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Oidhreacht agus Gaeltachta
Department of Culture,
Heritage and the Gaeltacht

The Status of EU Protected Habitats and Species in Ireland

2019



The Status of EU Protected Habitats and Species in Ireland

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

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The Burren, Clare. Deirdre Lynn



by Josepha Madigan T.D.

MINISTER FOR CULTURE, HERITAGE AND THE GAELTACHT

This is the third report on the assessment of the status of habitats and species that Ireland is required to protect under the EU Habitats Directive. These assessments serve as a benchmark for the status of biodiversity in Ireland.

The habitats make up much of our mountains, lakes, coasts, freshwaters and seas, and are a large part of our island territory and heritage. They provide us with water, food, clean air and many other services, and are central to our tourism industry and to our own enjoyment of the countryside we live in. The species covered in this report are a small subset of our full species complement but many are important indicators of wider ecosystem health.

This report is based on a substantial body of scientific work, carried out over the past 6 years, with advances of particular note in the marine environment.

Many habitats are still in Unfavourable status with nearly half demonstrating ongoing declines. There have been considerable efforts across Government to address the major impacts on these habitats. Peat cutting has been prohibited on a network of designated peatlands. Agricultural policy is moving towards improved environmental management through Locally-Led and Results-Based Agri-Environment Schemes where farmers have more say in the design of projects and are paid by conservation results. Forestry policy is evolving, with improved consideration of the type and location of planting and the rehabilitation of existing native woodlands. Bottom trawling on deep sea reef habitats has been banned. Greater controls have also been placed on aquaculture, including improved site location and requirements for environmental management. It may take time for the benefits of these measures to be realised.

The overall picture for plant and animal species is substantially better, with over 70% stable or increasing, mainly because Ireland is the stronghold for many of the listed species. It is encouraging that a wide range of species, from whales to tiny plants, have healthy populations and prospects. Some species are still in trouble, especially the freshwater pearl mussel. It lives for up to 130 years but is particularly vulnerable to even the slightest loss in water quality during its first few years, and so it is a real challenge to conserve the species.

My Department has prepared a Prioritised Action Framework 2021-2027 that identifies the financing needs and priorities that are directly linked to the specific conservation measures that are necessary for the Natura 2000 network of protected areas. The purpose is to achieve site-level conservation objectives for those species and habitat types for which the sites have been designated and thus contribute towards the achievement of Favourable Conservation Status at a national level. We need to invest in these measures across Government.

I am deeply concerned by the ongoing biodiversity losses being reported at a national and global level. The living fabric on which we all depend is being eroded. It is time for us all to step up to enable the transformative change required to reverse these trends.

I would like to thank all the staff of the National Parks and Wildlife Service in my Department, and many external experts for their input into this report.

Josepha Madigan

FOREWORD

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DESIGN AND PRODUCTION

Slick Fish Design
www.slickfish.ie

OVERVIEW



Galway bay. Deirdre Lynn

OVERVIEW

INTRODUCTION

The EU Directive on the Conservation of Habitats, Flora and Fauna (92/43/EEC), commonly known as “the Habitats Directive”, was adopted in 1992, came into force in 1994 and was first transposed into Irish law in 1997. The main aim of the Habitats Directive is to contribute towards the conservation of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status. These annexes list habitats (Annex I) and species (Annexes II, IV and V) which are considered threatened in the EU territory. The listed habitats and species represent a considerable proportion of biodiversity in Ireland and the Directive itself is one of the most important pieces of legislation governing the conservation of biodiversity in Europe.

Under Article 11 of the Directive, each member state is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive. In April 2019, Ireland submitted the third assessment of conservation status for 59 habitats and 60 species (including three overview assessments of species at a group level). A further eight species are considered to be vagrant in Ireland.

THE LISTED HABITATS AND SPECIES

Annex I: Habitat types whose conservation requires the designation of Special Areas of Conservation. Ireland hosts 16 Priority habitats, i.e. habitats which are considered to be in danger of disappearing within the EU territory.

Annex II: Animal and plant species whose conservation requires the designation of Special Areas of Conservation

Annex IV: Animal and plant species in need of strict protection.

Annex V: Animal and plant species whose taking in the wild and exploitation may be subject to management measures.

To assist with the identification of the listed habitats in the Directive, the EU Commission publishes an *Interpretation Manual of European Union Habitats*¹. The habitats that occur in Ireland are a good representation of Ireland’s semi-natural and natural habitats covering marine, freshwater, peatland, grassland and woodland habitats.

Ireland is a stronghold for many of the species listed in the Annexes. Some species suffered past exploitation, e.g. cetaceans; others, e.g. freshwater pearl mussel (*Margaritifera margaritifera*), require pristine water quality and are therefore good indicators of habitat quality.

DEFINITIONS 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 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.

HOW CONSERVATION STATUS IS ASSESSED

Conservation status is assessed at a national level, not just in Special Areas of Conservation.

Guidelines for assessing the conservation status of habitats and species were updated in 2017 by the European Topic Centre on Biological Diversity (ETC/BD), in conjunction with the Member States represented on the Expert Reporting Group under the Nature Directives².

The assessment brings together information on four parameters for habitats and species:

HABITAT	SPECIES
Range	Range
Area	Population
Structure & Functions	Habitat for the species
Future Prospects	Future Prospects

¹ Commission of the European Communities. 2013 Interpretation Manual of European Union Habitats, version EUR 28. DG-Environment – Nature and Biodiversity. Brussels. Commission of the European Communities.

² http://cdr.eionet.europa.eu/help/habitats_art17

Favourable Reference Values are set as targets against which current values are judged. These reference values should be at least equal to the value when the Directive came into force unless this value is not deemed to be enough to ensure the long-term survival of the habitat or species being assessed.

Favourable Reference Value for *Range* is the total geographical area within which all significant ecological variations of the habitat or species are included and which is sufficiently large to allow the long-term survival of the habitat or species. Favourable Reference Values for habitat *Area* and species *Population* are the minimum required for the long-term survival of the habitat or species in question.

For habitats, the assessment of *Structure and Functions* includes an assessment of the condition and the typical species that characterise the habitat.

For species, the extent and quality of suitable habitat is assessed to determine whether the long-term survival of the species is assured.

Conservation measures undertaken for Annex I habitats and Annex II species are listed. The major pressures and threats are also listed for each habitat and species. The impacts of these pressures, threats and measures are used to determine the *Future Prospects*.

The rate of loss or the distance away from Favourable Reference Values are used to determine whether a parameter is Favourable, Unfavourable-Inadequate, Unfavourable-Bad or Unknown following a rules-based approach (see the 2017 guidelines for full details). For a Favourable *Overall status* all parameters must be assessed as Favourable (with one Unknown acceptable); if any one of the parameters is assessed as Unfavourable-Bad, the *Overall Status* is also Unfavourable-Bad; any other combination results in an Unfavourable-Inadequate *Overall Status*. The Overall trend is derived from the trends for *Range, Area and Structure and Functions* for habitats; and *Range, Population and Habitat for the species* for species, following a rules-based approach.

THE MAJOR CHANGES TO THE CURRENT REPORTING GUIDELINES

The standardised list of Pressures and Threats has been updated and compiled into categories that better reflect the major sectoral drivers of change. The list of Conservation measures has been updated to reflect the pressures that need to be addressed.

The trend reported under the *Overall Status* is derived differently from the 2013 report. This trend is based on the 12-year short-term trends of the other attributes (*Range, Area, Structure and Functions*: for habitats; *Range, Population and Habitat for the species*: for species). The 2013 “operator” represented the current and projected trend.

The threshold for Favourable status for *t* has been lowered to 90% of the area of habitat in good condition.

The trend for area of habitat in good condition within Special Areas of Conservation is estimated to determine the contribution of this network towards achieving Favourable Conservation Status.

Research and survey has led to a better understanding of the distribution and ecology of many habitats or species and in some cases this has led to a refinement of targets and potentially a change of status.

Changes between assessments in 2007, 2013 and 2019 can be explained by a combination of improved knowledge, changes in the assessment methodology and, where relevant, by genuine change.

NOTE ON MAPS

The maps presented in this report give the known or best estimate of distribution, illustrated as dark pink squares (either 10 km or 50 km grids). The *Range* is drawn as an envelope around the distribution using a standardised procedure. Horizontal or vertical gaps in the habitat distribution of 3 or more grid squares or oblique gaps of 2 or more squares are deemed enough to justify a break in the *Range*. Where ecological conditions for the development of the habitat are deemed unsuitable, gaps of just 1 grid square may also be permitted.

The maps are derived using an Irish National Grid coordinate reference system projection for terrestrial assessments and a LAEA (Lambert Azimuthal Equal-Area ETRS89) coordinate reference system projection for offshore marine assessments. All maps were transformed to the LAEA projection as part of the EU submission; transformations are not displayed as part of this report as they are not the best representation of the distribution data for Ireland.

All maps produced in this report are licenced by Ordnance Survey Ireland (Licence number OSI-NMA-014).

WHO CARRIED OUT THE ASSESSMENTS?

The conservation assessments were carried out by staff of the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht and Inland Fisheries Ireland (IFI) of the Department of Communications, Climate Action and Environment (DCCAE), in conjunction with external experts. Contributors are listed in the Acknowledgements section.

WHERE DID THE DATA COME FROM?

The data which informed the conservation assessments were collated from a number of sources, primarily from scientific monitoring programmes commissioned by NPWS and DCCAE (including IFI). Additional data were sourced from, *inter alia*, local authority biodiversity data sets, the Environmental Protection Agency and Department of Agriculture, Food and the Marine. The National Biodiversity Data Centre provided supplementary distribution data for some species. Scientific publications were also reviewed to capture relevant academic data.

WHAT THIS PUBLICATION PRESENTS

This publication provides a synopsis for each of the listed habitats and species occurring in Ireland (please note a shortened version of the official habitat name has been given). This publication also presents a map of the known distribution and range for each habitat and species and an overview of the assessment results. Summary statistics of the national dataset are presented in the Results section. It is often difficult to provide a high-level meaningful narrative on the impact of pressures on the status of habitats and species, particularly for the diverse list of species. If more specific detail is required the detailed assessments and associated references for habitats and species collated in Volumes 2 and 3 respectively can be consulted; these volumes are available for download on the NPWS website³. Finally, the publication draws conclusions and indicates conservation priorities for the next 5 years and beyond.

WHERE HAVE THE DATA BEEN SUBMITTED?

The data have been submitted to the ETC/BD. A summary report for biogeographic regions within the EU will be published in conjunction with the European Environment Agency in 2020.

WHAT WILL THE DATA BE USED FOR?

These data will be used to assess progress with targets under Ireland's National Biodiversity Plan⁴, the EU Biodiversity Strategy⁵ and the Strategic Plan for the Convention on Biological Diversity⁶. The data will inform the objectives set for the Natura network. The assessment results have informed the drafting of the Prioritised Action Framework, which prioritises the work needed in Natura sites over the next 7 years in the context of the development of a variety of operating programmes, including the CAP Strategic Plan.

³ <http://npws.ie/publications/article17assessments/>

⁴ <http://www.npws.ie/legislationandconventions/nationalbiodiversityplan/>

⁵ <http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm>

⁶ <https://www.cbd.int/sp/>

HABITATS



1110 SANDBANKS

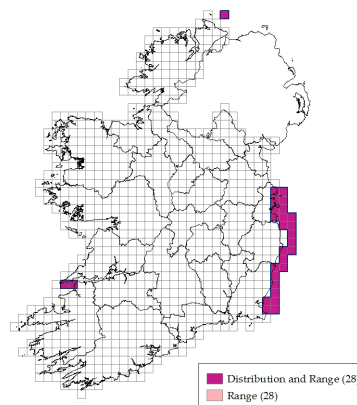
Sandbanks are distinct banks that arise from horizontal or sloping plains of sediment that ranges from gravel to fine sand. They are primarily composed of sandy sediments permanently covered by water, at depths of less than 20m below chart datum. The diversity and types of community associated with this habitat are determined particularly by sediment type together with a variety of other physical, chemical and hydrographical factors. Seismic profiling has interpreted the origin of near-shore sandbanks in the Irish Sea as moraines formed during de-glaciation and this may be typical across the range. There are currently 19 identified sandbank features in Ireland. They were originally identified through Admiralty Charts and supplemented by more recent acoustic seabed mapping.

Sandbank habitats in Irish waters are predominantly composed of a fine sand to sand community typified by the polychaete worm *Nephtys cirrosa*. These habitats commonly record a range of species including crustaceans (*Bathyporeia elegans*, *Urothoe brevicornis*, *Pontocrates altamarinus* and *Pisidia longicornis*), polychaetes (*Polygordus lacteus*, *Saccocirrus papillocercus*, *Pisione remota*, *Nephtys cirrosa*, *Magelona mirabilis*, *Eumida bahusiensis*, *Nephtys longosetosa*, *Spiofanus bombyx*, *Glycera lapidum*) and molluscs (*Donax vittatus* and *Fabulina fabula*). The species found in these habitats tend to be those adapted to mobile substrates but all of the noted species recorded in Irish waters are also frequently found in similar shallow coastal sediment habitats. Sandbanks with a significant proportion of coarse sediment are also present. There is some indication that mobile predators such as birds and marine mammals aggregate around sandbanks but it is not known if this is a function of the features themselves or the accessibility of shallow water.

No significant pressures were identified acting on this habitat and the Overall Status is assessed as Favourable with a stable trend, similar to the 2013 assessment.



MERC



OVERALL STATUS: FAVOURABLE =

1130 ESTUARIES

Estuaries are coastal inlets with a significant freshwater influence. They are diverse, dynamic habitats that help maintain the health of coastal ecosystems. They are a significant resource for bird and mammal species for feeding, breeding and resting, and depending on their geomorphology and hydrology support a mosaic of other habitats, including Annex I habitats such as mudflats. Boulder and cobble beds frequently fringe the edges of estuaries, and intertidal mudflats are often associated with the margins of estuaries where the tidal influence is stronger.

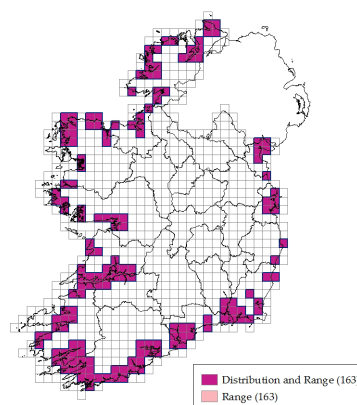
The estuarine seafloor may be characterised by coarse material, cobble or bedrock, while muddy, fine sands dominate in other estuaries. An important factor influencing estuarine conditions is the degree and rate of freshwater and saltwater mixing. Mixing is influenced by a number of factors including the size and shape of the river, influence of wind, swell and state of the tide.

The biological communities found within estuaries are quite variable across Ireland, their composition depending on the environmental conditions and sediment makeup. The most prevalent community is the Mud to fine sand community characterised by crustaceans (e.g. *Corophium volutator*, *Crangon crangon*), polychaetes (e.g. *Pygospio elegans*, *Spio martinensis*) and oligochaetes (*Tubificoides* spp.); next is the Fine sand to sand community distinguished by bivalves (e.g. *Macomangulus tenuis*) and polychaetes (e.g. *Nephtys cirrosa*, *Scoloplos armiger*).

Most of the pressures on estuaries come from various sources of pollution, including domestic wastewater, agriculture and marine aquaculture. Alien invasive species such as the naturalised Pacific oyster (*Magallana gigas*) are also recognised as a significant pressure. The Overall Status of the habitat is Inadequate and deteriorating. This status is the same as the 2013 assessment; however the trend has changed, due to more accurate data, from improving to declining. This decline is considered to have been on-going since before the last assessment.



MERC



OVERALL STATUS: INADEQUATE ▽

1140 TIDAL MUDFLATS AND SANDFLATS

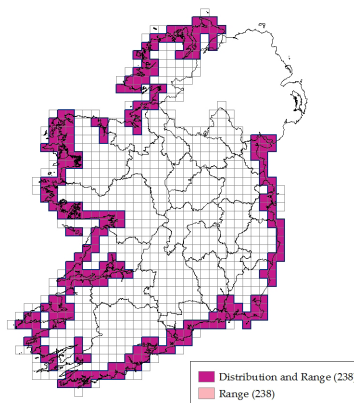
Tidal mudflats and sandflats habitat is comprised of the intertidal section of the coastline where sands and muds dominate. They are dynamic ecosystems, dependent on the balance of natural accretion and erosion. The fundamental building block of this habitat is sediment ranging from around 1µm to 2mm. The finer silt and clay sediments are dominant in mudflats and the larger sand fractions are associated with areas exposed to significant wave energy. A range of physical pressures operate in these habitats including dynamic fluctuations in salinity, temperature, and immersion. The fine sediment of intertidal mudflats is usually deposited in estuaries. These sediments are often rich in nutrients but the depth of suitable habitat for fauna is limited by the access of oxygen-rich seawater to buried mud. Where conditions are suitable, the sediment can form into stable mixed sediment flats. In areas exposed to large waves with little riverine influence the habitat is mostly composed of larger sand grains.

The most frequent biological community of mudflats and sandflats is the Mud to Fine sand community, which is characterised by molluscs (*Macomangulus tenuis*, *Peringia ulvae*), crustaceans (*Crangon crangon*, *Corophium volutator*), polychaetes (e.g. *Hediste diversicolor*) and oligochaetes (*Tubificoides benedii*). The next most prevalent community type is the Fine sand to sand community, characterised by molluscs (e.g. *Macomangulus tenuis*), crustaceans (*Bathyporeia pilosa*, *Pontocrates* spp.) and polychaetes (e.g. *Nephtys cirrosa*, *Scolecopsis* spp.). The largest proportion of the remainder is made up of the Muddy sands/sandy muds community.

The Overall status of the habitat is Inadequate and deteriorating, the change in trend from improving to deteriorating due to a genuine decline in the habitat since 2013. This was caused partly by pollution from agricultural, forestry and wastewater sources, as well as impacts associated with marine aquaculture, particularly the Pacific oyster (*Magallana gigas*).



MERC



OVERALL STATUS: **INADEQUATE** ▼

1150 LAGOONS*

Lagoons are expanses of coastal salt water, of varying salinity, which are wholly or partially separated from the sea by sand banks or shingle, or less frequently by rocks.

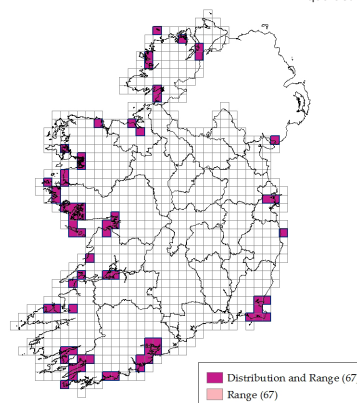
There are five morphological lagoon types in Ireland. Artificial lagoons are included within the Annex I habitat provided they had their origin on a transformed old natural lagoon or on a saltmarsh, and are not significantly exploited. These are the most frequent type of lagoon in Ireland. However, sedimentary lagoons cover the highest proportion of the habitat area. More than half of these have a barrier of cobbles rather than sand or shingle, which is considered unusual in Europe. The other types are the rock/peat lagoons (high-salinity lagoons with rock barriers found on the west coast), karst lagoons found in the limestone areas of Counties Clare and Galway, and saltmarsh lagoons which are large permanent saltmarsh pools.

The typical species are the stoneworts *Chara canescens*, *Chara baltica*, *Chara connivens* and *Lamprothamnium papulosum*, the Baltic prawn (*Palaemon adspersus*) and beaked tasselweed (*Ruppia maritima*). The Baltic prawn was added to the list following records of its occurrence for the first time in four lagoons in Ireland in 2017. The amphipod *Allomelita pellucida* was on earlier lists but is not now regarded as a lagoonal specialist.

Several high-ranking pressures were identified acting on this habitat: eutrophication, modification of hydrological flow, and drainage. Other pressures noted include erosion and silting up, accumulation of seaweed, and sedimentation from peat related to turf cutting and/or forestry. The Overall Status for Lagoons is assessed as Bad, unchanged since the 2013 assessment. However, the overall trend has changed from stable to deteriorating, a genuine decline since 2013.



Aquafact International Services



OVERALL STATUS: **BAD** ▼

1160 LARGE SHALLOW INLETS AND BAYS

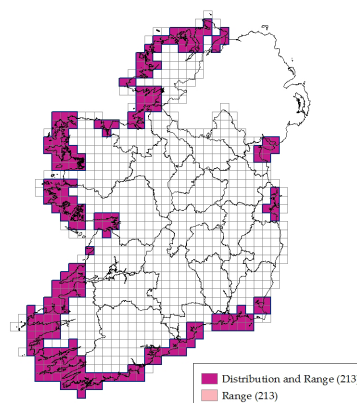
Large shallow inlets and bays are indentations of the coast with limited freshwater influence. They vary widely in habitat and species diversity depending on their location, exposure, geology and sediment composition, which determine their constituent habitat communities. The three most prevalent sediment communities are the Fine sand to sand community, Mud to fine sand community and Muddy sands/sandy muds community. A very significant proportion of keystone species in Ireland are found within this habitat including maërl and eelgrasses. A number of rare or unusual species also occur, including the rare anemones *Edwardsia delapiae* and *Pachycerianthus multiplicatus* and sensitive subtidal species such as *Neopentadactyla mixta*, *Sabella pavonina*, *Virgularia mirabilis* and *Limaria hians*.

The remainder of this habitat is variously composed of hard substrate communities including intertidal and subtidal reef and sea caves. Geogenic intertidal reef, ranging from exposed to sheltered shores, dominates a high proportion of the landward margins of this habitat, especially on the west coast of Ireland. Depending on exposure, intertidal reef habitats are characterised by sheltered fucoid-dominated shores to exposed mussel (*Mytilus edulis*) and barnacle-dominated shores. Biogenic reef habitats formed from mussels and the polychaete *Sabellaria spinulosa* are also present in the intertidal areas of this habitat. Subtidal reef found throughout the habitat is characterised by bedrock or cobble and boulder fields. Submerged or partially submerged sea caves are common around the coast of Ireland and host a range of distinct communities which vary considerably from the surrounding reef habitats. Inlets and bays also form an important resource for various bird and mammal species for feeding, breeding and resting.

Pressures on the habitat include nutrient enrichment, dredging and invasive alien species. Overall Status is assessed as Bad and deteriorating, a genuine decline since the 2013 assessment of Inadequate and improving, and is based on more detailed information.



MERC



OVERALL STATUS: **BAD** ▼

1170 REEFS

Reefs are marine features with hard substrate available for colonisation by plants and animals. In Irish waters they range from the intertidal to depths of 4,500m and more than 400km from the coast. Physical processes dictate the type of species that colonise them.

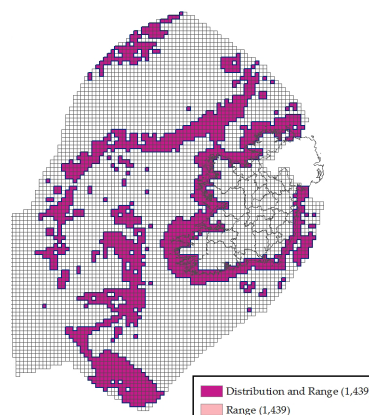
The exposure of intertidal reefs at low tide results in an extreme environment with specialised species, largely fucoid algae and molluscs, e.g. barnacle and limpets. Subtidal reefs are largely found in exposed areas with little freshwater influence. With increasing depth less light penetrates, and faunal communities begin to dominate. In the inshore, kelp communities occur on geogenic reef affording protection to a variety of species. Biogenic reef in shallow water may be formed by polychaetes or bivalves. In deep water biogenic reefs of stony corals *Lophelia pertusa* and/or *Madrepora oculata*, occasionally *Solenosmilia variabilis*, provide increased structural complexity resulting in greater biodiversity. Increased biodiversity on geogenic reef occurs as large sponge aggregations or mixed aggregations of black and gorgonian corals. In this relatively constant environment, growth rates are slow and animals live for hundreds of years.

In Mulroy Bay, Ireland's only sheltered reef, unusual species such as sponges *Dercitus bucklandi*, *Stelletta grubii*, undescribed species of *Polymastia* and the anthozoan *Parerythropodium coralloides* occur. In Kilkieran Bay an unusual sponge and ascidian community occurs characterised by the sponges *Esperiopsis fucorum*, *Haliclona simulans*, *Myxilla incrustans*, *Polymastia mamillaris*, among others, and ascidians *Ascidia aspersa*, *Ascidia mentula*, *Ciona intestinalis*, *Corella parallelogramma* and *Dendrodoa grossularia*.

The main pressures on reefs come from fishing methods that damage the seafloor. As a result the Overall Status is Inadequate and stable. While genuine improvements have occurred by the implementation of an EU Regulation restricting the use of bottom trawls, the change in status from Bad to Inadequate is mainly attributed to better knowledge gained from recent surveys.



MERC



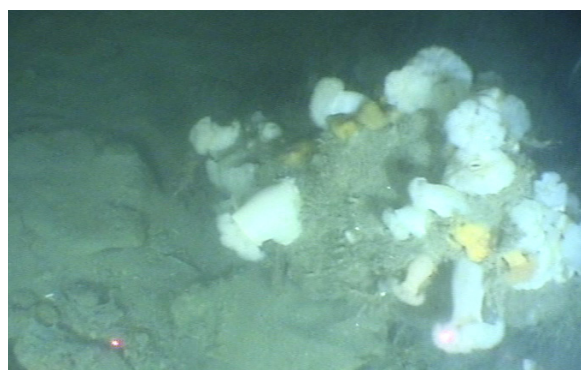
OVERALL STATUS: **INADEQUATE** =

1180 SUBMARINE STRUCTURES MADE BY LEAKING GASES

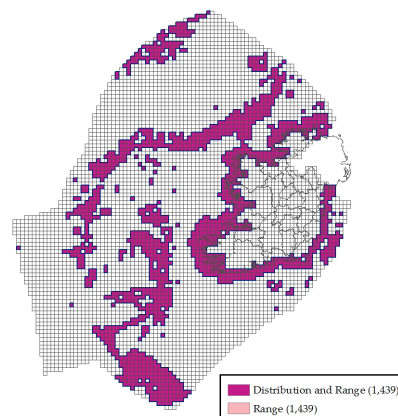
Submarine structures made by leaking gases is a marine habitat formed by the aggregation of carbonate cement as a result of microbial anaerobic oxidation of gas emissions, mainly methane. The formations are interspersed with gas vents that intermittently release gas. These formations support diverse epibenthic communities which are in contrast to the infaunal communities of the surrounding habitat, representing biodiversity hotspots in areas where they occur.

In Ireland this habitat is described from a single site in the Irish Sea, the Kish Bank Basin. Here seabed mounds rise 4m and 10m clear of the surrounding seafloor of rippled sand. Nodules, sediment crusts, small outcroppings and pavement areas which are smooth, pitted or covered with a fine layer of sediment occur in the vicinity of these mounds. Overhangs, cliffs and large rocks are also a feature of these mounds. The fauna found includes a variety of anemones such as *Metridium senile*, *Alcyonium digitatum*, *Sagartia elegans*, *Urticina felina*, *Actinothoe sphyrodeta* and *Cerianthus lloydii* and hydroids including *Nemertesia* spp., *Hydrallmania falcata* and *Tubularia indivisa*. In the crevices, overhangs and between rocks, the edible crab *Cancer pagurus* is very abundant; squat lobsters *Munida* sp. and lobsters *Homarus gammarus* also occur. Sponges, including *Cliona celata* and *Clathrina coriacea*, and the bryozoan *Flustra foliacea* are present. The feather star *Antedon bifida* is commonly seen in crevices and under overhangs. Fish species recorded include bib (*Trisopterus luscus*) and Yarell's blenny (*Chirolophis ascanii*). None of these species would typically occur in the surrounding habitat of mobile sand.

Because of the physical and geological nature of the habitat, and because no significant pressures were identified that might impact on the long-term viability of the habitat, the Overall Status of this habitat is assessed as Favourable with a stable trend. This habitat was not assessed in previous reporting periods.



NPWS



OVERALL STATUS: **FAVOURABLE** =

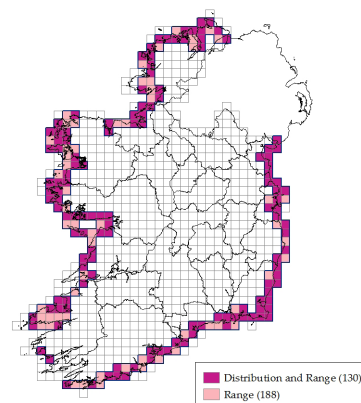
1210 DRIFT LINES

Drift lines occur on sandy or shingle substrate at the upper part of the strand, around the high tide mark. Water-borne material including organic matter is deposited on the shore and provides nutrients and a seed source for vegetation. The vegetation predominantly consists of annual species, such as orache species (*Atriplex* spp.), sea rocket (*Cakile maritima*) and prickly saltwort (*Salsola kali*), which are highly specialised to deal with the harsh conditions of high salinity, wind exposure and drought. This habitat is generally very species-poor and fragmented, and tends not to occupy large areas due to its narrow, linear nature. It exists in a state of instability and may be absent in some years due to natural and/or anthropogenic causes. In Ireland, the habitat includes drift line vegetation on sandy substrates as well as drift line vegetation on shingle.

The Overall Status is assessed as Inadequate due to pressures associated with activities such as recreation and coastal defences, which can interfere with sediment dynamics, and the fact that the current area is still below the favourable reference area. The trend is deteriorating due to anthropogenic area losses. This assessment is unchanged since the 2013 report.



Jim Martin



OVERALL STATUS: **INADEQUATE** ▼

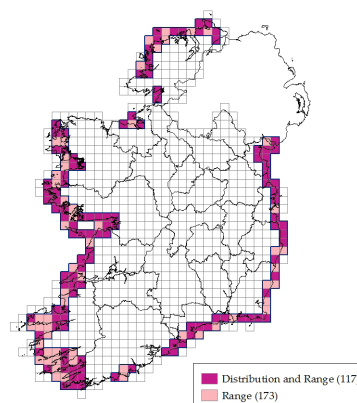
1220 VEGETATED SHINGLE

Vegetated shingle occurs along the coast where shingle (cobbles, pebbles, and gravel $\geq 2\text{mm}$ wide) has accumulated to form elevated ridges or banks above the high tide mark. On the upper beach the pioneer community of this vegetation type can be characterised by perennial species such as sea beet (*Beta vulgaris* subsp. *maritima*), sea-kale (*Crambe maritima*), rock samphire (*Crithmum maritimum*), yellow horned-poppy (*Glaucium flavum*), sea radish (*Raphanus raphanistrum* subsp. *maritimus*), sea campion (*Silene uniflora*), and sea mayweed (*Tripleurospermum maritimum*). At the top of the beach and moving inland, a wider range of vegetation types can be found at larger shingle sites, including a lichen-rich community and coastal forms of grassland, heath and scrub. The grassland community can be characterised by grass species such as bents (*Agrostis* spp.), false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*), spreading meadow-grass (*Poa humilis*), common couch (*Elytrigia repens*), red fescue (*Festuca rubra*), Yorkshire-fog (*Holcus lanatus*), and broadleaf herbs such as yarrow (*Achillea millefolium*), thrift (*Armeria maritima*), wild carrot (*Daucus carota*), autumn hawkbit (*Scorzoneroides autumnalis*), common bird's-foot-trefoil (*Lotus corniculatus*), plantains (*Plantago coronopus*, *P. lanceolata*), silverweed (*Potentilla anserina*), lady's bedstraw (*Galium verum*) and white clover (*Trifolium repens*). The scrub community is characterised by the woody species honeysuckle (*Lonicera periclymenum*), blackthorn (*Prunus spinosa*), brambles (*Rubus fruticosus* agg.), gorse (*Ulex europaeus*) and the climber hedge bindweed (*Calystegia sepium*). The majority of the grassland and scrub communities are rooted within soil, whereas the pioneer community is usually rooted in gravel, sand or organic matter, such as decomposing seaweed and other plant material.

The Overall Status is assessed as Inadequate, mainly due to pressures associated with coastal defences (which can interfere with sediment dynamics), recreation and shingle removal. The trend is stable. This assessment is unchanged since the 2013 report.



Emmi Virkki



OVERALL STATUS: **INADEQUATE** =

1230 VEGETATED SEA CLIFFS

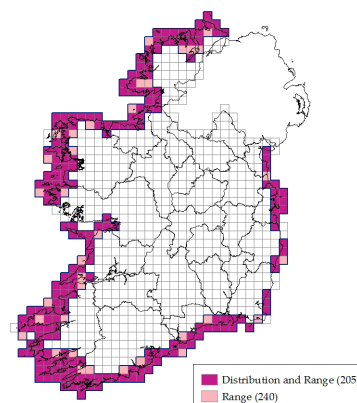
A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal or subtidal zone. Hard cliffs, composed of hard rock such as basalt, are at least 5m high, while soft cliffs, composed of softer substrates such as shale or boulder clay, are at least 3m high. Sea cliff habitat covers approximately 20% of the coastline of Ireland and is primarily distributed along the southern, western and north-western seaboard. The cliff top is generally defined by an obvious reduction in gradient. Both the cliff and cliff top are subject to maritime influence in the form of salt spray and exposure to coastal winds. Vegetated sea cliffs support a range of plant communities including scrub, heath, grassland, and maritime annual vegetation.

Typical 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*), sea spleenwort (*Asplenium marinum*), rock sea-spurrey (*Spergularia rupicola*), golden-samphire (*Inula crithmoides*), English stonecrop (*Sedum anglicum*), roseroot (*Sedum rosea*), tree-mallow (*Malva arborea*), spring squill (*Scilla verna*) and ling (*Calluna vulgaris*).

A number of significant pressures were identified, including trampling by walkers, invasive non-native species, gravel extraction, and sea-level and wave exposure changes due to climate change. There have been no significant losses in sea cliff habitat since the Directive came into force. However, closer monitoring of the potential impacts from climate change should be undertaken for this vulnerable habitat. All parameters are unchanged since the previous reporting period, and the Overall Status remains Inadequate with a stable trend.



Orla Daly



OVERALL STATUS: **INADEQUATE** =

1310 SALICORNIA MUD

Salicornia and other annuals colonising mud and sand is a pioneer saltmarsh community that may occur on muddy sediment seaward of established saltmarsh, or form patches within other saltmarsh communities where the elevation is suitable and there is regular tidal inundation.

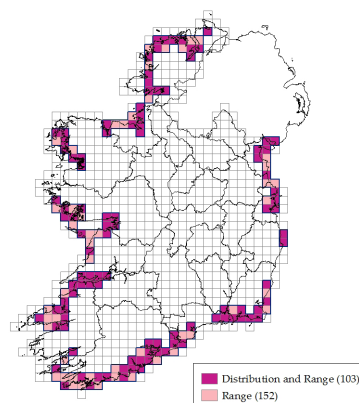
The typical species for this habitat are common saltmarsh-grass (*Puccinellia maritima*), glassworts (*Salicornia europaea* agg., *Salicornia pusilla*), hard grass (*Parapholis strigosa*), buck's-horn plantain (*Plantago coronopus*), sea pearlwort (*Sagina maritima*), knotted pearlwort (*Sagina nodosa*) and annual sea-blite (*Suaeda maritima*). Mono-specific swards of *Salicornia* spp. growing on muddy sediments are the most common plant community of this habitat found in Ireland.

As this habitat is dominated by annuals it can be ephemeral or transient in nature and is highly susceptible to erosion. Its distribution can vary considerably from year to year and it can move in response to changing conditions, e.g. in estuaries with shifting river channels. However, no significant pressures were identified that would affect the long-term viability of the habitat.

The Overall Status is assessed as Favourable with a stable trend. The change in assessment from Inadequate in the 2013 report is due partly to a change in the threshold for favourable structure and functions, and partly because of a lack of evidence for the recent spread of the invasive non-native species, common cord-grass (*Spartina anglica*), although the extent and potential spread of this species should be monitored closely.



Kristi Leyden



OVERALL STATUS: **FAVOURABLE**

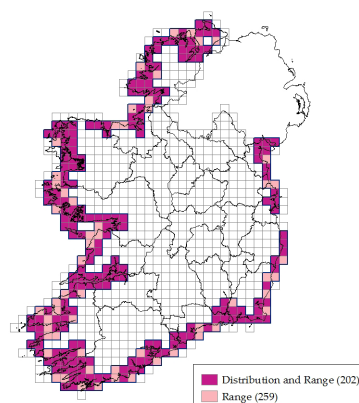
1330 ATLANTIC SALT MEADOWS

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 and large-sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and submergence frequency. The lowest part along the tidal zone is generally dominated by common saltmarsh-grass (*Puccinellia maritima*) with species like glassworts (*Salicornia* spp.), annual sea-blite (*Suaeda maritima*) and lax-flowered sea-lavender (*Limonium humile*) also important. The invasive common cord-grass (*Spartina anglica*) can be locally abundant in this habitat. The mid-marsh zones are generally characterised by thrift (*Armeria maritima*) and/or sea plantain (*Plantago maritima*). This zone is generally transitional to an upper saltmarsh herbaceous community with red fescue (*Festuca rubra*), saltmarsh rush (*Juncus gerardii*) and creeping bent (*Agrostis stolonifera*). This habitat is also important for other wildlife including wintering waders and wildfowl. Atlantic salt meadows are distributed around most of the coastline of Ireland. The intricate topography of the Irish coastline with many inlets has created an abundance of sites that are sheltered and allow muddy sediments to accumulate, leading to the development of saltmarsh.

The Overall Status is assessed as Inadequate, due mainly to pressures from agriculture, including ecologically unsuitable grazing regimes and land reclamation, and the invasive non-native species common cord-grass (*Spartina anglica*). This assessment is unchanged since the 2013 report. However, the overall deteriorating trend represents a genuine decline since 2013 due to losses in area.



Marcin Penk



OVERALL STATUS: **INADEQUATE**

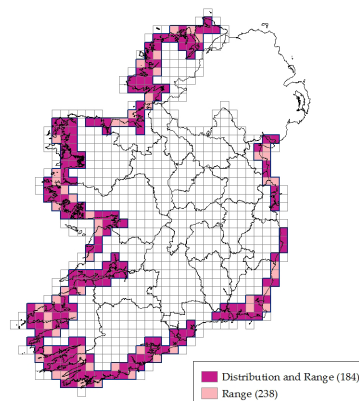
1410 MEDITERRANEAN SALT MEADOWS

Mediterranean salt meadows occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline; however, they are not as extensive as Atlantic salt meadows. The habitat is distinguished from Atlantic salt meadows by the presence of rushes such as sea rush (*Juncus maritimus*) and/or sharp rush (*Juncus acutus*), along with a range of species typically found in Atlantic salt meadows, including sea aster (*Aster tripolium*), sea-purslane (*Atriplex 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 Overall Status is assessed as Inadequate, mainly due to pressures associated with agriculture, including overgrazing, undergrazing and land reclamation. This assessment is unchanged since the 2013 report. However, the overall deteriorating trend represents a genuine decline since 2013 due to losses in area.



John Brophy



OVERALL STATUS: INADEQUATE ▼

1420 HALOPHILOUS SCRUB

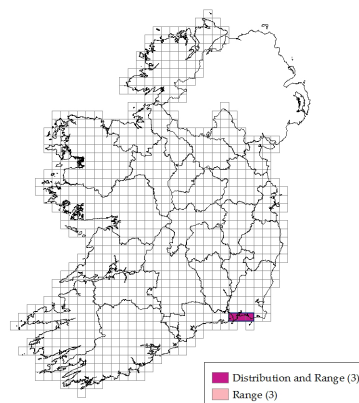
Halophilous scrub is defined as perennial vegetation of saline muds that belongs to the phytosociological class *Sarcocornetea fruticosi*. In Ireland this habitat is characterised by the presence of a single species, perennial glasswort (*Sarcocornia perennis*, previously known as *Arthrocnemum perenne*) on saltmarsh. This fleshy, slightly woody perennial can grow up to 30cm tall and often extends to form tussocks up to 1m in diameter. The main habitat of *Sarcocornia perennis* is gravelly or sandy foreshores and relatively well-drained sediments of coastal saltmarshes. This species is very rare in Ireland and is listed on the Flora (Protection) Order, 2015. It is also listed in the Vascular Plant Red List as Vulnerable. Consequently, this habitat is the rarest Annex I saltmarsh habitat found in Ireland and has been recorded from only seven saltmarsh sites in the south-east coast of Ireland.

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

The Overall Status is assessed as Bad with a deteriorating trend, indicating continuing decline since the 2013 assessment. This is due to recent area losses, associated with algal mats formed as a consequence of water pollution, which resulted in a contraction of the range of the habitat.



Marcin Penk



OVERALL STATUS: BAD ▼

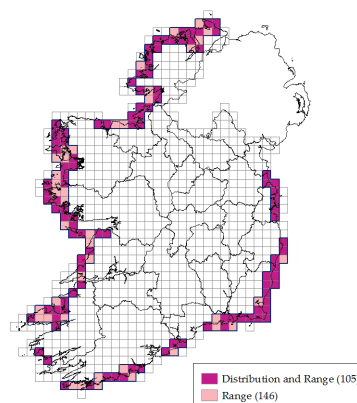
2110 EMBRYONIC SHIFTING DUNES

Embryonic shifting dunes are low sand mounds, generally less than a metre high, occurring between the high tide mark and the partially stabilised marram (white) dunes. Embryonic shifting dunes are unstable habitats where wind-blown sand is common and they are still vulnerable to saltwater intrusion. They represent the initial phase of dune formation and typically form where sand gathers around salt-tolerant species such as lyme-grass (*Leymus arenarius*) and sand couch (*Elytrigia juncea*). Other plants such as sea rocket (*Cakile maritima*), sea sandwort (*Honckenia peploides*) and prickly saltwort (*Salsola kali*) may also occur. They can be very short-lived habitats as they are subject to natural erosion processes and susceptible to removal by storms or high tides.

The Overall Status is assessed as Inadequate with a stable trend due to pressures associated with recreation and coastal defences, which can interfere with sediment dynamics. This assessment is unchanged since the 2013 assessment.



Emmi Virkki



OVERALL STATUS: **INADEQUATE** =

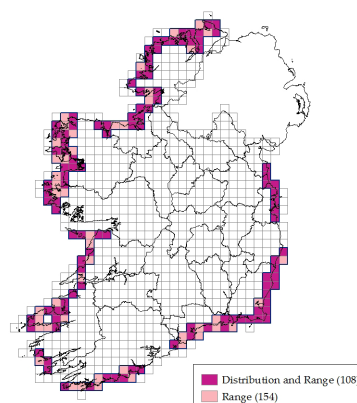
2120 MARRAM DUNES (WHITE DUNES)

Marram dunes (or white dunes) are dunes which are partly stabilised and are dominated by marram (*Ammophila arenaria*). They tend to be taller than embryonic shifting dunes and form further inland from these. The dunes are actively created by marram, which traps sand, but vegetation cover is incomplete. The dunes can build and erode quickly because of the presence of bare sand. For this reason they are sometimes referred to as mobile dunes. Typical species used in the assessment are marram (*Ammophila arenaria*), sand couch (*Elytrigia juncea*) and lyme-grass (*Leymus arenarius*). Other species also occur, such as 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 (*Senecio jacobaea*).

The Overall Status is assessed as Inadequate with a stable trend mainly because of pressures associated with recreation and coastal defences, which may interfere with local sediment dynamics. This assessment is unchanged since the 2013 assessment.



Jim Martin



OVERALL STATUS: **INADEQUATE** =

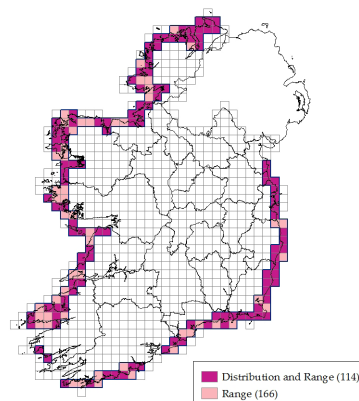
2130 FIXED DUNES (GREY DUNES)*

Fixed dunes are relatively sheltered with sand mobility greatly reduced in comparison to fore-dune habitats, and have developed a more or less closed carpet of vegetation. The sandy substrate is frequently overlain by a layer of humus, and lichens and mosses are often abundant. Species diversity and composition varies, but usually the fixed dune vegetation is typical of herb-rich grassland. Species such as red fescue (*Festuca rubra*), bent grasses (*Agrostis* spp.), yarrow (*Achillea millefolium*), common bird's-foot-trefoil (*Lotus corniculatus*), kidney vetch (*Anthyllis vulneraria*), ribwort plantain (*Plantago lanceolata*), eyebrights (*Euphrasia* spp.), wild thyme (*Thymus polytrichus*) and lady's bedstraw (*Galium verum*) are common. Fixed dunes can also be an important habitat for orchids such as pyramidal orchid (*Anacamptis pyramidalis*) and bee orchid (*Ophrys apifera*).

The Overall Status is assessed as Bad, as in the 2013 report, due to pressures associated with recreation and ecologically unsuitable grazing practices. The trend is deteriorating due to poor results for structure and functions, but this is largely attributed to use of a different methodology and decline is considered to have been on-going since before the last assessment.



Jim Martin



OVERALL STATUS: BAD ▼

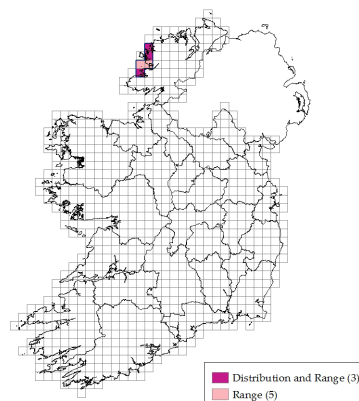
2140 DECALCIFIED *EMPETRUM* DUNES*

Decalcified *Empetrum* dunes are either 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 become fixed over siliceous rock. Typical species include crowberry (*Empetrum nigrum*), ling (*Calluna vulgaris*), wild thyme (*Thymus polytrichus*), common bird's-foot-trefoil (*Lotus corniculatus*), carnation sedge (*Carex panicea*), and the sand-binding species sand sedge (*Carex arenaria*) and marram (*Ammophila arenaria*). Decalcified *Empetrum* dunes are distinguished from Decalcified dune heath by the presence of crowberry, which is usually the most frequent dwarf shrub, within a more open dune heath community.

The main pressures identified on the habitat were grassland abandonment, recreational activities, and bracken encroachment; however, none of these were considered to impact on the long-term viability of the habitat. The Overall Status is therefore assessed as Favourable, which differs from the 2013 assessment of Inadequate. This has been attributed to more accurate monitoring data rather than actual change, and the habitat is considered to have been in Favourable condition since before the last assessment.



Jim Martin



OVERALL STATUS: FAVOURABLE =

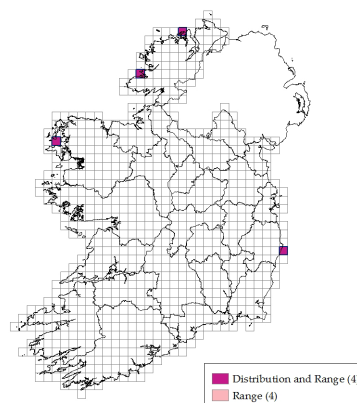
2150 DECALCIFIED DUNE HEATH*

Decalcified dune heath is most often 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 become fixed over siliceous rock. Typical species include ling (*Calluna vulgaris*), common bird's-foot-trefoil (*Lotus corniculatus*), sweet vernal-grass (*Anthoxanthum odoratum*), common dog-violet (*Viola riviniana*) and the sand-binding species sand sedge (*Carex arenaria*) and marram (*Ammophila arenaria*).

The Overall Status is assessed as Inadequate with a stable trend due to pressures associated with land abandonment, recreational activities, and bracken encroachment. This assessment is unchanged since the 2013 assessment.



Jim Martin



OVERALL STATUS: INADEQUATE =

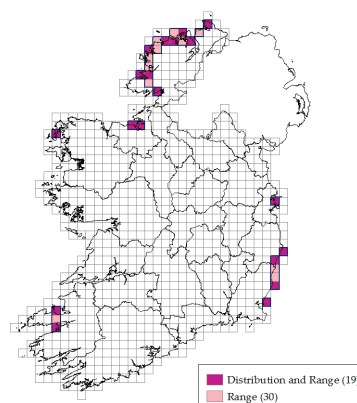
2170 DUNES WITH CREEPING WILLOW

Dunes with creeping willow are typically found either within dune slacks on sandy hummocks, or on the sides of dune ridges adjacent to slacks. They represent a transition between arid dune ridges and the wet conditions found in dune slacks, and though they may occasionally be inundated, to be classified as this habitat the area should flood only rarely and briefly. It is characterised by a dominance of creeping willow (*Salix repens*), which often forms a dense ground cover. Moisture-loving plant species typically associated with dune slacks should be absent or noticeably reduced. Species associated with this habitat include glaucous sedge (*Carex flacca*) and sand sedge (*Carex arenaria*), creeping bent (*Agrostis stolonifera*), mouse-ear hawkweed (*Pilosella officinarum*), eyebright (*Euphrasia officinalis* agg.), common rest-harrow (*Ononis repens*) and common bird's-foot-trefoil (*Lotus corniculatus*).

The Overall Status is assessed as Inadequate with a stable trend, which is unchanged from the 2013 report. Inadequate status is due mainly to pressures associated with ecologically unsuitable grazing, invasive non-native species and agricultural intensification.



Katharine_Duff



OVERALL STATUS: INADEQUATE =

2190 DUNE SLACKS

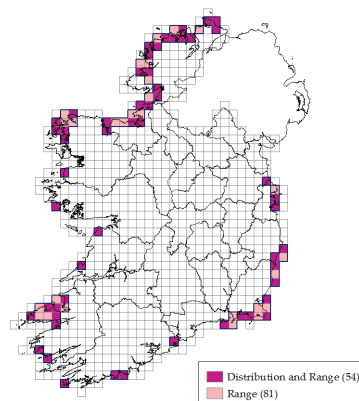
Dune slacks are topographically the lowest lying regions within a dune system, found in hollows or depressions either behind or between dune ridges. The waterlogged condition of the soil is an important determinant of the vegetation; the water table is usually within 1m of the surface, with diurnal, seasonal and annual fluctuations. Dune slacks can remain flooded from two to six months annually, with fluctuations in the water table based on precipitation and evapotranspiration. They can be classified as either primary or secondary depending on how they are formed. Primary slacks are formed by rapidly advancing dune ridges cutting off former beach plains from the influence of the sea, while secondary slacks are formed by blowing out in older dunes. In each case, the wind erodes the bare sand until the groundwater level is reached and pioneer dune slack vegetation begins to colonise.

Dune slacks have a number of vegetation communities demonstrating phases of succession within slacks, from pioneer to mature slacks. They are floristically rich and support wetland communities. Typical species include rushes (*Juncus* spp.), sedges (*Carex* spp.), marsh pennywort (*Hydrocotyle vulgaris*), water mint (*Mentha aquatica*), creeping bent (*Agrostis stolonifera*), silverweed (*Potentilla anserina*), bog pimpernel (*Anagallis tenella*) and orchids such as marsh helleborine (*Epipactis palustris*), marsh-/spotted-orchids (*Dactylorhiza* spp.) and common twayblade (*Neottia ovata*).

Pressures on the habitat come from a number of sources, including agricultural fertilisers, sports and leisure activities (e.g. walking, off-road driving and golf courses) and drainage. Succession to scrub is also a problem, particularly where it is linked to desiccation of the slack. The Overall Status of the habitat is assessed as Inadequate and deteriorating, unchanged since the 2013 assessment.



Rory Hodd



OVERALL STATUS: **INADEQUATE** ▼

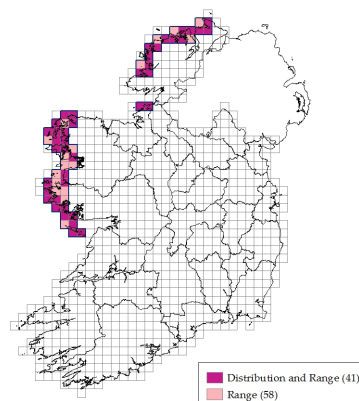
21A0 MACHAIR*

Machairs are complex and dynamic systems which are considered natural landforms that are the product of both wind erosion and cultural activities. They are globally restricted to the north-west coasts of Ireland and Scotland. Frequent species include red fescue (*Festuca rubra*), common bird's-foot-trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*), daisy (*Bellis perennis*), sand sedge (*Carex arenaria*), lady's bedstraw (*Galium verum*) and white clover (*Trifolium repens*). There is, however, no suite of species unique to machair and physical characteristics are important in its definition. A machair should typically be a flat, sandy, coastal plain, in an oceanic location with a cool, moist climate. The sandy substrate should have a significant percentage of shell-derived material, producing a lime-rich soil with a pH normally greater than 7. The vegetation should be herb-rich, with a low frequency of sand-binding species. Wetness of the soil varies, due to the proximity of the water table, with much of the vegetation transitional between wet and dry communities. There should be a history of human interference, principally from grazing. This habitat is found in exposed locations between Galway Bay and Malin Head, Co. Donegal.

Pressures on the habitat include ecologically unsuitable grazing regimes and disturbance. The Overall Status is assessed as Inadequate, which differs from the 2013 Bad assessment. The overall trend is stable. A different method was used to determine the proportion of habitat in good condition and the status is considered to have been Inadequate since before the last assessment.



Aoife Delaney



OVERALL STATUS: **INADEQUATE** =

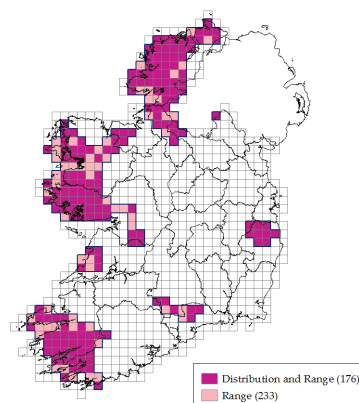
3110 OLIGOTROPHIC ISOETID LAKE HABITAT

Ireland is a European stronghold for this soft-water, nutrient-poor lake habitat. It is quite species-poor and dominated by plants with an isoetid growth form, such as quillwort (*Isoetes lacustris*), or water lobelia (*Lobelia dortmanna*). Other species such as bulbous rush (*Juncus bulbosus*) and bog pondweed (*Potamogeton polygonifolius*) also commonly occur. This habitat is frequent in catchments where peatland overlies acid bedrock (notably granite and old red sandstone). It is best developed on more gentle slopes along sheltered shorelines. The oligotrophic isoetid lake habitat is also found in upland lakes, such as corries, and earlier references to it as a "lowland lake" type were incorrect. It can also co-occur with the more species-poor Acid oligotrophic lake habitat (3160) and the more species-rich Mixed *Najas flexilis* lake habitat (3130).

The oligotrophic isoetid lake habitat has a widespread distribution in Ireland, occurring in a large number of lakes. It requires oligotrophic or Water Framework Directive High status, but is under significant pressure from eutrophication, and from drainage and other damage to peatland. Damage to peatland can result in hydrological changes in lakes, increased organic matter, water colour and turbidity, changes in sediment characteristics, acidification and enrichment. It is recognised that ensuring the long-term future of this lake habitat requires action to address peatland damage at a catchment scale, as well as to reduce nutrient and other pollution. The Overall Status is assessed as Bad with a stable trend. The change in trend from deteriorating to stable is because of the use of a different method.



Paul Duffy



OVERALL STATUS: **BAD** =

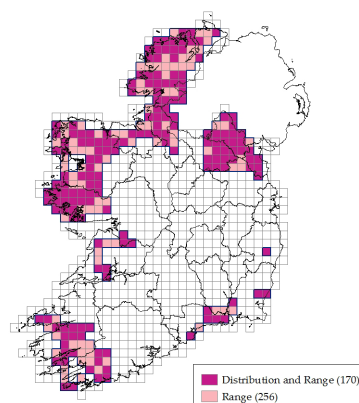
3130 MIXED NAJAS FLEXILIS LAKE HABITAT

The habitat 'Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*' has been interpreted as a mixed *Najas flexilis* lake habitat in Ireland. The habitat co-occurs with Oligotrophic isoetid lake habitat (3110) in some lakes, and may also co-occur with Hard-water lake habitat (3140) and Rich pondweed lake habitat (3150). Mixed *Najas flexilis* lake habitat occurs in lakes with very clear, circum-neutral, low-nutrient waters in catchments of mixed geology. Base-rich influences come from basalt, limestone, marble, sedimentary deposits or calcareous coastal sand, and peatland is often widespread in the catchments. The Annex II macrophyte *Najas flexilis* is a character species. The co-occurrence of *Potamogeton perfoliatus* and *Isoetes lacustris* is also characteristic. Macrophytes grow from shallow to deep water (8 m or more) and, hence, vegetation can cover a large proportion of the lake bed.

Owing to its rare species and relatively high species richness, mixed *Najas flexilis* lake habitat is of high conservation value. Ireland is a European stronghold for the habitat and for *Najas flexilis*. The habitat is widespread particularly along the western fringe. It is under significant pressure from drainage, agriculture, peat extraction, forestry and wastewaters. The Overall Status is assessed as Inadequate, unchanged since the 2013 assessment. Based on improved knowledge through dedicated survey during the reporting cycle, the trend is assessed as deteriorating.



Cilian Roden



OVERALL STATUS: **INADEQUATE** ▼

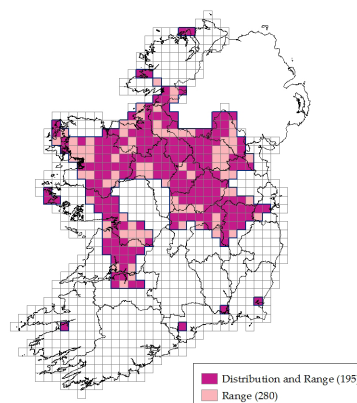
3140 HARD-WATER LAKE HABITAT

The hard-water lake habitat 'Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.' is strongly associated with lowland, 'marl' lakes over limestone bedrock. It is also found in lakes and ponds in turloughs, fens and on calcareous sand at the landward side of machair plains, as well as in quarries and canals. The habitat is dominated by algae, particularly stoneworts (*Chara* spp.). Stonewort diversity is high and includes a number of rare and threatened species, such as *Chara curta*, *Chara denudata*, *Nitella tenuissima* and *Tolypella intricata*. Some Irish, oligotrophic, marl lakes are also of international importance for their 'krustenstein', a microbial mat community found on bedrock and cobbles in shallow water. The characteristic depth-related vegetation zonation described from Irish marl lakes has up to six distinct, stonewort-dominated zones. Higher plants generally occur at low abundance and are restricted to the *Chara rudis* zone and sheltered shorelines. This oligotrophic habitat is associated with very high water clarity and transparency and, in Ireland, charophyte vegetation can occur to depths of 10 or 11 m. Ireland has some of the best European examples of the hard-water lake habitat and, as a result, particular responsibility for maintaining/restoring this natural habitat at Favourable conservation status within the EU.

The hard-water lake habitat is under significant pressure from eutrophication, the primary sources of nutrient and organic pollution being agriculture and municipal and industrial wastewaters. Movement of pollutants, especially phosphorus, through groundwater is a significant concern. As a result the Overall Status is assessed as Bad and deteriorating.



Brian Nelson



OVERALL STATUS: BAD ▼

3150 RICH PONDWEED LAKE HABITAT

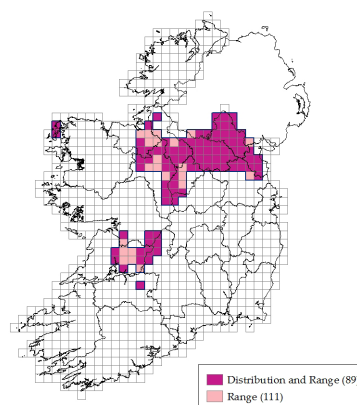
Little is known about the characteristics or ecology of Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation in Ireland. This rich pondweed lake habitat is considered likely to occur in lowland, base-rich lakes in the midlands and north-east of Ireland, where it is characterised by high abundance and diversity of pondweeds (*Potamogeton* spp.), such as *Potamogeton lucens*, *P. praelongus*, *P. perfoliatus*, *P. obtusifolius*, *P. berchtoldii* and *P. pectinatus*. Other rooted, predominantly submerged higher plants frequently co-occur, including *Myriophyllum spicatum*, *Hippuris vulgaris*, *Callitriche* spp., *Sagittaria sagittifolia* and *Ceratophyllum demersum*, while free-floating species such *Lemna trisulca* are also common.

The habitat is associated with large lakes in large catchments, such as those of the Shannon system, and with small, but naturally more productive lakes, such as those found in parts of the drumlin belt of Cavan, Monaghan and Leitrim or the lowlands south-east of the Burren. It seems likely that the pondweed-rich variant found in Ireland requires mesotrophic waters. Lakes with the habitat typically have well-developed reed swamp, fen and/or marsh communities around much of their shoreline. Wet woodland would have surrounded much of the shoreline in the past and has survived or re-colonised patches of many rich pondweed lake habitat shores.

Lakes with rich pondweed lake habitat are associated with catchments dominated by mineral soil and, hence, some of the most intensive agricultural lands in Ireland. Consequently, the habitat has been under pressure from eutrophication since the 1970s or before. It may, therefore, represent an altered state, caused by anthropogenic enrichment of habitats that in their natural or reference condition would have conformed to habitat Hard-water lake habitat (3140), Mixed *Najas flexilis* lake habitat (3130) or Oligotrophic isoetid lake habitat (3110). The Overall Status is assessed as Inadequate with a stable trend, as in the 2013 assessment.



Cilian Roden



OVERALL STATUS: INADEQUATE =

3160 ACID OLIGOTROPHIC LAKE HABITAT

Natural dystrophic lakes and ponds habitat, or acid oligotrophic lake habitat, is mainly found in small lakes and pools in a mosaic with Atlantic and upland blanket bog and wet heath. As for other ombrotrophic peatland habitats, the acid oligotrophic lake habitat is species poor botanically, but has relatively greater invertebrate species richness. Additionally, while individual pools or lakes may be species poor, among-site variation means that the habitat displays higher species richness at landscape and regional scales. Many of the typical acid oligotrophic lake habitat species are strongly associated with and sometimes restricted to the habitat. The habitat also varies across its Irish range, with altitude, geology and distance from the sea being the most likely drivers of the variation.

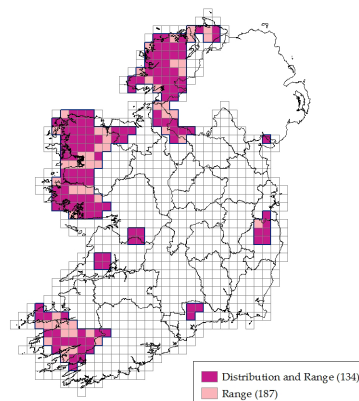
Typical plant species include *Sphagnum cuspidatum*, *Sphagnum auriculatum*, bulbous rush (*Juncus bulbosus*), bog pondweed (*Potamogeton polygonifolius*), bogbean (*Menyanthes trifoliata*) and bladderworts (*Utricularia* spp.). Lakes and ponds with acid oligotrophic lake habitat are dominated by Coleoptera (water beetles), followed by Trichoptera (caddisfly larvae) and Heteroptera (aquatic bugs, such as water boatmen). The invertebrate fauna is also characterised by some rare and threatened species, such as the endangered Downy Emerald dragonfly (*Cordulia aenea*).

On-going damage to peatland results in hydrological changes in lakes and ponds with the habitat, as well as increased sedimentation, colour, turbidity, organic material and ammonia. Fertilisation of forests can contribute to enrichment of the habitat.

The Overall Status of the habitat is Inadequate, unchanged since the 2013 assessment. The trend has changed from deteriorating to stable. This change is due to use of a different assessment method and the trend is considered to have been stable since before the last assessment.



Robert Thompson



OVERALL STATUS: **INADEQUATE** =

3180 TURLOUGH*

A turlough is a depression in limestone areas that is temporarily flooded by groundwater in most years. Turloughs are usually flooded in winter and dry during summer, though this varies greatly with rainfall and groundwater dynamics. Turloughs are entirely restricted to well-bedded, relatively pure, karstified Carboniferous limestone. Areas with turloughs seldom have rivers; instead water flows below the ground, and turloughs can be described as the floodplains of underground rivers.

Turloughs typically contain wetland vegetation communities in their lower zones, and communities more characteristic of drier limestone soils in their upper zones. Many turloughs show a distinctive zonation of plants relating to the duration of flooding. Turlough communities can include other Annex I habitats, notably Hard-water lake habitats (3140), Alkaline fen (7230), Chenopodion vegetation (3270) and Limestone pavement (8240). The climax vegetation for the drier parts of turloughs is wet woodland but owing to grazing practices, turlough woodland is now quite rare.

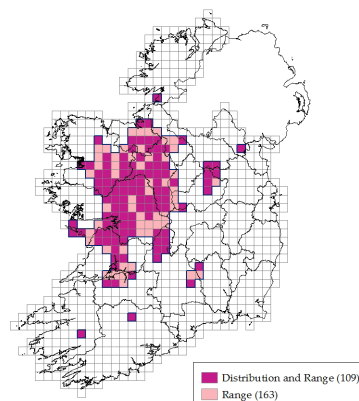
Turloughs provide important winter feeding grounds for several species of waterfowl and wading birds, with some of these utilising the habitat for breeding. Most turloughs have ponds and wet areas during the dry phase and these are important to aquatic invertebrates such as the characteristic moss-edge water beetles. Bare ground is important to invertebrate groups such as ground beetles, as well as Chenopodion vegetation (3270). Marginal woodland and scrub, as well as fringing limestone pavement and semi-natural grasslands, are also important for terrestrial invertebrates.

Hydrology is the key driver of turlough ecology, with flood duration and groundwater contribution important factors. Grazing is also integral to the ecology and it is important that appropriate grazing levels are maintained.

Because of on-going pressures related to drainage, groundwater pollution and ecologically unsuitable grazing, the Overall Status has been assessed as Inadequate and stable, unchanged since the 2013 assessment.



Deirdre Lynn



OVERALL STATUS: **INADEQUATE** =

3260 VEGETATION OF FLOWING WATERS

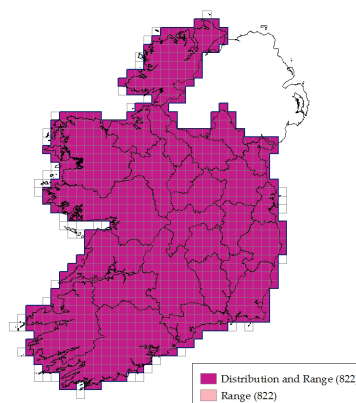
'Water courses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho-Batrachion* vegetation' has a broad definition, covering upland, flashy, oligotrophic, bryophyte- and algal-dominated rivers, to tidal reaches dominated by higher plants. In Ireland, the riverine areas of highest conservation interest are associated with lowland depositing and tidal rivers and unmodified, fast-flowing, low-nutrient rivers. A number of rare submerged and marginal species are found in the former including opposite-leaved pondweed (*Groenlandia densa*), water-starworts (e.g. *Callitriche truncata*), triangular club-rush (*Schoenoplectus triquetus*), needle spike-rush (*Eleocharis acicularis*) and mud-dwelling mosses (e.g. *Ephemerum* spp.). The low-nutrient, high-velocity river types are associated with high bryophyte diversity, cascades, riffles and riparian woodland. Important communities also occur in groundwater-fed, base-rich oligotrophic rivers.

Many Irish rivers have been heavily modified, particularly through arterial drainage and channelisation. These activities have changed channel hydrology and morphology, resulting in the accumulation of larger amounts of fine sediment. Such fines provide a rooting medium for plants and, as a result, stream water-crowfoot (*Ranunculus penicillatus*) has increased in abundance. Consequently, the habitat erroneously became synonymous with water-crowfoot in Ireland. Crowfoot-dominated reaches frequently have low diversity and are of low conservation value, and an abundance of the species generally indicates poor condition and damage.

The main problems for river habitats in Ireland are damage through hydrological and morphological change, eutrophication and other water pollution. The EPA continues to highlight the decline in high quality rivers. While not all variants of the river habitat require low nutrient conditions, this trend is a significant concern. Agriculture and municipal and industrial discharges are the most significant sources of nutrient and organic pollution. The Overall Status of the habitat is Inadequate and deteriorating, unchanged since the 2013 assessment.



Brian Nelson



OVERALL STATUS: **INADEQUATE** ▼

3270 CHENOPODION RUBRI

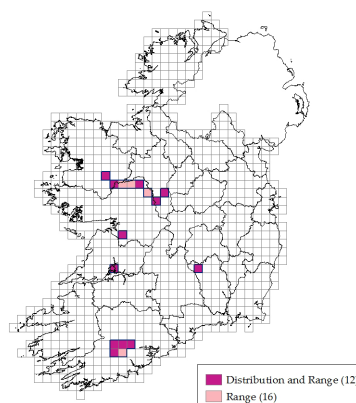
In Ireland, 'Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation' habitat occurs mainly in riverine turloughs where it is associated with late recession of flood water and summer flooding. The largest known site for *Chenopodium* vegetation in Ireland, however, is Carrigadrohid Reservoir at the Gearagh, Co. Cork. The habitat is found on damp mineral soils, often fine, alluvial muds, but also stony substratum. Typical species are small, short-lived, fast-growing annuals. These are poor competitors that occupy the habitat because it is exposed for too little time and too late in the growing season to allow perennial species complete their life cycles. The ongoing development of this habitat depends on a continuous supply of fine sediment. Most sites receive sediment from external sources via streams or large underground conduits. Wave action can lead to erosion, re-suspension and subsequent deposition of sediment within a basin.

Typical species include narrow-fruited water-starwort (*Callitriche palustris*), red goosefoot (*Chenopodium rubrum*), marsh cudweed (*Gnaphalium uliginosum*), mudwort (*Limosella aquatica*), small water-pepper (*Persicaria minor*), northern yellow-cress (*Rorippa islandica*), orange foxtail (*Alopecurus aequalis*), needle spike-rush (*Eleocharis acicularis*), and the liverwort cavernous crystalwort (*Riccia cavernosa*). Other species associated with *Chenopodium rubri* habitat include spear-leaved orache (*Atriplex prostrata*), marsh yellow-cress (*Rorippa palustris*), water-pepper (*Persicaria hydropiper*), toad rush (*Juncus bufonius*) and trifid bur-marigold (*Bidens tripartita*).

Intensive grazing resulting in poaching was the only significant pressure recorded for the habitat. The Overall Status for the habitat is Favourable with a stable trend, unchanged since the 2013 assessment.



John Conaghan



OVERALL STATUS: **FAVOURABLE** =

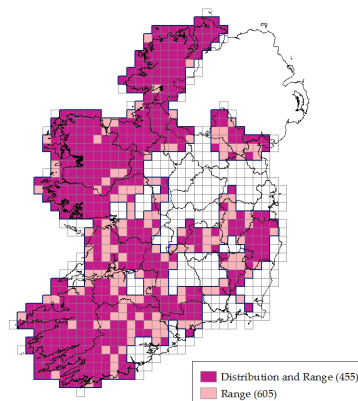
4010 WET HEATH

Wet heath is a highly variable peatland habitat that is intermediate in many regards between dry heath and blanket bog, generally occurring on gently sloping, poorly draining ground on shallow or intermediate peat depths (typically less than 50cm deep). It is characterised by a mixture of purple moor-grass (*Molinia caerulea*), cross-leaved heath (*Erica tetralix*), deergrass (*Trichophorum germanicum*) or ling (*Calluna vulgaris*), and locally bog-myrtle (*Myrica gale*), although not all of these species must be present for the habitat to qualify as wet heath. Dwarf shrubs may be scarce or absent in degraded examples of wet heath characterised by dominance of deergrass or purple moor-grass. Ground cover is variable but *Sphagnum* mosses such as *S. capillifolium*, *S. papillosum*, *S. compactum*, *S. tenellum*, *S. subnitens* and pleurocarpous mosses such as *Pleurozium schreberi* and *Hylocomium splendens*, along with lichens of the *Cladonia* genus, are characteristic.

Area losses have continued into the current reporting period due to new forestry, paths, tracks and land clearance. Overgrazing, burning, wind farm development and erosion continue to be issues for this habitat. Nitrogen deposition from agricultural activities that generate air pollution has recently been recognised as negatively impacting this habitat. Furthermore, climate change is acknowledged to be a potential future threat to wet heath, as it is expected to cause rises in temperature and decreases in precipitation. As a result the Overall Status is assessed as Bad and deteriorating. The change in trend since 2013 is attributed to a genuine decline in the habitat overall, in particular an increase in area with unfavourable Structure and functions.



Orla Daly



OVERALL STATUS: BAD ▼

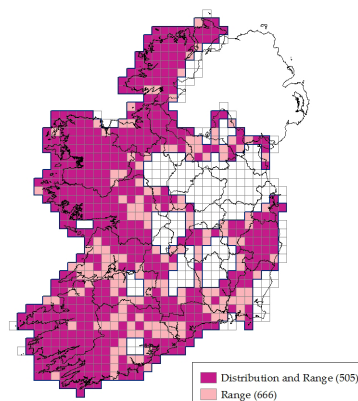
4030 DRY HEATH

Dry heath comprises vegetation dominated by ericaceous dwarf shrubs and usually occurs on well-drained, nutrient-poor and acidic mineral soils or shallow peats (typically <50cm deep) on sloping ground. Ling (*Calluna vulgaris*) is usually the main species but bell heather (*Erica cinerea*), western gorse (*Ulex gallii*) and bilberry (*Vaccinium myrtillus*) may also be important components. Dry heaths occur from sea level up to around 400m, where they start to merge into Alpine and Boreal heaths (4060). Calcareous dry heaths, where dwarf shrub communities have developed on leached soils over a base-rich substrate (e.g. in the Burren), are also included; these communities tend to contain several species of calcareous grassland. Stands of gorse (*Ulex europaeus*) are deemed to be scrub communities and are not included.

A number of significant pressures were recorded for this habitat in the current reporting period, particularly overgrazing by sheep and burning for agriculture. Both cause habitat degradation and loss through erosion. Afforestation and wind farms are also recognised as problems for Dry heath. The Overall Status of Dry heath is assessed as Bad and the trend is stable. This assessment is unchanged since 2013.



Philip Perrin



OVERALL STATUS: BAD =

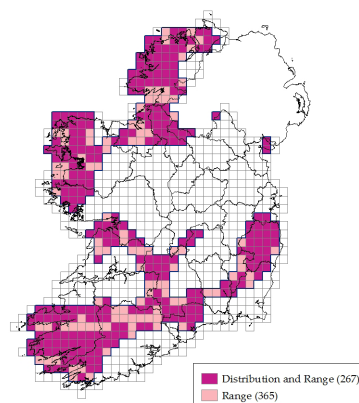
4060 ALPINE AND SUBALPINE HEATH

Alpine and Boreal heath consists of two distinct subtypes in Ireland. The upland subtype occurs on the exposed summits and upper slopes of mountains on acidic substrate. It typically occurs from around 350-400m upwards, but can occur at lower altitudes in more exposed locations. The vegetation is characterised by low-growing, wind-clipped dwarf shrubs, with ling (*Calluna vulgaris*) typically the most frequent, and by the abundance of the moss *Racomitrium lanuginosum*. While the presence of arctic-alpine species indicates high quality examples of this variant, it is not deemed a requisite. The lowland subtype comprises *Dryas* heath on limestone. The vegetation is characterised by mats of mountain avens (*Dryas octopetala*) accompanied by species typical of calcareous grassland.

Sheep grazing is widespread in uplands where this habitat occurs and is a problem for the habitat where grazing levels are high. Hill walking is often concentrated on the summits and ridges where this habitat is found, and can cause erosion and damage to the habitat. Agricultural activities that cause air pollution and consequently nitrogen deposition are also considered to cause significant impacts. Climate change is recognised as a potential future threat to the habitat in the future, particularly in the context of rising temperatures and decreases in precipitation. Considering these on-going pressures and threats, the Overall Status is assessed as Bad, unchanged since the 2013 assessment. The improving trend is based on the assumption that the reduced grazing brought about by the Commonage Framework Plans continues to have a positive effect on this habitat.



Rory Hodd



OVERALL STATUS: **BAD** ▲

5130 JUNIPER SCRUB

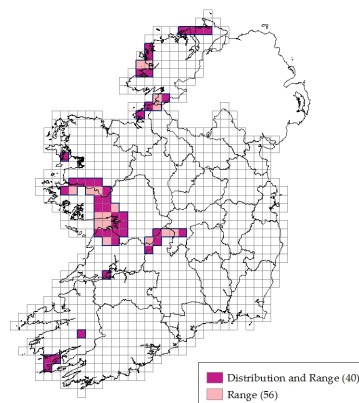
In Ireland a juniper formation is defined as a discrete area supporting 50 or more juniper plants where no plant is more than 20 m from another. In practice this means that, in addition to reaching the 50-plant threshold, juniper plants should achieve a minimum density of 25 plants per hectare to qualify as a formation.

Juniper formations are mostly associated with lowland dry calcareous and neutral grassland, exposed calcareous and siliceous rock, and dry siliceous and calcareous heath; however, formations can also occur on coastal dunes and at higher altitudes. They may overlap with other Annex I habitats, such as Limestone pavement (8240) and Alpine and Boreal heath (8240). Both upland and lowland juniper formations in Ireland are dominated almost exclusively by prostrate or spreading forms of juniper (*Juniperus communis*). Typical species of the habitat reflect the range of ecological situations in which juniper formations occur.

Local pressures were noted at some juniper stands, including overgrazing, erosion and small areas of juniper scrub removal, but none of the impacts were considered to be significant or to impact on the long-term viability of the habitat at the national level. Short periods of disturbance may even be beneficial by promoting regeneration. The Overall Status is assessed as Favourable and the trend is stable. The apparent improvement in status since the 2013 report is due to use of a different assessment method rather than a genuine change, and the habitat is considered to have been Favourable since before the last assessment.



Fionnuala O'Neill



OVERALL STATUS: **FAVOURABLE** =

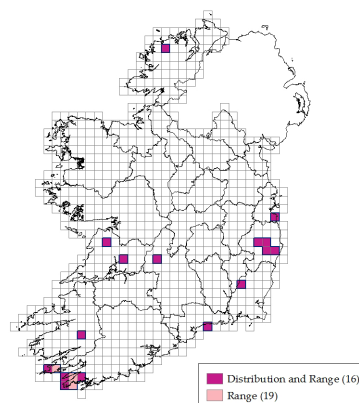
6130 CALAMINARIAN GRASSLAND

Calaminarian grassland vegetation is characterised by the presence of metallophyte plants, i.e. plants that can tolerate high levels of heavy metals. In Ireland, this habitat is restricted to artificial habitats on spoil heaps in the vicinity of old mine workings. Of particular note is a suite of rare bryophyte species which are tolerant of heavy metal-rich conditions and are restricted to ground with high concentrations of copper, lead and zinc. These species include *Cephaloziella nicholsonii*, *C. integerrima*, *C. massalongi*, *Ditrichum cornubicum*, *D. plumbicola*, *Scopelophila cataractae* and *Pohlia andalusica*, all of which are listed as threatened in the Irish red data list and four of which are protected under the Flora (Protection) Order, 2015. Very few vascular plant indicators of Calaminarian grassland have been identified, the exception being spring sandwort (*Minuartia verna*), which grows at one Calaminarian grassland site in Ireland, and inland, lowland stands of thrift (*Armeria maritima*) and sea campion (*Silene uniflora*).

Pressures are associated with abiotic natural processes (leaching of metals) and succession, as well as impacts from recreational activities (walking/hiking). Calaminarian grassland vegetation in Ireland only occurs on artificial soils created from past mining activities, but leaching out of metals will result in a decline in soil toxicity, which in turn will lead to natural succession to a different vegetation community. The Overall Status is assessed as Inadequate with a declining trend. The change in trend since 2013 is due to improved knowledge, and decline is considered to have been on-going since before the last assessment.



Neil Lockhart



OVERALL STATUS: INADEQUATE ▼

6210 CALCAREOUS GRASSLAND (*ORCHID-RICH)

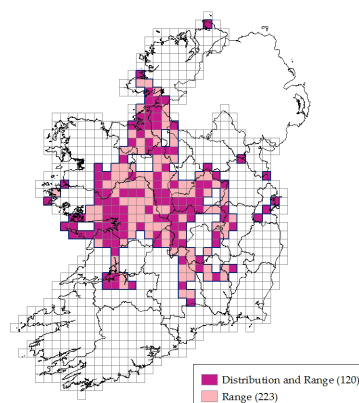
This calcareous grassland habitat comprises species-rich plant communities on shallow, well-drained calcareous substrates. It is considered a priority habitat if it is an important orchid site. This habitat includes a mixture of grasses and herbs, with calcicole species typically frequent. It usually occurs on obvious geological features such as eskers, outcropping limestone rock and in association with limestone pavement. The Burren and Aran Islands (Clare/Galway) and Dartry Mountains (Sligo/Leitrim) are particularly important areas for this habitat.

A typical sward is comprised of herbs such as wild carrot (*Daucus carota*), lady's bedstraw (*Galium verum*), hawkbits (*Leontodon hispidus*, *L. saxatilis*), common bird's-foot-trefoil (*Lotus corniculatus*), mouse-ear hawkweed (*Pilosella officinarum*), bulbous buttercup (*Ranunculus bulbosus*), glaucous sedge (*Carex flacca*) and downy oat-grass (*Avenula pubescens*). High-quality Calcareous grassland includes orchids and other herbs such as mountain everlasting (*Antennaria dioica*), kidney vetch (*Anthyllis vulneraria*), harebell (*Campanula rotundifolia*), greater knapweed (*Centaurea scabiosa*), autumn and field gentians (*Gentianella* spp.), field scabious (*Knautia arvensis*), fairy flax (*Linum catharticum*) and cowslip (*Primula veris*). Grasses and sedges include quaking-grass (*Briza media*), spring-sedge (*Carex caryophyllaea*) and crested hair-grass (*Koeleria macrantha*). Communities of the Burren region may feature spring gentian (*Gentiana verna*), bloody crane's-bill (*Geranium sanguineum*), dropwort (*Filipendula vulgaris*) and squinancywort (*Asperula cynanchica*), while rocky examples often have carline thistle (*Carlina vulgaris*), blue moor-grass (*Sesleria caerulea*), wild thyme (*Thymus polytrichus*) and the mosses *Ctenidium molluscum* and *Homalothecium lutescens*.

Despite a number of conservation-focused farming schemes which bring about localised and regional improvements, the Overall Status is assessed as Bad with a deteriorating trend due to on-going habitat losses mainly associated with agricultural intensification causing loss of species-rich communities, or abandonment of farmland resulting in succession to scrub. This represents a genuine decline since the 2013 report in which the trend was assessed as stable.



Orla Daly



OVERALL STATUS: BAD ▼

6230 SPECIES-RICH *NARDUS* GRASSLANDS*

Species-rich *Nardus* grasslands are restricted to siliceous substrates in upland areas (montane and sub-montane zone), usually near the upper limit of enclosed farmland. It has probably always been a rare habitat within Irish uplands and it relies on extensive grazing, usually by sheep, to maintain the habitat over almost all of its range. *Nardus* grasslands often occur in a mosaic with heath. Mineral flushing is usually required to create a habitat that supports a more species-rich community.

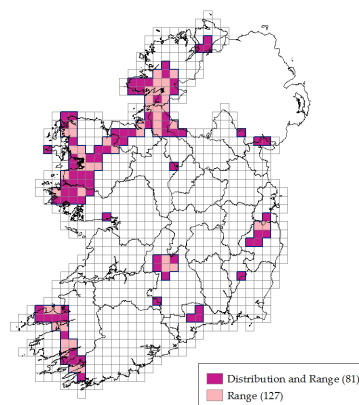
Typical species for this habitat include common bent (*Agrostis capillaris*), sweet vernal-grass (*Anthoxanthum odoratum*), green-ribbed sedge (*Carex binervis*), sheep's-fescue (*Festuca ovina*), heath bedstraw (*Galium saxatile*), wood-rushes (*Luzula multiflora*, *L. campestris*), mat-grass (*Nardus stricta*), heath milkwort (*Polygala serpyllifolia*), tormentil (*Potentilla erecta*) and heath speedwell (*Veronica officinalis*).

Both calcareous (calcareous flushing) and non-calcareous sub-communities of this habitat have been identified in Ireland. Species indicative of the calcareous sub-community include smooth lady's-mantle (*Alchemilla glabra*), mountain everlasting (*Antennaria dioica*), harebell (*Campanula rotundifolia*), pignut (*Conopodium majus*), fairy flax (*Linum catharticum*), common bird's-foot-trefoil (*Lotus corniculatus*), yellow pimpernel (*Lysimachia nemorum*), primrose (*Primula vulgaris*), selfheal (*Prunella vulgaris*) and wild thyme (*Thymus polytrichus*). Species of the acidic sub-community include spring-sedge (*Carex caryophylla*), pill sedge (*C. pilulifera*), heath-grass (*Danthonia decumbens*), bitter-vetch (*Lathyrus linifolius*), small-white orchid (*Pseudorchis albida*), heath dog-violet (*Viola canina*) and common dog-violet (*Viola riviniana*).

The Overall Status is assessed as Bad due to on-going pressures such as bracken encroachment and succession. The trend is stable, and may represent a genuine improvement since the 2013 report however there was limited monitoring undertaken.



Rory Hodd



OVERALL STATUS: **BAD** ▼

6410 MOLINIA MEADOWS

Molinia meadows are represented in Ireland by both fen and grassland communities on nutrient-poor soils. The habitat may be managed as traditional hay meadows (cut only once a year in late summer or autumn with the hay crop removed) or more usually as extensive pasture. *Molinia* meadows occur in lowland plains on neutral to calcareous gleys, sometimes with a marl layer beneath the surface, or on peaty soils in both lowland and upland situations.

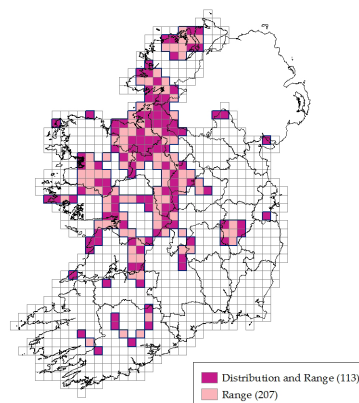
Molinia meadows generally have a central to north-western distribution in Ireland that follows the distribution of meadow thistle (*Cirsium dissectum*), one of the key indicator species for the habitat. This habitat is very rare in the east of the country, with only one site recorded within the five eastern counties that border the Irish Sea.

Typical species of the habitat, besides purple moor-grass (*Molinia caerulea*) and meadow thistle, include sneezewort (*Achillea ptarmica*), small sedges (e.g. *Carex echinata*, *C. nigra*, *C. pulicaris*) marsh hawk's-beard (*Crepis paludosa*), meadowsweet (*Filipendula ulmaria*), bedstraws (*Galium palustre*, *G. uliginosum*), a number of rush species (*Juncus acutiflorus*, *J. articulatus*, *J. conglomeratus*), adder's-tongue (*Ophioglossum vulgatum*), greater bird's-foot-trefoil (*Lotus pedunculatus*), heath wood-rush (*Luzula multiflora*), water mint (*Mentha aquatica*), tormentils (*Potentilla erecta*, *P. anglica*), devil's-bit scabious (*Succisa pratensis*), marsh violet (*Viola palustris*), fen violet (*V. persicifolia*) and, rarely, whorled caraway (*Carum verticillatum*).

The Overall Status is assessed as Bad with a deteriorating trend, the same result as in 2013, due to on-going losses of habitat. Significant historical losses of this habitat have also occurred since the EU Habitats Directive came into force. The main pressures on the habitat are associated with agricultural intensification (e.g. land drainage, fertiliser application), undergrazing and forestry.



Fionnuala O'Neill



OVERALL STATUS: **BAD** ▼

6430 HYDROPHILOUS TALL-HERB SWAMP

Three distinct communities can be considered for Hydrophilous tall-herb swamp in Ireland. The first is a lowland community of watercourses, particularly unmanaged edges of slow-moving rivers and the margins of lakes, which is dominated by tall hydrophilous herbs such as wild angelica (*Angelica sylvestris*), meadowsweet (*Filipendula ulmaria*), yellow iris (*Iris pseudacorus*), yellow loosestrife (*Lysimachia vulgaris*), purple-loosestrife (*Lythrum salicaria*) and common valerian (*Valeriana officinalis*). While horsetails (*Equisetum* spp.) are a common feature, monospecific stands of horsetails should not be included. Reed beds, large sedge swamps, large areas of fallow wet meadow and neophyte communities, e.g. with Indian balsam (*Impatiens glandulifera*), are also excluded.

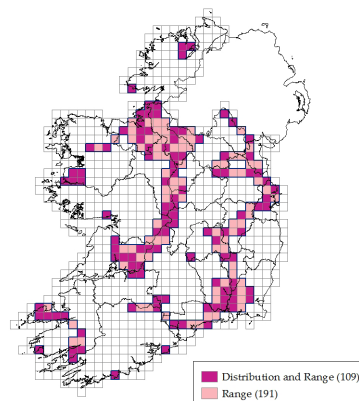
The second community is an upland community of ungrazed or lightly grazed cliff ledges. Small patches (<1m across) occur on calcareous cliffs and on wet siliceous cliffs where there is some base enrichment from the water. Characteristic species include lady's-mantles (*Alchemilla* spp.), wild angelica, marsh hawk's-beard (*Crepis paludosa*), meadowsweet (*Filipendula ulmaria*), water avens (*Geum rivale*) and lesser meadow-rue (*Thalictrum minus*). Great wood-rush (*Luzula sylvatica*) may be present but ledges strongly dominated by this species are not included.

A third lowland community type also possibly occurs as a nitrophilous tall-herb community of woodland borders, referred to as a 'saum' community. This habitat has been little studied in Ireland and further investigation is required to determine if examples exist in Ireland. Therefore only the first two communities are included in the present assessment.

Pressures on the habitat include invasive species; and agricultural intensification and drainage in the lowlands. The Overall Status is assessed as Bad with a deteriorating trend. This change in trend since the 2013 report represents a genuine decline due to range contraction and a decline in structure and functions.



Jim Martin



OVERALL STATUS: BAD ▼

6510 LOWLAND HAY MEADOWS

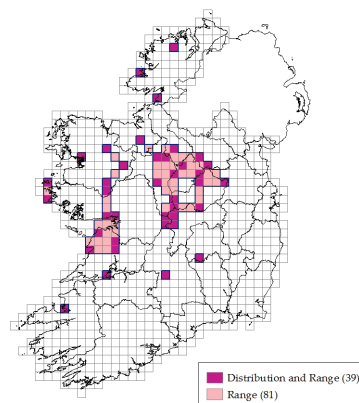
Lowland hay meadows are represented in Ireland by mesotrophic semi-natural grasslands that are almost always managed as traditional hay meadows (cut only once a year in late summer or autumn with the hay crop removed). These meadows are synonymous with the fertile plains of the larger river systems such as the Shannon and Moy. However, they have been found on flatter ground amongst low hills, drumlins, and there are also some sites on the coast. The habitat is only rarely found in sub-montane (200-400m) areas. Overall the Shannon Callows account for 27% of the area of 6510 within the State.

Typical species of this habitat in Ireland include meadow foxtail (*Alopecurus pratensis*), common knapweed (*Centaurea nigra*), smooth hawk's-beard (*Crepis capillaris*), wild carrot (*Daucus carota*), meadowsweet (*Filipendula ulmaria*), cat's-ear (*Hypochaeris radicata*), field scabious (*Knautia arvensis*), meadow vetchling (*Lathyrus pratensis*), hawkbits (*Leontodon* spp.), oxeye daisy (*Leucanthemum vulgare*), common bird's-foot-trefoil (*Lotus corniculatus*), greater burnet-saxifrage (*Pimpinella major*), ribwort plantain (*Plantago lanceolata*), selfheal (*Prunella vulgaris*), meadow buttercup (*Ranunculus acris*), yellow-rattle (*Rhinanthus minor*), red clover (*Trifolium pratense*), yellow oat-grass (*Trisetum flavescens*), tufted vetch (*Vicia cracca*), and more rarely, great burnet (*Sanguisorba officinalis*), goat's-beard (*Tragopogon pratensis*) and smooth brome (*Bromus racemosus*). Orchids may also occur.

The Overall Status is assessed as Bad due to on-going area losses associated with agricultural intensification (fertiliser application), changes in agricultural practices, and because of significant historical losses in the habitat since the Habitats Directive came into force. The trend is assessed as deteriorating. This change in trend since the 2013 report (in which it was judged to be stable) is attributed to improved knowledge/more accurate data, and decline is considered to have been on-going since before the last assessment.



Fionnuala O'Neill



OVERALL STATUS: BAD ▼

7110 ACTIVE RAISED BOGS*

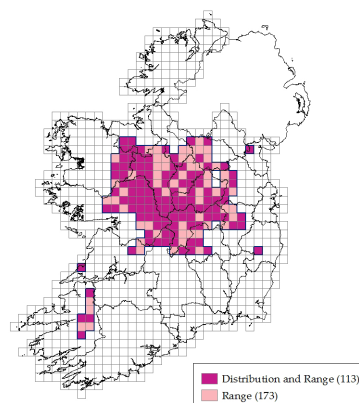
Raised bogs are accumulations of deep acid peat (3-12m) that originated in shallow lake basins or topographic depressions. They have a characteristic elevated surface or dome, which develops as raised bogs grow upwards from the surface. The bog dome is primarily rainwater-fed (ombrotrophic) and isolated from groundwater. This gives rise to acidic conditions deficient in plant nutrients, which in turn supports a distinctive suite of vegetation types. Although low in overall diversity, raised bogs support specialised plant assemblages dominated by a range of mosses of the genus *Sphagnum*. The bog surface in good condition supports a patterned micro-topography of pools, hummocks and lawns that provide a range of water regimes supporting different species assemblages. Raised bogs are more abundant in the lowlands of central and mid-west Ireland. In Ireland they are confined to areas with an annual rainfall below 1,250 mm and occur principally on land below 130m. They are classified into two sub-types: Western raised bogs (or Intermediate) and True Midland raised bogs.

Active raised bog is characterised by the presence of an acrotelm, which is the living, actively peat-forming upper layer whose surface is composed mainly of living bog mosses (*Sphagnum* spp.). Intact raised bogs are characterised by the presence of ericoid and sedge species and an abundance of *Sphagnum* species, amongst other mosses. Typical vascular plant species include bog-rosemary (*Andromeda polifolia*), bogbean (*Menyanthes trifoliata*), cottongrasses (*Eriophorum* spp.), cranberry (*Vaccinium oxycoccos*), cross-leaved heath (*Erica tetralix*), sundews (*Drosera* spp.) and white beak-sedge (*Rhynchospora alba*). Several species of *Cladonia* lichens are also frequent.

The main pressures on active raised bog are peat extraction, drainage, afforestation and burning. Climate change is also considered to pose a threat in the future. The Overall Status of the habitat is Bad and deteriorating, unchanged since the last assessment.



Fernando Fernandez



OVERALL STATUS: BAD ▼

7120 DEGRADED RAISED BOGS

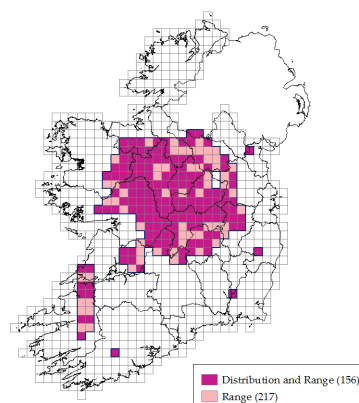
Raised bogs are accumulations of deep acid peat (3-12m) that originated in shallow lake basins or topographic depressions. As raised bogs grow upwards from the surface they typically develop an elevated dome, which is primarily rainwater-fed (ombrotrophic) and isolated from groundwater. This gives rise to a nutrient-deficient, acidic habitat, which supports a distinctive suite of specialised vegetation assemblages. Raised bogs are more abundant in the lowlands of central and mid-west Ireland. They are confined to areas with an annual rainfall below 1,250 mm, occurring principally on land below 130m.

Degraded raised bog is characterised by the complete absence (or patchy thin cover) of an acrotelm, which is the living, actively peat-forming upper layer. Previously, all the vegetated areas of high bog that were not delineated as active raised bog were defined as degraded raised bog, on the assumption that most of it could be restored to active peat-forming conditions after implementation of comprehensive restoration works. However, recent modelling techniques based on earlier research has allowed degraded raised bog to be delineated based on the premise that only areas with the right combination of physical conditions are ultimately capable of supporting active raised bog after restoration measures are implemented. To qualify as degraded raised bog, there must be a reasonable expectation that these areas are capable of natural regeneration to active bog within 30 years if their hydrology is repaired. The remainder of the high bog that is neither active nor degraded raised bog is now referred to as 'supporting raised bog habitat'.

The main pressures on Degraded raised bog come from peat extraction, drainage, afforestation and burning. Climate change is recognised as an additional threat in the future. As a result the Overall Status is assessed as Bad and deteriorating, unchanged since the last assessment.



Fernando Fernandez



OVERALL STATUS: BAD ▼

7130 BLANKET BOG (*ACTIVE)

Blanket bogs occur in areas of consistently high rainfall (>1,250mm and >225 rain days per annum) where the ground surface is waterlogged for much of the time, resulting in the development of deep peats. The habitat is widespread along the western seaboard and on uplands, but absent from lowlands in the midlands and east. It may be broadly divided into upland and lowland types. The peat is typically more than 50cm deep, c. 1-2m in uplands but up to 8m in lowlands. Blanket bog generally occurs on flat or gently sloping terrain but can occur on steeper ground in the wettest districts.

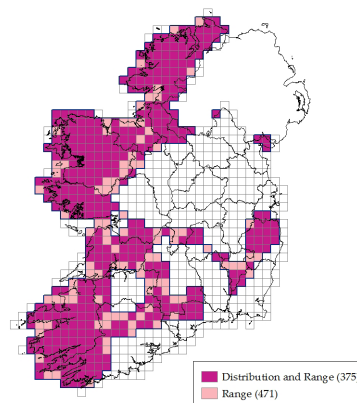
Species typical of lowland bogs include black bog-rush (*Schoenus nigricans*), white beak-sedge (*Rhynchospora alba*), pale butterwort (*Pinguicula lusitanica*), lousewort (*Pedicularis sylvatica*), heath milkwort (*Polygala serpyllifolia*), and the bryophytes *Pleurozia purpurea* and *Campylopus atrovirens*. Upland bogs are dominated by ling (*Calluna vulgaris*), hare's-tail cottongrass (*Eriophorum vaginatum*), deergrass (*Trichophorum germanicum*) and the moss *Racomitrium lanuginosum*, with crowberry (*Empetrum nigrum*), bilberry (*Vaccinium myrtillus*) and the liverwort *Diplophyllum albicans* also common. Lichens of the *Cladonia* genus are characteristic of both types.

Both active and inactive blanket bog qualify as the Annex I habitat. The former is a priority Annex I habitat and supports significant areas of peat-forming vegetation, e.g. *Sphagnum* spp., cottongrasses (*Eriophorum* spp.), black bog-rush and white beak-sedge. Areas are classed as inactive bog if they have few peat-forming species, e.g. eroded bog recolonised with swards of common cottongrass (*Eriophorum angustifolium*). The conservation assessment presented here is for the combined classes, active and inactive.

The main pressures on blanket bogs are overgrazing, burning, afforestation, peat extraction, and agricultural activities causing nitrogen deposition. Erosion, drainage and wind farm construction are other issues of concern. As a result the Overall Status is assessed as Bad and deteriorating, unchanged since the 2013 report.



Eamonn O'Sullivan



OVERALL STATUS: **BAD** ▼

7140 TRANSITION MIRES

Transition mires and quaking bogs are physically unstable peat-forming communities, typically occurring as swards or floating mats over saturated peat or open water. There is usually an abundant bryophyte layer. Vegetation ranges from extensive floating mats of small to medium sedges with *Sphagnum* on open water, to localised basic flushes over acid peat with base-tolerant *Sphagnum* and brown mosses. Aquatic and semi-aquatic vegetation is frequently present.

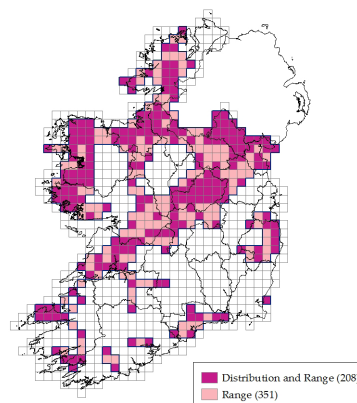
Transition mires are generally mineral rich (but not necessarily calcium rich), with slightly basic to moderately acid pH. Transition mires may occupy a physically transitional zone between bog and fen vegetation (e.g. the lagg zone of a raised bog), or where groundwater seeps through deep peat (e.g. upland soligenous flushes). They can also represent a transitional stage between groundwater-fed fen and rainwater-fed bog, as peat accumulates and isolates the vegetation from groundwater. Transition mire vegetation may also be found in damaged habitats, such as flooded peat cuttings over calcareous substrate.

This habitat is widespread but localised in Ireland. It has been recorded most frequently in blanket bog regions in the north and west, limestone regions in the north-west and midlands, and in inter-drumlin hollows and lakes in the border counties. There are a number of rare and protected species which occur in, or are confined to, transition mire habitats in Ireland, such as the Annex II moss species *Hamatocaulis vernicosus* (also listed on the Flora (Protection) Order, FPO) and the FPO species bog orchid (*Hammarbya paludosa*) and slender cottongrass (*Eriophorum gracile*).

The main pressures facing transition mires in Ireland are afforestation, water pollution, drainage and hydrological changes. Grazing/agricultural management is also prominent as an issue. The Overall Status is assessed as Bad, as in the last two reporting periods. The trend is assessed as stable.



Joanne Denyer



OVERALL STATUS: **BAD** =

7150 RHYNCHOSPORION DEPRESSIONS

'Depressions on peat substrates of the *Rhynchosporion*', characterised by the presence of *Rhynchospora alba* and *R. fusca*, is considered to be an integral part and microhabitat of active raised bog and blanket bog.

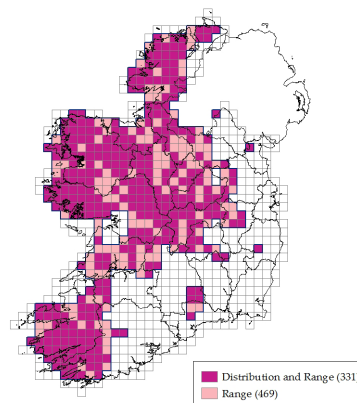
In raised bogs, *Rhynchospora* vegetation communities are considered to qualify as the Annex I habitat when they occur in their most developed form in the wettest sections of active raised bogs, corresponding with pools, *Sphagnum* lawns and hollows. This habitat is also an integral part of blanket bogs and can also be found in poor fens / flushes and transition mires occurring in close association with blanket bog. Only when the *Rhynchospora* species are associated with plant communities of the most sensitive and undisturbed parts of blanket bog and associated wetland habitats are they considered to correspond with the Annex I habitat. Such areas include small depressions or flushed areas, extensive water tracks and interconnecting shallow pool areas around hummocks of *Sphagnum*, pool margins, and low-level flats or lawns that often form an interface between hummocks and bog pools.

Rhynchospora vegetation communities in more disturbed situations on degraded raised bog and blanket bog (e.g. tracks, cutover peat, areas overgrazed and trampled by livestock) have a depauperate species assemblage and lack other indicative species such as abundant *Sphagnum* species and great sundew (*Drosera anglica*). Although formerly regarded as the Annex I habitat, this vegetation is no longer considered to correspond with the habitat in Ireland.

The main pressures on the habitat are associated with impacts on the supporting bog habitats, especially overgrazing, burning, peat extraction, drainage and conversion to forestry. The Overall Status of the habitat is therefore assessed as Bad and deteriorating. The change in status since 2013 is primarily due to use of a different method in the definition and interpretation of the habitat.



Fernando Fernandez



OVERALL STATUS: **BAD** ▼

7210 CLADIUM FENS*

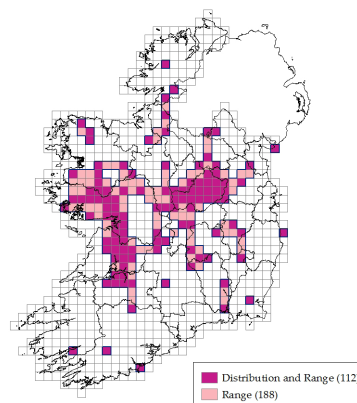
Cladium fens refers to *Cladium mariscus* beds which are in contact with species-rich vegetation of small-sedge fens (i.e. *Cladium mariscus* and species of the *Caricion davallianae*). They occur where there are species-rich open swards of *Cladium mariscus* with elements of small-sedge fen, fen meadow and tall-herb fen. These may be naturally species-rich or managed to prevent dominance of *Cladium mariscus*. However, this habitat can also occur where species-poor or mono-dominant stands of *Cladium mariscus* transition to species-rich alkaline fen vegetation types at their margins or occur in a mosaic of species-poor and species-rich vegetation. This latter situation tends to be more common in Ireland. In these instances, the whole stand of *Cladium mariscus*, including areas that support species-poor vegetation, qualifies as *Cladium* fen habitat.

Cladium fen occurs in a wide range of habitats, in both topogenous and soligenous situations, such as the emergent zone of calcareous lakes, valley fens, floodplains, wet meadows and calcium-rich flush areas within blanket bogs in the west. The habitat is characterised by waterlogged peat soils, a high water table (at or above the surface), and near neutral to alkaline oligotrophic to mesotrophic water. *Cladium* fens are found throughout Ireland, most commonly in lowland areas in the midlands, west and south-east. They are occasional elsewhere.

The Overall Status is assessed as Inadequate but stable. The change in status since 2013 is due to improved knowledge/more accurate data and the trend is considered to have been stable since before the last assessment.



Joanne Denyer



OVERALL STATUS: **INADEQUATE** =

7220 PETRIFYING SPRINGS*

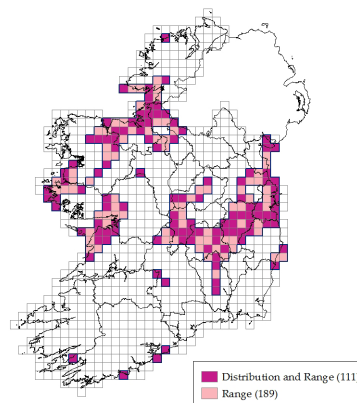
Petrifying springs are lime-rich water sources where tufa is actively deposited and where characteristic species of bryophytes are dominant or abundant. The emerging spring water is rich in carbon dioxide and dissolved calcium carbonate. On contact with the atmosphere, carbon dioxide is outgassed and calcium carbonate is deposited as tufa. The resulting ecological conditions, with high pH and constant inundation by water and deposition of precipitated calcium carbonate, constitute a challenging environment for plants and animals, and the communities associated with petrifying springs are therefore highly specialised. The ecological significance of petrifying springs is seldom confined to a point source; rather, there is often a continuum of intergrading hydrological conditions from the spring head, through a flushed slope and into small streams. Spring heads may be distinct point locations giving rise to small streams immediately below the point of emergence, or water may seep to the surface in a more diffuse pattern over a larger area.

Ecologically significant species that serve as positive indicators of habitat status consist largely of mosses and liverworts, with a smaller number of vascular plants. Characteristic mosses include *Palustriella commutata*, *P. falcata*, *Philonotis calcarea*, *Eucladium verticillatum*, *Didymodon tophaceus*, *Bryum pseudotriquetrum*, along with the liverworts *Pellia endiviifolia*, *Aneura pinguis* and *Jungermannia atrovirens*. Characteristic vascular plants include common butterwort (*Pinguicula vulgaris*), grass-of-Parnassus (*Parnassia palustris*), long-stalked yellow-sedge (*Carex lepidocarpa*), carnation sedge (*C. panicea*), broad-leaved cottongrass (*Eriophorum latifolium*), great horsetail (*Equisetum telmateia*), variegated horsetail (*E. variegatum*) and lesser clubmoss (*Selaginella selaginoides*). Stoneworts, especially *Chara vulgaris*, may also be present.

The Overall Status is assessed as Inadequate, which is unchanged since the last reporting period. The trend is assessed as deteriorating (reported as stable in 2013), which is due to improved knowledge, and decline is considered to have been ongoing since before the last assessment.



Melinda Lyons



OVERALL STATUS: INADEQUATE ▼

7230 ALKALINE FENS

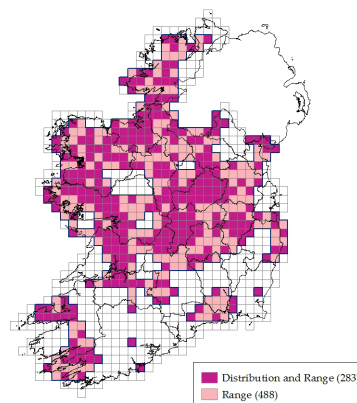
Alkaline fens are groundwater-fed, generally peat-forming systems with extensive areas of species-rich small sedge and brown moss communities. They occur in areas where there is a high water table and a base-rich, often calcareous water supply. Alkaline fens can develop in areas where vertical water movement predominates (topogenous), such as poorly drained basins or hollows and open water transitions; or where horizontal water movement is also important (soligenous), such as flushes, valley fens and the lags of raised bogs. However, this distinction is not always clear (such as in large floodplain fens which can include both elements). Fen systems are often a complex mosaic of habitats, with tall sedge beds, reedbeds, wet grasslands, springs and open water co-occurring.

Alkaline fens are relatively widespread in Ireland. The most extensive areas of alkaline fens are thought to occur in lowland basins associated with limestone groundwater bodies (often in midland areas). Alkaline fens associated with flushes and open water transitions tend to be smaller, but may be more widespread than those in lowland basins.

The main pressures facing the habitat in Ireland are land abandonment (and associated succession), overgrazing, drainage and pollution. The Overall Status is assessed as Bad with a deteriorating trend due to losses of area and habitat quality, as well as the pressures and threats faced by the habitat.



Joanne Denyer



OVERALL STATUS: BAD ▼

8110 SILICEOUS SCREE

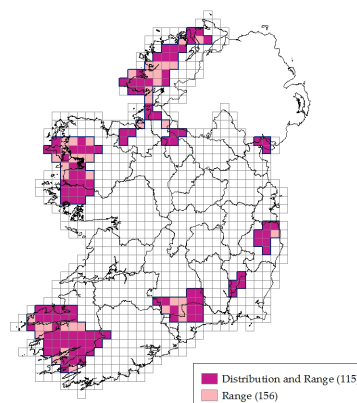
Siliceous scree habitat consists of accumulations of siliceous rock fragments on slopes below upland cliffs or on exposed / frost-shattered mountain summits or ridges. While there is no strict lower altitudinal threshold, this habitat is interpreted as referring to examples of scree occurring in a broadly upland landscape context. Rock sizes may vary from large blocks ('talus') that can be very stable to smaller fragments that may be highly mobile. Areas of loose rock on summits or plateaux exposed by peat erosion and areas akin to fell-field are not included, nor are screes beneath vegetation that indicates other habitats (e.g. dry heath, scrub). While the presence of arctic-alpine species on siliceous scree indicates high-quality examples of the habitat, they are not deemed an essential component.

Vegetation can be sparse and can consist chiefly of bryophyte and lichen assemblages, although calcifuge ferns, such as broad buckler-fern (*Dryopteris dilatata*) and Wilson's filmy-fern (*Hymenophyllum wilsonii*), and the saxifrage species St. Patrick's-cabbage (*Saxifraga spathularis*) are typically present. Siliceous scree supports several species of high conservation value including legally protected Flora (Protection) Order, 2015 and Red-listed bryophytes, particularly species of the 'mixed northern hepatic mat' community including *Adelanthus lindenbergianus*, which are also considered rare or threatened on a European scale.

The Overall Status is Inadequate, as in the 2013 assessment, but the trend has changed. Structure and functions were assessed as improving in the previous reporting period due to destocking associated with the Commonage Framework Plans; however, as overgrazing, undergrazing and succession were recorded as medium-importance pressures in this reporting period, and Structure and functions were again assessed as Inadequate, the trend is considered to be stable rather than improving. This change is due to improved knowledge and the habitat is considered to have been stable since before the last assessment.



Philip Perrin



OVERALL STATUS: **INADEQUATE** =

8120 CALCAREOUS SCREE

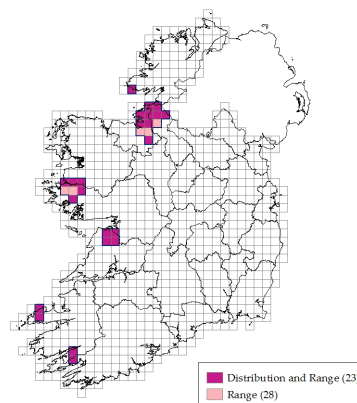
Calcareous scree habitat consists of accumulations of calcareous rock fragments on slopes below upland cliffs or on exposed / frost-shattered mountain summits or ridges. Rocks may vary in size from large blocks (also known as talus) that can be very stable, to smaller fragments that can be highly mobile. Areas of loose rock on summits or plateaux exposed by erosion of blanket bog and areas akin to fell-field are not included, nor are areas of scree beneath a vegetation cover that assigns them to other habitats such as dry heath or scrub. While there is no strict altitudinal threshold, this habitat is limited to examples of scree occurring in a broadly upland landscape context.

The vegetation may be very sparse and can chiefly comprise bryophyte and lichen assemblages, although calcicole ferns, including green spleenwort (*Asplenium viride*) and brittle bladder-fern (*Cystopteris fragilis*), and saxifrage species (*Saxifraga* spp.) are typically present. There is a suite of Red-listed bryophytes associated with calcareous scree habitat as well the Flora (Protection) Order, 2015 moss species *Didymodon maximus*. While the presence of arctic-alpine species indicates high-quality examples of the habitat, it is not deemed a requisite.

The Overall Status is assessed as Inadequate with a stable trend due to pressures associated with overgrazing, unchanged since the 2013 assessment.



Eamonn O'Sullivan



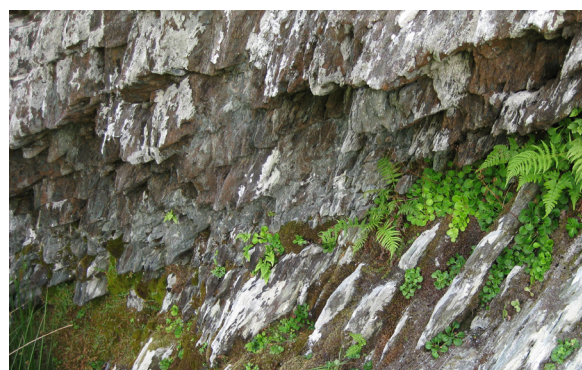
OVERALL STATUS: **INADEQUATE** =

8210 CALCAREOUS ROCKY SLOPES

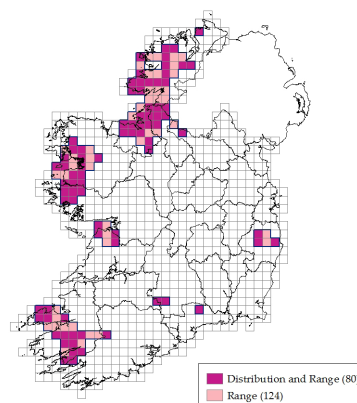
Calcareous rocky slopes habitat consists of vertical or near-vertical exposures of calcareous bedrock with cracks, fissures and overhangs that support chasmophytic vegetation (i.e. vegetation in crevices). It may also occur on wet siliceous cliffs where there is some base enrichment in the water or where such rock has been metamorphosed. While there is no strict altitudinal threshold, this habitat is limited to examples of chasmophytic vegetation in a broadly upland landscape context. Areas of heath, grassland or tall herb communities on rock faces or ledges are not considered part of the habitat.

The vegetation is characterised by calcicole ferns, such as green spleenwort (*Asplenium viride*), maidenhair spleenwort (*Asplenium trichomanes*) and brittle bladder-fern (*Cystopteris fragilis*); saxifrages, e.g. purple (*Saxifraga oppositifolia*) and yellow saxifrage (*S. aizoides*); and saxicolous bryophytes including frizzled crisp-moss (*Tortella tortuosa*) and red leskea (*Orthothecium rufescens*). Species of restricted distribution in Ireland associated with this habitat include red leskea and yellow saxifrage and several Flora (Protection) Order, 2015 bryophytes including *Bartramia halleriana*, *Encalypta raptocarpa*, *E. ciliata*, *Myurella julacea*, *Gymnomitrium corallioides* and *Lejeunea mandonii*. While the presence of arctic-alpine species indicates high-quality examples of this community, they are not deemed an essential component of the habitat.

The Overall Status is assessed as Inadequate with a stable trend due to pressures associated with overgrazing and the non-native invasive species New Zealand willowherb (*Epilobium brunnescens*). This is unchanged since the previous assessment in 2013.



Eamonn O'Sullivan



OVERALL STATUS: **INADEQUATE** =

8220 SILICEOUS ROCKY SLOPES

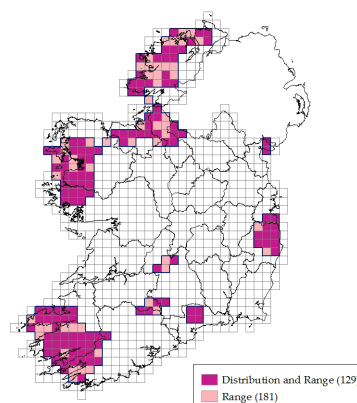
Siliceous rocky slope habitat consists of vertical or near-vertical exposures of siliceous bedrock with clefts, crevices, fissures, and overhangs that support chasmophytic vegetation (i.e. vegetation in crevices). While there is no strict lower altitudinal threshold, this habitat is interpreted as referring to examples of chasmophytic vegetation occurring in a broadly upland landscape context. Areas of heath, grassland or tall herb communities growing on rock faces or ledges are not included in this habitat and while the presence of arctic-alpine species indicates high-quality examples of the habitat, they are not an essential component of the habitat.

The vegetation is characterised by calcifuge ferns such as broad buckler-fern (*Dryopteris dilatata*) and Wilson's filmy-fern (*Hymenophyllum wilsonii*), saxifrages, especially St. Patrick's-cabbage (*Saxifraga spathularis*), and saxicolous bryophytes, such as *Andreaea* spp. and *Racomitrium heterostichum*, which require moist, shaded, infertile microhabitats.

The Overall Status is assessed as Inadequate with a stable trend due to pressures associated with the non-native invasive species New Zealand willowherb (*Epilobium brunnescens*). There have been no significant changes since 2013.



Rory Hodd



OVERALL STATUS: **INADEQUATE** =

8240 LIMESTONE PAVEMENT*

The structure of Limestone pavement habitat typically consists of blocks of rock, known as clints, separated by fissures or grikes. Sometimes due to weathering this structure is less defined, especially in the 'shattered' variant of pavement. Limestone pavement can occur as areas of exposed rock with very little vegetation or in association with grassland, heath, scrub, or woodland communities.

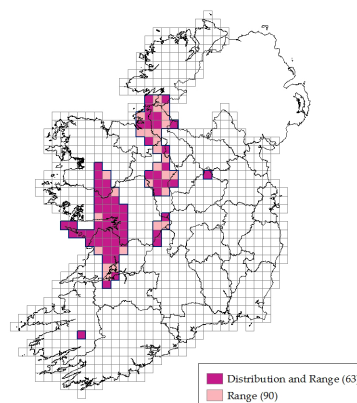
The main vascular plant species associated with the habitat include scattered low-growing woody species such as hazel (*Corylus avellana*), common ivy (*Hedera helix*), holly (*Ilex aquifolium*), burnet rose (*Rosa spinosissima*) and brambles (*Rubus fruticosus* agg.), and herbaceous species such as blue moor-grass (*Sesleria caerulea*), wood sage (*Teucrium scorodonia*), wall lettuce (*Mycelis muralis*), herb-Robert (*Geranium robertianum*), carline thistle (*Carlina vulgaris*) and glaucous sedge (*Carex flacca*). A suite of calcicole ferns are also usually found, including wall-rue (*Asplenium ruta-muraria*), rustyback (*Asplenium ceterach*) and, in the deeper grikes, the shade-loving hart's-tongue (*Asplenium scolopendrium*). Characteristic bryophytes are *Ctenidium molluscum*, *Tortella tortuosa* and *Neckera crispa*.

The wooded variant of Limestone pavement has been recorded in areas of hazel woodland with a low canopy of at least 3 m and minimal soil depth. Under canopy the surface of the limestone pavement is sometimes completely covered by bryophytes such as *Eurhynchium striatum*, *Neckera crispa* and *Thamnobryum alopecurum*.

The Overall Status is assessed as Inadequate due to continuing area losses associated with conversion to agricultural land and housing construction, as well as scrub encroachment caused by undergrazing. The trend is stable as some of these impacts are being offset to some degree by conservation measures undertaken in the Burren and Aran Islands. This is unchanged since the 2013 assessment.



Jim Martin



OVERALL STATUS: **INADEQUATE** =

8310 CAVES

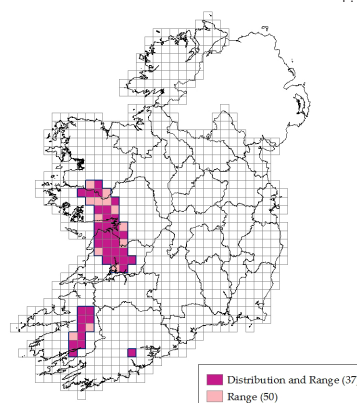
There is little evidence that Irish caves support much in the way of specialised or endemic fauna. However, the lesser horseshoe bat (*Rhinolophus hipposideros*), which is listed on Annex II of the Habitats Directive, occurs in caves in Ireland. Consequently, in practice, this EU habitat is confined in Ireland to caves which are not exploited commercially for tourism and host important numbers of lesser horseshoe bat.

The lesser horseshoe bat is restricted to six western counties: Mayo, Galway, Clare, Limerick, Kerry and Cork. It requires cool, stable temperatures and minimal disturbance for winter hibernation and suitable caves are selected where available. Lesser horseshoe bats may also turn up in caves at other times of year, although seldom in significant numbers.

Although some threats have been identified, some of which might have appreciable localised effects, none is considered likely to have a significant impact on this habitat in Ireland. Overall the future prospects for this habitat are considered to be good. Although the overall conservation assessment for the lesser horseshoe bat in Ireland is now Inadequate due to a small contraction in range, these concerns do not relate to areas with bats in caves, and the Overall Status of caves is Favourable and stable, as it has been over the last two reporting periods. Many vulnerable bat caves are already protected from disturbance through grilling. Regular monitoring is underway and if further vulnerable cave sites are identified these will also be grilled.



F. Greenaway; © NPWS



OVERALL STATUS: **FAVOURABLE** =

8330 SEA CAVES

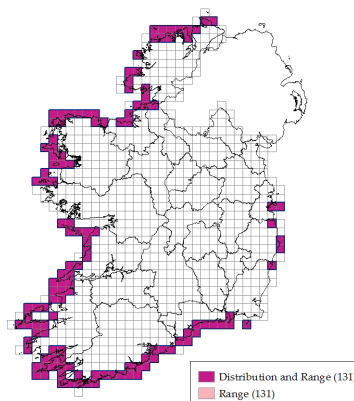
In Ireland sea caves are defined as caves which are fully submerged below sea level, or which have an intertidal component to them. The entrances of sea caves usually occur on sea cliff faces with the cave extending both above and below sea level. A number of sea caves are known to be completely submerged, others form tunnels or caverns. Their walls, roof and floor support similar species to those of reef habitats but which are adapted to the specific physical attributes of the sea cave. The floor of caves varies from sediment to bedrock and/or boulders. Due to the exposure to swell these habitats are often very dynamic.

In Ireland, sea caves present a marked difference from surrounding reef habitat due to differences in characteristics such as inclination, wave surge, scour and shade. These can change rapidly from the cave entrance to the inner parts of the cave, leading to a marked zonation in the communities present. Where a bank of boulders or other hard substrate is present at the back of a cave and where the area is not continually submerged it may be used as a haul-out area by grey seals.

Sea caves appear to be extensive around the coast of Ireland, although their distribution along the south-east coast appears to be limited due to geological factors. The occurrence of sandstone/limestone is highly correlated with the formation of sea caves, accounting for nearly 85% of documented occurrences around Ireland. The Overall Status is assessed as Favourable as there are no pressures impacting on this habitat. This is the same assessment as in the last two reporting periods.



MERC



OVERALL STATUS: **FAVOURABLE**

91A0 OLD OAK WOODLAND

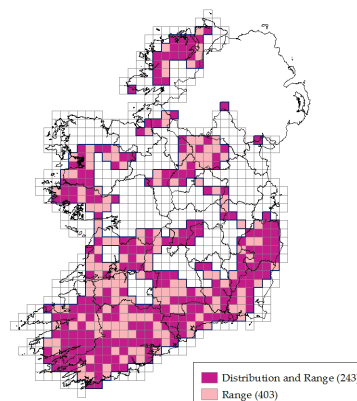
Old oak woodland generally occurs on podzolised soils in upland, southern and western regions, but also occurs on localised, non-waterlogged acid soils elsewhere. In areas with high rainfall a western oceanic subtype occurs that is rich in bryophytes, lichens and filmy ferns. A drier, comparatively species-poor subtype occurs on less rocky terrain. A third, more base-rich subtype is also found, differing from the previous two in the greater diversity of tree and herb species.

Typical species include the trees sessile oak (*Quercus petraea*), holly (*Ilex aquifolium*), downy birch (*Betula pubescens*) and rowan (*Sorbus aucuparia*); low woody species such as honeysuckle (*Lonicera periclymenum*), ivy (*Hedera helix*) and bilberry (*Vaccinium myrtillus*); ferns such as buckler ferns (*Dryopteris* spp.) and hard fern (*Blechnum spicant*); great wood-rush (*Luzula sylvatica*); and many bryophytes including *Dicranum* spp., *Hylocomium brevirostre*, *Mnium hornum*, *Plagiothecium undulatum*, *Polytrichum formosum*, *Rhytidiadelphus* spp., *Thuidium tamariscinum*, *Diplophyllum albicans*, *Saccogyna viticulosa* and *Scapania gracilis*.

Historical habitat loss has occurred and still continues, although at a very low level. However, the greatest on-going pressures on these woods come from invasive non-native species such as *Rhododendron ponticum*, cherry laurel (*Prunus laurocerasus*) and beech (*Fagus sylvatica*), and overgrazing by deer. These impacts severely reduce tree regeneration, which is essential for the long-term viability of woodlands. Measures such as the Native Woodland Scheme are expected to have a positive long-term effect but are as yet insufficient to outweigh the pressures, as development of Annex-quality woodland takes decades. These pressures, in conjunction with the continued fragmentation of remaining stands, lead to an Overall Status of Bad with a deteriorating trend. The change in trend from improving in 2013 is due to the availability of more accurate data, particularly in relation to recent habitat loss, and decline is considered to have been on-going since before the last assessment.



Orla Daly



OVERALL STATUS: **BAD**

91D0 BOG WOODLAND*

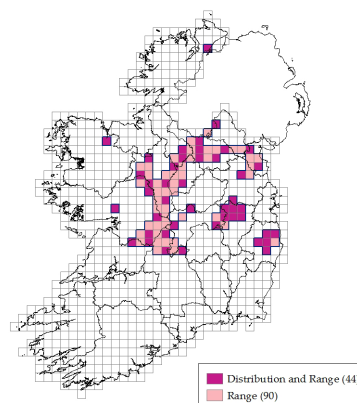
Bog woodland occurs in three distinct habitats in Ireland: on intact raised bogs, associated with low-flow flushes on the high bog; on cutover bog, in association with a weak groundwater influence; and within sessile oak woodlands in association with nutrient-poor flushes. They are mostly found in the midlands, the mid-west, the drumlin belt of the north midlands and in upland valleys. Bog woodlands are dominated by downy birch (*Betula pubescens*), with small amounts of willow (mostly *Salix aurita* or *S. cinerea*). Locally, there may be small amounts of Scots pine (*Pinus sylvestris*), especially on raised bogs. The dwarf shrub and field layers may be poorly to well developed. Dwarf shrub species can include ling (*Calluna vulgaris*), bilberry (*Vaccinium myrtillus*) and cranberry (*Vaccinium oxycoccos*). Field layer species can include purple moor-grass (*Molinia caerulea*), soft rush (*Juncus effusus*) and ferns (e.g. *Dryopteris* spp.). The bryophyte layer has a characteristic luxuriant growth of *Sphagnum* species. *Polytrichum commune* and *Aulacomnium palustre* are also typical.

Bog woodlands are closely linked to precise hydrological conditions that are required for both their initiation and maintenance. These conditions are characteristically restricted to small areas, and consequently the area of individual bog woodlands is typically small. Bog woodlands on raised bog and within sessile oak woodlands are considered more or less permanent, provided hydrology remains stable, whereas bog woodlands on cutover may represent a more transient community that gradually reverts to raised bog or dries out to become another woodland type.

A number of low-level pressures affect bog woodlands, including drainage, invasive species and burning, but none are considered significant enough at a national level to adversely affect the long-term viability of the habitat. The Overall Status is therefore Favourable with a stable trend, unchanged since the previous assessment.



Fionnuala O'Neill

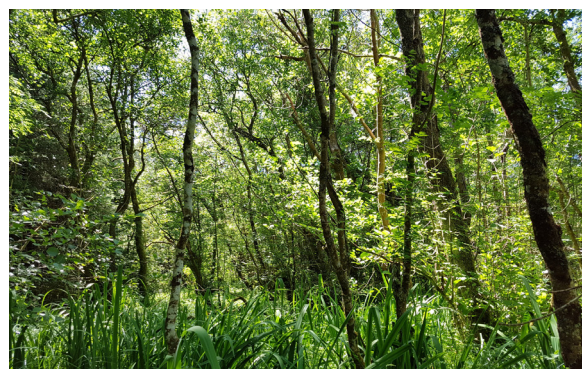


OVERALL STATUS: **FAVOURABLE**

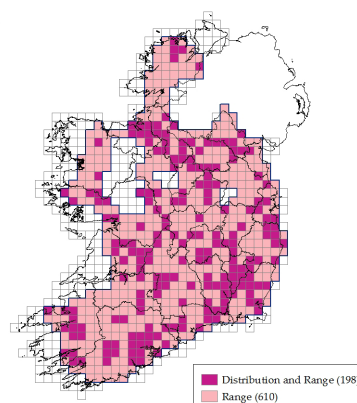
91E0 ALLUVIAL WOODLAND*

A number of variants of Alluvial woodland habitat exist, of which riparian forests of ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*) (Alno-Padion) of temperate and Boreal Europe lowland and hill watercourses are the most common in Ireland. All types occur on heavy soils which are periodically inundated by the annual rise of river levels but otherwise well-drained and aerated during low water. The herbaceous layer includes many large species such as meadowsweet (*Filipendula ulmaria*), wild angelica (*Angelica sylvestris*), wood dock (*Rumex sanguineus*) and sedges (*Carex* spp.), vernal species such as lesser celandine (*Ficaria verna*) and wood anemone (*Anemone nemorosa*), and other indicative species such as remote sedge (*Carex remota*), gypsywort (*Lycopus europaeus*), common nettle (*Urtica dioica*) and water avens (*Geum rivale*). In addition, there are gallery forests of tall willows (*Salicetum albae*) alongside river channels and occasionally on river islands, where the tree roots are almost continuously submerged. These are dominated by white willow (*Salix alba*), osier (*S. viminalis*) and almond willow (*S. triandra*), sometimes with grey willow (*S. cinerea*), but alder should be rare. There is a luxuriant herb layer of species such as reed canary-grass (*Phalaris arundinacea*), common nettle and meadowsweet.

A number of pressures affect this habitat in Ireland, the most serious being invasive species, particularly sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*), Indian balsam (*Impatiens glandulifera*) and currant species (*Ribes nigrum* and *R. rubrum*). Some native species such as brambles (*Rubus fruticosus* agg.) and common nettle can also become over-vigorous. Small area losses due to clear-felling have also occurred. As a result the Overall Status is Bad and the trend is declining. This poorer trend since the previous assessment is mainly due to the availability of more accurate data, and the decline is considered to have been on-going since before the last assessment.



Orla Daly



OVERALL STATUS: **BAD**

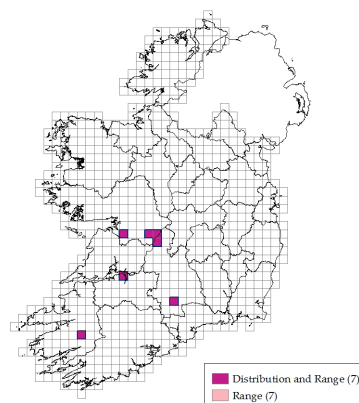
91J0 YEW WOODLAND*

The distribution of Yew woodland is highly restricted in Ireland, only occurring at a limited number of sites in the west and south-west, predominantly on shallow soils over limestone pavement or outcrops. The canopy is typically dominated by yew (*Taxus baccata*), with other canopy species including ash (*Fraxinus excelsior*) and the introduced beech (*Fagus sylvatica*). Hazel (*Corylus avellana*) and holly (*Ilex aquifolium*) are components of the shrub layer, although typically occurring in small quantities. The dense evergreen canopy can restrict regeneration, which is usually limited or absent. The field layer is characteristically both species-poor and limited in cover, with the most frequent and abundant species being ivy (*Hedera helix*), which is locally dominant, false brome (*Brachypodium sylvaticum*), common dog-violet (*Viola riviniana*) and ferns, in particular hart's-tongue (*Asplenium scolopendrium*). The rocky woodland floor can support an extensive carpet of bryophytes, dominated by a few robust pleurocarpous mosses including *Thamnobryum alopecurum* and *Isoetecium myosuroides*. Locally, in east Galway, yew woodland with sessile oak (*Quercus petraea*) and holly occurs on podzols over acidic tills, and the associated field layer is typical of the Old oak woodland habitat (91A0).

Pressures are mainly linked to the presence of alien species such as sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*), cherry laurel (*Prunus laurocerasus*) and traveller's-joy (*Clematis vitalba*), with overgrazing by deer also posing a serious problem. The Overall Status of Yew woodland is therefore Bad. The change in trend from improving to stable since the previous assessment is due to improved knowledge and more accurate data, and the trend is considered to have been stable since before the last assessment.



Orla Daly



OVERALL STATUS: BAD =



SPECIES



6985 KILLARNEY FERN (*Vandenboschia speciosa*)

Killarney fern (*Vandenboschia speciosa*) is a large filmy fern that is extremely sensitive to desiccation and is restricted to damp, shady and humid habitats. It has a typical fern two-stage life cycle. Both the sporophyte (typical fern frond) and gametophyte (filamentous structure) are capable of asexual reproduction, by means of rhizomes in the former and gemmae in the latter. Gametophyte colonies can exist and reproduce in the absence of sporophytes.

In Ireland, when the sporophyte and gametophyte occur together they occupy similar habitats in dripping caves, cliffs, crevices and gullies by waterfalls, crevices in woodland, and occasionally the floor of damp woodland; all deeply shaded humid habitats. Sporophyte colonies, however, are more limited in their distribution in Ireland than gametophyte colonies. Niches that the gametophyte can occupy, e.g. shallow crevices in otherwise open habitats that provide adequate shade for the gametophyte, are not always suitable for the growth of the larger sporophytes.

Most sites are located in the south-west and south, particularly Kerry, Cork and Waterford, but populations also occur in the east, west and north-west. The current known Irish population comprises 290 colonies in 86 populations, with 141 previously unknown colonies recorded since the last reporting period.

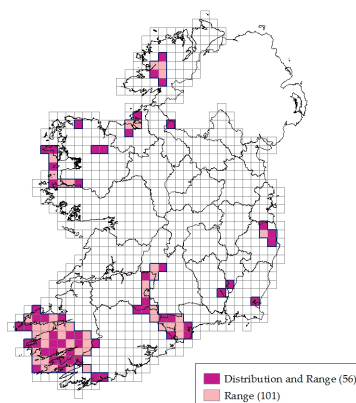
The pressures identified are generally local issues and none were considered to be impacting on the long-term viability of the species or its habitat. The problem of invasive non-native species, identified at a number of sites, is difficult to manage as they often provide essential cover to Killarney fern colonies.

The Overall Status of the species continues to be Favourable, as it has been over the last two assessments.

ANNEX II, IV



Emer Ní Dhúill



OVERALL STATUS: FAVOURABLE =

1528 MARSH SAXIFRAGE (*Saxifraga hirculus*)

Marsh saxifrage (*Saxifraga hirculus*) is an herbaceous perennial that is restricted to mineral flushes in blanket bog. Formerly more widespread, the midlands sites recorded in the 1800s have since been lost to drainage and peat extraction.

The petals are bright yellow with orange spots near the base. The ovary is superior and sepals are reflexed in fruit. Leaves are alternate and oblong in shape, with long petioles on the lowest leaves. The flowering stem can vary in height from 4 to 35 cm with up to 7 flowers, although 2-3 flowers are more common. The species can reproduce sexually by insect pollination with gravity-dispersed seeds, or clonally by means of runners (normally 1-5) from the parent rhizome. Moss often covers these runners which decay after one season, separating both plants; the clone thus becomes an independent ramet that can form new rhizomes. Marsh saxifrage is a weak competitor, so appropriate grazing that keeps the habitat open is important for the conservation of the species, although overgrazing may adversely affect seed set.

Marsh saxifrage requires a stable, moving water table close to the soil surface, so maintenance of a suitable hydrological regime is also key to its conservation.

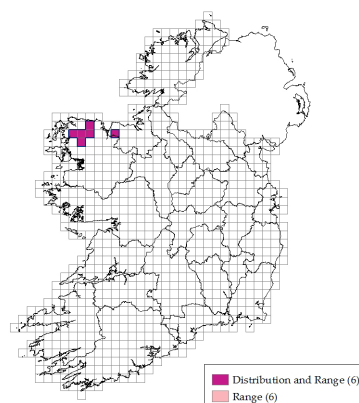
Marsh saxifrage is listed on the Flora (Protection) Order, 2015 (S.I. No. 356/2015), and the all-Ireland population of the species was assessed as Near Threatened, based on a decline in its area of occupancy and extent of occurrence between the two assessment periods 1930-1969 and 1987-1999.

There is no evidence of any major pressures currently impacting this species nationally, and therefore the Overall Status is assessed as Favourable.

ANNEX II, IV



Maria Long



OVERALL STATUS: FAVOURABLE =

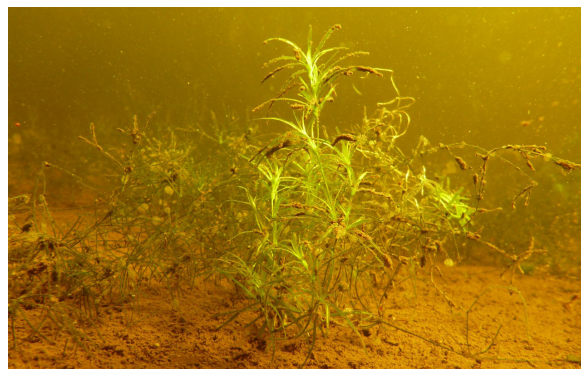
1833 SLENDER NAIAD (*Najas flexilis*)

The slender naiad (*Najas flexilis*) is a fragile, annual plant that grows in clear-water, lowland lakes. It has an unusual global distribution, being widespread in North America but more restricted in Europe and Asia, and is rare and declining in many countries. The core of the species' European range is Ireland and Scotland. The species is considered to occur in 52 lakes in counties Clare, Donegal, Galway, Kerry and Mayo, with most sites found near the coast. It is a glacial relict species that is not colonising new sites, rather it has occupied the same lakes continuously for almost 10,000 years. It is considered to have gone extinct in six lakes.

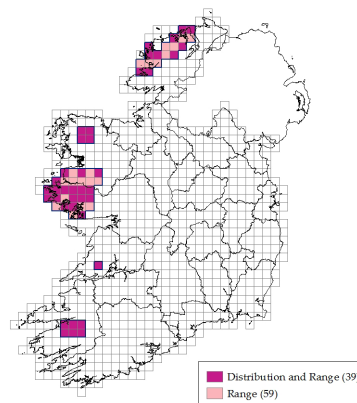
The slender naiad has exacting environmental requirements, most notably high water clarity/transparency and deep euphotic zones. It occurs in lakes with some base-rich influences in otherwise peatland-dominated catchments. In Ireland, the lakes typically overlie calcareous sand (often in machair), marble or sometimes limestone. The plant grows permanently submerged, commonly in deep water, and can easily be overlooked. It reproduces only from seed with seedlings appearing around June. The plant dies in September/October, once it has set seed. Population size can vary over time, owing to fluctuations in seed production and germination.

The species is threatened by enrichment (eutrophication), acidification and peatland damage. The Overall Status is assessed as Inadequate and the trend as deteriorating, because of population extinctions, population decreases and decreasing habitat quality in the current reporting period. The trend differs from the previous assessment because of the availability of improved data to inform the assessments.

ANNEX II, IV



Cilian Roden



OVERALL STATUS: **INADEQUATE** ▼

6216 SLENDER GREEN FEATHER-MOSS (*Hamatocaulis vernicosus*)

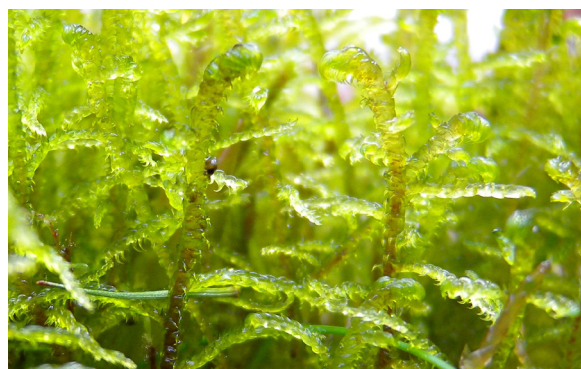
ANNEX II

Slender green feather-moss (*Hamatocaulis vernicosus*), also called shining sickle moss, is a medium-sized perennial moss with distinctively hooked shoot tips with branches that are held at right angles to the stem. The leaves are strongly curved, are often longitudinally pleated and are frequently tinged with red at the bases. Male and female reproductive organs are found on different plants. Sporophytes have never been recorded in Ireland and are very rare across its global distribution, maturing in summer where they do occur. No specialised asexual propagules are known, thus propagation must be through fragmentation of the parent plant.

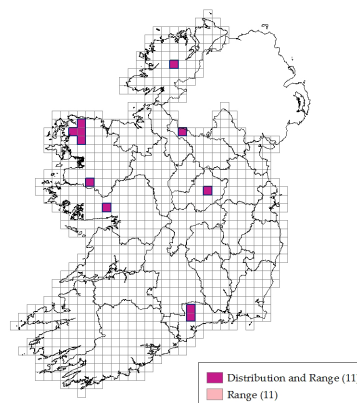
Slender green feather-moss is a circumboreal species ranging from the Arctic, south to western, central and eastern Europe, Turkey, Caucasus, central Asia and northern USA, with a disjunct occurrence in the Dominican Republic. It is currently known from 11 localities in Ireland, with large populations in the lowlands (at Lough Corrib, Lough Mask and Scragh Bog) and smaller more scattered populations in the uplands (in Cos. Donegal, Mayo, Waterford and Cavan).

Slender green feather-moss is found in intermediate fens and flushes where there is an influence of mineral-rich, but not calcium-rich, groundwater. In Ireland, it is found in springs and flushes in upland districts, while in the lowlands it generally occurs in spring-influenced sites in mildly basic small-sedge fens.

Although its population has almost certainly declined in historic times, due to loss of intact peatlands, recent surveys indicate that there continues to be sufficient good quality habitat to support the long-term survival of the species. There are also no significant pressures currently impacting the species. Therefore the Overall Status is assessed as Favourable, as it has been for the last two assessments.



Christina Campbell



OVERALL STATUS: **FAVOURABLE** =

1395 PETALWORT (*Petalophyllum ralfsii*)

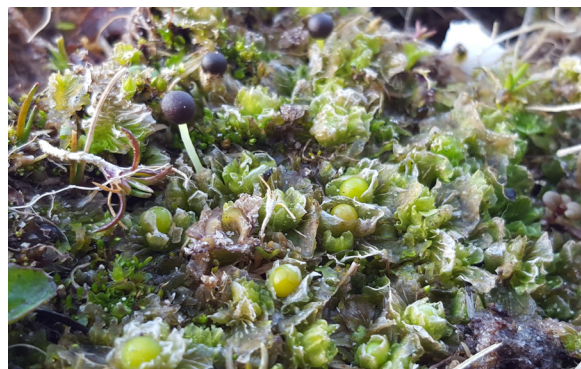
Petalwort (*Petalophyllum ralfsii*) is a pioneering thallose liverwort of bare, moist, stable sand or of short turf, mainly on mildly to strongly base-rich dune slacks and machair where the habitat can be subject to inundation in the winter.

The species looks like a miniature lettuce and is often less than 1 cm diameter. It has erect, almost parallel lamellae which are perpendicular to the flattened part of the thallus. The above-ground parts can die back during the summer when conditions are drier and the plants survive as underground tubers. Thalli can be solitary, in rosettes or in mats. Male and female parts are on separate plants. Sporophytes are produced regularly in spring and early summer. Spores may persist in the soil for long periods until environmental conditions become suitable for new plant production. No specialised asexual propagules are known, but the plant can reproduce clonally, whereby the thallus splits in two. Underground branches can also give rise to new thalli, which then become independent as the underground branches decay.

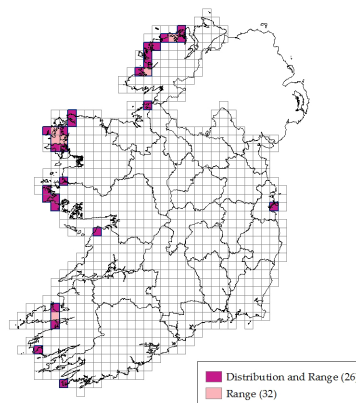
Petalwort has an Atlantic-Mediterranean distribution and in Ireland is most common on the west coast. Some of the largest populations in the world are thought to occur in Ireland. The area and quality of the occupied habitat for the species is deemed to be sufficient for the species' long-term survival. There are also no negative pressures currently impacting seriously on the habitat at a national level.

Therefore, the Overall Status is assessed as Favourable, the same result as the last two reporting periods.

ANNEX II



Christina Campbell



OVERALL STATUS: **FAVOURABLE** =

1376 MAËRL (*Lithothamnion corallioides*)

ANNEX V OVERALL STATUS: **BAD** ▼

1377 MAËRL (*Phymatolithon calcareum*)

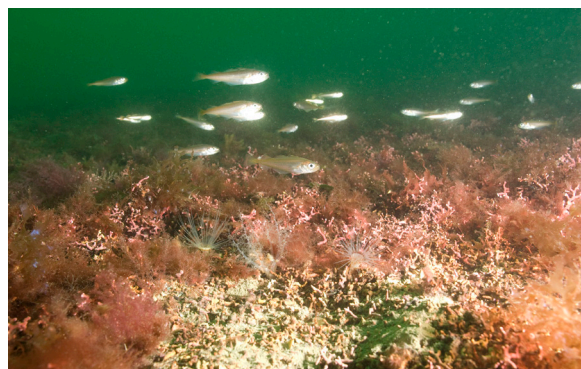
ANNEX V

Lithothamnion corallioides and *Phymatolithon calcareum* are calcified red seaweed species and two of a number of species collectively known as maërl. These slow-growing species live freely over mud, sand or gravel substrates. A joint assessment is presented as differentiation in the field can be difficult; *Phymatolithon calcareum* may be slightly larger than *Lithothamnion corallioides* and may form a more pronounced stag-horn morphotype. Individuals may be 4-7 cm across and when alive are usually pink or brownish in colour but appear a blanched white when dead. Maërl species in Ireland are considered habitat-forming species and are often incorrectly thought of as coral because of the calcareous bodies and broad similarity in shape.

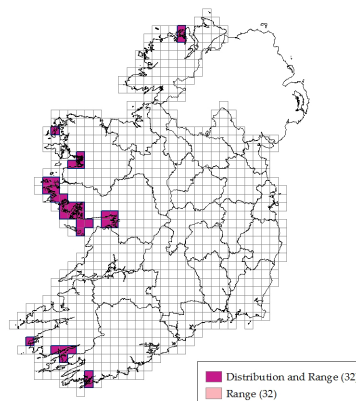
The distribution of maërl species is influenced by temperature, salinity and light penetration. Although slow-growing, only growing when temperatures exceed 12-13°C, they can form an extensive covering of the underlying substrate. Both species are limited by light penetration to the substrate and are usually found within a depth of less than 20m, occasionally 30m, but always below the lowest astronomical tide.

In Ireland maërl beds are recorded on the Atlantic coast from Roaringwater Bay in Cork to Mulroy Bay in Donegal, occurring within bays sheltered to some extent from Atlantic swells. The fauna of these beds is very diverse with a small number of species occurring in high abundance. In Kilkieran Bay, the holothurian *Neopentadactyla mixta* is estimated to occur in densities of several hundred per metre in a duned maërl bed off Ardmore Point.

The Overall Status of maërl is Bad and declining, due to deterioration in the quality of the maërl beds caused by the deposition of pseudofaeces and/or extensive algal cover on the beds, the presence of negative indicator species such as the opportunistic ascidian *Asciidiella aspersa*, and the presence of the invasive alien *Sargassum muticum*.



MERC



OVERALL STATUS: **BAD** ▼

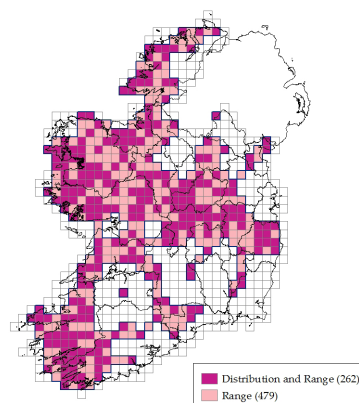
1400 WHITE CUSHION MOSS (*Leucobryum glaucum*)

ANNEX V

White Cushion Moss (*Leucobryum glaucum*) is a densely tufted moss, forming glaucous green cushions which can extend to one metre across and to 15 cm high. The plant can hold water like a sponge. Male and female parts are on separate plants and this species rarely produces sporophytes in Ireland. It grows in acidic woodland and mires, including wet heath, raised and blanket bog, and is widely distributed throughout Ireland. Although some of the habitats in which the species occurs are impacted by pressures, there is enough habitat of sufficient quality to support the species and there is no evidence that pressures are operating to compromise the status of this species. Therefore this species has been assessed as Favourable, as in the previous assessment, with a stable trend.



Neil Lockhart



OVERALL STATUS: FAVOURABLE =

1409 SPHAGNUM SPECIES

Sphagnum mosses are the key peat-forming species in most acid bogs, including Raised bogs and blanket bogs, and can occur in a variety of other wetland habitats such as wet heaths, wet woodland, transition mires and alkaline fens. These mosses usually form carpets or hummocks made up of vertically growing shoots and can hold up to twenty times their own dry weight in water. Their morphology depends on the wetness and exposure of the habitat but all require high rainfall to survive. There are 32 *Sphagnum* species recorded from Ireland out of a total of 55 known species recorded in Europe. Collection of *Sphagnum* spp. is unlikely to pose a conservation problem. However, although this genus occurs in many widespread habitats, the condition of these habitats is considered to be inadequate due to pressures such as peat extraction, drainage and eutrophication and as a result the taxon's future prospects are rated as Inadequate. The Overall Status for the group is thus Inadequate.

ANNEX V



Robert Thompson

OVERALL STATUS: **INADEQUATE** =

1413 LYCOPodium GROUP

Clubmosses (family Lycopodiaceae) are an ancient group of vascular plants that, like ferns, produce spores rather than seeds. In Ireland four species of Clubmoss are included under the *Lycopodium* sub-group: *Diphasiastrum alpinum* (Alpine Clubmoss), *Huperzia selago* (Fir Clubmoss), *Lycopodium clavatum* (Stag's-horn Clubmoss) and *Lycopodiella inundata* (Marsh Clubmoss). The first three occur on upland heaths, bogs and rocky areas, while *Lycopodiella inundata* is a lowland species, found on lake margins and on open patches on peaty soil in heathland, flushes and bog. *Huperzia selago* is the most widespread and frequently occurring of the four. *Diphasiastrum alpinum* and *Lycopodium clavatum* are much less common and are largely restricted to high mountain sites. *Lycopodiella inundata* is the rarest of the four species. There is no evidence of the exploitation or commercial collecting of any of these species in Ireland.

The Overall Status of the *Lycopodium* sub-group is assessed as Unfavourable-Inadequate. This is based on unfavourable assessments for the Habitat for the species and Future prospects parameters for *Huperzia selago* and *Lycopodium clavatum*. *Lycopodium clavatum* also received an unfavourable assessment for Population. The overall trend in conservation status was assessed as stable.

ANNEX V



Orla Daly

OVERALL STATUS: **INADEQUATE** =

1378 CLADONIA SUBGENUS CLADINA

The former genus *Cladina* is no longer recognised as a taxonomically valid unit, even as a subgenus, consisting as it does of at least two unrelated groups, with a similar morphology derived by convergent evolution, and it is more useful to refer to the group here as the Reindeer Lichens. Currently there are four species of Reindeer Lichen confirmed from Ireland: *Cladonia arbuscula*, *C. ciliata*, *C. portentosa* and *C. rangiferina*. A fifth species, *C. azorica*, also occurs but further research is required to clarify if Irish and British *C. azorica* comprises a new taxon. *C. portentosa* and *C. ciliata* are the commonest and most widespread of the five species in Ireland, followed by *C. arbuscula* and *C. rangiferina*. *C. azorica* is the rarest of the five, having been recorded from only two locations.

No evidence of the exploitation/commercial collecting in Ireland of any of the Reindeer Lichen species has been found. Reindeer Lichens, collectively, are found on low-productivity acid soils, predominantly on drier soils but extending on to drier bog peats. They are poor competitors with vascular plants and require habitats where vascular plant vegetation is naturally suppressed and low, or set back by periodic fires or by grazing. They are particularly poor competitors with grasses and are mainly found in heath and bog with low grass productivity. In Ireland they occur in a wide range of habitats, including dry heaths, wet heaths, alpine and subalpine heaths, raised bogs, blanket bogs, siliceous screes, rocky slopes, fixed coastal dunes, dune heaths, mature vegetated shingle and on rocks, including in old Oak woodland.

The Overall Status of this taxon is Inadequate due to pressures on the habitats in which it occurs. This is unchanged since the previous reporting period.

ANNEX V



Roy Anderson

OVERALL STATUS: **INADEQUATE** =

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

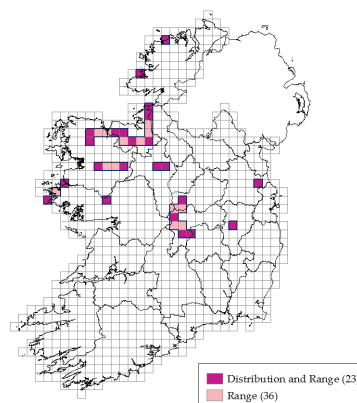
The whorl snails are amongst the smallest of the Irish land molluscs, ranging in size from 1.7 to 2.7mm in height and 1 to 1.5mm in width. *Vertigo geyeri* is consistent in where it lives, within the saturated and decaying roots of small sedges and associated fen mosses. It is stringent in its requirement for saturated water conditions in calcareous, groundwater-fed flushes. This microhabitat is generally found in mosaics of suitable patches that are often only a few square metres within wider fen habitats, which in Ireland can occur within habitats as diverse as raised bog lags, transition mires, lake shores, hill or mountain slopes, and wetlands associated with coastal dunes and machair. It requires open habitat that prevents succession by shade-loving plants and more competitive shade-loving snails. *V. geyeri* is particularly sensitive to changes in hydrology. Within its macro-habitat, *V. geyeri* needs constancy of hydrological conditions, but with enough variation to provide refugia for the meteorological extremes that the habitat must endure.

V. geyeri is found locally in calcareous fens in central Ireland and more widely in western coastal counties from Galway to Donegal. It is considered to be under threat in Ireland and was assessed as Vulnerable on the Irish Red List.

The Overall Status of *V. geyeri* is assessed as Bad and deteriorating. Grazing levels are considered critical at many sites, the species requiring areas of short vegetation within larger areas of wetland habitat, and given the small size of most sites, damage can happen very quickly. The species is considered very sensitive to changes in hydrology and this has been implicated in causing some of the losses from sites during the current and earlier reporting periods.



Roy Anderson



OVERALL STATUS: BAD ▼

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

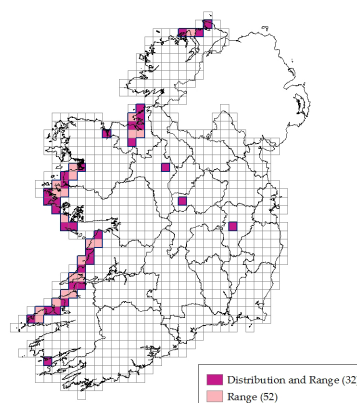
Vertigo angustior is one of eight species of whorl snail living in Ireland. The whorl snails are amongst the smallest of the Irish land molluscs, ranging in size from 1.7 to 2.7mm in height and 1 to 1.5mm in width. The shells of *V. angustior* are reddish-coloured with fine vertical raised lines (striations). The mouth of the shell is on the left when viewed from the front as the shell is sinistrally coiled, which is unusual in Irish molluscs. Its distribution is primarily western, mainly found on the Atlantic-facing dune systems from Kerry to Donegal. It is considered to be under threat in Ireland and Europe and was assessed as Vulnerable on the Irish Red List.

All whorl snails favour damp or wet habitats, where they live mostly in moss, leaves and decaying vegetation, and feed on bacterial films and decaying vegetation. *V. angustior* occurs in a variety of habitats including dune and coastal grassland, fen, marsh, saltmarsh and floodplains. Despite the wide range of habitats, the exact conditions it demands are rare; much of the habitat that is "almost correct" is devoid of the snail, while in other sites the appropriate ecotone is restricted to a narrow band only a few metres wide.

The Overall Status of *V. angustior* is Inadequate and deteriorating. Grazing is critical for the maintenance of the habitat of *V. angustior*, especially on the extensive sand dune populations. These habitats are easily modified by inappropriate grazing, changes in stocking type and the impact of wild herbivores, especially rabbits. Sand dune systems have been impacted by leisure activities – caravan sites and golf courses, mainly – and expansion of these activities has exerted significant pressure on some large sites.



Roy Anderson



OVERALL STATUS: INADEQUATE ▼

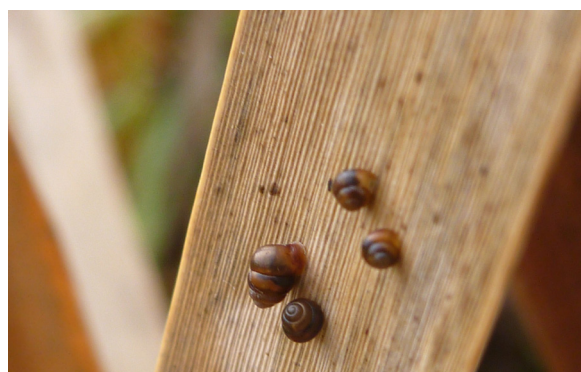
1016 DESMOULIN'S WHORL SNAIL (*Vertigo moulinsiana*)

Vertigo moulinsiana is the largest of all the *Vertigo* species, growing to between 2.2 and 2.7mm in height. All whorl snails favour damp or wet habitats, where they live mostly in moss, leaves and decaying vegetation. They feed on bacterial films and decaying vegetation. *V. moulinsiana* lives on living and dead stems and leaves of tall wetland plants. It has a requirement for tall structured vegetation containing tall riparian grasses and sedges, particularly reed sweet-grass (*Glyceria maxima*), common reed (*Phragmites australis*), greater pond-sedge (*Carex riparia*) and great fen-sedge (*Cladium mariscus*).

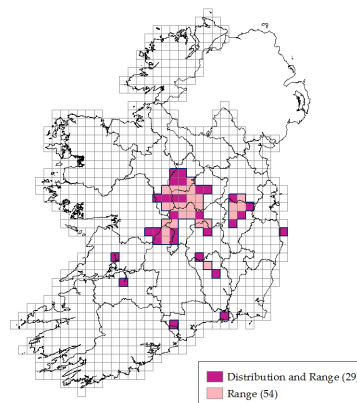
Sites are usually at the end of hydrosere succession and unmanaged, allowing the build-up of litter. As well as the tall vegetation structure of the habitats, *V. moulinsiana* requires a stable hydrology with the water table at, or slightly above, the ground surface for much of the year and very low-amplitude seasonal flooding. It climbs tall vegetation in the summer and autumn, but in severe conditions aestivates on the lower leaves of plants. In winter it descends to the litter level and becomes less active.

Populations of *V. moulinsiana* are found widely in central and southern Ireland. It is found mainly in calcareous, lowland wetlands, especially swamps, fens and marshes bordering rivers, canals, lakes and ponds. *V. moulinsiana* is considered to be under threat in Ireland and Europe and was assessed as Endangered on the Irish Red List.

The Overall Status of *V. moulinsiana* is assessed as Inadequate and deteriorating. The main pressures are associated with natural succession resulting in species composition change and drying out of the habitat. The sites are mainly unmanaged because of their natural wetness, so grazing and mowing are less significant on a national scale and equally should be easily rectified in the short and medium term.



John Brophy



OVERALL STATUS: **INADEQUATE**



1024 KERRY SLUG (*Geomalacus maculosus*)

The Kerry slug adults vary in colour from black with white spots to brown with cream spots. The black form is found in open habitat and the brown form in woodland. Colour variation is related to the amount of dark pigment in their bodies and animals produce more dark pigment in more open habitat in response to increased insolation.

The Kerry slug occurs in two main habitats: woodland, and blanket bog / wet heathland. It only occurs on acidic geology, mainly on Devonian Old Red Sandstone in Ireland. The slugs are found on trees in woodland and on boulders in the open habitats, and feed on mosses, lichens and liverworts.

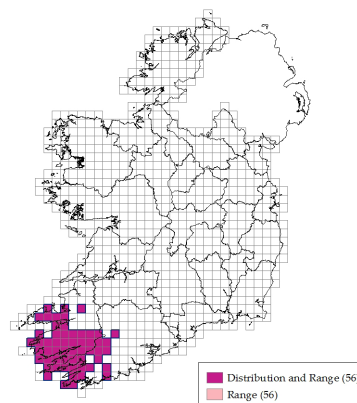
The slug emerges to feed in very damp and humid conditions, on very cloudy warm damp days either during or after rain, or at dawn, dusk and during the night if it is not too cold or dry. In a 2011 study, the number of slugs seen in open habitats was correlated to the amount of previous rainfall, with fewest seen when conditions were dry. Peak numbers of slugs were detected during autumn in the open habitats. However even in the middle of summer, wet periods would allow slugs to become active. In woodland habitat, slugs could be seen throughout the year but highest numbers were recorded in spring.

Studies have shown that the Kerry slug can be abundant on conifer trees. The species will also recolonise boulder habitat when the wood is clear-felled.

The Overall Status is Favourable and improving, driven in part by the large populations in conifer plantations.



Roy Anderson



OVERALL STATUS: **FAVOURABLE**



1029 FRESHWATER PEARL MUSSEL, INCORPORATING NORE PEARL MUSSEL

Margaritifera margaritifera, *M. margaritifera durrovensis*

ANNEX II, V

The freshwater pearl mussel (*Margaritifera margaritifera*) is a large, long-lived, bivalve mollusc found in clean, fast-flowing rivers. Individuals can grow to very large sizes relative to other freshwater molluscs, slowly building up thick calcareous shells in rivers with relatively soft water and low levels of calcium. Individual mussels can live for over a hundred years in Ireland. Previously the River Nore pearl mussel (*Margaritifera durrovensis*) was reported separately; however, genetic research has since placed the Nore population within the *Margaritifera margaritifera* taxon (*M. m. durrovensis*).

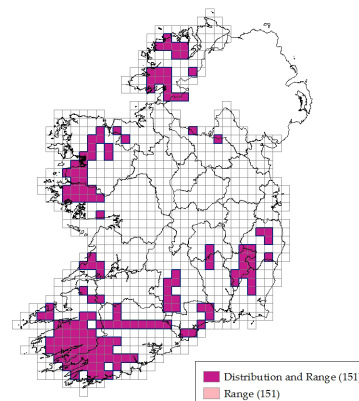
The freshwater pearl mussel has a complex life cycle. Mussels mature at 7-15 years of age, and have a prolonged fertile period lasting into old age. The species produces glochidial larvae that use a temporary salmonid host, typically Atlantic salmon and sea trout in Ireland, but also brown trout. Juvenile mussels occupy interstitial habitats in the river bed for five years or more.

The species is critically endangered in Ireland and across Europe, mainly because of habitat deterioration: a combination of hydrological and morphological changes, sedimentation and enrichment. In many rivers, adult mussels have become stressed and are prematurely dying owing to habitat deterioration, while in others, riverbeds have become too clogged with silt, algae and rooted plants for young mussels to survive. The pressures come from a wide variety of sources (e.g. pollution from urban wastewater, development activities, farming and forestry), often quite removed from the species' habitat. Direct impacts also arise from in-stream works such as channelisation, bridge repairs / construction and recreational fishery structures. Flow changes, caused by activities such as land drainage, have been highlighted as an important contributor to the species' demise.

The Overall Status of *M. margaritifera* is Bad and deteriorating, unchanged since the 2013 assessment.



Evelyn Moorkens



OVERALL STATUS: **BAD** ▼

1092 WHITE-CLAWED CRAYFISH (*Austropotamobius pallipes*)

ANNEX II, V

The white-clawed crayfish (*Austropotamobius pallipes*) is the largest freshwater arthropod found in Ireland. The species prefers relatively cool temperatures and adequate dissolved oxygen and lime, although tolerating significant fluctuations in these parameters. Habitat heterogeneity is important; juveniles live among submerged tree roots, gravel or macrophytes, while larger crayfish must have stones to hide under, or an earthen bank in which to burrow. The species is omnivorous, with juveniles more reliant than adults on animal foods.

The white-clawed crayfish is generally associated with good quality waters but in Ireland it can occur in water of lower quality. It is now generally considered as a keystone or heritage species rather than as a bioindicator, because of its traditional importance and its large size, longevity and dominant position in the ecosystem.

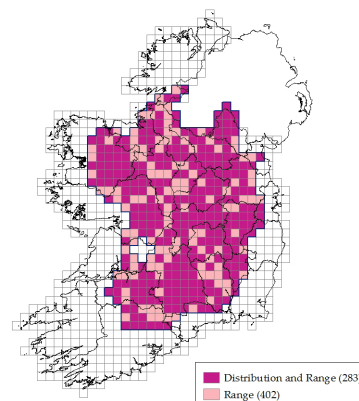
In most of its range, white-clawed crayfish is found principally in first-order streams, but in Ireland it extends from the smallest streams and drains to large rivers and medium-sized lakes wherever there is sufficient lime. The distribution in Ireland reflects this need for lime as it is widespread in central Ireland but absent from areas with acidic geology such as Kerry and west Cork, the west of Galway and Mayo, and Donegal.

White-clawed crayfish faces an existential threat from twin impacts of non-indigenous crayfish species (NICS) and Crayfish Plague which is a water-borne disease specific to freshwater crayfish caused by the oomycete *Aphanomyces astaci*. NICS impact the White-clawed Crayfish through direct predation and competition but also act as carriers of Crayfish Plague.

The Overall Status of the species is Bad with a deteriorating trend. This represents a genuine decline since the last reporting period and is mainly due to bad Future prospects for the species due to the presence of the Crayfish Plague organism across six catchments.



Brian Nelson



OVERALL STATUS: **BAD** ▼

1065 MARSH FRITILLARY (*Euphydryas aurinia*)

The marsh fritillary (*Euphydryas aurinia*) is an attractive butterfly with chequered wings marked in brown, orange, black and white. The adults have a short flight period of 4-6 weeks in May and June but the larval stage lasts nine months. The brown-black spiny caterpillars live communally in a silken web that they spin over the leaves of the food plant devil's-bit scabious (*Succisa pratensis*), which they feed on from August until October. During the winter they hibernate together in a small web hidden within the vegetation. The caterpillars emerge from hibernation to resume feeding in February or early March but become increasingly solitary until they pupate in late April, with adults emerging two to three weeks later.

Marsh fritillary requires a low, open sward with abundant *Succisa pratensis*. Colonies in Ireland have been recorded on sand dunes, fens, cutover raised bogs, blanket bogs, wet heaths, unimproved wet, neutral or calcareous grasslands, calcareous and coastal heaths, sometimes in exposed conditions. Most marsh fritillary sites are in lowland situations below 200m but the species has been recorded up to 350m and perhaps higher in recent years.

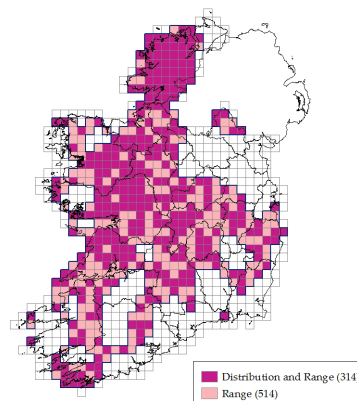
Sites are often on marginal land in upland areas and the edges of wetlands and peatlands which are subject to pressures from agricultural conversion and afforestation. There are also issues where vegetation becomes unsuitable through natural succession. Many management practices create and maintain the short, generally tussocky vegetation that the species requires, including grazing, natural exposure on western islands and coastal headlands, wet and low-nutrient ground conditions, and disturbance in the recent past (for example burning or peat extraction).

The Overall Status of the species is Inadequate but improving. There has been genuine spread into areas where there have not been previous records.

ANNEX II



Brian Nelson



OVERALL STATUS: **INADEQUATE**



1095 SEA LAMPREY (*Petromyzon marinus*)

The life cycle of the sea lamprey (*Petromyzon marinus*) contains both a marine phase and a freshwater phase. Adult sea lamprey living as external parasites on host fish or marine mammals at sea grow in length from 60 to 100cm before migrating in spring into freshwater to excavate redds or spawning nests in gravelled areas of large rivers. Upriver migration occurs at a time of falling water levels and substantial spawning activity has been recorded in gravelled areas downstream of large weirs in the major Irish rivers. Sea lamprey spawning has been recorded in the upper reaches of the River Laune, where there are no barriers to upstream migration. Substantial areas of gravel suitable for spawning have been recorded in SAC main stem rivers but low utilisation of these areas by spawning sea lamprey has been recorded, both up- and downstream of barriers to migration.

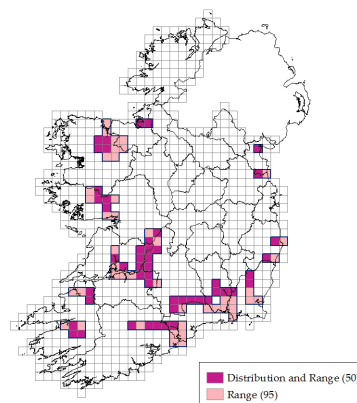
Egg laying follows nest excavation and the resulting larvae, called ammocoetes, hatch out within days. These swim or drift downstream to areas of fine sediment into which they can burrow. The ammocoete retains its burrowing habit in fine-grained sediment over a period of years. Transformation to the young adult stage occurs in late summer and the juvenile sea lamprey can be found migrating downriver to estuarine waters and the open sea in late autumn-winter.

The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. Barriers to upstream migration (e.g. weirs) are considered the major impediment to good conservation status for sea lamprey as these limit access to spawning beds and juvenile habitat. The Overall Status of this species is assessed as Bad with a stable trend, unchanged since the last 2013 assessment.

ANNEX II



Eddie Dunne



OVERALL STATUS: **BAD**



1096 BROOK LAMPREY (*Lampetra planeri*)

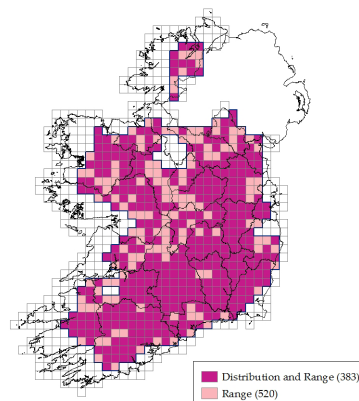
The brook lamprey (*Lampetra planeri*) is the smallest of the three lampreys recorded in Ireland, typically reaching no more than 15-18cm in length. Unlike the sea lamprey (*Petromyzon marinus*) and the river lamprey (*Lampetra fluviatilis*), the brook lamprey is non-parasitic and non-migratory as an adult, living its entire life in freshwater. Adults spawn in spring, excavating shallow nests in relatively small-sized gravels in areas of reduced flow. After hatching, the larvae ('ammocoetes') drift or swim downstream to areas of river bed or margins with fine silt deposits. They burrow into this substrate and live as filter feeders over a period of years before transforming into young adult fish. The young adults overwinter before migrating short distances upstream to gravelled areas where they spawn. The adult fish die after spawning.

River and brook lamprey are indistinguishable as larvae, living as filter feeders in sediment. Mature adult forms are, however, clearly distinguishable based on body size. Brook lamprey and river lamprey are considered by many in the same context as the brown trout / sea trout pairing, with a similar absence of genetic discriminators.

Lamprey surveys in Ireland have necessarily focused on ammocoete abundances and to a lesser extent upon observations of adult spawning events. Distribution records can only be definitively assigned to one species or the other where adult records exist. For brook lamprey in Ireland there are extensive areas of suitable habitat and no significant pressures impacting this species. The Overall Status is therefore assessed as Favourable.



Eddie Dunne



OVERALL STATUS: FAVOURABLE =

1099 RIVER LAMPREY (*Lampetra fluviatilis*)

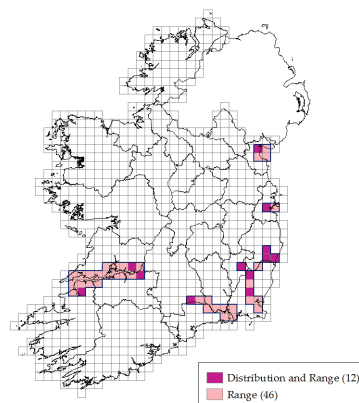
The river lamprey (*Lampetra fluviatilis*) breeds in freshwater rivers and streams. Adults spawn in spring, excavating shallow nests in riverine sections comprising fine gravels and small stones. After hatching, the larvae or 'ammocoetes' drift or swim downstream to areas of river bed or margins with fine silt deposits. They burrow into this bed material where they live as filter feeders over a period of years before transforming into young adult fish and migrating downriver to estuarine and marine habitats. As adults they are parasitic, attaching to and feeding on larger fish in coastal waters. They can grow up to 25-30cm at maturity, at which stage they return to freshwater habitats to spawn. The adult fish die after spawning.

River and brook lamprey are indistinguishable as larvae. The mature adult forms are, however, clearly distinguishable based on body size. The two types of lamprey are considered by many in the same context as the brown trout / sea trout pairing, with a similar absence of genetic discriminators.

The inability to distinguish between river lamprey and brook lamprey larvae, and the challenges associated with sampling for adult river lamprey, means that an evaluation of their actual range and population size cannot be undertaken. The Overall Status for river lamprey is therefore assessed as Unknown. The previous reporting period used primarily juvenile *Lampetra* sp. distribution data for this species.



Sean Rooney



OVERALL STATUS: UNKNOWN

5046 KILLARNEY SHAD (*Alosa killarzensis*)

The Killarney shad (*Alosa killarzensis*) is unique to Ireland and is only recorded in Lough Leane in Killarney. For this reason it is listed in the Irish Red Data Book as Vulnerable. Anecdotal reports and observations indicate that the species spawns within Lough Leane along shallow gravelled shores and on gravel shoals adjoining the various islands. The adult fish live in shoals in the lake, feeding on zooplankton. Thus the full life cycle is undertaken within the lake. The species is considered to derive from ancestral post-glacial populations that became isolated in the lake. Lough Leane has unimpeded connectivity to the transitional waters of Castlemaine Harbour via the River Laune but the species has never been found outside Lough Leane.

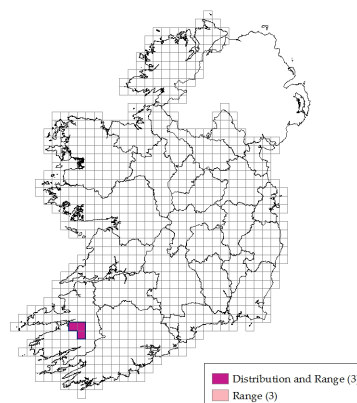
The continual presence of adult fish in successive fish surveys indicates an ongoing successful spawning effort. The continued absence of pike and introduced species from L. Leane is crucial to the continued success of Killarney shad: any disruption of the ecology of the lake could be detrimental to the species.

L. Leane has been subject to considerable pressure, primarily due to nutrient enrichment: the seasonal increase in human population at Killarney that occurs each summer puts pressure on water supply and leads to increased waste production for the local waste water treatment works. The Killarney shad population appears to have survived impacts of eutrophication in the 1970s and early 1980s. However, the potential for adverse impact on L. Leane from anthropogenic eutrophication, particularly in combination with reduced summer water levels, remains.

The entire range of the Killarney shad is protected within Killarney National Park. The Overall Status is assessed as Favourable, as it has been in the last two assessments.



Emma Morrissey



OVERALL STATUS: **FAVOURABLE** =

1103 TWAITE SHAD (*Alosa fallax*)

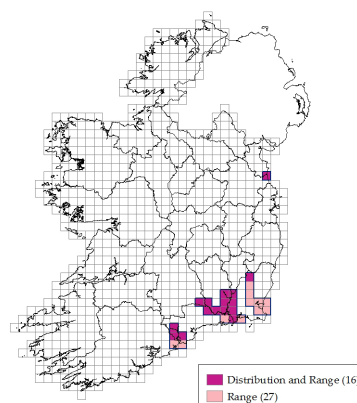
The twaite shad (*Alosa fallax*) spends most of its life in estuaries and coastal waters but returns upriver to spawn in late May / early June. The fertilised eggs hatch after a short period and juveniles can reach up to 100mm at the end of the first year. Limited knowledge indicates that Irish twaite shad may live in estuarine waters for at least two full years prior to going to sea. Migrating adults have been identified in four rivers in the south / south-east of Ireland. Spawning was confirmed during the 2013-2018 period at the upper tidal limits of these rivers, with eggs and juveniles recorded. There are sporadic records of twaite shad from a small number of other rivers along the east, south and west coasts, but spawning has not been confirmed at any of those locations. The number of incidental twaite shad records is much reduced due to stricter control of commercial salmon fishing in Irish estuaries.

Habitat extent is considered adequate to carry a larger population than currently recorded. However, there are concerns regarding habitat quality, especially at spawning sites. A number of pressures were identified, mainly relating to pollution, alteration of flow patterns, and habitat disturbance. Introduced species were also recorded, with a large population of the Asian clam (*Corbicula fluminea*) recorded within kilometres of the twaite shad spawning ground on the River Barrow. Furthermore, barriers to migration, such as weirs, can impede or prevent twaite shad accessing spawning habitat, and can also increase the potential for hybridisation between converging populations of twaite and Allis shad simultaneously obstructed below barriers.

The Overall Status of this species is assessed as Bad with a stable trend, unchanged from the previous assessment.



William Roche



OVERALL STATUS: **BAD** =

5076 POLLAN (*Coregonus pollan*)

Pollan (*Coregonus pollan*) is a species of whitefish unique to the island of Ireland. It is found in three large lakes on the River Shannon – Lough Derg, Lough Ree and Lough Allen – as well as Lough Erne and Lough Neagh in Northern Ireland. With the exception of L. Neagh, these lakes are characterised by significant areas of deep water where the fish retreats during warm weather. The pollan feeds on a mix of plankton, insect larvae and some benthic food items. They may make diurnal feeding movements up and down the water column. Spawning is thought to occur on gravelled areas in the shallow exposed lake shores in December-January. Visual surveys on Lough Ree and Lough Allen have indicated the presence of extensive areas of suitable spawning grounds – exposed shorelines around headlands and islands with shallow-water littoral beds of gravels.

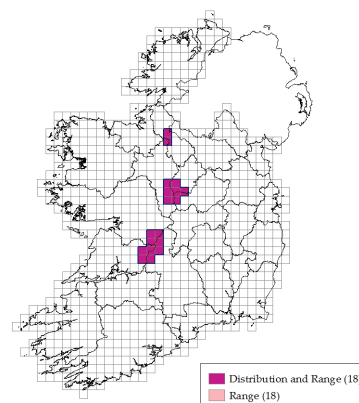
Pollan once constituted a significant proportion of fish biomass in the Shannon lakes. Acoustic and netting population estimates for this reporting cycle have identified a gradient of decreasing pollan density from the upper to lower Shannon lake systems. Pressures identified for the species include pollution due to agricultural fertiliser application and urban waste water discharge. Invasive species, specifically zebra mussel (*Dreissena polymorpha*) and Asian clam (*Corbicula fluminea*), have also been identified as a significant pressure. Water level regulation may become a concern, as significant alterations or fluctuations in water surface level could have a severe impact on the success of pollan spawning or on the survival of the newly-released fertilised eggs. Introduced fish species, namely perch and roach, are a substantial component of the fish community in these lakes and may compete with pollan for food.

The Overall Status is assessed as Bad, as in the previous two assessments, but the trend is now known to be stable.

ANNEX V



Emma Morrissey



OVERALL STATUS: BAD =

1106 ATLANTIC SALMON (*Salmo salar*)

The Atlantic salmon (*Salmo salar*) is indigenous to the North Atlantic, extending in an arc from northern Portugal in the east to the north-eastern United States in the west. The Irish population generally comprises fish that spend usually two years as sub-adults in freshwater before going to sea as smolts. The majority of fish spend one winter at sea before returning to their natal rivers, mainly during the summer, as grilse. Smaller numbers spend two winters at sea, returning mainly in spring, hence "spring" salmon. A small proportion of the adult population returns to the sea post-spawning and can return to spawn again.

The survival of salmon during the marine phase of its lifecycle has been identified as the key determinant of trends in population size in natal rivers. Known pressures include exploitation at sea in commercial fisheries, interceptory fisheries in coastal waters, aquaculture and predation. In addition, the negative influence of climate change on food prey structure and abundance has increasingly been attributed to the declines observed in stocks at sea. Within river systems, variation in individual stock abundance can be influenced by a variety of factors, notably alterations in physical habitat, water quality, environmental factors, predation, and angling and commercial fisheries exploitation pressure.

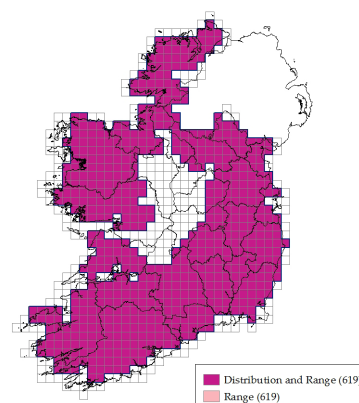
There is considered to be sufficient habitat in Ireland to support a viable salmon population. Freshwater quality in Ireland continues to remain a concern but ongoing pressures linked with habitat quality are not considered to be compromising the viability of the species.

The Overall Status is assessed as Inadequate, the same as the last assessment. Although a short-term negative trend is reported for this species, the trend has reversed in the last 5 years. Therefore an overall stable trend is reported.

ANNEX II, V



Mike Brown



OVERALL STATUS: INADEQUATE =

6284 NATTERJACK TOAD (*Epidalea calamita*)

The natterjack toad (*Epidalea calamita*) is widespread across continental Europe but lives at the edge of its climatic range in Ireland. It is confined to a handful of coastal sites around the Dingle and Iveragh peninsulas in West Kerry, with one translocated population in Wexford.

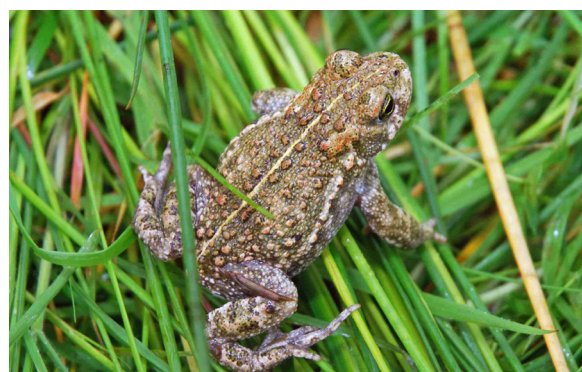
The natterjack toad emerges from hibernation in late March / early April. The protracted breeding season can continue into June. Mating pairs form and eggs are laid in strings. In warm weather the resulting tadpoles can develop quickly and emerge onto land within 8-10 weeks. The toad is adapted to temporary water bodies; while dry years lead to mass mortalities of tadpoles due to pond desiccation, good years can see large numbers of strings laid and thousands of juveniles emerge successfully. Consequently, significant population fluctuations can be apparent between years.

Natterjacks do best in warm, open grassy habitat such as dunes and coastal grasslands. They are most active at night and will forage until late autumn, feeding on terrestrial invertebrates such as spiders and beetles. As nights get colder, natterjacks retreat to frost-free refuges where they hibernate over winter.

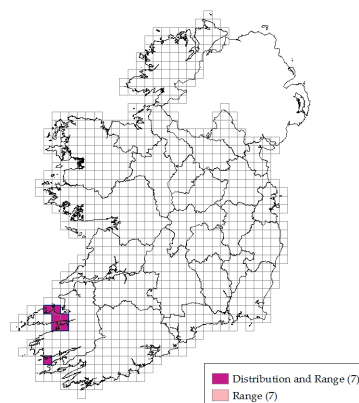
Poor water quality is the most common pressure on the species, followed by lack of grassland management and predation of tadpoles and eggs by invertebrates. Also of concern are ponds becoming overgrown with emergent vegetation, making them unsuitable for breeding. Invasive species – New Zealand pigmyweed (*Crassula helmsii*) and sea-buckthorn (*Hippophae rhamnoides*) – can also cause problems for the toad.

Due to historical declines in range, the Overall Status of the natterjack toad is Bad, as in the previous two assessments. The change in overall trend (from increasing to stable) reflects the most recent survey data, which indicate that the uptake of constructed ponds has not continued at the rate seen in the previous report.

ANNEX IV



NPWS



OVERALL STATUS: **BAD** =

1213 COMMON FROG (*Rana temporaria*)

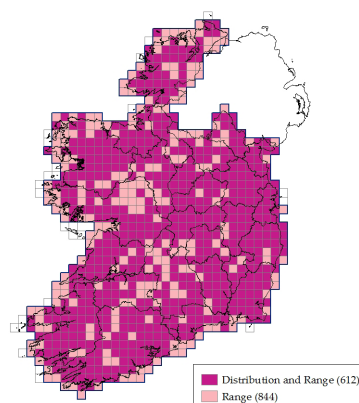
The common frog (*Rana temporaria*) is one of only three amphibians found in Ireland. It is a widespread and very abundant species throughout the country, occurring in a broad range of habitats from upland lakes to coastal dunes and urban gardens. Adults congregate to spawn in ponds, marshes and ditches in the spring. Eggs develop into tadpoles as water temperature rises and, following metamorphosis, young froglets emerge onto land in early summer. These young animals are particularly vulnerable to predation, but adult frogs are also an important prey item for several predators including otters and herons. Young frogs spend 2-3 years on land, feeding on terrestrial invertebrates, before returning to freshwater to breed. Life expectancy of 3-4 years would be typical.

The common frog is a widespread and very abundant species in Ireland. It is found throughout the country, has a broad habitat niche and is adaptable to changes in land practices. The species has colonised garden ponds in urban areas and drainage ditches in agricultural areas. It appears largely unaffected in Ireland by pollution and disturbance. The most recent national survey estimated the population at over 150,000,000 adults, making it one of the most numerous vertebrates in the country. No significant threats to the frog population have been identified. Overall Status is considered to be Favourable.

ANNEX V



Joan O'Neill



OVERALL STATUS: **FAVOURABLE** =

1223 LEATHERBACK TURTLE (*Dermochelys coriacea*)

The leatherback turtle (*Dermochelys coriacea*) is the most widely distributed living reptile species, being found in all oceans except the Southern Ocean. Within the North Atlantic its range extends from the tropics to the high latitudes of Newfoundland right across to Europe's north-westerly fringe. It is a widely roaming species, with individuals making extensive pan-oceanic movements. Breeding is confined to warm tropical regions because of thermal constraints on egg incubation, but the species has many unique anatomical and physiological adaptations that permit it, unlike other marine turtles, to forage seasonally into cooler temperate waters. Consequently, leatherback populations have a very dynamic range. During the summer months their range is at its greatest extent with individuals located throughout the North Atlantic, whereas during the winter months their range is restricted to areas where the sea surface temperature is $>15^{\circ}\text{C}$.

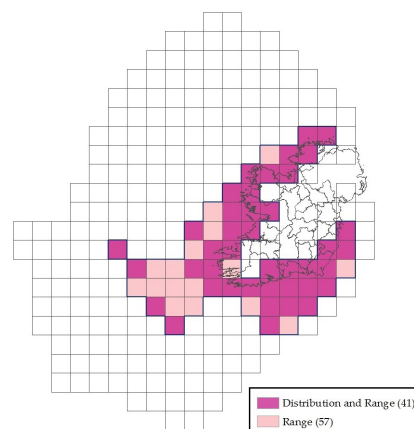
Recent studies have shown that after nesting in the tropics the majority of North Atlantic leatherbacks head north towards cooler temperate waters. Some of these individuals head north towards the North-East Atlantic and Irish waters where they forage on jellyfish for the summer months before turning south again in the autumn as water temperatures decline.

There are significant difficulties associated with reporting on this species. Despite some recent progress, the population ecology, range and habitat utilisation of this species in the North-East Atlantic are not well understood. Although there is evidence of significant declines of leatherbacks in the Pacific, there are some indications that the Atlantic populations may be faring better, with recent surveys suggesting that numbers of females may be increasing at some nesting beaches. Nonetheless, mortalities of nesting adults and juveniles is a cause for concern in some areas and fishing causes further mortality during the animal's trans-Atlantic migrations. The Overall Status of this species is assessed as Unknown.

ANNEX IV



Ferdia Marnell



OVERALL STATUS: UNKNOWN

1303 LESSER HORSESHOE BAT (*Rhinolophus hipposideros*)

The lesser horseshoe bat (*Rhinolophus hipposideros*) is widely distributed through western, central and southern Europe and as far east as Kashmir, northern Africa and Arabia. Ireland represents the most north-westerly limit of the species' distribution and here it is confined to six west coast counties: Mayo, Galway, Clare, Limerick, Cork and Kerry.

Lesser horseshoe bats are faithful to their roosts and will return to the same site each year. Summer roosts are often in the attics of old or derelict buildings. Hibernation sites are typically in caves, souterrains, cellars and icehouses. Lesser horseshoes rely on linear landscape features (e.g. treelines, stone walls and hedgerows) to navigate and commute from roosts to feeding sites and seldom fly out in the open. This species forages on flying insects predominantly in deciduous woodland and riparian vegetation, normally within a few kilometres of their roosts.

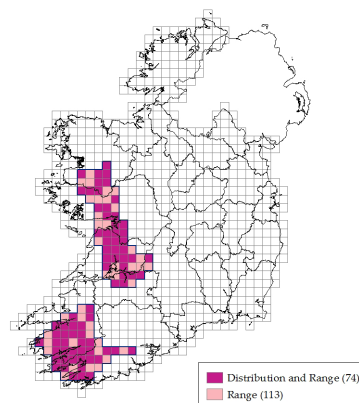
The lesser horseshoe bat has been extensively surveyed in Ireland over the last 30 years. That said, new roosts are occasionally found and there are certainly hibernation sites that are still unknown. There is also a network of night roosts which individual or small numbers of bats may occasionally use and these have not been comprehensively surveyed or documented.

The population overall is doing well; monitoring has demonstrated significant increases in numbers in the core areas. Over much of its distribution, both range and the area of suitable habitat have remained stable. In Limerick and North Kerry, however, worrying declines in habitat, and consequently in range, have been observed. These are considered likely to continue without significant intervention. For these reasons, Habitat, Range and their associated Future prospects, which were all considered to be Favourable in the last report, are now considered Inadequate, and the Overall Status of this species is assessed as Inadequate and declining.

ANNEX II, IV



Sinead Biggane



OVERALL STATUS: INADEQUATE

1309 COMMON PIPISTRELLE (*Pipistrellus pipistrellus*)

The common pipistrelle (*Pipistrellus pipistrellus*) is one of Ireland's smallest mammals. It is widespread throughout the country and commonly encountered during bat surveys, although it may be less common or even absent from some parts of the western fringes. It is very general in its habitat preference, foraging in woodland, riparian habitats and parkland, along linear features in farmland, and in towns and cities. Some association with broadleaved woodland and riparian habitats at a local scale have been identified, while mixed forestry may be more important at a wider scale in the landscape. Only areas of bog, marsh and heath appear to be avoided.

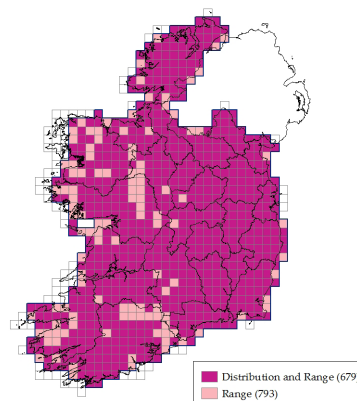
Maternity roosts of this species are often in buildings, typically in the attics of dwelling houses, although it is occasionally found roosting under bridges and in trees. Bats normally disperse in autumn and hibernate over winter. This species has rarely been found hibernating in Ireland, but the available records for bats in winter are from modern dwelling houses.

This species has a very wide distribution across the island including some off-shore islands and there is no evidence of any decline in range or in habitat. The most recent estimates suggest a population size in the order of 1-2 million animals, making it one of the most common mammals in Ireland. Ongoing car-based bat monitoring indicates that the population is increasing. Furthermore, there is no indication of any major pressures currently impacting populations and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE ▲

5009 SOPRANO PIPISTRELLE (*Pipistrellus pygmaeus*)

The soprano pipistrelle (*Pipistrellus pygmaeus*) is present across much of central Europe and into southern Scandinavia and Greece, but may be absent from parts of France and southern Italy. It is the most widespread bat species on the island of Ireland, occurring in all counties including the extreme north, west and south. It is the second most commonly encountered species in the national bat monitoring programme, although its abundance is variable across the island with no particular north-south or east-west pattern apparent.

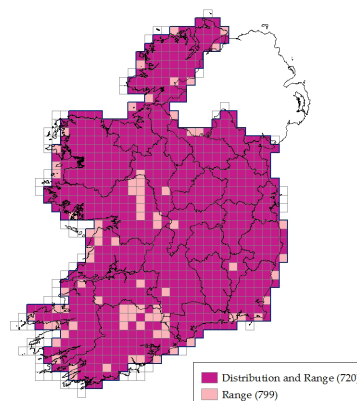
Summer roosts are usually in buildings, including modern suburban houses, old abandoned mansions, churches, amenity buildings and farm sheds. Bat boxes are also used. Soprano pipistrelles normally roost in very confined spaces, such as behind window sashes, under tiles and weather-boards, behind fascia and soffits, and within the cavities of flat roofs. Roosts of more than 1,500 individuals are known. The species is thought to hibernate in buildings and trees, but has seldom been recorded in winter. Although this bat is known to forage in a broad range of habitats, it shows some preference for aquatic habitats – riparian woodland, rivers and lakes.

The most recent estimates put the population of the species at between 500,000 and 1,200,000 individuals. There is no indication of any significant pressures impacting on the species, and numbers appear to be increasing. The Overall Status of the species is therefore assessed as Favourable and improving, the same conclusion as the previous assessment.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE ▲

1317 NATHUSIUS' PIPISTRELLE (*Pipistrellus nathusii*)

The Nathusius' pipistrelle (*Pipistrellus nathusii*) was recognised as a resident bat species on the island of Ireland following the discovery in 1997 of a maternity colony of 150 bats in Northern Ireland. The first bat detector records from the Republic of Ireland were made in 1997 and 1998. The initial rapid expansion of this bat across Ireland was captured by annual car transect surveys, but more recent years of this survey suggest the species has not gone on to consolidate its range here; Nathusius' pipistrelle remains rare in the Republic of Ireland, its range is disjunct and its modelled core area of habitat is relatively small.

This is typically a migrant species, found in eastern Europe in summertime and in south-western Europe in the winter. Ireland and the UK appear to lie in a transitional region, with resident bats being supplemented during winter by the migratory individuals returning from the north-east of the species range. An expansion is predicted in the area of suitable habitat for the species up to 2050 with increasing temperatures. To date, however, despite extensive survey work, there has been no maternity roost recorded in the Republic of Ireland; nor have there been any confirmed hibernation records for the species in the Republic of Ireland.

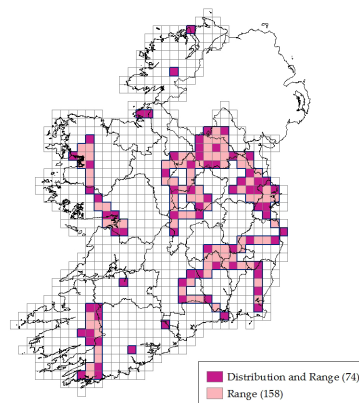
The population of Nathusius' pipistrelle in Ireland is cautiously estimated to be 3,000-5,000 individuals. It remains unclear whether the species is successfully reproducing here and what level of population would be required to ensure long-term viability.

No pressures appear to be acting on the species, and there are many buildings similar to those used by nursery colonies in Northern Ireland, so suitable habitat does not appear to be a limiting factor. However, given the uncertainty about range and population, the Overall Status is assessed as Unknown, unchanged since the last assessment.

ANNEX IV



Frank Greenaway



OVERALL STATUS: UNKNOWN

1322 NATTERER'S BAT (*Myotis nattereri*)

The Natterer's bat (*Myotis nattereri*) is widespread across Europe and found from Portugal and north-west Africa to the Urals and the near East. It is widely distributed in Ireland, though records are relatively scarce.

Summer roosts are normally in old stone buildings or masonry bridges. Usually only small numbers of bats are present, often hidden in narrow spaces where they are difficult to locate. A few larger roosts (>50 bats) have been found in Church of Ireland churches. A number of important autumnal swarming sites have been identified. This species is seldom recorded in winter, but occasionally individuals have been observed in bridges, mines and caves. Detector records are limited due to the difficulty of distinguishing the *Myotis* species.

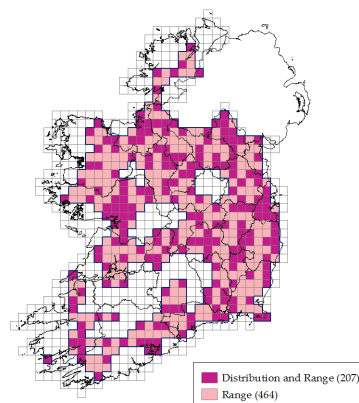
This bat gleans most of its prey (spiders, beetles, caterpillars, moths) from foliage, rather than catching it in the air. Woodland habitats, river corridors and pastures appear to be favoured for foraging.

Building renovation and loss of foraging habitat are potential threats for this species, but are not considered to be significant. There is no monitoring scheme in place for this species, but the most recent Red Data List for Irish Mammals lists Natterer's bat as Least Concern and the Overall Status has been assessed as Favourable, as in the last two assessments.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE 

1314 DAUBENTON'S BAT (*Myotis daubentonii*)

The Daubenton's bat (*Myotis daubentonii*) is found throughout Ireland. It forages over water and is particularly associated with slow-moving rivers and with lakes. It favours waterways with riparian vegetation, particularly broadleaf woodlands, and is positively associated with good water quality and invertebrate diversity. It is less likely to be present where there are street lights. It also tends to avoid areas of peatland and is negatively associated with increasing altitudes. This species forages over the surface of water bodies, gaffing aquatic insects, such as non-biting midges, caddis-flies and mayflies, with its large feet.

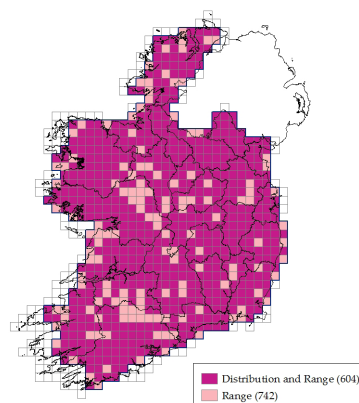
The majority of roosts known for this species are in masonry bridges and old stone buildings such as castles and mills. Confirmed hibernacula for the species are extremely rare in Ireland. Several cave locations have been confirmed as autumnal swarming sites for the species, but it is unknown whether these sites also function as hibernation roosts.

Recent estimates for this species suggest a population size in the order to 57,000-79,000 animals. Ongoing monitoring indicates that the population is stable or even slightly increasing and there is no evidence of decline in suitable habitat. Although some pressures/threats have been noted, there is no indication of any major pressures currently impacting on the species and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE ▲

1330 WHISKERED BAT (*Myotis mystacinus*)

The whiskered bat (*Myotis mystacinus*) is widespread across much of Europe, although it is absent from northern Scotland and northern Scandinavia. There are records from throughout Ireland, from Donegal to Wexford, but the species is not common and its distribution appears to be naturally dispersed and disjunct.

Summer roosts are normally in old stone buildings. Typically only small numbers of bats are present, often between rafters and felt and in other narrow spaces where they are difficult to locate. Bridge roosts have also been recorded. A number of important autumnal swarming sites have been identified, and small numbers of wintering animals have been recorded in caves. Detector records are limited due to the difficulty of distinguishing the *Myotis* species.

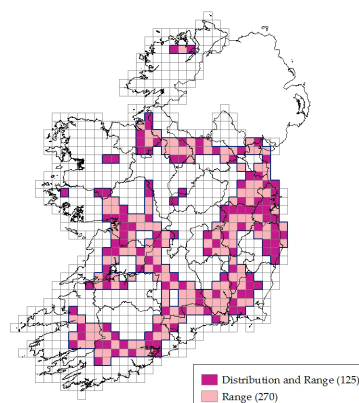
This bat is a woodland specialist, foraging selectively in broadleaved and mixed woodland as well as riparian corridors. In Ireland farmland pasture and wet grassland are also used for foraging.

Building renovation and loss of foraging habitat are potential threats for this species, but are not considered to be significant. There is no monitoring scheme in place for this species, but the most recent Red Data List for Irish Mammals lists whiskered bat as Least Concern and the Overall Status is assessed as Favourable, unchanged over the last two reporting periods.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE =

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

The brown long-eared bat (*Plecotus auritus*) is widely distributed in Ireland and across Europe. Its slow flight limits the distance that this species can travel at night-time and studies have found that almost all bats will forage within 1.5km of the roost. However, its manoeuvrability means that it can access cluttered habitats, and flightless arthropod prey make up a large proportion of its diet, confirming the importance of gleaning as a foraging strategy for the species. Modelling indicates that the brown long-eared bat selects areas with broadleaf woodland and riparian habitats on a local scale, while the presence of mixed woodland at a wider landscape level is also important. It can cope with low levels of urbanisation, but habitats such as bog, marsh and heath are avoided.

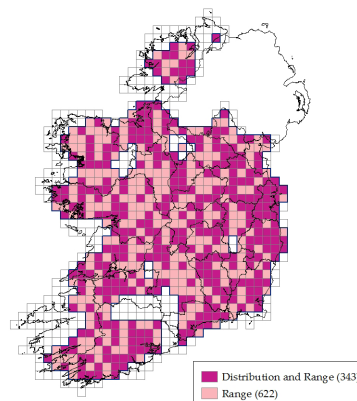
Brown long-eared bats rely heavily on man-made structures for roosting. Most of the roosts recorded in Ireland are in buildings, with very small numbers in bridges, trees and bat boxes, although the natural summer roost of this species across Europe is tree holes. Brown long-eared bats show a high degree of roost fidelity and will often use traditional roosts for generations. While the species has been found in a range of building types, from old mills to bungalows, churches and large mansions typically support the largest numbers.

Recent estimates put the Irish population of brown long-eared bats at 60,000-100,000 animals. Monitoring data suggest a recent significant increase in numbers, and both range and habitat are considered to be stable and favourable. There is no indication of any major pressures currently impacting the population. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE =

1331 LEISLER'S BAT (*Nyctalus leisleri*)

Leisler's bat (*Nyctalus leisleri*) has been described as a 'typically Irish bat' due to its abundance in Ireland compared to the rest of Europe, where it is uncommon or absent. Its abundance in Ireland has been attributed to the absence of larger competing species, such as the closely related noctule (*N. noctula*). On continental Europe, Leisler's bat is considered a tree-dwelling species across most of its distribution. The majority of known roosts of this species in Ireland, however, have been found in buildings, although roost records from trees and bat boxes are also known.

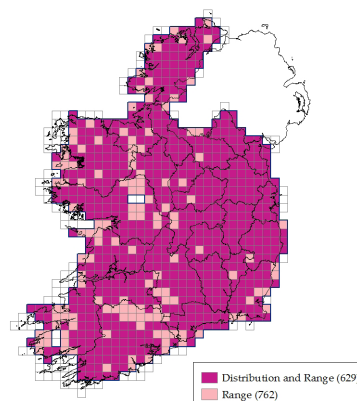
Of all the Irish bat species Leisler's has the most specific maternity roosting habitat requirements. They select sites with adjacent woodland and freshwater and avoid areas of arable land and coniferous woodland. Surveys and modelling of foraging preferences indicate that woodlands, riparian habitats and small amounts of urbanisation are favoured while peatlands and areas of dense urbanisation are avoided.

Leisler's bat is widespread across Ireland, but monitoring indicates it is more abundant in the east and south of the country. The most recent estimates for this species suggest a population size of 60,000-110,000 animals, with monitoring over the last 12 years indicating an increasing trend. Two threats/pressures have been identified and need to be investigated further: wind energy, and the impact on roosts associated with deliberate/accidental exclusion from houses. However, there is no evidence of decline in range or habitat and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

ANNEX IV



Frank Greenaway



OVERALL STATUS: FAVOURABLE ▲

1334 MOUNTAIN HARE (*Lepus timidus*)

The mountain hare (*Lepus timidus*) is widely distributed across northern Europe and Asia. In Ireland, *Lepus timidus* occurs as a distinct, endemic sub-species, *Lepus timidus hibernicus*, the Irish hare. Genetics indicates that the Irish hare's unique morphology and ecology is the result of adaptation due to the isolation from other mountain hare populations for at least 35,000-57,000 years. One of the notable differences between the Irish hare and *Lepus timidus* in other regions is that the former does not undergo complete winter whitening.

The Irish hare is found throughout the country from coastal habitats to upland heath and bog. Diet in all these habitats tends to be dominated by grass species, but can also include herbs and shrubby species, where they are available. Leverets can be born at any time of year but peak breeding in spring is typical with a second litter later in the summer under suitable conditions. In good years, significant population increases can occur, but poor years with low breeding success and high mortality can lead to significant declines.

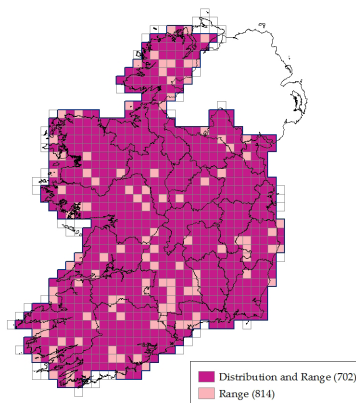
Density estimates stratified by habitat show that hares are more abundant in lowland, farmland habitat, while upland areas support lower densities of this species. As a result changes in agricultural practices can have a significant impact on hare populations.

The range for this species covers nearly the entire landmass of Ireland including some off-shore islands. Despite natural inter-annual fluctuations in population density, the animal is widespread and in places abundant. Agricultural intensification is leading to some reduction in habitat quality and a number of related threats have been identified, but the hare has a broad habitat niche, so the impacts of these changes on habitat extent and quality are unknown. The Overall Status of the hare is Favourable.

ANNEX V



Mike Brown



OVERALL STATUS: FAVOURABLE =

1355 OTTER (*Lutra lutra*)

Ireland continues to remain a stronghold for the European otter (*Lutra lutra*). Four national surveys have been conducted to date. The first in 1980/81 found signs of otters throughout the country, at 88% of sites surveyed. There was some suggestion of declines in the survey results of 1990/91 and 2004/05 but the most recent survey (2010) indicated recovery to 1980 levels. The most recent distribution data show that the otter continues to be widespread throughout Ireland in a wide variety of habitat types.

Otters have two basic requirements: aquatic prey and safe refuges where they can rest. In Ireland, otter populations are found along rivers, lakes and coasts, where fish and other prey are abundant, and where the bank-side habitat offers plenty of cover. The otter is an opportunistic predator with a broad and varied diet. In coastal areas fish, crabs and molluscs are known to be eaten. In freshwater areas a variety of fish from sticklebacks to salmon and eels will be taken, while crayfish and frogs can be important locally or seasonally.

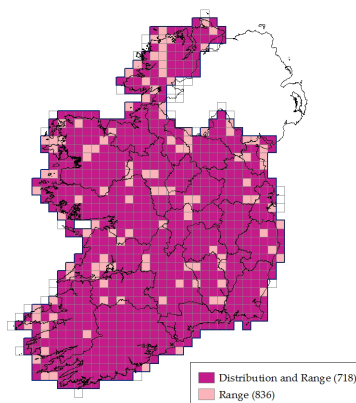
A total of 44 SACs have been designated for the otter comprising extensive stretches of river channels and coastline (including off-shore islands) as well as lakes and blanket bog systems. The main threats to the otter include pollution, particularly organic pollution resulting in fish kills; and accidental deaths (road traffic and fishing gear).

Although recent studies on territory overlaps and animal movements suggest that refinements to the population estimation formula are needed, the otter population (estimated at between 7,000 and 10,000 breeding females) is considered to be increasing and none of the threats or pressures identified is considered likely to impact significantly on the species. The Overall Status of otter is therefore considered to be Favourable, unchanged since the previous reporting period.

ANNEX II, IV



Eddie Dunne



OVERALL STATUS: FAVOURABLE ▲

1357 PINE MARTEN (*Martes martes*)

The pine marten (*Martes martes*) is a medium-sized arboreal carnivore, typically inhabiting forested ecosystems or landscapes with substantial woodland or scrub. It is an opportunistic feeder on small mammals, berries, nuts, frogs, lizards, birds and invertebrates.

Pine martens maintain territories and typically occur in low densities, with females giving birth to 2-4 cubs every one or two years. Young animals disperse to find their own territories and the mortality at this stage may be high. Adults in productive habitats may live for five or six years.

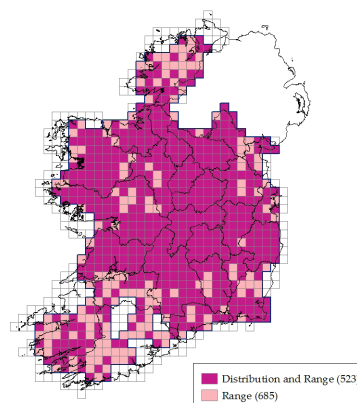
The pine marten was formerly widespread in Ireland but declined in the 17th century with the deforestation of the country. Pine martens suffered further in the 19th and early 20th centuries due to persecution by gamekeepers and trappers. However, the species is now undergoing a phase of re-colonisation. It has greatly increased its range in recent decades and although its population is still low, it is rising. The animal's resurgence is largely attributed to the banning of strychnine and other poisons, the legal protection afforded the species since 1976 under the Wildlife Acts and the steady increase in afforestation.

There is ample habitat available across the country to allow the species to continue its spread and to allow the population to expand as well. While some threats have been identified, none of them are considered sufficiently serious to undermine the continued recovery of the species. Therefore the Overall Status of the pine marten is assessed as Favourable, unchanged since the previous reporting period.

ANNEX V



Mike Brown



OVERALL STATUS: FAVOURABLE ▲

1364 GREY SEAL (*Halichoerus grypus*)

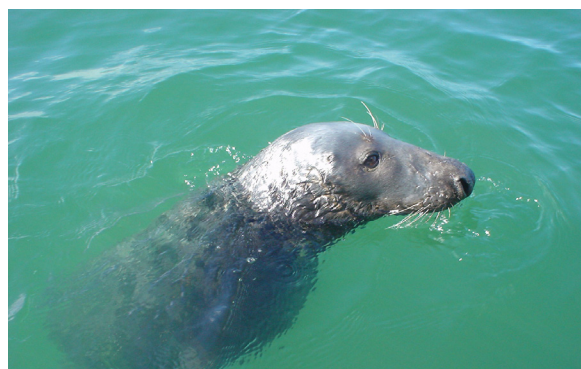
The grey seal (*Halichoerus grypus*) is the larger of two seal species that commonly breed around Ireland and inhabit its inshore and offshore waters. Notable by a pronounced sexual dimorphism, adult males can measure 2.0-2.5m in length and weigh up to 300kg, in comparison to adult females which tend to be less than 2m in length and weigh 180-190kg. Where the animal's head is clearly visible, grey seals can be identified by their characteristic long muzzle and comparatively straight or convex snout from forehead to nose. Fur colouration can be highly variable in juveniles and adults of both sexes, ranging from a slate-grey dorsal surface and a lighter, mottled ventral surface to uniformly dark grey or brown with lighter blotches.

Grey seals are primarily pelagic or demersal in their feeding habits and can be wide-ranging. Individuals can travel tens or even hundreds of kilometres when foraging or moving between haul-out sites. They mainly feed on a wide range of fish species and to a lesser extent on cephalopods. They are only found in the Northern Hemisphere, mainly in cold temperate and sub-polar waters, in the North-East Atlantic from Iceland and Norway to the French coast. Those in Ireland are generally considered part of a meta-population that also inhabits adjacent jurisdictions.

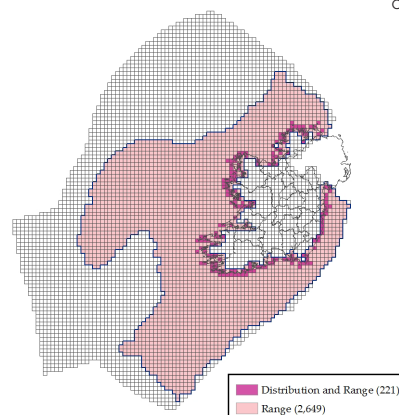
Pressures on this species in Irish waters mainly involve commercial vessel-based activities such as geophysical seismic exploration or local/regional prey removal by fisheries or by-catch in fisheries. While these pressures may act on a temporary and/or regional scale and some are likely to continue to act as pressures in the future, none is considered sufficiently serious to adversely impact on grey seal populations in Irish waters.

Given the current state of knowledge of the species' distribution, population, ecology and prevailing pressures, the Overall Status is Favourable with an increasing trend.

ANNEX II, V



Ciaran O'Keeffe



OVERALL STATUS: FAVOURABLE ▲

1365 HARBOUR / COMMON SEAL (*Phoca vitulina*)

The harbour seal (*Phoca vitulina*), also known as the common seal, is the smaller of two seal species that commonly breed around the coast of Ireland and inhabit its inshore and offshore waters. At all ages harbour seal fur colouration patterns can be highly variable ranging from yellow-brown, tan or mid-brown to grey-black and with variable spotted, dappled or speckled markings along the body length. Harbour seals can also be identified by their short, blunt muzzle and obvious bridged, dog-like snout.

Harbour seals inhabit the Northern Hemisphere from warm temperate and even subtropical waters to northern polar regions. Substantial declines and die-offs have been recorded both historically and recently, including via viral disease in Europe and elsewhere.

In Ireland harbour seals occur in estuarine, coastal and fully marine areas and also occupy regular haul-out sites about which animals breed, moult, rest and engage in social activity. Such sites tend to be found in enclosed sheltered bays, although the species may also occur on offshore islands and rocky skerries. The breeding season takes place mainly between May and July each year when pups are born and nursed for a period of about three weeks. Mating also takes place at breeding sites or in the water nearby.

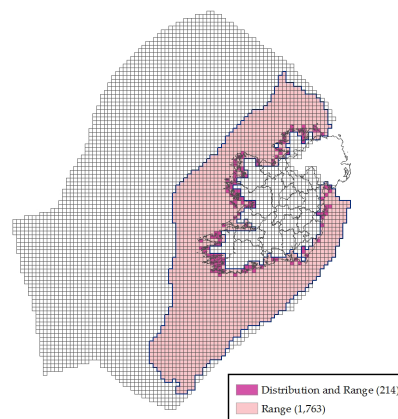
Pressures on this species in Irish waters mainly involve commercial vessel-based activities such as local/regional prey removal by fisheries or by-catch in fisheries, or geophysical seismic exploration; other possible impacts may occur from coastal tourism and localised human disturbance at haul-out sites. None of these pressures are considered to be of sufficient magnitude to adversely impact on populations of harbour seals in Irish waters.

The Overall Status of the harbour seal in Ireland is considered to be Favourable, given the current knowledge of the species' population size, distribution, ecology and prevailing pressures on the species.

ANNEX II, V



Oliver Ó Cadhla



OVERALL STATUS: FAVOURABLE =

1345 HUMPBACK WHALE (*Megaptera novaeangliae*)

The humpback whale (*Megaptera novaeangliae*) is the fourth largest baleen whale species found in Ireland. It is readily identifiable at close range due to several diagnostic features including its characteristic low 'bushy' blow, a small irregularly-shaped dorsal fin, uniquely long, white and flexible pectoral fins, and white patterning on the underside of the tail flukes.

Humpback whales feed on small shoaling fish, krill and zooplankton, and they commonly move between cold, high-latitude feeding grounds in summer and warm tropical waters in winter, during which calving and mating occurs. Some identifiable whales have repeatedly returned to forage off Ireland's southwest and south coasts in autumn/winter. Individuals have also been recorded in Iceland or Norway, underlining the species' tendency for long-range movement and migration.

Contemporary sightings of humpback whales and recent acoustic data indicate a wide but comparatively low level of occurrence in deep oceanic waters and those overlying the continental slope and continental shelf. Having been hunted intensively into the early 20th century this species has seen some post-whaling recovery in parts of its range. Yet records are uncommon in offshore Irish waters compared to more numerous whale species like fin and minke whales.

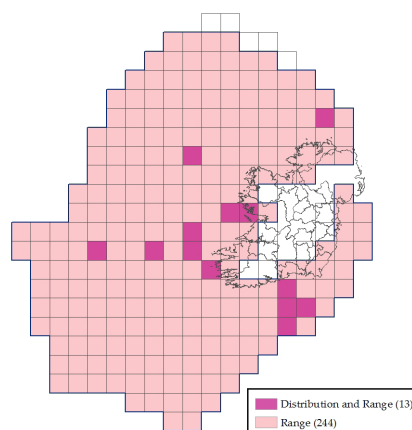
Pressures acting on this species in Irish waters mainly involve commercial vessel-based activities such as impacts arising from shipping movements, geophysical seismic exploration or local/regional prey removal by fisheries. While the effect of these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to adversely impact on populations of humpback whale in Irish waters.

The Overall Status of humpback whale in Ireland remains Unknown. This overall result is the same as in the previous two assessments due to limited ongoing information on the species' occurrence and population ecology in Irish waters.

ANNEX IV



Nicholas Massett



OVERALL STATUS: UNKNOWN

1349 BOTTLENOSE DOLPHIN (*Tursiops truncatus*)

The bottlenose dolphin (*Tursiops truncatus*) is one of the most frequently recorded and familiar cetaceans occurring in Ireland. With adults averaging up to 3.0-3.8m in length, they are quite readily identifiable, bearing a substantial curved grey dorsal fin, a short but pronounced rounded beak, and lacking an obvious pattern in their grey body colouration except for a paler ventral surface.

Bottlenose dolphins are skilful foragers, preying primarily on small fish and squid and often hunting cooperatively in social groups. Group sizes can be large and number several hundred individuals, particularly in offshore waters, while in coastal waters more variable groups of 3-30 individuals are more common.

Contemporary sightings of bottlenose dolphins indicate a wide occurrence of this species throughout Irish coastal and offshore waters, from those overlying the continental shelf and continental slope to deeper ocean basins. While robust and long-term data on bottlenose dolphin population size and trends in Irish waters as a whole are not available, knowledge of the species' seasonal distribution and summer abundance in western European waters has improved significantly in recent years. There has also recently been some improvement in population abundance data from a large part of the Irish EEZ, yielding new estimates based on dedicated cetacean surveillance since 2013.

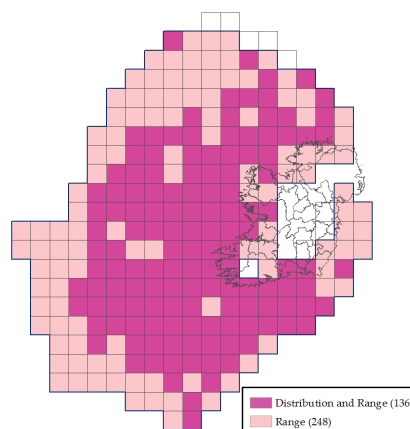
Pressures on this species in Irish waters mainly involve commercial vessel-based activities such as impacts arising from geophysical seismic exploration or from local/regional prey removal by fisheries. While the effect of these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to adversely impact on populations of bottlenose dolphin in Irish waters.

The Overall Status of bottlenose dolphin in Ireland remains Favourable. This overall result is the same as the previous two assessments.

ANNEX II, IV



Machiel Oudejans



OVERALL STATUS: **FAVOURABLE** =

1350 SHORT-BEAKED COMMON DOLPHIN (*Delphinus delphis*)

The short-beaked common dolphin (*Delphinus delphis*) is one of the smallest dolphin species occurring in Irish waters, with adults averaging just 1.7-2.0m in length. This is the most frequently recorded dolphin species in Irish waters, partly due to its tendency to closely approach moving vessels. The animals are readily identifiable when they break clear of the surface showing the species' characteristic pronounced beak, relatively tall curved dorsal fin and an extended horizontal 'hourglass' colour pattern on the flanks.

Common dolphins prey primarily on small fish and squid, and they have also been shown to hunt cooperatively in social groups. Group sizes can number from a few dolphins to several hundred or over a thousand individuals in the open sea. Contemporary sightings of short-beaked common dolphins indicate a wide occurrence throughout Irish coastal and offshore waters, from those overlying the continental shelf and continental slope to deeper ocean basins. While robust and long-term data on common dolphin population size and trends in Irish waters as a whole are not available, knowledge of the species' seasonal distribution and summer abundance in western European waters has improved significantly in recent years. There has also recently been some improvement in population abundance data from a large part of the Irish EEZ, yielding new estimates based on dedicated cetacean surveillance since 2013.

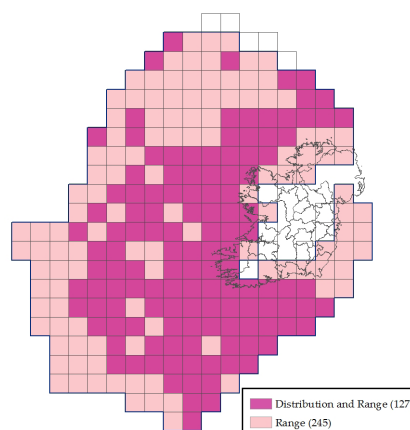
Pressures acting on this species in Irish waters mainly involve commercial vessel-based activities such as impacts from geophysical seismic exploration or from local/regional prey removal by fisheries. While these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to adversely impact on populations of common dolphin in Irish waters.

The Overall Status of common dolphin in Ireland remains Favourable. This overall result is the same as the previous assessment.

ANNEX IV



Gary Burrows



OVERALL STATUS: **FAVOURABLE** =

1351 HARBOUR PORPOISE (*Phocoena phocoena*)

The harbour porpoise (*Phocoena phocoena*) is the smallest cetacean species occurring in Irish waters, with adults averaging just 1.4-1.8m long. Inhabiting only the Northern Hemisphere, the species is mainly found in cold temperate and sub-polar waters, in the North-East Atlantic from Iceland and northern Norway to north-west Africa. Harbour porpoises feed primarily on small fish and squid and they are thought to concentrate their hunting close to the seabed.

The harbour porpoise is one of the most frequently recorded cetacean species in Irish waters but is recorded with greater difficulty offshore and in the open Atlantic due to its small size and inconspicuous nature. Contemporary sightings of harbour porpoises indicate a wide occurrence of this species primarily through Irish coastal waters and those overlying the continental shelf and continental slope. While robust and long-term data on harbour porpoise population size and trends in Irish waters as a whole are not available, knowledge of the species' seasonal distribution and summer abundance in western European waters has improved significantly in recent years. There has also recently been some improvement in population abundance data from a large part of the Irish EEZ, yielding new estimates based on dedicated cetacean surveillance since 2013.

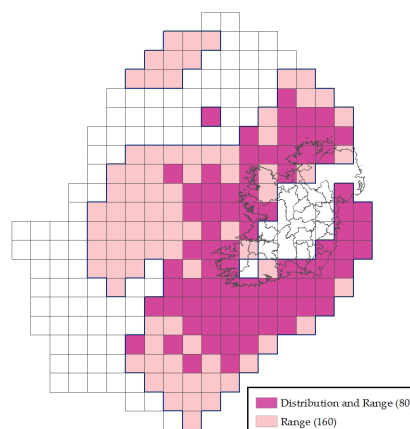
Pressures acting on this species in Irish waters mainly involve commercial vessel-based activities such as impacts arising from geophysical seismic exploration or from local/regional prey removal by fisheries. While these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to adversely impact on populations of harbour porpoise in Irish waters.

The Overall Status of harbour porpoise in Ireland remains Favourable. This overall result is the same as the previous two assessments.

ANNEX II, IV



Gary Burrows



OVERALL STATUS: FAVOURABLE =

2027 KILLER WHALE (*Orcinus orca*)

The killer whale (*Orcinus orca*) is the largest member of the dolphin family that occurs in Irish waters. Found mostly in temperate and sub-polar regions, its North Atlantic populations appear to range mainly from the Gulf of Mexico, north-west Africa and the Mediterranean, north to Greenland, Iceland and Norway. With adults reaching up to 6.5-9m in length, their characteristic tall black dorsal fin and very distinctive white/near-white patches behind the eye and dorsal fin, killer whales are readily identifiable at sea. In Ireland they are recorded annually in small numbers, and at least some of the whales photo-identified in Ireland are known from coastal Scotland.

Contemporary sightings of killer whales indicate the wide and regular occurrence of this species throughout Irish waters, from those overlying the continental shelf and continental slope to the margins of deeper ocean basins. However, knowledge of the species' seasonal distribution and abundance in western European waters has only marginally improved during the current reporting period.

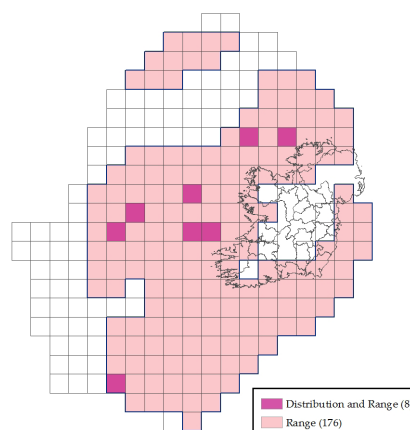
Pressures on this species in Irish waters involve potential pollutant burdens from man-made Polychlorinated Biphenyl compounds plus other persistent organic pollutants, as well as impacts from commercial vessel-based activities such as geophysical seismic exploration and local/regional prey removal by fisheries. With the exception of pollution, which could be having a significant and wider impact in the North-East Atlantic, no pressures are considered to be adversely impacting on populations of killer whale in Irish waters.

The Overall Status of killer whale in Ireland remains Unknown. This overall result is the same as the previous two assessments since there has been no significant improvement in knowledge of the conservation status of the species.

ANNEX IV



Róisín Pinfield



OVERALL STATUS: UNKNOWN

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

The long-finned pilot whale (*Globicephala melas*) is one of the largest members of the dolphin family occurring in Ireland, with adults averaging up to 6m long. Found in temperate and sub-polar regions, its North Atlantic populations range from Greenland, Iceland and the Barents Sea to the Tropic of Cancer. Long-finned pilot whales are frequently recorded in offshore Atlantic waters, usually over the continental shelf and slope, and deeper ocean basins. They are quite readily identifiable due to their body size and mainly black/dark grey colour, a notably broad-based dorsal fin and a bulbous melon (forehead) lacking an obvious beak.

This highly social and mainly squid-eating species is known to be deep-diving in its foraging ecology, and it may conduct seasonal inshore movements in some areas. A greater understanding of its seasonal distribution and summer abundance in western European waters been gained in recent years and more population abundance data have recently been recorded from a large part of the Irish EEZ. It does not appear that human activity including targeted hunting in the Faroe Islands has brought about a significant decline at the population level, but further research will be required to better inform this understanding.

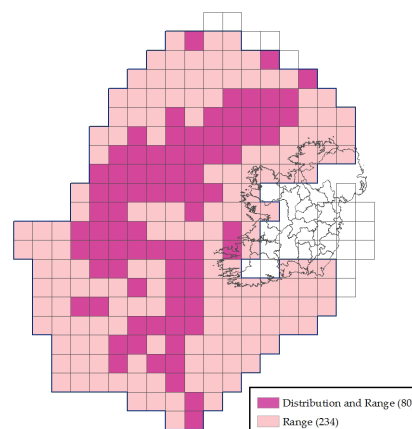
Pressures acting on this species in Irish waters mainly involve commercial vessel-based activities that occur primarily on a local or regional scale and/or on a temporary or intermittent basis, such as impacts arising from shipping movements or geophysical seismic exploration. None of these pressures are considered to be adversely impacting on populations of long-finned pilot whale in Irish waters.

The Overall Status of long-finned pilot whale in Ireland remains Favourable, given the current knowledge of the species' population size, distribution, ecology and the prevailing pressures on the species. This overall result is the same as in the previous two assessments.

ANNEX IV



Gary Burrows



OVERALL STATUS: **FAVOURABLE** =

2030 RISSEO'S DOLPHIN (*Grampus griseus*)

Risso's dolphin (*Grampus griseus*) is one of the larger dolphins occurring in Irish waters, its adults averaging up to 4m long. It is found throughout the world's oceans and in the Atlantic from Norway to South Africa. Contemporary sightings of Risso's dolphins indicate the wide and frequent occurrence of this species throughout Irish waters, from those overlying the continental shelf and continental slope to the margins of deeper ocean basins. They are quite readily identifiable at sea, having an unusually tall dorsal fin, no noticeable beak and with many individuals showing scarred whitened backs, especially in front of the dorsal fin.

Knowledge of the species' seasonal distribution and summer abundance in western European waters has improved significantly in recent years. There has also recently been a very significant improvement in population abundance data from a large part of the Irish EEZ.

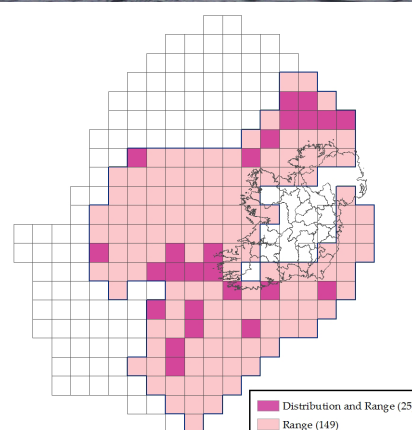
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. Another potential pressure is the use of military sonars in the deeper ocean and adjacent continental margins which, while not employed by the Irish Naval Service, is known and documented to occur in the waters of Ireland's EEZ. None of these pressures are considered to adversely impact populations of the species in Irish waters.

The Overall Status of Risso's dolphin in Ireland is assessed as Favourable, given the current knowledge of the species' population size, distribution, ecology and the prevailing pressures on the species. This overall result is different from the previous two assessments, in which the status was assessed as Unknown, and it represents a significant improvement in knowledge of the conservation status of the species.

ANNEX IV



Nicholas Massett



OVERALL STATUS: **FAVOURABLE** =

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

ANNEX IV

The Atlantic white-sided dolphin (*Lagenorhynchus acutus*) is a medium-sized dolphin species occurring in Irish waters, its adults averaging c. 2.2-2.7m in length. Like its close relative the white-beaked dolphin, it is confined to the North Atlantic and mainly found in cold temperate and sub-polar waters, from Iceland and northern Norway to the Iberian Peninsula.

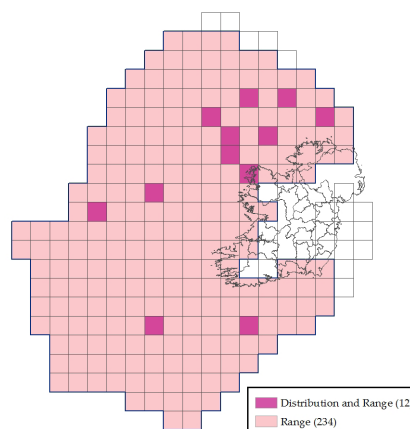
White-sided dolphins are quite commonly recorded in Irish Atlantic waters but less so coastally. Contemporary sightings of the species indicate a wide occurrence throughout Irish offshore waters, from those overlying the outer continental shelf and continental slope to deeper ocean basins. They can be difficult to distinguish at sea due to their small size, inconspicuous dorsal fin and black/dark grey dorsal colouration; they are more readily identified when breaking clear of the water, showing a characteristic short stubby beak, thick tail stock and horizontal white into sandy colour bands on the rear flanks of the body. While it is known to feed mainly on small pelagic schooling fish and squid, this species' wider population ecology in the North-East Atlantic is not well understood.

Knowledge of the species' seasonal distribution and summer abundance in western European waters has improved in recent years, and there has also been an improvement in population abundance data from a large part of the Irish EEZ.

Pressures acting on this species in Irish waters mainly involve commercial vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. None of these are considered to be having an adverse impact on the population in Irish waters. The Overall Status of Atlantic white-sided dolphin in Ireland therefore remains Favourable, given the current knowledge of the species' population size, distribution, ecology and the prevailing pressures on the species. This overall result is the same as the previous two assessments.



Oliver Ó Cadhla



OVERALL STATUS: FAVOURABLE =

2032 WHITE-BEAKED DOLPHIN (*Lagenorhynchus albirostris*)

ANNEX IV

The white-beaked dolphin (*Lagenorhynchus albirostris*) is a medium-sized dolphin species confined to the Northern Hemisphere where it is predominantly found in cold temperate and sub-polar waters. In the North-East Atlantic it occurs from Iceland and northern Norway south to the Bay of Biscay and Portugal. Classified by the IUCN as a species of Least Concern since its broad North Atlantic range, abundance and status indicate that it is well above the thresholds for a threatened category, white-beaked dolphins are regularly recorded in Irish offshore waters and coastally.

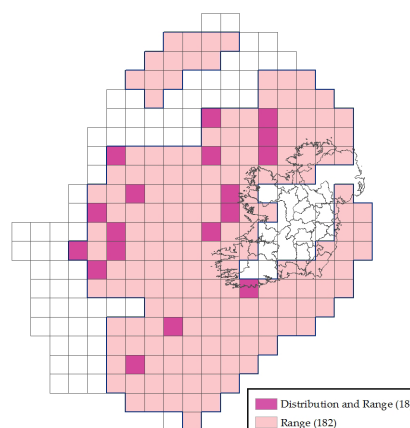
Although challenging to distinguish from other dolphin species at sea, white-beaked dolphins are quite readily identifiable at close range via their characteristic short stub-like white/grey beak, conspicuously tall dorsal fin relative to body size, stocky appearance and large, pale, white-coloured bands or patches on the flanks of the body. They feed on a variety of small pelagic schooling fish, squid and crustaceans. Contemporary sightings of white-beaked dolphins indicate the wide and frequent occurrence of this species throughout Irish waters, from those overlying the continental shelf and continental slope to the margins of deeper ocean basins (e.g., Rockall Trough, Porcupine Seabight).

The main pressures acting on this species in Irish waters involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. While the effect of these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to be causing an adverse impact on populations of white-beaked dolphin in Irish waters.

The Overall Status of white-beaked dolphin in Ireland remains Favourable, given the current knowledge of its population size, distribution, ecology and the prevailing pressures on the species. This overall result is the same as the previous assessment.



Róisín Pinfield



OVERALL STATUS: FAVOURABLE =

2034 STRIPED DOLPHIN (*Stenella coeruleoalba*)

The striped dolphin (*Stenella coeruleoalba*) is one of the smallest dolphin species occurring in Ireland. Found globally in tropical and warm temperate waters, in the North-East Atlantic it is mainly recorded from the Faroe Islands to South Africa with a notable prevalence in the Mediterranean. Each year striped dolphins are recorded in small numbers in Irish waters. However they can be difficult to distinguish at sea due to their size and traits shared with many dolphin species, particularly short-beaked common dolphins. They are more easily identified at close range when their characteristic pale flanks, white ventral surface and narrow grey/black stripes extending laterally from the eye can be observed.

Contemporary sightings of striped dolphins indicate a wide occurrence of this species through Irish offshore waters, from those overlying the outer continental shelf and continental slope to deeper ocean basins (e.g., Rockall Trough, Porcupine Seabight). However the population estimates for Irish waters are somewhat uncertain, while available abundance figures for western European waters are also variable with survey season and year. There is also some uncertainty in the trajectory of North-East Atlantic populations of striped dolphin, so the current population is unknown.

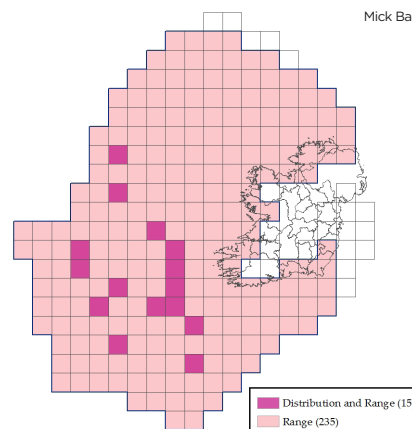
The main pressures acting on this species in Irish waters involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. While the effect of these pressures may act on a temporary and/or regional scale, none is considered to be of sufficient magnitude to be causing an adverse impact on populations of striped dolphin in Irish waters.

The Overall Status of striped dolphin in Ireland remains Favourable, given the current knowledge of the species' distribution, ecology and the prevailing pressures on the species. This result is the same as the previous assessment.

ANNEX IV



Mick Baines & Maren Reichelt



OVERALL STATUS: **FAVOURABLE** =

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

Cuvier's beaked whale (*Ziphius cavirostris*) is a distinctive short-beaked toothed whale measuring up to 5.5-6.5m in length. The species can be difficult to identify in the open sea, partly due to elusive behaviour in the presence of vessels and the absence of many features observable at long range. At close range they are more readily identifiable by their distinctive skin colouration/scarring, a short prominent blunt beak, a small curved dorsal fin about two-thirds of the way along the back, and the absence of a central notch in the tail flukes.

While it is the most common of the beaked whales to be found stranded in Ireland, live records of the species in Irish waters have been infrequent until recently. Knowledge of its population structure or seasonal movements remains limited due to the historical scarcity of data, although information has improved since 2015. The species occurs in deep oceanic waters, those overlying the continental slope, and also the margin of the continental shelf.

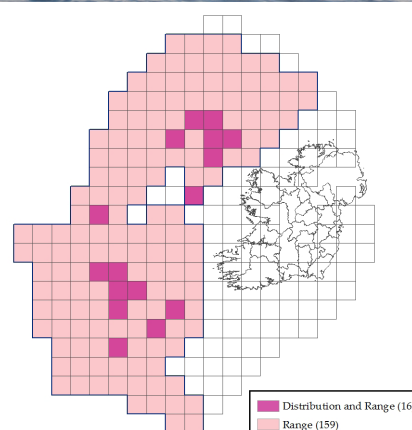
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. Another potential pressure is the use of military sonars in the deeper ocean and adjacent continental margins which, while not employed by the Irish Naval Service, is known and documented to occur in the waters of Ireland's EEZ. None of these pressures are considered to be significantly impacting on populations of the species in Irish waters.

The Overall Status of Cuvier's beaked whale in Ireland is assessed as Favourable. This is different from the previous two assessments (in which the status was assessed as Unknown), due to improved knowledge, higher quality data, and new methods used in the assessment of the conservation status of the species.

ANNEX IV



Fleur Visser



OVERALL STATUS: **FAVOURABLE** =

2038 SOWERBY'S BEAKED WHALE (*Mesoplodon bidens*)

Sowerby's beaked whale (*Mesoplodon bidens*) is a smaller member of the beaked whale family averaging up to 5-6m in adult body length. It is one of at least three *Mesoplodon* species to occur in Ireland. Sowerby's beaked whales are quite readily identifiable in the field. This is due to their long slender beak which is often clearly visible when the animal surfaces, to the absence of a central notch in the tail flukes, and its skin colouration which tends to be dark grey on the dorsal surface and often contains elongated scarring on the flanks.

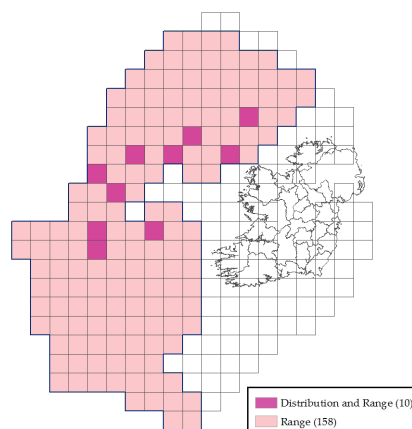
Although individuals occasionally strand around the coast, live records in Irish waters have been infrequent until recently. Knowledge of population structure or movements remains limited due to the historical scarcity of data, but information has improved since 2015. Numerous contemporary sightings of Sowerby's beaked whales and extensive acoustic data demonstrate the wide and frequent occurrence of this species in deep oceanic waters, those overlying the continental slope, and also the margin of the continental shelf. However, despite a significant improvement in *Mesoplodon* population abundance data from a significant deep water component of the Irish EEZ, the population is currently unknown.

Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from local/regional prey removal by fisheries. None of these pressures are considered to be of sufficient magnitude to adversely impact on populations of Sowerby's beaked whale in Irish waters.

The Overall Status of Sowerby's beaked whale in Ireland is assessed as Favourable. This is different from the previous two assessments (in which the status was assessed as Unknown), due to improved knowledge, higher quality data, and new methods used in the assessment of the conservation status of the species.



Dave Cade



OVERALL STATUS: FAVOURABLE =

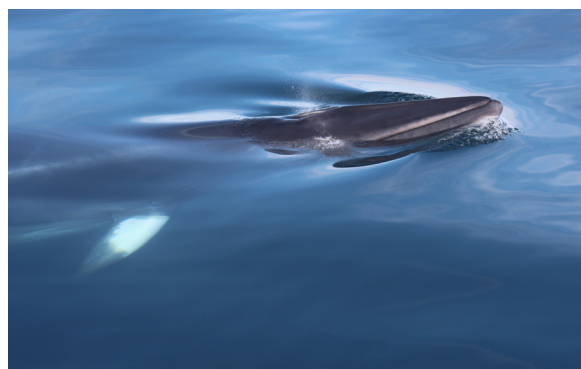
2618 MINKE WHALE (*Balaenoptera acutorostrata*)

The minke whale (*Balaenoptera acutorostrata*) is the smallest baleen whale species occurring in Irish waters, with adults averaging 8.5m in body length. Found only in the Northern Hemisphere, the species is recorded more frequently in Irish waters than its larger relatives the blue whale, fin whale and sei whale, although this may be partly due to a greater tendency to occupy shallower coastal and continental shelf waters. Minke whales have been observed all around Ireland's coast and offshore in deep ocean basins as well as over the continental shelf and slope. They are also known to enter coastal bays or to be seen close to headlands. As well as their size difference and the absence of a distinct tall exhalation blow when surfacing, the species' characteristic pointed snout and broad white patches on the pectoral fins are striking and useful in its identification.

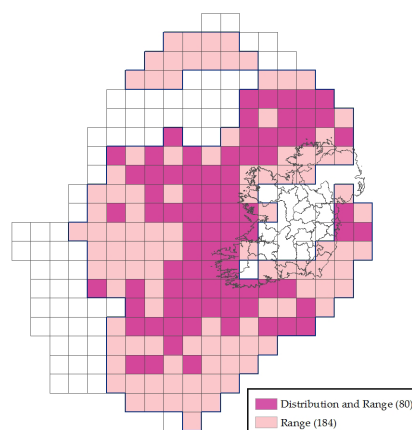
Minke whales are thought to prey on small fish and swimming crustaceans and it is thought that they undertake some migratory movement to warmer waters in the winter. In Ireland minke whales are seen in all seasons, usually as single individuals or in loose associations of up to ten animals linked to localised feeding activity.

Pressures on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from shipping movements, geophysical seismic exploration or from local/regional prey removal by fisheries. None of these pressures are considered to be of sufficient magnitude to adversely impact on populations of minke whale in Irish waters.

The Overall Status of minke whale in Ireland remains Favourable, given current knowledge of the species' population size, distribution, ecology and prevailing pressures on the species. This overall result is the same as in the previous two assessments.



Colin Barnes



OVERALL STATUS: FAVOURABLE =

2621 FIN WHALE (*Balaenoptera physalus*)

The fin whale (*Balaenoptera physalus*) is the second largest whale species in the world and is the most frequently recorded large whale species in Irish waters, being seen more often than either of its close relatives of similar size, the blue whale and sei whale. Once hunted intensively throughout the North Atlantic in the late 19th and early 20th centuries, fin whales are recorded in all Irish waters from deep ocean basins to continental slope and shelf areas, and even seasonally in inshore waters off the southwest to southeast coasts.

While fin whales can be difficult to distinguish at sea from other whales, their asymmetrical light grey to white skin pigmentation in the right jaw and head area is striking and useful for identification. They are usually observed in small numbers of 1-3 individuals or in loose associations of up to twenty animals linked to localised feeding activity. This species preys mainly on small fish, swimming crustaceans and zooplankton.

In Ireland fin whales are recorded in all seasons. Knowledge of the species' seasonal distribution and summer abundance in western European waters has improved significantly in recent years, but despite a significant improvement in population abundance data from a large part of the Irish EEZ, the current population remains unknown.

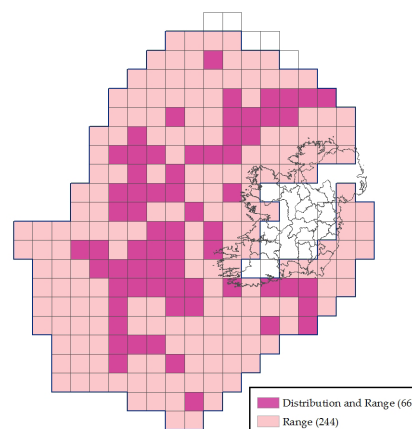
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as shipping movements, geophysical seismic exploration or local/regional prey removal by fisheries. None of these are considered to be of sufficient magnitude to adversely impact on populations of fin whale in Irish waters.

The Overall Status of fin whale in Ireland is assessed as Favourable, given the current knowledge of the species' distribution, ecology and prevailing pressures on the species. This overall result is the same as in the previous two assessments.

ANNEX IV



Róisín Pinfield



OVERALL STATUS: FAVOURABLE =

5020 BLUE WHALE (*Balaenoptera musculus*)

The blue whale (*Balaenoptera musculus*) is the world's largest animal species, measuring up to 30m in length, but it remains one of the most rarely observed cetaceans in Irish waters. This is probably due to severe population depletion as a result of intensive hunting throughout its North Atlantic range, as well as a mainly oceanic and temporary occurrence.

Blue whales commonly migrate between cold, high-latitude feeding grounds in summer and warm temperate or tropical waters in winter, during which calving and mating occurs. Individual blue whales can be identified at sea by their sheer body size and other diagnostic features, including a characteristically tall column-shaped blow often extending more than 10m high, a very small triangular dorsal fin, and blue-grey skin colouration with lighter-coloured blotches or patches.

The species feeds on swimming crustaceans and zooplankton in oceanic, continental slope and even shelf waters. Records from Ireland remain limited, usually consisting of 1-2 animals in deep waters far off the west and southwest coasts. While information on the species' true occurrence and ecology remains patchy there is some growing evidence of animals migrating through Irish waters in the autumn and early winter, and also of active foraging during such transits.

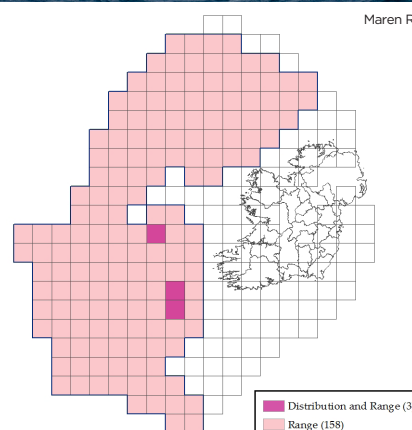
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from shipping movements or geophysical seismic exploration. None of these are considered to be of sufficient magnitude to adversely impact on populations of blue whale in Irish waters.

The Overall Status of the blue whale is considered to be Unknown due to limitations in information on its occurrence and population ecology in Ireland's extensive marine waters. This overall result is the same as in the previous two assessments.

ANNEX IV



Maren Reichelt & Mick Baines



OVERALL STATUS: UNKNOWN

2624 SPERM WHALE (*Physeter macrocephalus*)

The sperm whale (*Physeter macrocephalus*) is the largest toothed cetacean occurring in Irish waters. Mature males measure up to 16-18m in body length while females are smaller (c. 10-12m). This familiar deep-diving species is widely found from equatorial to polar regions and has been regularly recorded during oceanic surveys to the west of Ireland. Only males occupy cold temperate and sub-polar latitudes. Records of females or calves stranding in Ireland are rare.

Sperm whales are readily identified due to their body size, their notably blunt forehead and low bushy exhalation blow, and their characteristic low, bump-like dorsal fin that can be difficult to observe at sea. Contemporary sightings of sperm whales and extensive acoustic data demonstrate the wide and frequent occurrence of this species in deep oceanic waters, those overlying the continental slope, and also the margin of the continental shelf.

Ireland is one of a few EU member states inhabited by this predominantly squid-eating species, which remains classified as Vulnerable due to numbers being reduced by industrial hunting. However, given the newly available estimates for Irish waters and the species' wide and frequent occurrence, the population of the species is assessed as Favourable here.

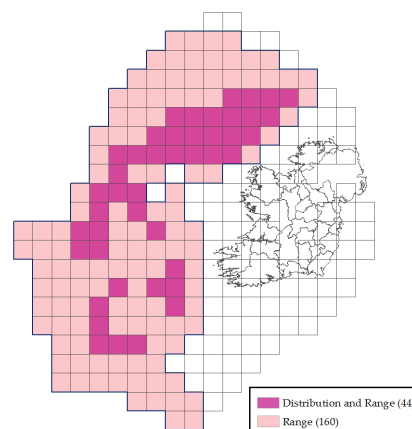
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from shipping movements or geophysical seismic exploration. None of these are considered to be of sufficient magnitude to adversely impact on populations of sperm whale in Irish waters.

The Overall Status of sperm whale is assessed as Favourable given the current knowledge of the species' population size, distribution, ecology and prevailing pressures on the species. This is different from the previous Unknown assessments, due to improved knowledge, higher quality data, and new methods used in the assessment of its conservation status.

ANNEX IV



William Hunt



OVERALL STATUS: FAVOURABLE =

5033 NORTHERN BOTTLENOSE WHALE (*Hyperoodon ampullatus*)

The northern bottlenose whale (*Hyperoodon ampullatus*) is the largest of the beaked whale family occurring in Ireland, its adults averaging up to 7-9m long. Found only in the North Atlantic, mainly in temperate and sub-polar regions, in the east its range stretches from Greenland and northern Norway to the Azores and north-west Africa but excludes the Mediterranean and Baltic Seas.

Classified by the IUCN as a Data Deficient species whose population status and trends remain uncertain after depletion through intensive whaling, northern bottlenose whales are quite readily identifiable in the field. This is due to their large body length for a toothed cetacean, their characteristic bulbous melon (forehead) and prominent but short rounded beak.

Northern bottlenose whales are generally found in deep oceanic habitats. Records from Irish waters have been infrequent and sporadic with the occasional coastal occurrence. Knowledge of this deep-diving species' population structure, breeding habits and movements remains very limited due to the historical scarcity of data, but information has improved somewhat since 2015.

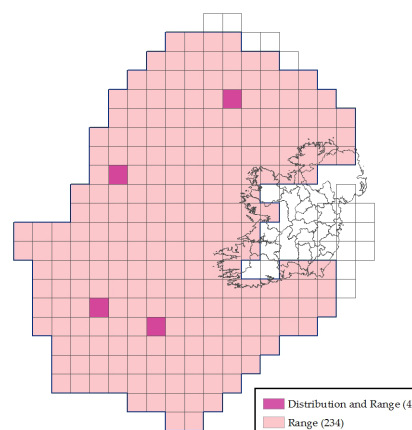
Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from geophysical seismic exploration and from shipping movements. Another potential pressure is the use of military sonars in the deeper ocean and adjacent continental margins which, while not employed by the Irish Naval Service, is known and documented to occur in the waters of Ireland's EEZ. None of these pressures are considered to adversely impact populations of the species in Irish waters.

The Overall Status of the northern bottlenose whale is Unknown, as it was for the last two assessments, due to limited ongoing information on the species' occurrence and population ecology in Irish waters.

ANNEX IV



Eilidh Siegal



OVERALL STATUS: UNKNOWN

The sei whale (*Balaenoptera borealis*) is the third largest whale species found in Ireland but is one of the least frequently recorded. In addition to severe population depletion as a result of hunting, an apparently oceanic occurrence may partly explain why records remain low compared to more coastally occurring species such as the fin and humpback whale. They are only readily identifiable in good sea conditions or within close range where diagnostic features, including its surfacing behaviour, characteristic upright and comparatively tall dorsal fin and the absence of asymmetrical skin colouration, can be observed.

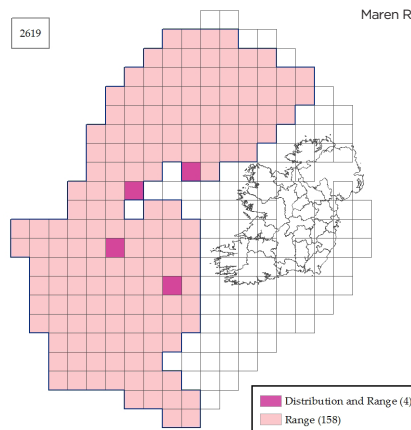
Sei whales feed mainly on small shoaling fish, swimming crustaceans and zooplankton in oceanic, continental slope and shelf waters. They are believed to commonly move between cold high-latitude feeding grounds in summer and warm temperate or tropical waters in winter, during which calving and mating occurs. Contemporary sightings of sei whales and some recent acoustic data indicate a wide but comparatively low level of occurrence in deep oceanic waters and those overlying the continental slope. However there is currently no evidence that the North Atlantic sei whale population, at least in its central/eastern component, may be increasing following the cessation of commercial whaling. The sparse nature of Irish records makes its seasonal occurrence and distribution unclear.

Pressures acting on this species in Irish waters mainly involve commercial shipping-based or vessel-based activities such as impacts arising from shipping movements or geophysical seismic exploration. None of these are of sufficient magnitude to adversely impact on populations of sei whale in Irish waters.

The Overall Status of sei whale in Ireland remains Unknown. This result is the same as in the previous two assessments due to limited ongoing information on the species' occurrence and population ecology in Irish waters.



Maren Reichelt & Mick Baines



OVERALL STATUS: UNKNOWN

VAGRANT SPECIES

1348 NORTHERN RIGHT WHALE (*Eubalaena glacialis*)

ANNEX IV

The Northern right whale (*Eubalaena glacialis*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. Distinctive by its v-shaped exhalation blow, the complete absence of a dorsal fin and the presence of white encrusted lumps on the head area known as "callosities", this slow-swimming baleen whale species was once hunted intensively throughout its North Atlantic range including off the north-west of Ireland in the early 1900s.

Little is now known about the occurrence or ecology of this species in the North-East Atlantic, while remnant populations inhabiting North American waters remain extremely vulnerable to ongoing human impacts and potential extinction.

No live records have been confirmed from Irish waters in recent decades. In the last 50 years sightings have occurred very occasionally off the European continental shelf and in the mid-Atlantic.

2028 FALSE KILLER WHALE (*Pseudorca crassidens*)

ANNEX IV

False killer whale (*Pseudorca crassidens*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. Distinctive by its resemblance to the larger, stockier killer whale, particularly due to its length and the shape of its dorsal fin, this species is completely black in colouration and more slender in appearance, with a more rounded or blunt head-shape also notable.

Little is known about the occurrence or ecology of this species in the North-East Atlantic but it is assumed to be a tropical, sub-tropical and warm temperate deep-water species that feeds on fish and squid and which very occasionally occurs in offshore Irish waters. In the last 50 years rare sightings have occurred off the European continental shelf and in the mid-Atlantic, while only a few sporadic live records have been confirmed from Irish waters in the last 15-20 years.

2037 TRUE'S BEAKED WHALE (*Mesoplodon mirus*)

ANNEX IV

True's beaked whale (*Mesoplodon mirus*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. Difficult to identify in the open ocean, like many beaked whale species its presence and identifying features can be elusive in the field. True's beaked whales are also tricky to separate from their close relatives the Gervais' beaked whales but both are identifiable by a distinct medium-sized beak and adult male True's beaked whales have two prominent teeth at the tip of the lower jaw.

2622 PYGMY SPERM WHALE (*Kogia breviceps*)

ANNEX IV

Pygmy sperm whale (*Kogia breviceps*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. It is distinctive by its small size (up to 3.5m in length) and blunt head shape containing a pale 'false gill' line between the eyes and the pectoral fins. Also, unlike cetaceans of similar size its small dorsal fin is located about two-thirds of the way along its back.

Little is known about the population distribution or ecology of this species in the North-East Atlantic but it is considered to be a deep-water species that feeds on squid and octopus, and which may occasionally occur in offshore Irish waters. Since only one live record has emerged so far from oceanic waters very far from shore, most information on the species in Ireland has come from the isolated and rare stranding of individual animals.

5029 BELUGA / WHITE WHALE (*Delphinapterus leucas*)

ANNEX IV

Beluga or White whale (*Delphinapterus leucas*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. A large dolphin species that is very distinctive due to its completely white/ivory skin colouration, its rounded bulbous melon (forehead) and the absence of a dorsal fin, it is not easily confused with other cetacean species.

Little is known about the occurrence or ecology of this species in the North-East Atlantic. It is normally a polar or sub-polar species found in Arctic regions where it feeds on fish and crustaceans. Only three live records have been confirmed from Ireland, one from County Mayo, another from County Cork, and the third sighting, comprising three individuals, made far offshore during an aerial survey in December 2015.

5034 GERVAIS' BEAKED WHALE (*Mesoplodon europaeus*)

ANNEX IV

Gervais' beaked whale (*Mesoplodon europaeus*) is one of six species of cetacean (i.e., whales, dolphins and porpoises) that have been very rarely recorded in Irish waters and are therefore termed vagrant species. Difficult to identify in the open ocean, like many beaked whale species its presence and identifying features can be elusive in the field. Gervais' beaked whales are also tricky to separate from their close relatives the True's beaked whales but both are identifiable by a distinct medium-sized beak and adult male Gervais' beaked whales have two prominent teeth positioned about a quarter of the way back along the lower jaw.

Little is known about the occurrence or ecology of this species in the North-East Atlantic but it is assumed to be a warm temperate or sub-tropical deep-water species that feeds on squid and possibly fish. Only one record is available from Ireland so far, that being from a stranding in County Sligo.

1102 ALLIS SHAD (*ALOSA ALOSA*)

ANNEX II, V

The Allis shad (*Alosa alosa*) is a large member of the herring family. It spends much of its life in coastal waters and samples of marine-caught Allis shad have been collected off the south-east coast. This species enters freshwater to breed, with significant penetration of large rivers reported on the continent. There is some evidence of Allis shad entering Irish rivers, with one fish recorded some 40km from the sea on the Slaney. Nonetheless, only a small number of Allis shad have ever been recovered from Irish freshwaters and while there is good evidence of the presence of breeding populations of twaite shad in Irish rivers, the only evidence of breeding by Allis shad is the presence of Allis-twaite hybrids. No juvenile Allis shad have been found during survey work of Irish river systems. Overall it would appear that the Allis shad is an opportunistic spawner in Irish waters. Until evidence of an established breeding population is found, Allis shad is considered a vagrant.

1320 BRANDT'S BAT (*Myotis brandtii*)

ANNEX IV

Brandt's bat (*Myotis brandtii*) is a cryptic species, requiring genetic determination to separate it from the whiskered bat (*M. mystacinus*). Following the initial confirmation of a specimen of Brandt's bat in Wicklow in 2006, further records were expected. However, extensive survey work at potential roosts and swarming sites since then has failed to locate any. The species is now considered a vagrant and was not assessed in the current report.



RESULTS



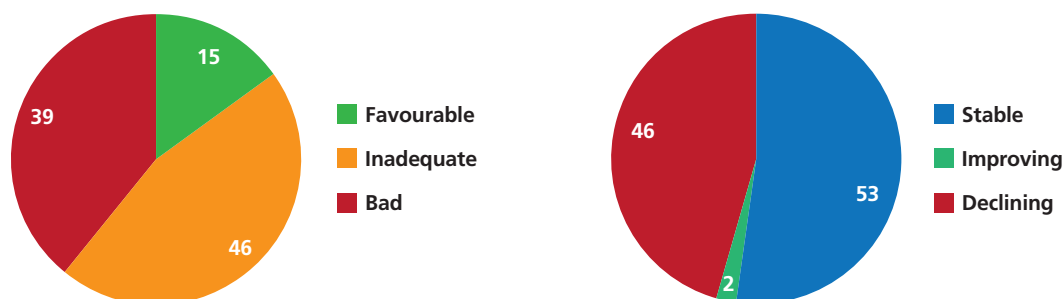


RESULTS

HABITAT ASSESSMENTS

The *Overall Status* of habitats as depicted in Figure 1a is that 85% of habitats are in Unfavourable (i.e. Inadequate or Bad) status, with 46% of habitats demonstrating ongoing declining trends (Figure 1b).

Figure 1: a) Percentage of habitats in Favourable, Unfavourable-Inadequate or Unfavourable-Bad condition
b) Percentage of habitats with Stable, Improving or Declining trends. $n=59$



An overview of the results of the 59 individual habitat assessments for 2019 is presented in Table 1. The assessment results for 2007 and 2013 are presented for comparison. Many of the changes from previous assessments are due to improved knowledge e.g. marine habitats, changes of interpretation of the ecology of the habitat e.g. *Rhynchosporion* depressions, or changes in the thresholds for *Structure and Functions* e.g. Juniper scrub. Therefore the actual status (i.e. Favourable, Unfavourable-Inadequate or Unfavourable-Bad) of habitats has remained largely unchanged over time but with ongoing declining trends impacting almost half of all habitats as illustrated in Figure 1b. Although some habitats had insufficient *Range* and *Area* when the Directive came into force (e.g. active raised bog, hay meadows and many woodland habitats), it is the *Structure and Functions* of the habitats that is driving the *Overall Status* results in many cases, with inadequate conservation measures in place to improve the *Future Prospects*. Declining trends are particularly notable in marine, peatland, grassland and woodland habitats.

Table 1: Assessment results by habitat for 2007, 2013 and 2019.

Code	Common name	2007 Overall Status	2013 Overall Status and operator	2019 Overall Status and trend	2019 Range	2019 Area	2019 Structure & Functions	2019 Future Prospects
1110	Sandbanks	●	●	=	=	=	=	●
1130	Estuaries	●	▲	▼	=	=	▼	●
1140	Tidal mudflats and sandflats	●	▲	▼	=	=	▼	●
1150	Lagoons*	●	=	▼	=	=	▼	●
1160	Large shallow inlets and bays	●	▲	▼	=	=	▼	●
1170	Reefs	●	▼	=	=	=	=	●
1180	Submarine structures made by leaking gases			=	=	=	=	●
1210	Drift lines	●	▼	▼	=	▼	=	●
1220	Vegetated shingle	●	=	=	=	=	=	●
1230	Vegetated sea cliffs	●	=	=	=	=	=	●
1310	<i>Salicornia</i> mud	●	▼	=	=	=	=	●
1320	Spartinion	●						
1330	Atlantic salt meadows	●	=	▼	=	▼	=	●
1410	Mediterranean salt meadows	●	=	▼	=	▼	=	●
1420	Halophilous scrub	●	▼	▼	▼	▼	=	●
2110	Embryonic shifting dunes	●	=	=	=	=	=	●
2120	Marram dunes (white dunes)	●	=	=	=	▼	=	●
2130	Fixed dunes (grey dunes)*	●	=	▼	=	=	▼	●
2140	<i>Empetrum</i> dunes*	●	=	=	=	=	=	●
2150	Dune heath*	●	=	=	=	=	=	●
2170	Dunes with creeping willow	●	=	=	=	=	=	●
2190	Dune slacks	●	▼	▼	▼	▼	=	●
21A0	Machair*	●	=	=	=	▼	=	●
3110	Oligotrophic isoetid lake habitat	●	▼	=	=	=	=	●
3130	Mixed <i>Najas flexilis</i> lake habitat	●	=	▼	=	=	▼	●
3140	Hard water lakes	●	▼	▼	=	=	▼	●
3150	Rich pondweed lake habitat	●	=	=	=	=	=	●
3160	Acid oligotrophic lakes	●	▼	=	=	=	×	●
3180	Turloughs*	●	=	=	=	=	=	●
3260	Vegetation of flowing waters	●	▼	▼	=	=	▼	●
3270	<i>Chenopodium rubri</i>	●	●	=	=	=	=	●

STATUS: ● Favourable ● Unfavourable-Inadequate ● Unfavourable-Bad ● Unknown

TREND: ▲ Improving = Stable ▼ Declining × Unknown

* priority habitat. Please note “Spartinion” was not considered post-2007 as this habitat is comprised of non-native species.

Code	Common name	2007 Overall Status	2013 Overall Status and operator	2019 Overall Status and trend	2019 Range	2019 Area	2019 Structure & Functions	2019 Future Prospects
4010	Wet heaths	●	=	▼	=	▼	=	●
4030	Dry heaths	●	=	=	=	▼	=	●
4060	Alpine and subalpine heath	●	▲	▲	=	▼	▲	●
5130	Juniper scrub	●	=	=	=	=	=	●
6130	Calaminarian grasslands	●	=	▼	▼	▼	▼	●
6210	Orchid-rich calcareous grassland*	●	=	▼	=	▼	=	●
6230	Species-rich <i>Nardus</i> grassland*	●	▼	=	=	=	=	●
6410	<i>Molinia</i> meadows	●	▼	▼	▼	▼	=	●
6430	Hydrophilous tall-herb swamp	●	=	▼	▼	▼	=	●
6510	Hay meadows	●	=	▼	▼	▼	▼	●
7110	Raised bog (active)*	●	▼	▼	=	▼	▼	●
7120	Degraded raised bogs	●	▼	▼	=	▼	▼	●
7130	Blanket bog (active)*	●	▼	▼	=	▼	▼	●
7140	Transition mires	●	×	=	=	=	×	●
7150	Rhynchosporion depressions	●	▼	▼	=	▼	▼	●
7210	<i>Cladium</i> fens*	●	×	=	=	=	×	●
7220	Petrifying springs*	●	=	▼	=	=	▼	●
7230	Alkaline fens	●	×	▼	=	▼	×	●
8110	Siliceous scree	●	▲	=	=	=	=	●
8120	Eutric scree	●	=	=	=	=	=	●
8210	Calcareous rocky slopes	●	=	=	=	=	=	●
8220	Siliceous rocky slopes	●	=	=	=	=	=	●
8240	Limestone pavement*	●	=	=	=	▼	▲	●
8310	Caves	●	●	=	=	=	=	●
8330	Sea caves	●	●	=	=	=	=	●
91A0	Old oak woodland	●	▲	▼	=	▼	=	●
91D0	Bog woodland*	●	●	=	=	=	=	●
91E0	Alluvial woodland*	●	▲	▼	=	▼	▼	●
91J0	Yew woodland*	●	▲	=	=	=	=	●

HABITAT PRESSURES/THREATS

The standardised list of pressures and threats are classified into 15 categories corresponding to the main sectoral drivers. These high-level categories are listed in Table 2 together with explanations or major subdivisions where appropriate.

Table 2: Standardised categories for pressures and threats.

Pressure/Threat categories	Notes on sub-categories
A Agriculture	Includes land conversion, grazing, abandonment, burning, enrichment, drainage and associated pollution
B Forestry	Includes land conversion, grazing, forestry management practices such as clear felling, removal of dead wood, burning, enrichment, drainage and associated pollution
C Extraction of resources (minerals, peat, non-renewable energy resources)	Includes geotechnical surveying, peat extraction and pollution arising from extraction activities
D Energy production processes and related infrastructure development	Includes wind, electricity, oil and gas infrastructure and associated pollution
E Development and operation of transport systems	Includes roads, paths, shipping lanes and associated light and noise pollution
F Development, construction and use of residential, commercial, industrial and recreational infrastructure and areas	Includes urbanisation, industrialisation, recreation and associated pollution
G Extraction and cultivation of biological living resources (other than agriculture and forestry)	Includes hunting, poisoning, fishing, aquaculture and pollution arising from aquaculture
H Military action, public safety measures, and other human intrusions	Includes vandalism and disturbance
I Alien and problematic species	Also includes diseases, pathogens and pests
J Mixed source pollution	Where the main driver of pollution is uncertain
K Human-induced changes in water regimes	Includes abstractions, landfill, modification of water flow
L Natural processes (excluding catastrophes and processes induced by human activity or climate change)	Includes erosion, succession, competition and predation
M Geological events, natural catastrophes	Includes storms, floods and fire
N Climate change	Includes temperature rise, drought, sea level rise and increased precipitation
X Unknown pressures, no pressures and pressures from outside the Member State	

Pressures are negatively impacting activities that have taken place during the reporting period (i.e. 2013-2018); threats are negatively impacting activities that are expected to continue over the next 12 years. A combined maximum of 10 Medium and/or High-importance pressures/threats per habitat or species have been listed, with a maximum of five of High importance.

Pressures and threats are recorded in 54 of the 59 habitats assessed. The most frequent pressures recorded in habitats relate to the agriculture category (Figure 2). Over 70% of habitats are impacted by pressures relating to agricultural practices, and the pressure is ranked as High importance in more than 50% of habitats (Figure 3). The most prevalent sub-category of agricultural pressures is “A09 Intensive grazing or overgrazing by livestock” (Figure 4), which is recorded in 55% of habitats in which agricultural impacts are noted (39% of habitats overall), the next most frequent agricultural pressure being “A10 Extensive grazing or undergrazing”, which is noted at 21% of habitats impacted by agriculture (15% of habitats overall). Inappropriate grazing (either too much or too little) is recorded in 62% of all habitats where agricultural impacts are reported, and in 44% of habitats overall. “A06 Abandonment of grassland management (e.g. cessation of grazing or mowing)” and “A26 Agricultural activities generating diffuse pollution to surface or ground waters” are the next most frequent agricultural impacts, each affecting 19% of habitats where agricultural impacts are noted, or 14% of habitats overall. All eight of the habitats affected by diffuse pollution are either lake or groundwater-dependent habitats. Quantitative analysis of the proportion of habitat exceeding Nitrogen deposition thresholds arising from “A27 Agricultural activities generating air pollution” has highlighted Blanket bog, Alpine heath and Wet heath as particularly vulnerable to this type of pollution. The impacts of “A28 Agricultural activities generating marine pollution” are reported as High importance in three of the marine habitats.

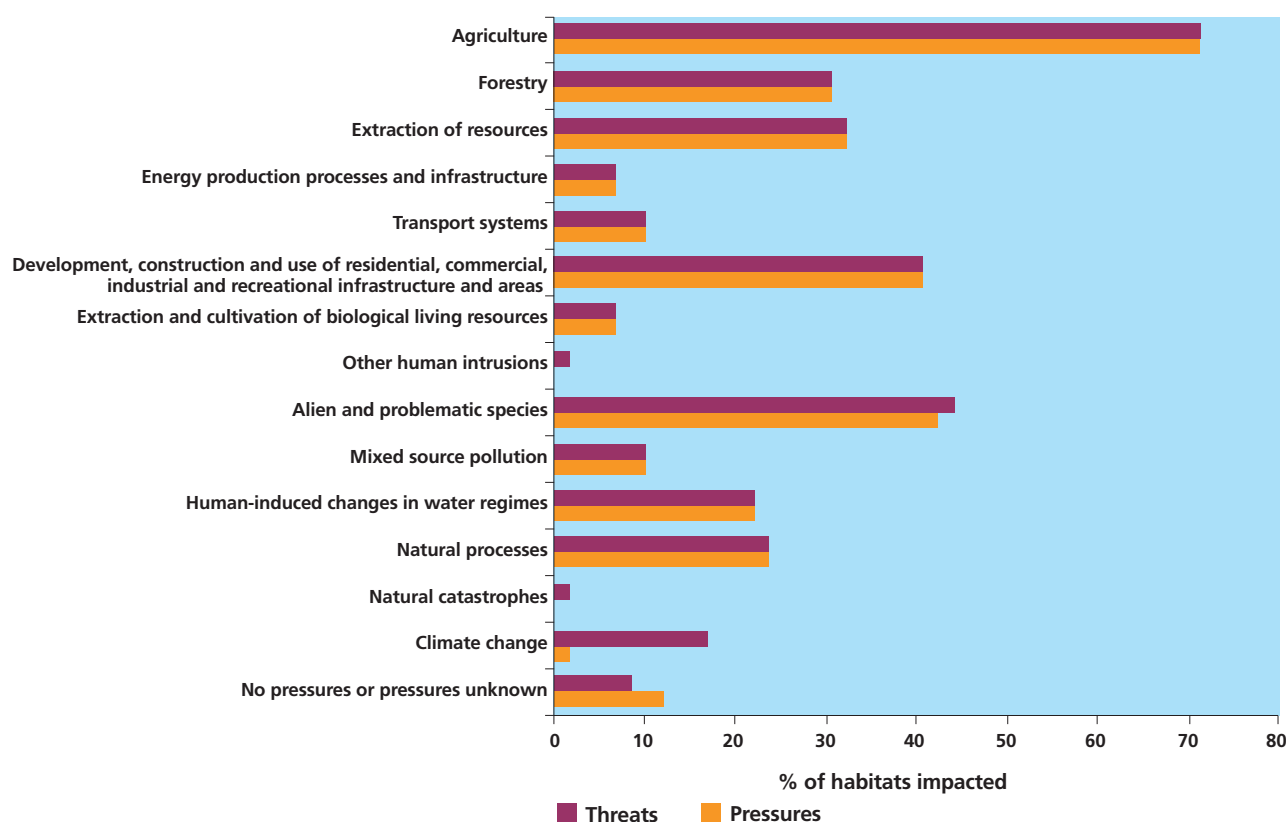


Figure 2: Percentage of habitats impacted by pressure/threat category (combined Medium and High-importance pressures/threats)

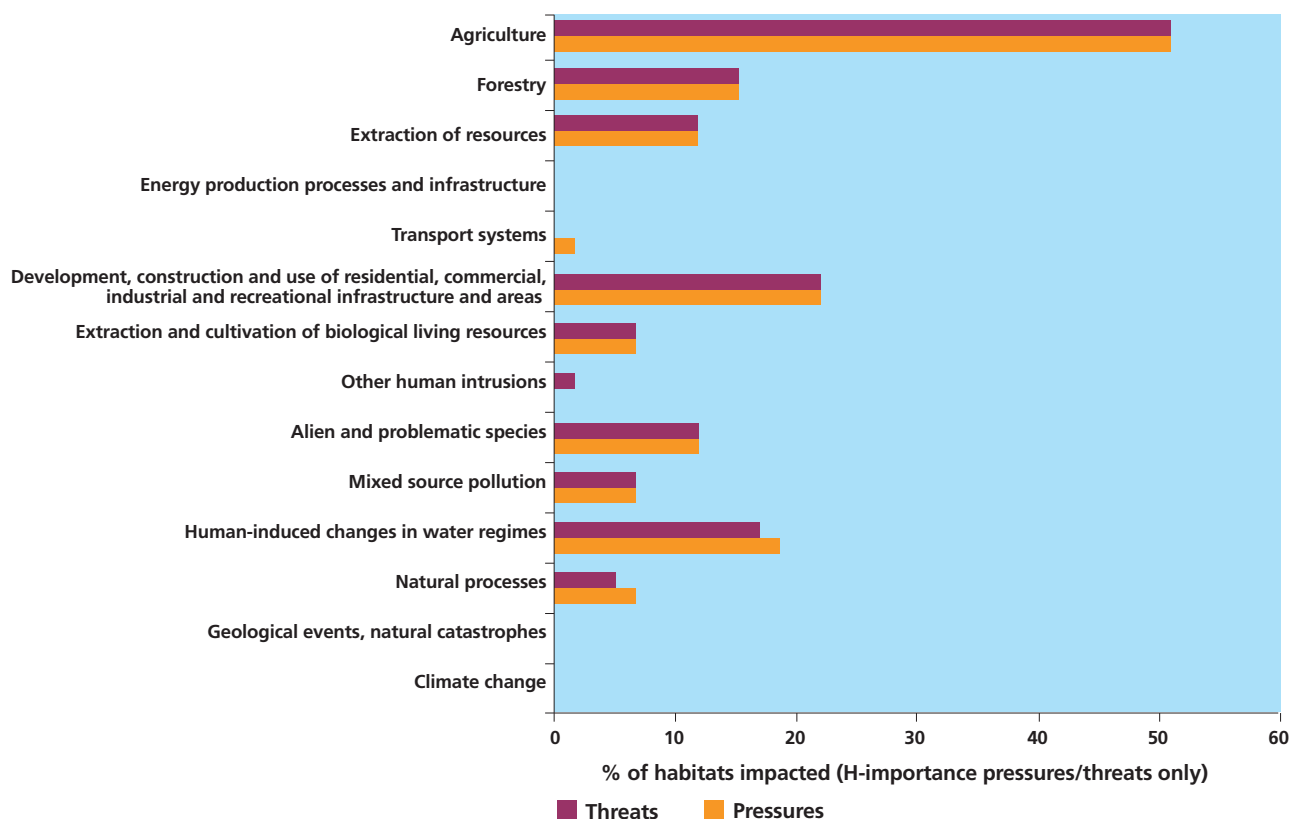


Figure 3: Percentage of habitats impacted by High-importance pressure/threat category

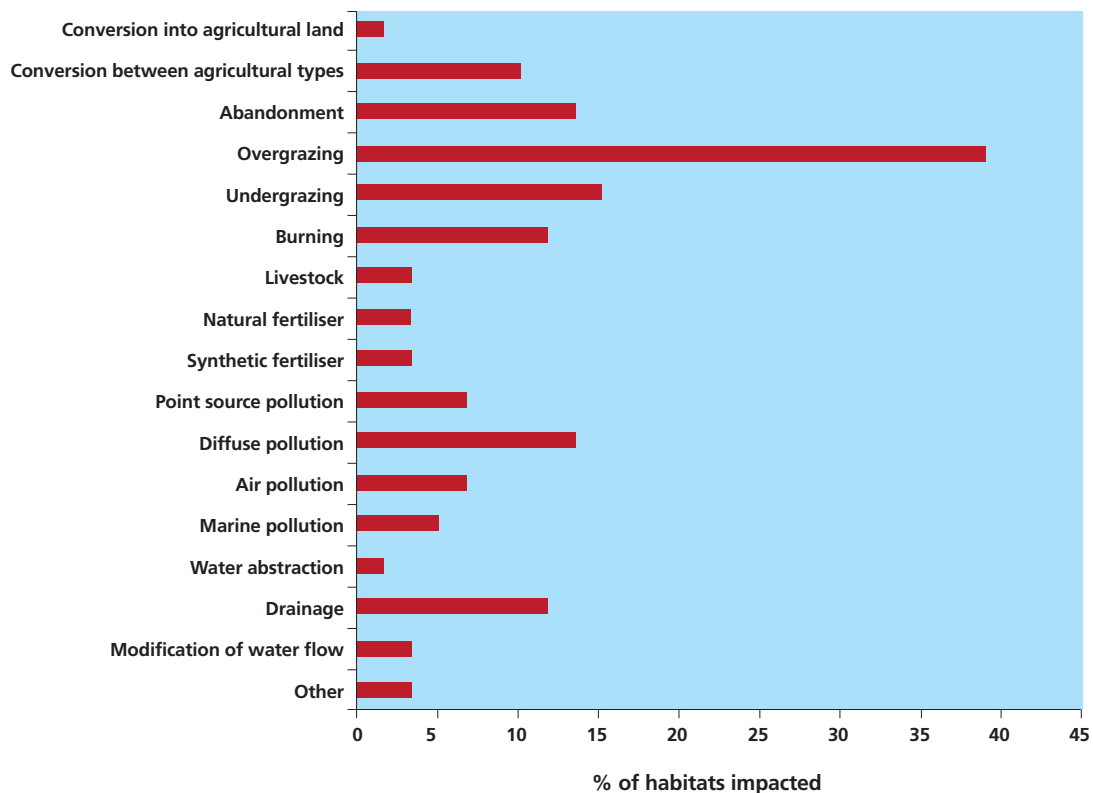


Figure 4: Percentage of habitats impacted by agricultural pressures (Medium and High-importance pressures combined). The names of pressures have been adapted from the standardised list

The next most frequent category of pressure to be recorded in habitats is “I Alien and problematic species” (listed as a pressure in 42% of habitats), closely followed by “F Development, construction and use of residential, commercial, industrial and recreational infrastructure and areas”, a pressure in 41% of habitats (Figure 2). However, alien and problematic species are high-importance pressures at just 12% of habitats, while infrastructure is recorded as a high-importance pressure in 22% of habitats (Figure 3). By far the most frequent impact associated with alien and problematic species is “I02 Other invasive alien species (other than species of Union concern)”, recorded in 22 habitats – of high importance in seven habitats and medium importance in 15; problematic native species, particularly bracken (*Pteridium aquilinum*), are an issue in just six habitats, in all cases regarded as being a medium-importance pressure. The alien species of note are Rhododendron (*Rhododendron ponticum*), cherry laurel (*Prunus laurocerasus*), sea buckthorn (*Hippophae rhamnoides*), common cord-grass (*Spartina anglica*), Canadian waterweed (*Elodea canadensis*) and New Zealand willowherb (*Epilobium brunnescens*); however the relative impact of each species is very different, with Rhododendron, for example, severely impacting the structure of many woodlands while the actual impact of New Zealand willowherb on the functioning of upland rocky habitats is less clear. One factor of note regarding invasive alien species is that a wide range of habitats are affected: terrestrial and aquatic, freshwater and marine, rocky habitats, saltmarsh, grasslands and woodlands. The most frequent sub-category of pressure associated with category F is “F07 Sports, tourism and leisure activities” (e.g. hiking, walking), which is recorded in 15 of the 24 habitats in which this category was recorded. Not surprisingly, habitats affected include coastal habitats such as dunes, machair and sea cliffs, as well as some types of heath and bog, all of which are usually located in areas popular with walkers and tourists.

“F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures)” is the next most frequent “F” category impact, occurring at eight of the 24 habitats where category F was recorded; half of these are associated with coastal protection works.

The frequency of threats is similar to the frequency of pressures across all habitats, implying that there is no evidence that there will be any major decline in pressures over the next 12 years. A notable exception is “N Climate change”, which is listed more frequently as a potential threat (listed in 10 habitats, mostly peatlands) than as an active pressure (listed for sea cliffs). This acknowledges the likely impact of climate change within the next 12 years on many of our more vulnerable habitats, based on the recent increased frequency of extreme weather events. The sub-category listed most frequently is “N01 Temperature changes (e.g. rise of temperature and extremes) due to climate change”, followed by “N02 Droughts and decreases in precipitation due to climate change”.

HABITAT CONSERVATION MEASURES

Conservation measures are reported as being undertaken in 36 habitats. For 27 of these habitats, the main purpose of the conservation measures is to maintain the *Range, Area or Structure and Functions* of the habitat. For five habitats the main purpose of the measures is to restore the habitat, while for the remaining four the purpose of the measures is to increase the habitat area.

The conservation measures implemented are broadly in line with the main pressures noted. The measures listed most often relate to combating pressures associated with agriculture. A total of 28 habitats have measures put in place for this, and they are usually associated with implementation of agricultural schemes such as GLAS or EU LIFE programmes (primarily “CA03 Maintain existing extensive agricultural practices and agricultural landscape features”). The main habitat groups in which “CA03” is implemented are grasslands, dunes, heath and rocky habitats.

Control of problematic species is recorded as being implemented across 14 habitat types. These control measures are undertaken in equal frequency on alien invasive and problematic native species (mainly deer and bracken), despite the fact that most of the impacts recorded in this category are associated with invasive alien species. Habitats being remediated include machair, dune slacks, upland grassland, heaths, bogs, woodlands and sea cliffs.

Conservation measures related to forestry are the third most frequent type of measures implemented across habitats, having been reported as implemented in 10 habitats. For woodland habitats the measures mainly relate to the maintenance of existing forestry practices such as native tree planting, removal of non-native species and control of grazing animals and also, for the two wet woodland habitats, the management of drainage. For non-woodland habitats such as heaths, bogs and upland grassland, which may occur in areas adjacent to commercial forestry or where forestry is regarded as a viable future land-use option for marginal agricultural land, the measures relate to preventing the conversion of these habitats to forestry.

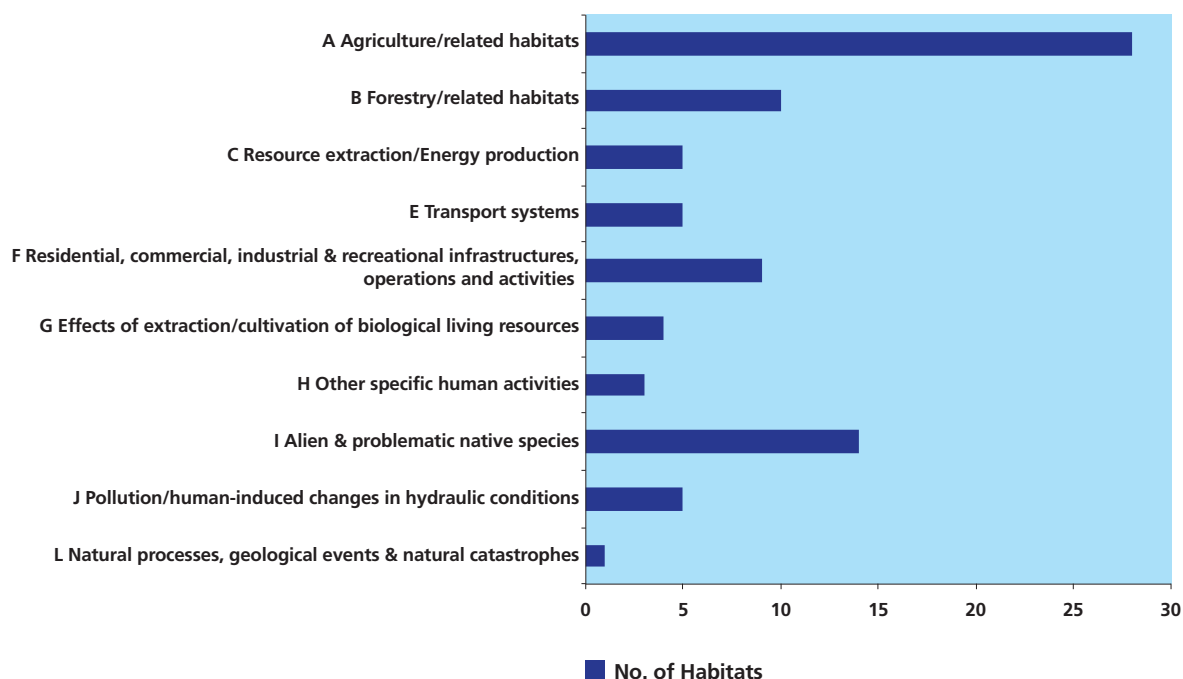


Figure 5: Number of habitats with associated measures in place

SPECIES ASSESSMENTS

Of the 68 Habitats Directive-listed species in Ireland, eight species have been described as vagrants. These include six cetacean species, Allis shad (*Alosa alosa*) and Brandt's bat (*Myotis brandtii*). The latter two species have been assigned to this category since 2007 as there is no evidence of breeding populations of these species. The Nore pearl mussel (*Margaritifera durrovensis*) is no longer considered a separate species from the freshwater pearl mussel.

The *Overall Status* of the remaining 60 species (including three species groups) as depicted in Figure 6a is that 57% of species are in Favourable status and 30% are in Unfavourable status (i.e. Inadequate or Bad), with 72% demonstrating stable or improving trends while 15% demonstrate ongoing declining trends (Figure 6b).

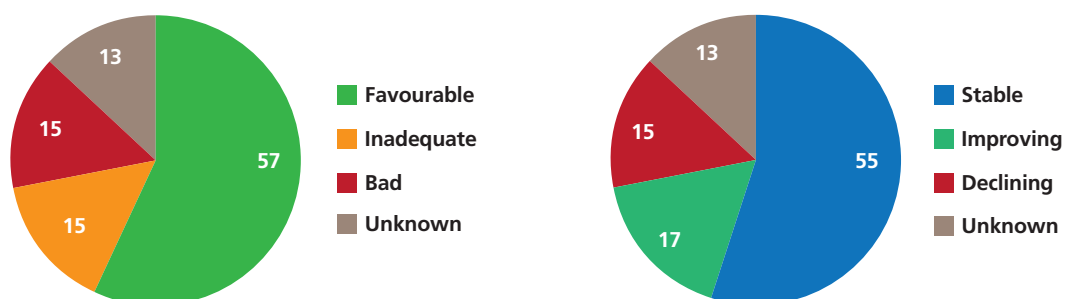


Figure 6: a) Percentage of species in Favourable, Inadequate or Bad condition. b) Percentage of species with Stable, Improving or Declining trends. $n=60$

An overview of the results of the 68 individual species assessments for 2019 is presented in Table 3. The assessment results for 2007 and 2013 are presented for comparison.



Sligo/Leitrim. Deirdre Lynn

Table 3: Assessment results by species for 2007, 2013 and 2019.

Code	Species name	Annex	2007 Overall Status	2013 Overall Status and operator	2019 Overall Status and trend	2019 Range	2019 Population	2019 Habitat for the species	2019 Future Prospects
6985	Killarney fern (<i>Vandenboschia speciosa</i>)	II, IV	●	●	=	=	=	=	●
1528	Marsh saxifrage (<i>Saxifraga hirculus</i>)	II, IV	●	●	=	=	=	=	●
1833	Slender naiad (<i>Najas flexilis</i>)	II, IV	●	▼	▼	▼	▼	▼	●
6216	Slender green feather moss (<i>Hamatocaulis vernicosus</i>)	II	●	●	=	=	=	=	●
1395	Petalwort (<i>Petalophyllum ralfsii</i>)	II	●	●	=	=	=	=	●
1376	Maërl (<i>Lithothamnium coralloides</i>)	V	●	▲	▼	=	=	▼	●
1377	Maërl (<i>Phymatholithon calcareum</i>)	V	●	▲	▼	=	=	▼	●
1400	White cushion moss (<i>Leucobryum glaucum</i>)	V	●	●	=	=	=	=	●
1409	Sphagnum genus (<i>Sphagnum spp.</i>)	V	●	=	=				
1413	Lycopodium group (<i>Lycopodium spp.</i>)	V	●	=	=				
1378	Cladonia subgenus cladina (<i>Cladonia (Cladina) subsp.</i>)	V	●	=	=				
1013	Geyer's whorl snail (<i>Vertigo geyeri</i>)	II	●	▼	▼	▼	▼	▼	●
1014	Narrow-mouthed whorl snail (<i>Vertigo angustior</i>)	II	●	▼	▼	▼	▼	▼	●
1016	Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>)	II	●	▼	▼	▼	▼	▼	●
1024	Kerry slug (<i>Geomalacus maculosus</i>)	II, IV	●	●	▲	▲	▲	=	●
1029	Freshwater pearl mussel (<i>Margaritifera margaritifera</i>)	II, V	●	▼	▼	=	▼	▼	●
1990	Nore pearl mussel (<i>Margaritifera durrovensis</i>)	II, V	●	▼					
1092	White-clawed crayfish (<i>Austropotamobius pallipes</i>)	II, V	●	=	▼	▼	▼	=	●
1065	Marsh fritillary (<i>Euphydryas aurinia</i>)	II	●	▼	▲	▲	▲	=	●
1095	Sea lamprey (<i>Petromyzon marinus</i>)	II	●	=	=	=	=	=	●
1096	Brook lamprey (<i>Lampetra planeri</i>)	II	●	●	=	=	=	=	●
1099	River lamprey (<i>Lampetra fluviatilis</i>)	II, V	●	●		×	×	=	
5046	Killarney shad (<i>Alosa killamensis</i>)	II, V	●	●	=	=	=	=	●
1103	Twaite shad (<i>Alosa fallax</i>)	II, V	●	=	=	=	=	=	●
5076	Pollan (<i>Coregonus pollan</i>)	V	●	×	=	=	=	=	●
1106	Atlantic salmon (<i>Salmo salar</i>)	II, V	●	=	=	=	▼	=	●
6284	Natterjack toad (<i>Epidalea calamita</i>)	IV	●	▲	=	=	×	▲	●
1213	Common frog (<i>Rana temporaria</i>)	V	●	●	=	=	=	=	●
1223	Leatherback turtle (<i>Dermochelys coriacea</i>)	IV	●			×	×		
1303	Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	II, IV	●	●	▼	▼	▲	▼	●
1309	Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	IV	●	●	▲	=	▲	=	●
5009	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	IV	●	●	▲	=	▲	=	●
1317	Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	IV	●			×	▲	=	
1322	Natterer's bat (<i>Myotis nattereri</i>)	IV	●	●	=	=	=	=	●

STATUS: ● Favourable ● Unfavourable-Inadequate ● Unfavourable-Bad ● Unknown ● Vagrant

TREND: ▲ Improving = Stable ▼ Declining × Unknown

Code	Species name	Annex	2007 Overall Status	2013 Overall Status and operator	2019 Overall Status and trend	2019 Range	2019 Population	2019 Habitat for the species	2019 Future Prospects
1314	Daubenton's bat (<i>Myotis daubentonii</i>)	IV	●	●	▲	=	▲	=	●
1330	Whiskered bat (<i>Myotis mystacinus</i>)	IV	●	●	=	=	=	=	●
1326	Brown long-eared bat (<i>Plecotus auritus</i>)	IV	●	●	▲	=	▲	=	●
1331	Leisler's bat (<i>Nyctalus leisleri</i>)	IV	●	●	▲	=	▲	=	●
1334	Mountain hare (<i>Lepus timidus</i>)	V	●	●	=	=	=	×	●
1355	Otter (<i>Lutra lutra</i>)	II, IV	●	●	▲	=	▲	=	●
1357	Pine marten (<i>Martes martes</i>)	V	●	●	▲	▲	▲	▲	●
1364	Grey seal (<i>Halichoerus grypus</i>)	II, V	●	●	▲	=	▲	=	●
1365	Harbour seal (<i>Phoca vitulina</i>)	II, V	●	●	=	=	=	=	●
1345	Humpback whale (<i>Megaptera novaeangliae</i>)	IV	●	●	●	=	×	=	●
1349	Common bottlenose dolphin (<i>Tursiops truncatus</i>)	II, IV	●	●	=	=	×	=	●
1350	Common dolphin (<i>Delphinus delphis</i>)	IV	●	●	=	=	×	=	●
1351	Harbour porpoise (<i>Phocoena phocoena</i>)	II, IV	●	●	=	=	×	=	●
2027	Killer whale (<i>Orcinus orca</i>)	IV	●	●	●	=	×	=	●
2029	Long-finned pilot whale (<i>Globicephala melas</i>)	IV	●	●	=	=	×	=	●
2030	Risso's dolphin (<i>Grampus griseus</i>)	IV	●	●	=	=	×	=	●
2031	White-sided dolphin (<i>Lagenorhynchus acutus</i>)	IV	●	●	=	=	×	=	●
2032	White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)	IV	●	●	=	=	×	=	●
2034	Striped dolphin (<i>Stenella coeruleoalba</i>)	IV	●	●	=	=	×	=	●
2035	Cuvier's beaked whale (<i>Ziphius cavirostris</i>)	IV	●	●	=	=	×	=	●
2038	Sowerby's beaked whale (<i>Mesoplodon bidens</i>)	IV	●	●	=	=	×	=	●
2618	Minke whale (<i>Balaenoptera acutorostrata</i>)	IV	●	●	=	=	×	=	●
2621	Fin whale (<i>Balaenoptera physalus</i>)	IV	●	●	=	=	×	=	●
5020	Blue whale (<i>Balaenoptera musculus</i>)	IV	●	●	●	=	×	=	●
2624	Sperm whale (<i>Physeter macrocephalus</i>)	IV	●	●	=	=	×	=	●
5033	Northern bottlenose whale (<i>Hyperoodon ampullatus</i>)	IV	●	●	●	=	×	=	●
2619	Sei whale (<i>Balaenoptera borealis</i>)	IV	●	●	●	=	×	=	●
1348	Northern right whale (<i>Eubalaena glacialis</i>)	IV	●	●	●	●	●	●	●
2028	False killer whale (<i>Pseudorca crassidens</i>)	IV	●	●	●	●	●	●	●
2037	True's beaked whale (<i>Mesoplodon mirus</i>)	IV	●	●	●	●	●	●	●
2622	Pygmy sperm whale (<i>Kogia breviceps</i>)	IV	●	●	●	●	●	●	●
5029	Beluga/White whale (<i>Delphinapterus leucas</i>)	IV	●	●	●	●	●	●	●
5034	Gervais' beaked whale (<i>Mesoplodon europaeus</i>)	IV	●	●	●	●	●	●	●
1102	Allis shad (<i>Alosa alosa</i>)	II, V	●	●	●	●	●	●	●
1320	Brandt's bat (<i>Myotis brandtii</i>)	IV	●	●	●	●	●	●	●

Many species remain in Favourable status. *Population* increases and *Range* expansion have been observed for several bat species, marsh fritillary (*Euphydryas aurinia*), otter (*Lutra lutra*) and pine marten (*Martes martes*). Ongoing declines are reported for all whorl snails, freshwater pearl mussel, lesser horseshoe bat (*Rhinolophus hipposideros*) and maërl species. Knowledge has improved for many cetacean species and all data point to Favourable status for all species. A re-assessment of data for river lamprey (*Lampetra fluviatilis*) and leatherback turtle (*Dermochelys coriacea*) has resulted in an Unknown assessment for these species due to difficulties associated with identifying river lamprey juveniles and the paucity of records across a vast marine area for the leatherback turtle.

SPECIES PRESSURES/THREATS

The percentage of species impacted by Medium and High-importance pressures and threats is presented in Figure 8. Pressures are identified as impacting on 46 of the 57 taxa assessed. Threats are identified for 48 taxa. Some impacts (pressures and threats) are specific to a particular species group. Most marine mammals, as well as sea lamprey (*Petromyzon marinus*), twaite shad (*Alosa fallax*) and maërl species, suffer impacts due to "G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species". Several fish species are affected by "D02 Hydropower (dams, weirs, run-off-the-river), including infrastructure", primarily because these structures act as barriers to movement of the species, restricting the area available for spawning. All marine mammals are subject to a certain level of disturbance due to geotechnical marine surveys (pressure category "E Extraction of resources"), although it should be noted that, in relation to seismic exploration, a robust regulatory and management regime is applied in order to avoid potentially significant impacts on marine mammals. Several marine mammal species are also affected by commercial shipping and transport, with "E02 Shipping lanes and ferry lanes transport operations" affecting whale species in particular.

Impacts from agricultural activities, and to a lesser extent forestry, are reported as having a negative effect on a wide range of species, including fish, molluscs, terrestrial mammals and vascular plants. This is because of the wide sphere of influence of some of these activities which, though implemented at relatively local levels, may influence a much wider area, particularly if they affect groundwater supplies or nearby watercourses. Examples include drainage, fertiliser application and clear-felling. Unlike the Annex I habitats, inappropriate grazing is less of a problem for listed species in general, although undergrazing or abandonment are a significant problem for the whorl snails and marsh fritillary butterfly, whose habitats frequently occur in agricultural systems. The Agriculture category represents the highest percentage of High-importance pressures (Figure 9) relative to other categories, with the incidence predicted to increase over the next 12 years; this has been linked to the threat from fertiliser and pollution on selected fish species.

The issue of alien species is a cross-cutting one, as it is for habitats, but it is recorded as a pressure for species much less frequently; however the impact is predicted to increase over the next 12 years. These invasive species are having a greater impact on freshwater or marine species, for example the white-clawed crayfish (*Austropotamobius pallipes*) is impacted by the crayfish plague fungus (*Aphanomyces astaci*); slender naiad (*Najas flexilis*) is impacted by the Canadian waterweed (*Elodea canadensis*); twaite shad and pollan (*Coregonus pollan*) are impacted by the Asian clam (*Corbicula fluminea*); pollan is additionally impacted by zebra mussels (*Dreissena polymorpha*); maërl species are impacted by the invasive alga wireweed (*Sargassum muticum*); natterjack toad (*Epidalea calamita*) is impacted by the aquatic New Zealand pygmyweed (*Crassula helmsii*). The only terrestrial invasive species noted were sea buckthorn (*Hippophae rhamnoides*), impacting natterjack toad, and Rhododendron (*Rhododendron ponticum*) in woodlands, reported as having a negative impact on the habitat of the Kerry slug (*Geomalacus maculosus*).

In general, lower numbers of pressures and threats are reported for bat species than the other species groups, with no significant impacts noted for six of the nine bat species assessed. Many bat populations are increasing, which may be partly linked with climate change. The lesser horseshoe bat, although increasing in numbers, has suffered a reduction in *Range* resulting in a disjunction between populations in the south-west and the western populations. The assessments indicated that Climate change is predicted to have the greatest negative impact on fish species in the near future.

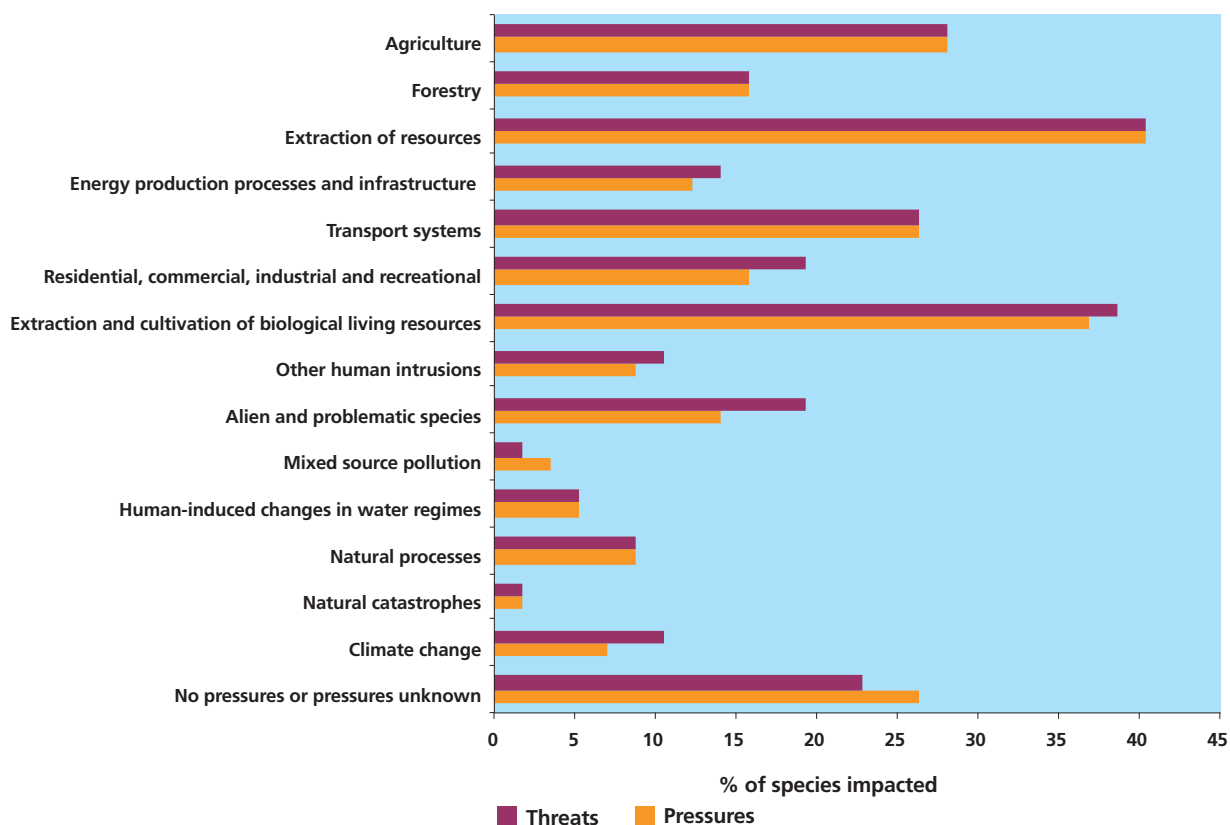


Figure 8: Percentage of species impacted by pressure/threat category (combined Medium and High-importance pressures/threats)

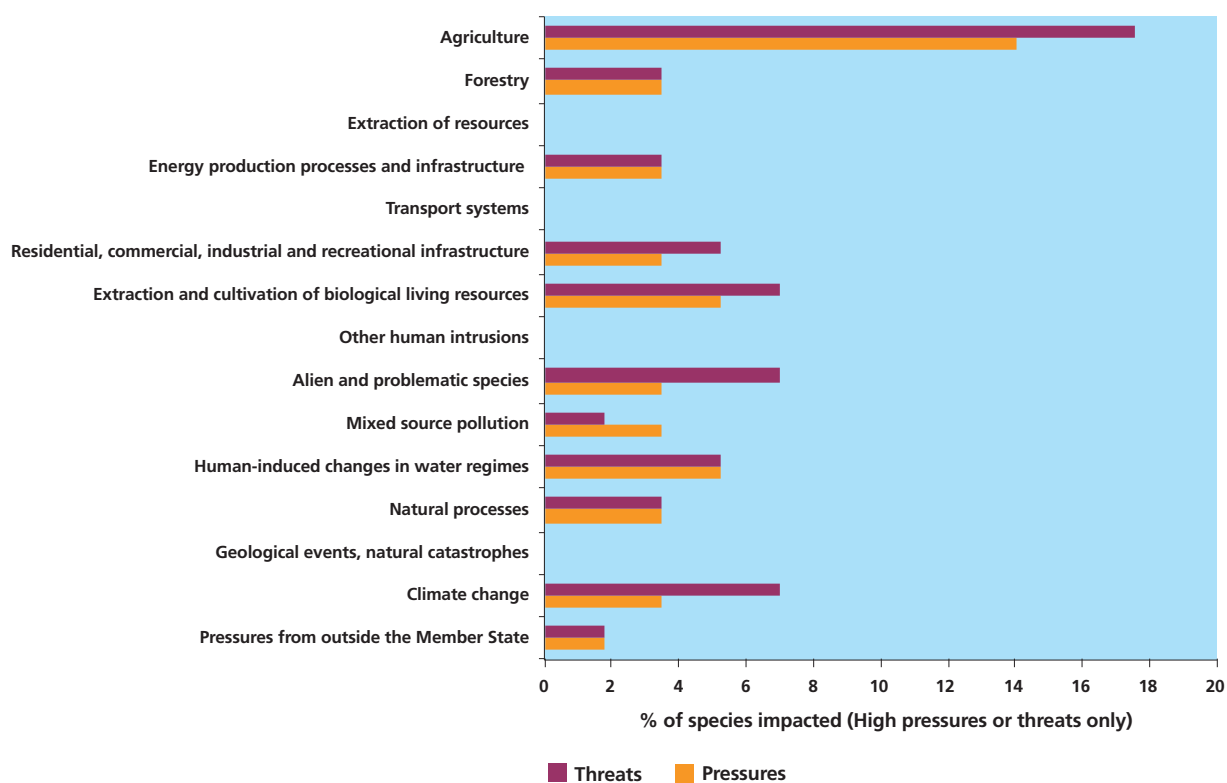


Figure 9: Percentage of species impacted by High-importance pressure/threat category

SPECIES CONSERVATION MEASURES

Conservation measures are reported only for Annex II species. Conservation measures are being implemented for 12 of the 24 Annex II species assessed. The most frequent purpose of the measures implemented is maintenance of *Range/Population/Habitat for the species* (seven species), followed by expansion of *Range* (two species), increasing population size and/or improvement of population dynamics (two species), and restoration of habitat (one species).

The most widely recorded conservation measure category among the species is “CF Measures related to residential, commercial, industrial and recreational infrastructures, operations and activities”, with eight species listed as having at least one sub-category of this measure implemented. For four marine species the sub-category “CF09 Reduce/eliminate noise, light, heat or other forms of pollution from industrial, commercial, residential and recreational areas and activities” is listed, and this is primarily linked to reducing the effects of seismic activity. For two fish species, the measure relates to managing changes in hydrological and coastal systems and regimes, as this includes management of barriers such as weirs and dams.

When all sub-categories of a measure are counted, the most frequent category listed is “CG Measures relating to the effects of extraction/cultivation of biological living resources”. These refer mainly to measures designed to combat impacts from interactions between (mostly marine) species and commercial fisheries vessels and aquaculture such as accidental entanglement in nets, and control of illegal fishing. Agricultural measures are also frequent, with four agricultural measures implemented in relation to the freshwater pearl mussel alone. These measures are delivered through targeted schemes such as the Green, low-carbon, agri-environment scheme (GLAS), Results-based agri-environment payment schemes (RBAPS), EU LIFE projects and European Innovation Partnership (EIP) projects.

Overall, the most frequent measures at the sub-category level are “CA10 Reduce/eliminate point pollution to surface or ground waters from agricultural activities”, “CA11 Reduce diffuse pollution to surface or ground waters from agricultural activities”, “CB14 Manage drainage and irrigation operations and infrastructures”, and “CC12 Reduce/eliminate noise, light, thermal and other forms of pollution related to resource exploitation and energy production,” all of which are recorded in four species assessments.

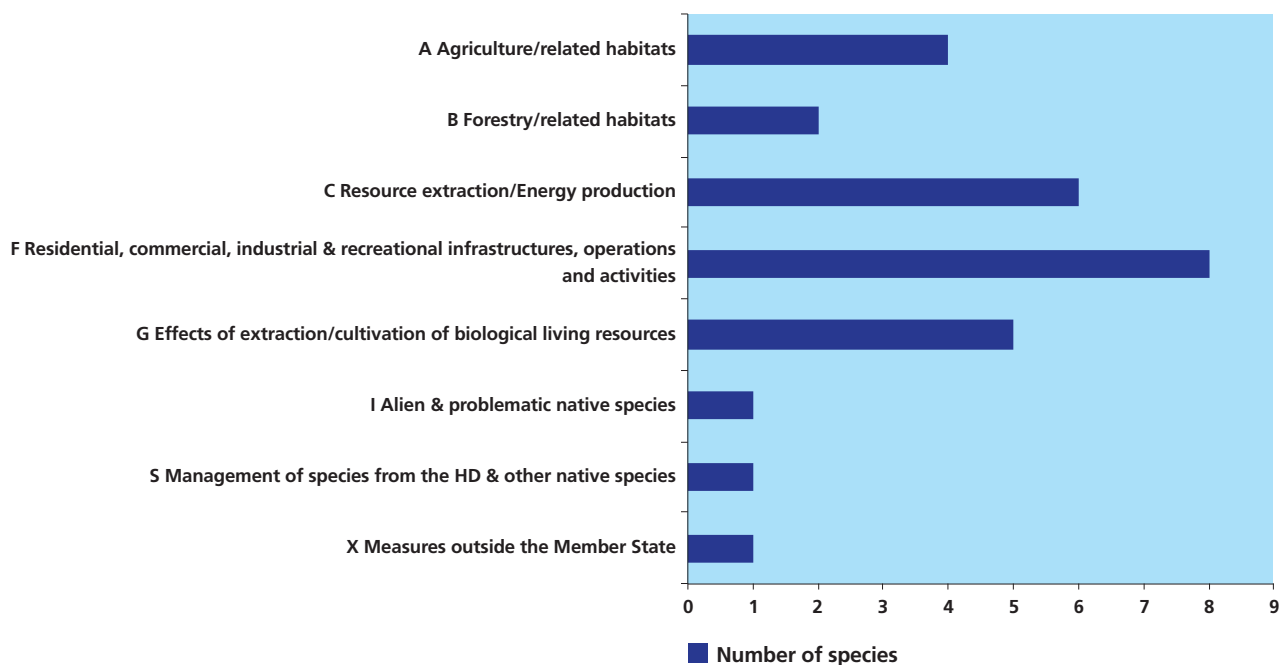


Figure 10: Number of species with associated measures in place

CONTRIBUTION OF THE SAC NETWORK

The trend of habitat in good condition and population trend is determined within the SAC network for habitats and species respectively. This does not take into account whether or not the habitat or species is a selection feature in each SAC. The SAC network affords a greater level of protection for 13 habitats and one species (Figure 11 a and b). One species (salmon (*Salmo salar*)) appears to be in worse condition within the network. This is an artefact of the assessment process. For the national assessment, the declining trend in population in the last 12 years is offset by improvements in the last 5 years and the Overall trend is therefore set as stable; the trend within the network is solely based on the population trend.

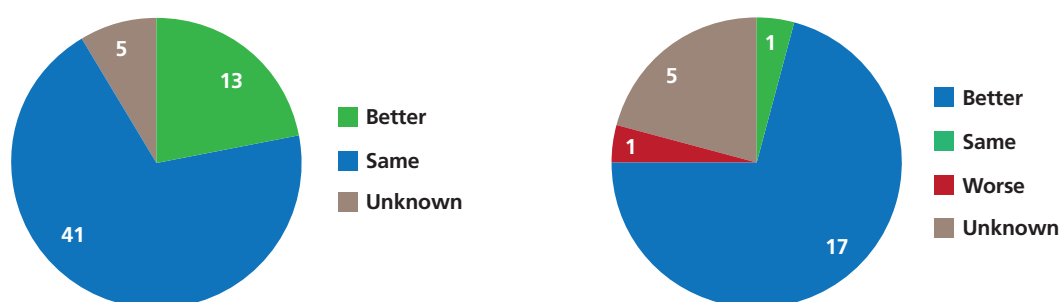


Figure 11: Number of habitats (a) and species (b) that are better, same, worse or unknown within the SAC network.

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CONCLUSIONS



CONCLUSIONS

This is the third Irish report on the status of habitats and species that are protected under the EU Habitats Directive.

The conclusion is that most Irish habitats listed on the Habitats Directive are in Unfavourable status and almost half are demonstrating ongoing declines. The majority of species listed on the Habitats Directive are, however, in Favourable status in Ireland, and stable, although a small number are considered to be in Bad status and continue to require concerted efforts to protect and restore them.

Before further considering the results, it is worth recalling that these habitats and species are considered threatened in Ireland and across Europe and are listed in the Directive for that very reason. The assessments are based on data collected across the whole national territory and therefore include many areas that are undesignated for nature protection. The strict guidelines for assessment set high thresholds and it is difficult for a habitat or species to achieve a Favourable rating, even if it were entirely confined to protected areas. In many cases it will take a substantial period of time for protective or restorative measures to take effect.

The main pressures on habitats are ecologically unsuitable grazing levels – which can be undergrazing (or even abandonment) as well as overgrazing; pollution of freshwaters and coastal marine waters; drainage and/or cutting of peatlands; invasive species; and recreational pressures.

Although very substantial progress has been made in the protection of SAC raised bogs, these will continue to dry out and lose their active peat-forming areas until restoration work is commenced. An end to turf-cutting will of itself not restore active raised bog habitat but it is the essential precursor to blocking the drains and allowing natural bog-building processes to start up again. Meanwhile some undesignated bogs are still used for peat exploitation and therefore the national resource must continue to show a decline.

NPWS has developed a management planning process for raised bogs whereby conservation measures necessary to achieve a site's conservation objective targets are identified and

mapped. Individual site-specific restoration plans have been prepared for 53 raised bog SACs based on this process. The National Raised Bog Special Areas of Conservation Management Plan 2017-2022 sets out a roadmap for the restoration and conservation of raised bog SACs in Ireland. Within this plan, a programme of conservation measures for the first cycle of the Plan (2017-2022) is outlined and it includes a commitment for protection and restoration activities within all raised bog SACs and the new network of Natural Heritage Areas for Ireland. A significant part of the programme is to restore active raised bog through implementation of best-practice restoration techniques within the designated raised bog network. The Plan sets an overall target of achieving 3,747ha of active raised bog within the network of SACs and NHAs. The measures fall into two broad categories: preventative measures including control of activities such as drainage and turf-cutting, and active intervention measures including removal of forest plantations, drain blocking and bund construction on the high bog and cutover bog.

In tandem with the restoration programme, NPWS has worked to protect the integrity of raised bog SACs from turf-cutting by prohibiting cutting that could potentially affect active raised bog and providing compensation, including relocation where feasible, through the Cessation of Turf Cutting Compensation Scheme (CTCCS). In 2014, NPWS extended the CTCCS to an additional 36 raised bog NHAs.

Bord na Móna will cease the supply and use of peat for power production by 2030. This move away from peat exploitation by 2030 takes account of Government policy to reduce dependence on carbon-based fuels in energy production. The company is required to rehabilitate its worked bogs and has already restored 1,000ha of raised bog and contributed to the rehabilitation of around 15% of its original 80,000ha landholding with input also from NPWS, NGOs and community groups.

Grasslands, such as orchid-rich grasslands and hay meadows, have undergone significant losses over the last 10-15 years, with 31% and 28% of the area monitored respectively reported as being lost. These habitats are threatened either

by intensification of farming or insufficient grazing and abandonment. There have been some improvements in specific areas, in particular through the Burren Programme and Aran LIFE, which encourage farmers to use their traditional knowledge to restore the native grassland flora and the limestone pavement habitat. The current Common Agricultural Policy provides opportunities within national rural development measures for beneficial agri-environment schemes but, other than in the Burren and Aran Islands, measures to date have not been successful in grassland restoration and need to be reviewed and refined.

Oak, alluvial and yew woodlands are deemed to be in Bad status as typically these habitats are small and fragmented and therefore their area is considered insufficient for full ecological functionality. The improvements in management, primarily through the Native Woodland Scheme and measures undertaken within National Parks, led to an assessment of Bad with an improving trend in 2013; this trend has been assessed as stable in 2019 as the monitoring results did not demonstrate a significant positive effect of these measures at the national level.

Most of the other habitats considered in Unfavourable status are being affected by pressures which show little sign of abating in the near future. These include some of the lake and coastal marine habitats, which are affected by excessive nutrient loading from the surrounding catchment, and which could take a long time to fully recover.

The 2nd Cycle River Basin Management Plan 2018-2021 (RBMP) under the Water Framework Directive identifies key threats to water quality on a catchment basis and is developing evidence-based measures for their mitigation. A catchment approach has been adopted to ensure consideration of both water and flooding issues within land use planning and a total of 726 waterbodies have been identified within 190 Priority Areas for Action. The RBMP will ensure improved targeting of measures for freshwater and transitional waters including lagoons, for example through advice to farmers and through financial support for urban wastewater treatment and for improved domestic treatment systems.

Some habitats have been the subject of significant conservation measures in recent years but either the time taken for recovery is too great for improvements to be detected at this stage, or the measures in one area have been offset by declines elsewhere. Thus for example, improved management of sheep in the uplands, through the Commonage Framework Plans, has allowed re-vegetation of many areas but it will take years for plant communities to fully re-establish and there are still overgrazed areas. In the meantime some other areas are now undergrazed, furthermore there has been some serious damage caused by wildfires.

There are some reported changes in status assessment (both improvements and declines) which are due to better ecological knowledge or understanding of pressures, rather than actual change on the ground. Our knowledge of the distribution and condition of habitats and species has improved again in this reporting period. However some baseline surveys are still needed, in particular for fens.

The species status assessments are much better, with 57% in Favourable status, including most of the bat species, seals, and cetaceans. A declining trend is reported for 15% of species, with freshwater species most at risk. However, an improving trend is reported for 17% of species, with populations of species such as the otter and pine marten and many bat species expanding. The natterjack toad was assessed as Bad with an improving trend in 2013, however this has been assessed as a stable trend in 2019 as ongoing improvements to restore *Range* are not exhibiting adequate positive results. The salmon, which is one of the most monitored species in Ireland, is stable due to a very recent improving trend, though still in low numbers, and is susceptible to a wide range of pressures during its time in the ocean as well as in freshwater. Other fish species such as the sea lamprey, pollan and twaite shad remain in Bad status. The sea lamprey is prevented from reaching suitable breeding habitat in river by weirs; the pollan is impacted by nutrient enrichment in the large lakes where it lives, and by introduced competing fish species, and there are concerns about the habitat quality at spawning sites for twaite shad. The greatest

concern continues to be the freshwater pearl mussel, as only a few rivers have populations that show juvenile recruitment.

The EU LIFE Programme has been a major source of support for the conservation, management and restoration of habitats to support threatened and protected species. The Raptor LIFE (2015-2019) project is working to connect and restore habitats for salmon and brook lamprey. Kerry LIFE is focusing on the critically endangered freshwater pearl mussel by working with farmers and forest-owners to develop and deliver sustainable land-use management techniques and practices in two catchments. The Pearl Mussel Project, an EIP, is furthering suitable habitat management by developing and rolling out a results-based agri-environmental scheme in the top eight freshwater pearl mussel catchments.

There are many challenges to address between now and 2025, when the next report in this series is due. These challenges will be further exacerbated by the effects of climate change, particularly on peatland habitats and fish species. Much will depend on the identification and development of necessary conservation measures and the elaboration of mechanisms for the delivery of these measures in the next 6-year period. Operational Programmes accessing EU funding instruments will need to be used to meet the strategic national and EU objectives for biodiversity, including in Natura 2000. Given the prevalence of farming in an Irish context, the CAP Strategic Plan should provide opportunities for national rural development measures and direct payment supports that, if properly designed, could improve the status of our farmed habitats and species. Funding from the national exchequer will also be required to supplement EU funding in many cases.

After a long period of cutbacks the National Parks and Wildlife Service is rebuilding its staff complement and other sectors have increased staff resources for community and farm liaison, but it is expected that this capacity needs to be significantly enhanced in the coming years.

The continuing implementation of national and EU legislation will have positive impacts, and continued use of EU funds such as LIFE can have very beneficial results in key areas. As always, cooperation between the many sectors who have an interest in the land, in the sea, in the landscape and in nature will be essential.





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