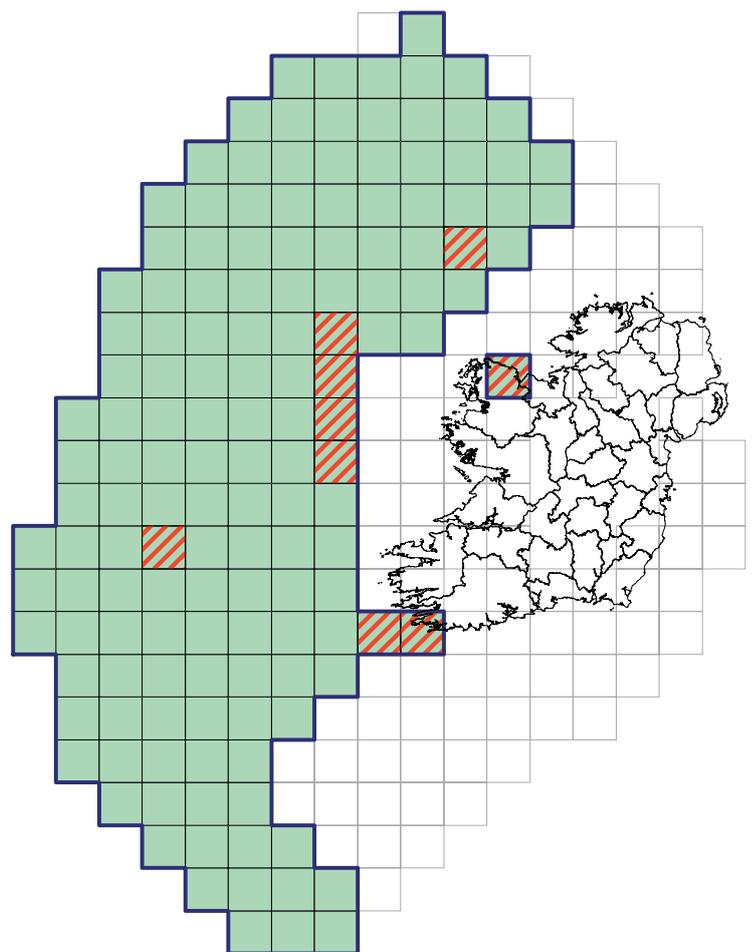
STRIPED DOLPHIN <i>Stenella coeruleoalba</i> (2034)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



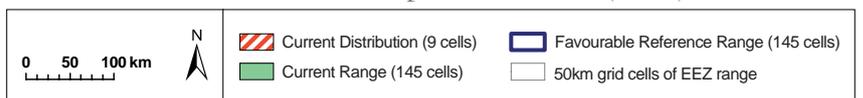
Cuvier's beaked whale is rarely seen in Irish waters, usually being sighted in deep water beyond the continental shelf or occasionally inshore. They are typically seen singly or in small groups and have been observed breaching. They feed mainly on squid and also on fish.

Cuvier's beaked whales strand more often than any other species of beaked whale. There were over 20 strandings recorded in Ireland in the 20th century, mostly on the west coast and generally occurring in the first quarter of the year. Acoustic disturbance as a result of seismic surveys of the sea bed may be a factor in the high number of strandings of this species. There is no abundance estimate available for Cuvier's beaked whale in Irish waters. The overall conservation status for this species in Irish waters is unknown.

Photograph: Cuvier's beaked whale (Colin McLeod)



CUVIER'S BEAKED WHALE - *Ziphius cavirostris* (2035)



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CUVIER'S BEAKED WHALE <i>Ziphius cavirostris</i> (2035)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



Sowerby's beaked whales are rarely seen alive and are extremely rare in Irish waters. They occur in small groups of up to 12 individuals and feed mainly on squid and fish.

There are no definite sightings of Sowerby's beaked whale in Irish waters; however 12 stranding records in counties Wexford, Galway and Sligo have occurred in the last 15 years. Seismic activity from sea bed mapping may be a factor in these strandings. Little is known about their range and there is no abundance estimate in Irish waters, rendering their overall conservation status unknown.

Photograph: Sowerby's beaked whale (Matt Hobbs)

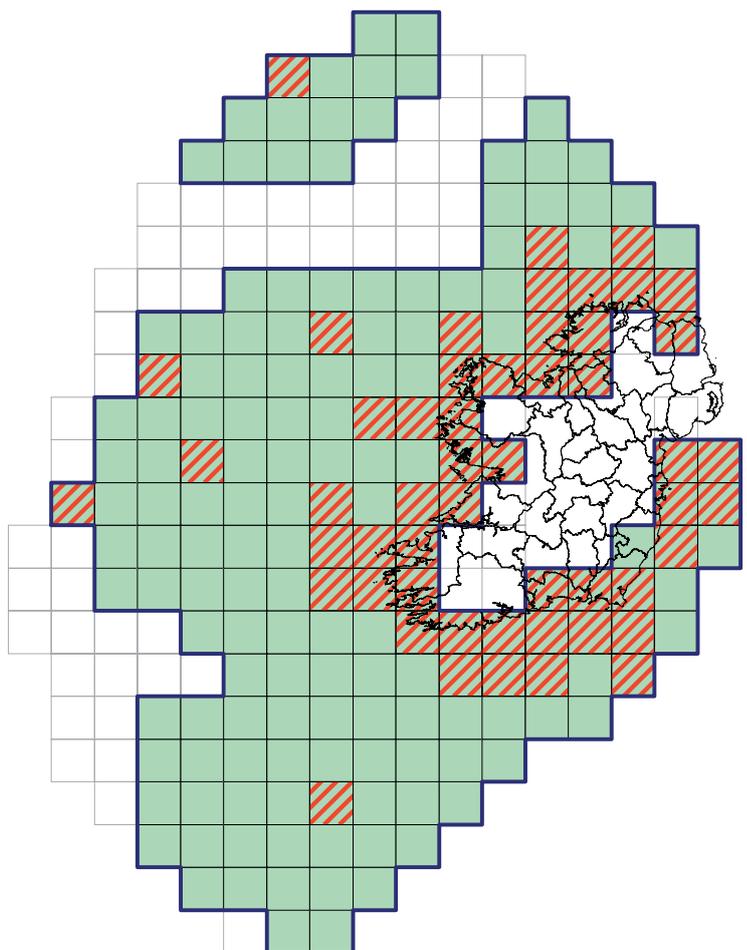
SOWERBY'S BEAKED WHALE <i>Mesoplodon bidens</i> (2038)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN



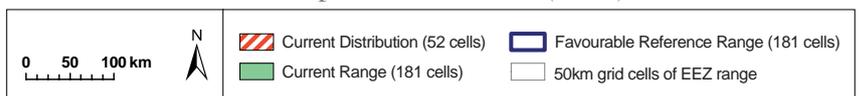
The minke whale is the most frequently recorded baleen whale in Irish waters. It occurs along the entire Irish coastline though mainly off the south and west coasts, typically between May and October. Minke whales often approach boats, remaining close for extended periods of time, and will breach on occasion. They are rarely seen beyond the continental shelf, and may sometimes be seen extremely close inshore.

The main threat to minke whales off the coast of Ireland is incidental capture in fishing nets; however the occurrence of this is rare. A recent abundance estimate for Irish coastal waters is 2,222 individuals; however it is not possible to determine whether abundance estimates available for minke whales are viable and thus favourable. The overall conservation status for this species is good.

Photograph: Minke whale lunge feeding (Padraig Whooley, IWDG)



MINKE WHALE - *Balaenoptera acutorostrata* (2618)



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MINKE WHALE <i>Balaenoptera acutorostrata</i> (2618)	
Range	Good
Population	Unknown
Habitat	Good
Future prospects	Good
OVERALL	GOOD

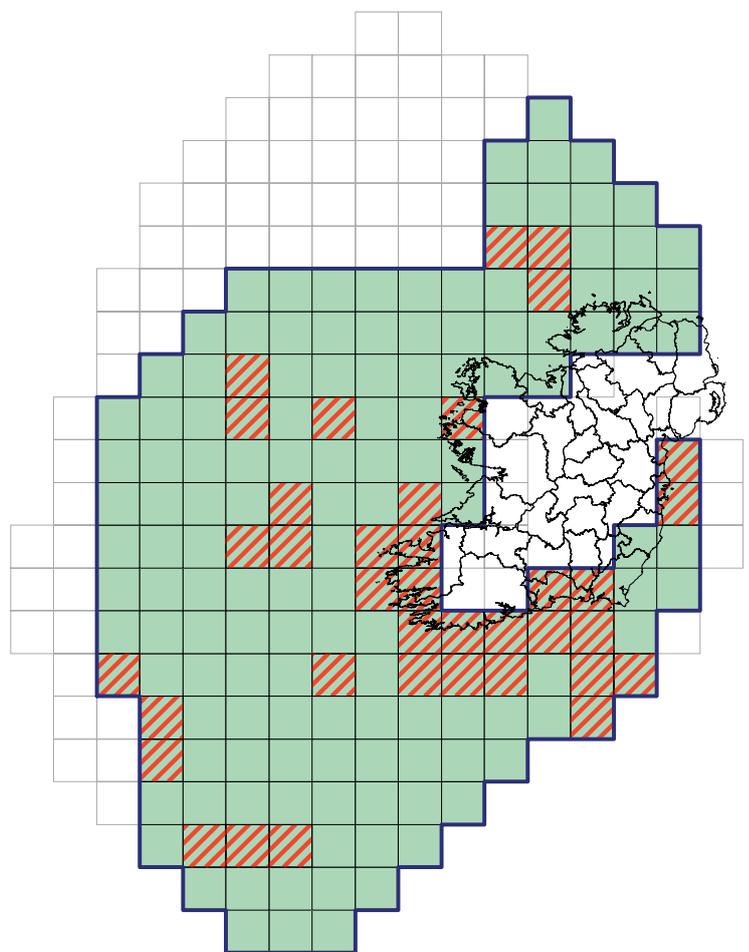


Fin whales are the second largest of all whales, reaching approximately 25m in length. They are usually seen alone or in loosely associated groups of up to 8 individuals, although over 20 have been seen together off the south coast of Ireland in summer. They take a large range of prey including krill and sand-eel, and are regularly seen off the south coast, where they are thought to feed on sprat and herring.

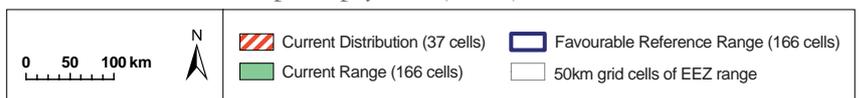
Acoustic detections have estimated that between 300-500 fin whales migrate through Irish waters annually. There is high site fidelity and fin whales re-visit the same inshore areas year after year, along the south coast from County Wexford to County Cork, suggesting the presence of important feeding habitats in these areas. This species is protected from hunting and there are signs of population increase as evident from increased number of sightings of fin whales off the south and south-west coasts. Best expert opinion suggests that the fin whale population is likely to be stable, and its overall conservation status is good.

Photograph: Fin whale (Padraig Whooley, IWDG)

FIN WHALE <i>Balaenoptera physalus</i> (2621)	
Range	Good
Population	Unknown
Habitat	Good
Future prospects	Good
OVERALL	GOOD



FIN WHALE - *Balaenoptera physalus* (2621)



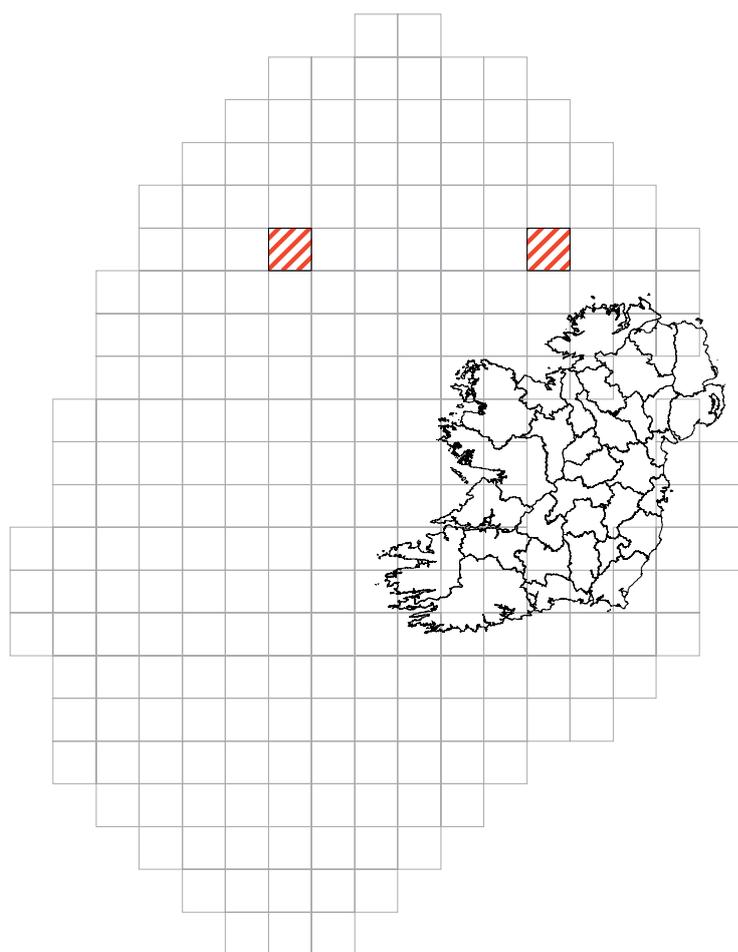
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Though once relatively common, sightings of blue whales in Irish waters are now rare. They generally travel alone or in small groups, and have been seen in the company of fin whales. They rarely breach, staying underwater for periods of 20 minutes or more, and feed primarily on krill. Little is known about their behaviour.

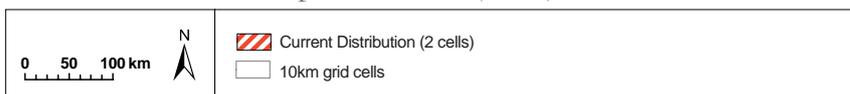
Acoustic detections have shown that the western seaboard of Ireland is an important migratory corridor for large baleen whales including the blue whale, with an estimated 30 to 50 blue whales migrating through Irish waters annually. Although the blue whale is a protected species since the mid-1960's, there is little evidence of population recovery and they are still very rare in Irish waters. Their range, population and habitat preferences are unknown, rendering their overall conservation status unknown.

Photograph: Blue whale (Dylan Walker)



BLUE WHALE <i>Balaenoptera musculus</i> (5020)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

BLUE WHALE - *Balaenoptera musculus* (5020)



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The sperm whale is a deep-diving species that is occasionally seen and more often heard in Irish waters, usually in deep waters off the continental shelf. In recent times they have been observed most regularly along the Rockall Trough off the west coast in spring and summer. They may be seen in family groups dominated by females, or singly as males, which tend to live alone. They feed primarily on squid but also take fish.

Acoustic disturbance from seismic surveys, carried out to map the seabed, may potentially displace the sperm whale from its preferred habitats in Irish waters. The number and rate of sperm whale strandings in Ireland has increased since the 1960s, which may be

attributable in part to such acoustic disturbances. Although there is no abundance estimate available the population is thought to be increasing. The overall conservation status of sperm whale in Irish waters is unknown.

Photograph: Sperm whale (Colin McLeod)

SPERM WHALE <i>Physeter macrocephalus</i> (5031)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

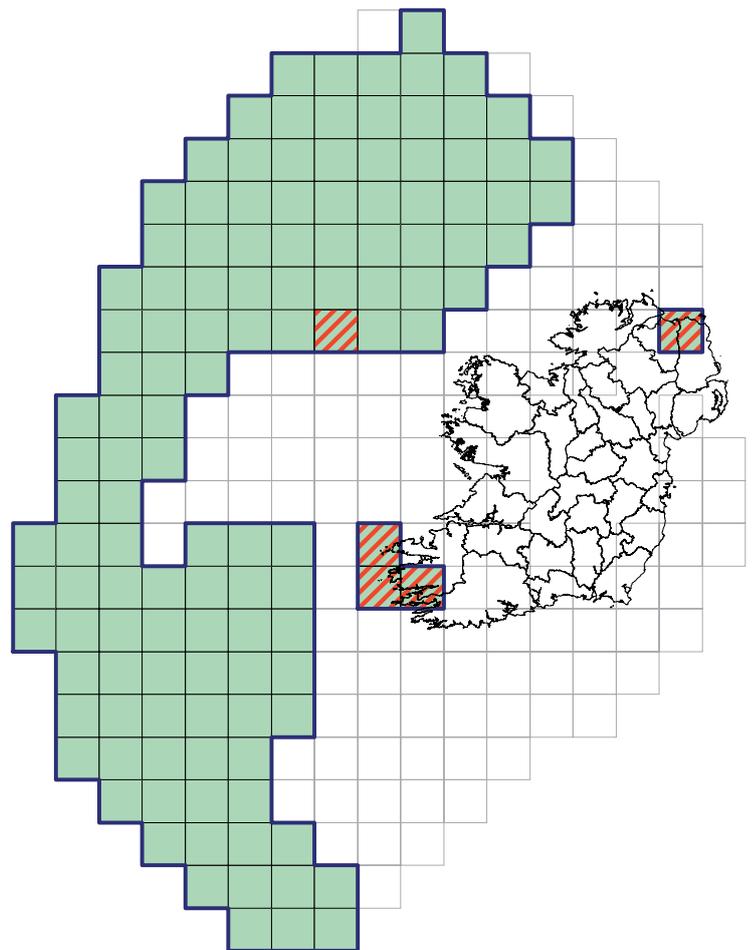
NORTHERN BOTTLENOSE WHALE - *Hyperoodon ampullatus* (5033) Annex IV



The northern bottlenose whale was hunted in Irish waters until the mid-1970s and is now rarely seen. They are typically seen in small groups of fewer than ten animals, usually beyond the continental shelf but have also been observed from land. This species regularly strands alive, particularly off the south-west and north-west coasts, and usually in spring and autumn. It feeds primarily on squid.

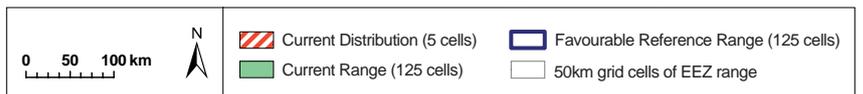
Potential disturbance to northern bottlenose whales may arise from seismic mapping of the seabed, which would displace them from their preferred habitats. There is no abundance estimate available for northern bottlenose whales in Irish waters, and their conservation status in Irish waters is unknown.

Photograph: Northern bottlenose whale (Padraig Whooley, IWDG)



NORTHERN BOTTLENOSE WHALE <i>Hyperoodon ampullatus</i> (5033)	
Range	Unknown
Population	Unknown
Habitat	Unknown
Future prospects	Unknown
OVERALL	UNKNOWN

NORTHERN BOTTLENOSE WHALE - *Hyperoodon ampullatus* (5033)



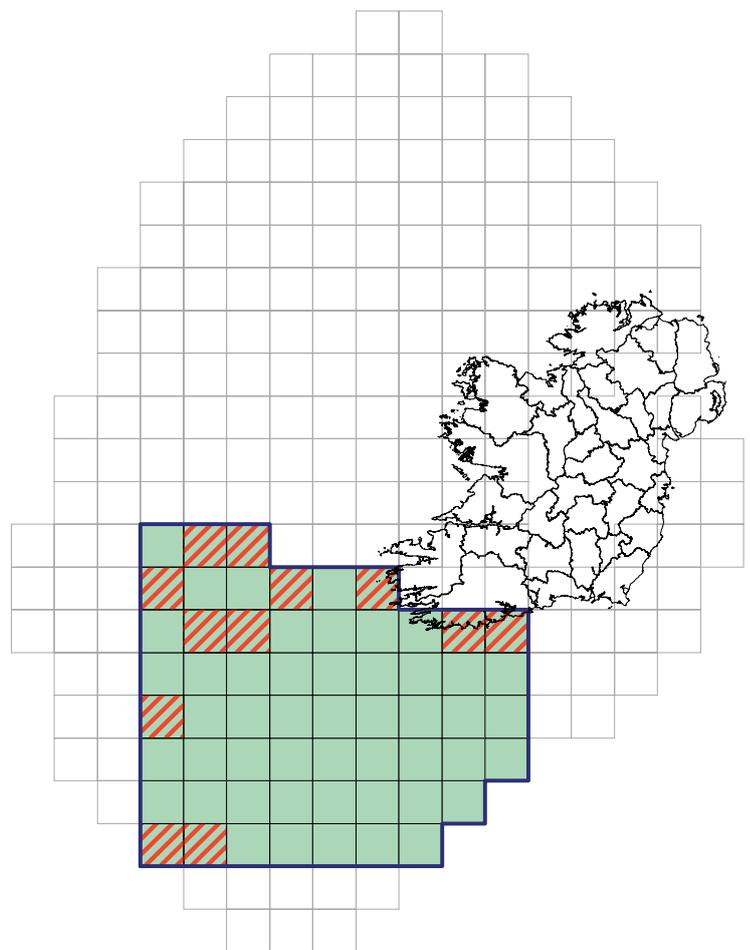
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Sei whales are difficult to identify without a close-up view and so are probably under-recorded in Irish waters. They are rarely seen; 14 recorded sightings over the past 15 years have occurred off the north-west and south-west coasts beyond the continental shelf, during the spring and summer. They are usually seen alone or in very small groups, and feed mainly on copepods and small fish.

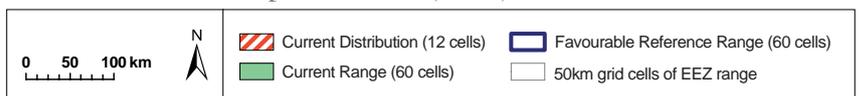
The range and population of sei whales in Irish coastal waters is largely unknown. The overall conservation status of this species in Irish waters is unknown.

Photograph: Sei whale near Larne, Co. Antrim (Peter Steele)



SEI WHALE <i>Balaenoptera borealis</i> (2619)	
Range	Unknown
Population	Unknown
Habitat	Good
Future prospects	Unknown
OVERALL	UNKNOWN

SEI WHALE - *Balaenoptera borealis* (2619)



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NORTHERN RIGHT WHALE - *Eubalaena glacialis* (1348) Annex IV

The Northern right whale is a vagrant species in Irish waters and is rarely recorded; there have been a few recent confirmed sightings off the northwest coast. Little is known of their behaviour. They are usually seen alone and feed primarily on copepods. The current population is unknown, but was severely depleted by commercial

whaling in the early 1900's. There are 18 historical catch records from a Norwegian whaling station based in Mayo, which occurred between 1908 and 1920. The overall conservation status of Northern right whales in Irish waters is unknown.

FALSE KILLER WHALE - *Pseudorca crassidens* (2028) Annex IV

The false killer whale is a vagrant species in Irish waters. It is known from only two definite sighting records which occurred off the west coast of Ireland. False killer whales are usually seen in groups of up to 20 individuals or more, and feed mainly on squid and fish. The false killer whale is a subtropical species occurring at

the limits of its range in Irish waters: climate change is likely to increase the frequency with which this species appears off the Irish coast. The overall conservation status of the false killer whale in Irish waters is unknown.

TRUE'S BEAKED WHALE - *Mesoplodon mirus* (2037) Annex IV

True's beaked whale is a rarely seen vagrant in Irish waters. There is only one confirmed live sighting as well as several stranding records, all of which occurred on the west coast. Little is known of their behaviour or diet, although they are thought to eat squid.

Acoustic disturbance arising from seismic activity associated with seabed mapping may negatively affect True's beaked whale. The overall conservation status of this species in Irish waters is unknown.

PYGMY SPERM WHALE - *Kogia breviceps* (2622) Annex IV

The pygmy sperm whale is an extremely rare vagrant in Irish waters. It has only been positively identified at sea on one occasion, and there are just six stranding records which have occurred on the west coast of Ireland over the past 50 years.

They mainly feed on squid and octopus. There is no abundance estimate for this species and their preferred habitat is unknown. The overall conservation status for pygmy sperm whale in Irish waters is unknown.

BELUGA / WHITE WHALE - *Delphinapterus leucas* (5029) Annex IV

The beluga whale is a rarely seen vagrant in Irish waters. There are just two sighting records which occurred off the coasts of counties Mayo and Cork. They have a varied diet including squid, fish, crab and shrimp.

The beluga whale is an Arctic species, occurring at the limit of its known range in Ireland. Very little is known of its population and range in Irish waters, and its overall conservation status off the Irish coast is unknown.

GERVAIS' BEAKED WHALE - *Mesoplodon europaeus* (5034) Annex IV

Gervais' beaked whale is an extremely rare vagrant in Irish waters. There is just one stranding record from Co. Sligo, which occurred in 1989. They feed mainly on squid and fish. Little is known of

the behaviour, population or range of Gervais' beaked whale in Irish waters and their overall conservation status is unknown.

4. SUMMARY OF RESULTS

The synopses given in the preceding pages allow an overall picture to be obtained of the present conservation status of all habitats and species listed in the Habitats Directive. Tables 1 and 2 present the conservation status for each attribute for habitats and species respectively; Figures 1 and 2 summarise these results. Species considered to be vagrant were not assessed.

Although the range for most of the habitats was assessed favourably, the structure and functions and future prospects, in particular, will require considerable management effort to improve condition and reduce the impacts of pressures.

A low proportion of species were assessed as having a "Bad" overall status. This includes three species of mollusc, three fish and one amphibian. Not surprisingly, these species are all dependent on freshwater for at least some parts of their life cycles. The critical situation of some of the more sensitive species, such as the freshwater pearl mussels, underlines the urgency of improving water quality in key areas. A majority of those species assessed as having "Poor" overall status, are also water dependent. A large proportion of the cetacean species were assessed as having an "Unknown" status as the distribution and populations of these elusive species are still poorly understood. Encouragingly, all of the bat species were assessed as having a "good" status.

HABITAT ASSESSMENT

Table 1: Assessment of each attribute and overall Conservation Status for Annexed Habitat (* indicates priority habitat)

Code	Habitat Name (summarised)	Range	Area	Structure & Functions (Condition)	Future Prospects	Overall
1110	Sandbanks	Good	Good	Good	Poor	Poor
1130	Estuaries	Good	Good	Unknown	Poor	Poor
1140	Tidal Mudflats and Sandflats	Good	Good	Poor	Poor	Poor
1150	Coastal Lagoons*	Good	Poor	Bad	Poor	Bad
1160	Large Shallow Inlets and Bays	Good	Good	Unknown	Poor	Poor
1170	Reefs	Good	Unknown	Poor	Poor	Poor
1210	Annual Vegetation of Drift Lines	Good	Poor	Good	Poor	Poor
1220	Perennial Vegetation of Stony Banks	Good	Poor	Poor	Poor	Poor
1230	Vegetated Sea Cliffs	Good	Good	Poor	Poor	Poor
1310	Salicornia mud	Good	Poor	Poor	Poor	Poor
1320	Spartina Swards	Good	Poor	Good	Poor	Poor
1330	Atlantic Salt Meadows	Good	Poor	Poor	Poor	Poor
1410	Mediterranean Salt Meadows	Good	Good	Poor	Poor	Poor
1420	Halophilous Scrub	Good	Bad	Poor	Bad	Bad
2110	Embryonic Shifting Dunes	Good	Poor	Poor	Poor	Poor
2120	Marram Dunes (White Dunes)	Good	Bad	Bad	Bad	Bad
2130	Fixed Dunes (Grey Dunes)*	Good	Poor	Bad	Bad	Bad
2140	Decalcified Empetrum Dunes*	Good	Good	Bad	Poor	Bad
2150	Decalcified Dune Heath*	Good	Good	Bad	Poor	Bad
2170	Dunes with Creeping Willow	Good	Good	Poor	Poor	Poor
2190	Humid Dune Slacks	Good	Poor	Poor	Bad	Bad
2IAO	Machair*	Good	Poor	Bad	Bad	Bad
3110	Lowland Oligotrophic Lakes	Good	Good	Bad	Bad	Bad
3130	Upland Oligotrophic Lakes	Good	Good	Bad	Bad	Bad
3140	Hard Water Lakes	Good	Good	Bad	Bad	Bad
3150	Natural Eutrophic Lakes	Unknown	Unknown	Unknown	Bad	Bad
3160	Dystrophic Lakes	Good	Unknown	Bad	Bad	Bad
3180	Turloughs*	Good	Good	Poor	Poor	Poor
3260	Floating River Vegetation	Good	Good	Bad	Bad	Bad
3270	Chenopodium rubri	Good	Good	Good	Good	Good
4010	Wet Heath	Good	Unknown	Bad	Bad	Bad
4030	Dry Heath	Good	Good	Poor	Poor	Poor
4060	Alpine and Subalpine Heath	Good	Poor	Poor	Poor	Poor
5130	Juniper Scrub	Good	Poor	Poor	Poor	Poor
6130	Calaminarian Grassland	Good	Good	Good	Poor	Poor
6210	Orchid-Rich Grassland/Calcareous Grassland*	Good	Bad	Bad	Bad	Bad
6230	Species-Rich Nardus Upland Grassland*	Good	Bad	Bad	Bad	Bad
6410	Molinia Meadows	Good	Bad	Bad	Bad	Bad
6430	Hydrophilous Tall Herb	Good	Good	Poor	Poor	Poor
6510	Lowland Hay Meadows	Bad	Bad	Bad	Bad	Bad

HABITAT ASSESSMENT

Table 1: Assessment of each attribute and overall Conservation Status for Annexed Habitat (* indicates priority habitat) - continued

Code	Habitat Name (summarised)	Range	Area	Structure & Functions (Condition)	Future Prospects	Overall
7110	Raised Bog (Active)*	Bad	Bad	Bad	Bad	Bad
7120	Degraded Raised Bogs	Good	Good	Poor	Poor	Poor
7130	Blanket Bog (Active)*	Good	Bad	Poor	Bad	Bad
7140	Transition Mires	Good	Good	Bad	Bad	Bad
7150	Rhynchosporion Depressions	Good	Good	Good	Good	Good
7210	Cladium Fens*	Good	Good	Bad	Bad	Bad
7220	Petrifying Springs*	Good	Good	Bad	Bad	Bad
7230	Alkaline Fens	Good	Good	Bad	Bad	Bad
8110	Siliceous Scree	Good	Poor	Poor	Poor	Poor
8120	Calcareous Scree	Good	Poor	Poor	Poor	Poor
8210	Calcareous Rocky Slopes	Good	Poor	Poor	Poor	Poor
8220	Siliceous Rocky Slopes	Good	Poor	Poor	Poor	Poor
8240	Limestone Pavement*	Good	Poor	Poor	Poor	Poor
8310	Caves	Good	Unknown	Good	Good	Good
8330	Sea Caves	Good	Unknown	Good	Good	Good
91A0	Old Oak Woodlands	Good	Bad	Bad	Bad	Bad
91D0	Bog Woodland*	Good	Poor	Poor	Poor	Poor
91E0	Residual Alluvial Forests*	Good	Bad	Bad	Bad	Bad
91J0	Yew Woodlands*	Bad	Bad	Bad	Bad	Bad

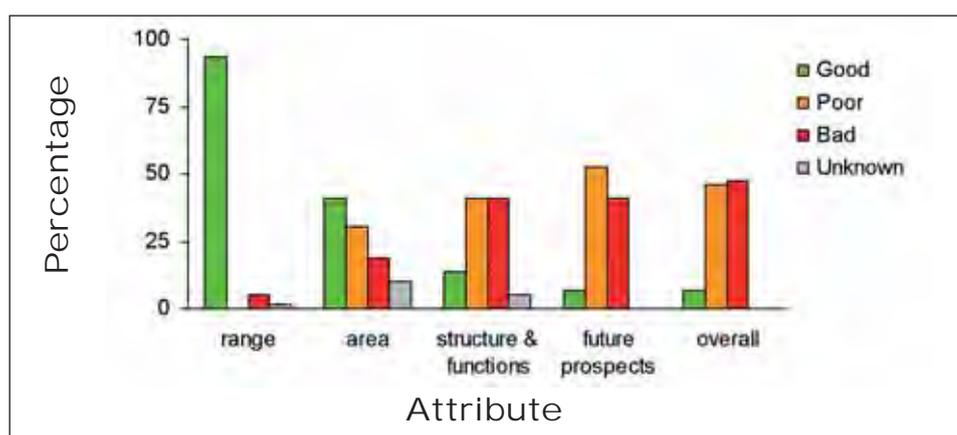


Figure 1: Summary of conservation status for all habitats

SPECIES ASSESSMENT

Table 2: Assessment of each attribute and overall Conservation Status for Annexed Species

Code	Species Name	Annex	Range	Population	Suitable Habitat	Future Prospects	Overall
1421	Killarney Fern (<i>Trichomanes speciosum</i>)	II	Good	Good	Good	Good	Good
1528	Marsh Saxifrage (<i>Saxifraga hirculus</i>)	II	Good	Good	Good	Good	Good
1833	Slender Naiad (<i>Najas flexilis</i>)	II	Good	Poor	Poor	Good	Poor
1393	Slender Green Feather-Moss (<i>Hamatocaulis vernicosus</i>)	II	Good	Good	Good	Good	Good
1395	Petalwort (<i>Petalophyllum ralfsii</i>)	II	Good	Good	Good	Good	Good
1376	Maerl (<i>Lithothamnion coralloides</i>)	V	Good	Unknown	Unknown	Poor	Poor
1377	Maerl (<i>Phymatolithon calcareum</i>)	V	Good	Unknown	Unknown	Poor	Poor
1400	White Cushion Moss (<i>Leucobryum glaucum</i>)	V	Good	Good	Poor	Good	Poor
1409	<i>Sphagnum</i> genus	V	Good	Good	Poor	Poor	Poor
1413	<i>Lycopodium</i> species group	V	Good	Poor	Poor	Poor	Poor
5113	<i>Cladonia</i> subgenus <i>Cladina</i>	V	Good	Good	Poor	Poor	Poor
1013	Geyer's Whorl Snail (<i>Vertigo geyeri</i>)	II	Good	Poor	Poor	Poor	Poor
1014	Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>)	II	Good	Poor	Poor	Poor	Poor
1016	Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>)	II	Bad	Bad	Poor	Bad	Bad
1024	Kerry Slug (<i>Geomalacus maculosus</i>)	II, IV	Good	Good	Good	Good	Good
1029	Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)	II, V	Good	Bad	Bad	Bad	Bad
1990	Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)	II, V	Bad	Bad	Bad	Bad	Bad
1092	White-clawed Crayfish (<i>Austroptamobius pallipes</i>)	II, V	Poor	Poor	Poor	Poor	Poor
1065	Marsh Fritillary (<i>Euphydryas aurinia</i>)	II	Good	Poor	Poor	Poor	Poor
1095	Sea Lamprey (<i>Petromyzon marinus</i>)	II	Poor	Poor	Poor	Poor	Poor
1099	River Lamprey (<i>Lampetra fluviatilis</i>)	II, V	Good	Good	Good	Good	Good
1096	Brook Lamprey (<i>Lampetra planeri</i>)	II	Good	Good	Good	Good	Good
1102	Allis Shad (<i>Alosa alosa</i>)	II, V	Good	Unknown	Unknown	Unknown	Unknown
5046	Killarney Shad (<i>Alosa fallax killarnensis</i>)	II, V	Good	Good	Good	Good	Good
1103	Twaite Shad (<i>Alosa fallax fallax</i>)	II, V	Good	Bad	Unknown	Poor	Bad
5076	Pollan (<i>Coregonus autumnalis</i>)	V	Good	Bad	Poor	Poor	Bad
1106	Atlantic Salmon (<i>Salmo salar</i>)	II, V	Good	Bad	Poor	Poor	Bad
1202	Natterjack Toad (<i>Bufo calamita</i>)	IV	Bad	Bad	Poor	Poor	Bad
1213	Common Frog (<i>Rana temporaria</i>)	V	Good	Good	Poor	Good	Poor
1223	Leatherback Turtle (<i>Dermodochelys coriacea</i>)	IV	Unknown	Unknown	Unknown	Poor	Poor
1303	Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	II, IV	Good	Good	Good	Good	Good
1309	Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	IV	Good	Good	Good	Good	Good
5009	Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	IV	Good	Good	Good	Good	Good
1317	Nathusius' Pipistrelle (<i>Pipistrellus nathusii</i>)	IV	Good	Good	Good	Good	Good
1322	Natterer's Bat (<i>Myotis nattereri</i>)	IV	Good	Good	Good	Good	Good
1314	Daubenton's Bat (<i>Myotis daubentoni</i>)	IV	Good	Good	Good	Good	Good
1330	Whiskered Bat (<i>Myotis mystacinus</i>)	IV	Good	Good	Good	Good	Good
1320	Brandt's Bat (<i>Myotis brandtii</i>)	IV	Good	Good	Good	Good	Good
1326	Brown Long-eared Bat (<i>Plecotus auritus</i>)	IV	Good	Good	Good	Good	Good
1331	Leisler's Bat (<i>Nyctalus leisleri</i>)	IV	Good	Good	Good	Good	Good

SPECIES ASSESSMENT

Table 2: Assessment of each attribute and overall Conservation Status for Annexed Species (continued).

Code	Species Name	Annex	Range	Population	Suitable Habitat	Future Prospects	Overall
1334	Irish Hare (<i>Lepus timidus hibernicus</i>)	V	Good	Unknown	Poor	Good	Poor
1355	Otter (<i>Lutra lutra</i>)	II, IV	Good	Poor	Good	Good	Poor
1357	Pine Marten (<i>Martes martes</i>)	V	Good	Good	Good	Good	Good
1364	Grey Seal (<i>Halichoerus grypus</i>)	II, V	Unknown	Good	Good	Good	Good
1365	Common (Harbour) Seal (<i>Phoca vitulina vitulina</i>)	II, V	Unknown	Good	Good	Good	Good
1345	Humpback Whale (<i>Megaptera novaeangliae</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
1349	Bottle-nosed Dolphin (<i>Tursiops truncatus</i>)	II, IV	Good	Unknown	Good	Good	Good
1350	Common Dolphin (<i>Delphinus delphis</i>)	IV	Good	Unknown	Good	Good	Good
1351	Harbour Porpoise (<i>Phocoena phocoena</i>)	II, IV	Good	Good	Good	Good	Good
2027	Killer Whale (<i>Orcinus orca</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2029	Long-finned Pilot Whale (<i>Globicephala melas</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2030	Risso's Dolphin (<i>Grampus griseus</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2031	White-sided Dolphin (<i>Lagenorhynchus acutus</i>)	IV	Good	Unknown	Good	Good	Good
2032	White-beaked Dolphin (<i>Lagenorhynchus albirostris</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2034	Striped Dolphin (<i>Stenella coeruleoalba</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2035	Cuvier's Beaked Whale (<i>Ziphius cavirostris</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2038	Sowerby's Beaked Whale (<i>Mesoplodon bidens</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2618	Minke Whale (<i>Balaenoptera acutorostrata</i>)	IV	Good	Unknown	Good	Good	Good
2621	Fin Whale (<i>Balaenoptera physalus</i>)	IV	Good	Unknown	Good	Good	Good
5020	Blue Whale (<i>Balaenoptera musculus</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
5031	Sperm Whale (<i>Physeter macrocephalus</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
5033	Northern Bottlenose Whale (<i>Hyperoodon ampullatus</i>)	IV	Unknown	Unknown	Unknown	Unknown	Unknown
2619	Sei Whale (<i>Balaenoptera borealis</i>)	IV	Unknown	Unknown	Good	Unknown	Unknown
1348	Northern Right Whale (<i>Eubalaena glacialis</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant
2028	False Killer Whale (<i>Pseudorca crassidens</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant
2037	True's Beaked Whale (<i>Mesoplodon mirus</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant
2622	Pygmy Sperm Whale (<i>Kogia breviceps</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant
5029	Beluga/White Whale (<i>Delphinapterus leucas</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant
5034	Gervais' Beaked Whale (<i>Mesoplodon europaeus</i>)	IV	Vagrant	Vagrant	Vagrant	Vagrant	Vagrant

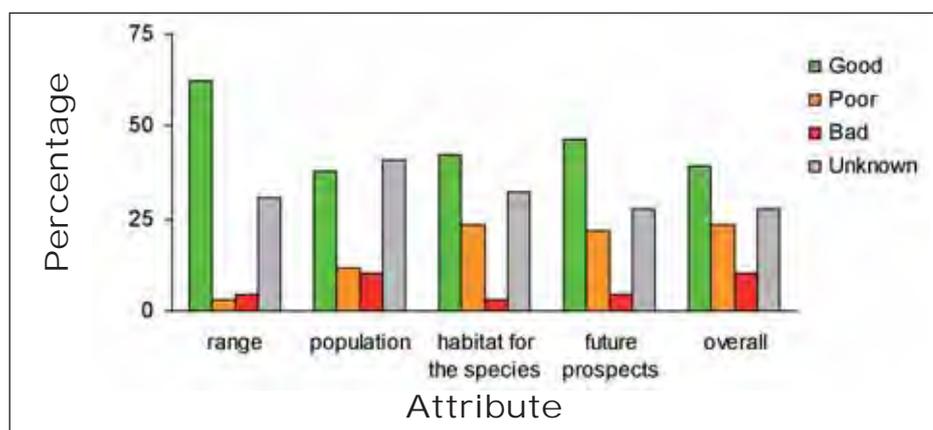


Figure 2: Summary of Conservation status for all species (excluding vagrants, Annex V species groups were assessed together)

Trends

The trend data for Range (Habitats & Species), Area (Habitats) and Population (Species) attributes were assessed as Decreasing, Stable, Increasing or Unknown. Habitat Range was mainly reported as Stable, however over half of the Habitats assessed reported a decreasing trend in Area (Figure 3a). A high proportion of Species Range and Population was reported as Stable or Unknown (Figure 3b). Please note that the timescale of the trend period was dependent on the available historical data. For species and habitats with poor information, expert judgement was used to estimate the trend since 1994.

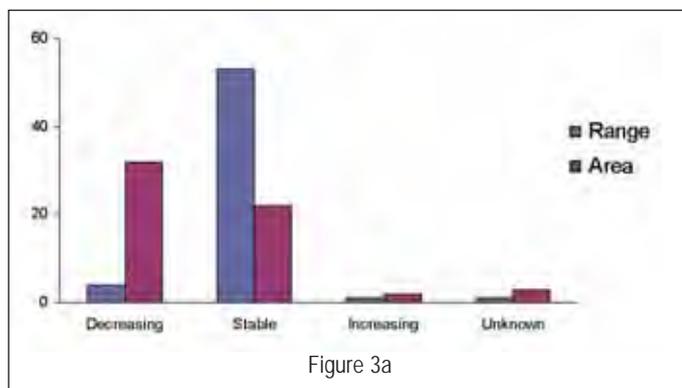


Figure 3a

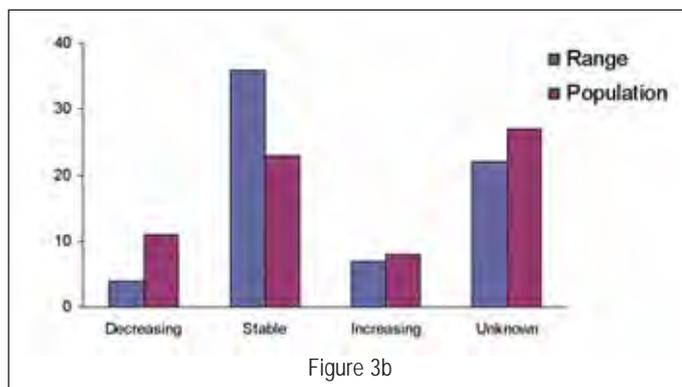


Figure 3b

Figure 3: Trend data for Range and Area (a) and Range and Population (b) for Habitats and Species respectively.

Quality of data

The data gathered for Range (Habitats & Species), Area (Habitats) and Population (Species) attributes were derived from a number of sources. Habitat Area, for example, was often inferred from soil maps, bedrock or interrogation of aerial photographs, in other cases Habitat Area was estimated from extensive field survey. The quality of data was assigned to a Good, Moderate or Poor category. Figure 4

illustrates the quality of the data used to assess the attributes; the quality of Habitat Area (Figure 4a) and Species Population (Figure 4b) data as poor for almost half of the habitats and species assessed. The quality of data for Range for both Habitats and Species was somewhat better.

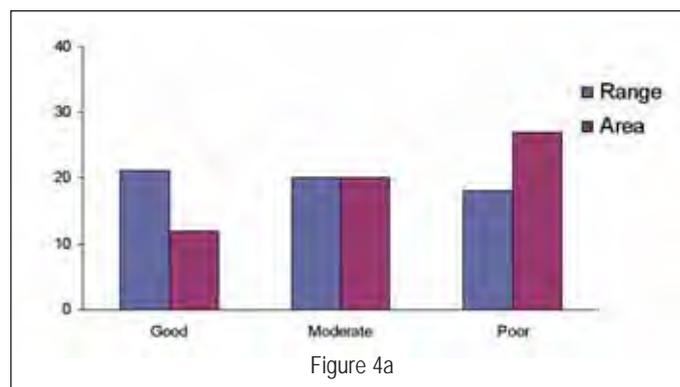


Figure 4a

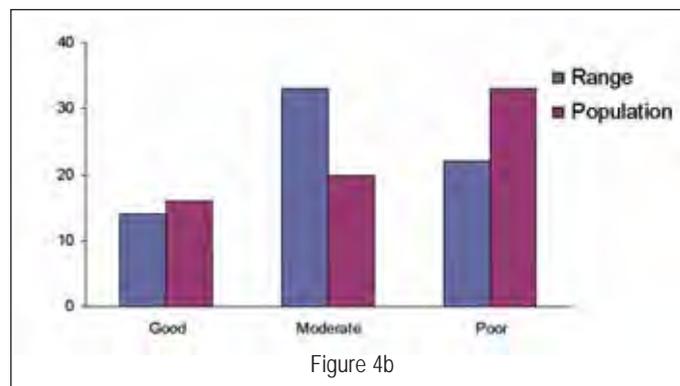


Figure 4b

Figure 4: Quality of data for Range and Area (a) and Range and Population (b) for Habitats and Species respectively.

Pressures

All major pressures were listed for each habitat and species as part of the assessment process. These pressures were selected from a predetermined list of over 150 activities. The pressures were amalgamated into categories and the count by category is listed in Table 3 and 4 for habitats and species respectively. This ranking is drawn up on the basis of the number of Habitats or Species affected by each pressure. No weighting was given to the severity of each pressure, however the reporting process required "major" pressures to be listed. Different activities were more prevalent in particular habitat groups, e.g. recreation in coastal habitats, pollution in aquatic habitats and abandonment in grassland habitats.

SUMMARY OF RESULTS

Table 3: An overview of the major pressures reported in the assessment of habitats

Rank	Pressures	Amalgamated counts
1	Grazing (including overgrazing and undergrazing)	40
2	Recreation (sports & leisure structures & activities)	32
3	Peat extraction	29
3	Communication networks (e.g. roads)	29
4	Forestry	25
4	Urbanisation (e.g. housing)	25
5	Drainage	22
6	Sand & gravel extraction	20
7	Reclamation (e.g. landfill)	19
8	Pollution	17
8	Invasive species	17
9	Restructuring agricultural land holding (e.g. removal of hedges)	15
10	Fertilisation	13
10	Burning	13
11	Discharges (e.g. household waste)	11
12	Erosion	10
13	Fishing (including trawling and other commercial fishing)	9
14	Trampling	8
15	Abandonment	7
15	Stock feeding	7

Table 4 – An overview of the major pressures reported in the assessment of Annex species

Rank	Pressures	Amalgamated counts
1	Fishing (including trawling and other commercial fishing)	43
2	Drainage	41
3	Pollution	38
4	Communication networks (e.g. roads)	25
5	Forestry	22
5	Recreation (sports & leisure structures & activities)	22
6	Pesticides	18
6	Urbanisation	18
7	Restructuring agricultural land holding (e.g. removal of hedges)	17
7	Collection of fauna & flora	17
8	Discharges (e.g. household waste)	15
9	Fertilisation	12
9	Grazing (including overgrazing and undergrazing)	12
9	Sand & gravel extraction	12
10	Cultivation (including modification of cultivation practices.)	10
10	Reclamation (e.g. landfill)	10

5. CONCLUSIONS

These assessments provide a benchmark statement on the current status of habitats and species in Ireland. They indicate that many Irish species of fauna and flora have a moderately satisfactory status, but a small number are in urgent need of concerted efforts to protect them. The assessments of habitats present a much bleaker picture with the majority being rated as having poor or bad overall status.

It should be noted that there are underlying factors that predetermine some of the negative findings of this report. First, habitats and species had to be considered at risk across Europe to warrant inclusion in the Habitats Directive. Second, the strict guidelines for assessment set high thresholds and thus it was difficult for a habitat or species to achieve a “good” rating. Finally, the assessments include the entire range of the habitats and species in the State, and thus include many areas that have no statutory protection.

Furthermore, after nearly a century of afforestation, some 40 years of agricultural intensification and a decade of economic boom, it should come as no surprise to find that these habitats are under significant pressure.

These assessments were required under European law. The law requires that Ireland sets about improving the situation and in particular ensures that habitats and species in Special Areas of Conservation are maintained or if necessary restored. The main objectives over the coming five years and beyond must be:

1. to achieve an improvement in the status of priority habitats that were assessed as “bad”, in particular raised bog and certain types of grassland, but also blanket bog, lagoons, sand dune systems, and some woodland habitats;
2. to achieve an improvement of the species assessed as bad, in particular the freshwater pearl mussel, but also Desmoulins’ whorl snail, natterjack toad, and three fish species: salmon, twaite shad and pollan;
3. to achieve an improvement in the status of non-priority habitats which were assessed as “bad” in particular, lakes, rivers and oak woodland;
4. to achieve an improvement in the knowledge base on the occurrence and status of habitats and species.

None of these priorities will be easily achieved, and some will take many years to show real improvement.

The pressures and threats to these habitats and species are well

documented. The key threats are:

- **direct damage**, such as peat cutting, drainage and infilling; buildings and infrastructure; reclamation of wetlands such as bogs and fens; removal of sand and gravel;
- **overgrazing** and **undergrazing** of grasslands, peatlands, and coastal habitats;
- **pollution** of both surface water and groundwater by nutrients or silt;
- **unsustainable exploitation** of water, sand, peat, fish and other natural goods and services;
- **invasion by alien species** of plants and animals;
- **recreational pressure** in areas which were previously undisturbed.

Already there are many significant policies and work programmes in place which will have beneficial effect. These include the Single Farm Payment scheme, which removes incentives for overgrazing; Commonage Framework Plans, which assessed appropriate grazing levels on commonages; protection of freshwaters driven by the Water Framework Directive; the Water Services Investment Programme; the ban on drift netting of salmon and of course, enforcement of the Habitats Regulations to protect SACs and SPAs.

However there are still enormous challenges facing Ireland in relation to:

- protection of peatlands and wetlands generally;
- sustainable management of coastal resources much valued for recreation and development;
- improving water quality;
- incentives for landowners to manage important grasslands and prevent spread of scrub and invasive alien species; and
- control of alien species in freshwater, marine and terrestrial habitats.

Real improvement can only come about through a collaborative approach between Government Departments and Agencies, landowners, non-governmental organisations (NGOs), researchers and other interested parties.

Whilst the reporting process in the Habitats Directive requires monitoring of all habitats and species listed in the Annexes in the Directive, particular attention will be given to baseline survey of areas that we know least about, including grasslands, uplands, fens and marine habitats.

