

Northern Ireland Habitat Action Plan
Maerl Beds
Final Draft – April 2003

1. Current Status

1.1 Physical and biological status

- 1.1.1 The term maerl is used to describe several species of calcified marine algae which grow as unattached nodules on the seabed. Maerl is slow-growing, but over long periods its dead calcareous skeleton can accumulate into deep deposits, overlain by a thin layer of pink, living maerl. In favourable conditions Maerl can form extensive beds and has been commercially exploited in other European countries for use in agriculture as well as the cosmetic, pharmaceutical and other industries. The maerl habitat frequently supports a rich community of associated flora and fauna. Where dead maerl is washed up on beaches it is often mistaken for coral, as it has a superficially similar appearance.
- 1.1.2 Maerl beds typically develop in sheltered conditions where there is some tidal flow, such as in the narrows and rapids of sea loughs or in the straits and sounds between islands. Beds may also develop in more open waters where wave action is sufficient to remove fine sediments, but not strong enough to break or disperse the brittle maerl branches. Live maerl has been found in the UK at depths of 40 m but beds are typically much shallower, from above 20 m extending to low tide level.
- 1.1.3 The location, extent and condition of maerl beds in Northern Ireland is poorly known. However several research studies are currently underway on various aspects of local maerl habitats (see 3.2.2). Maerl beds are known in Northern Ireland in Strangford Lough and off the north east coast of County Antrim.
- 1.1.4 Two maerl beds are known to occur in Strangford Lough. Near Zara Shoal in Castleward Bay there is a bed of live *Phymatolithon calcareum* which comprises thinly scattered maerl nodules on shelly gravel at a depth of 9-12 m. The bed is relatively small and, although incompletely mapped, it is believed to extend approximately 50m x 50m (S. Vise, pers. comm.).
- 1.1.5 The second site in Strangford Lough is in the channel between Rainey Island, Sketrick Island and Ballydorn. This bed is composed of fossil *Lithothamnion glaciale*, which has been dated to approximately 4000 B.P. A very small amount of live *P. calcareum* is also found north of the Ballydorn Lightship (Cadew Point) in an area of intertidal maerl gravel (S. Vise, pers. comm.).
- 1.1.6 Extensive maerl beds were also reported at Garron Point and Ballygally Head by Erwin *et al.* (1986) during the Northern Ireland Sublittoral Survey. Scattered maerl was recorded from a number of other sites including Church Bay, Ringfad Point, Cushendun Bay and Carlingford Lough. On the open coast, maerl was recorded at depths ranging from approximately 10m to 35m with dense beds at 15-25m. In the more sheltered Carlingford Lough it was found at depths of 2-5m. In both cases tidal streams of 2-4 knots were recorded. Part of the area of the maerl beds off Cushendun have more recently been surveyed by Industrial Research and Technology Unit (now

part of the Water Management Unit (WMU) of Environment and Heritage Service (EHS)).

- 1.1.7 Species recorded on the maerl beds in Northern Ireland include *Stenogramme interrupta*, *Gelidiella*, *Scinaia turgida*, *Halarachnion ligulatum*, *Scmitzia neapolitana*, *Dudresnaya verticillata*, *Peysonelia dubyi* and *Radicilingua thysanorhizans* (Erwin *et al*, 1986).
- 1.1.8 Maerl is of commercial value and is extracted in other countries for use as a soil conditioner, animal food additive, filtration in acidic drinking water and various other uses.

1.2 Links with other action plans

- 1.2.1 This maerl habitat action plan identifies specific targets and actions required to deliver Northern Ireland's contribution to the UK action plan. (UK Biodiversity Steering Group, 1999)
- 1.2.2 Maerl beds may occur within tidal rapids and saline lagoons; the actions proposed in this plan should therefore be combined with efforts to implement the actions of other appropriate plans.
- 1.2.3 The Northern Ireland Species of Conservation Concern (SoCC) list is currently under review. This review will identify local priority species and those which may require action plans.

2. Current factors affecting the habitat

- 2.1 Direct physical disturbance. This can include extraction (although no commercial extraction of maerl has taken place in the past or takes place currently in Northern Ireland), scallop dredging and moorings. Scallop dredging is known to take place in Strangford Lough and also on the open coast. Scallop dredging is well known for its ability to cause damage to maerl beds, for example, Hall-Spencer & Moore (2001) found that a single passage of a Newhaven scallop dredge can kill 70% of the living maerl present in its path and damage most of the associated flora and megafauna. The maerl beds within Strangford Lough are at present believed to be subject to some physical damage from anchor and mooring chains. The Zara Shoal bed is situated within Castleward Bay which is a popular location for anchoring by recreational craft during the summer. The beds near Rainey Island are also close to moorings of the Down Cruising Club. It is possible that anchors, blocks and chains cause physical damage to the maerl beds at low water through abrasion.
- 2.2 Indirect physical disturbance. Maerl beds are likely to have suffered historically due to the construction of causeways between islands in Strangford Lough. Most of the causeways are believed to date from prehistoric times with only one known to have been built in recent years (1970s). It is probable that causeways create a change in coastal processes which may affect some maerl populations (if present).
- 2.3 Pollution. Maerl beds occur in Red Bay, off the Antrim coast, where there is also a commercial fish farm operation. Fish farms can sometimes have an effect on maerl

beds by causing eutrophication and promoting the formation of dense beds of *Beggiatoa* (Birkett *et al.*, 1998). However, it is believed that the maerl in Red Bay is currently unaffected by fish farming at its present location due to the strong tidal streams in the area which rapidly dilute and disperse any discharges from the fish farm (J. Breen, pers.comm.).

- 2.4** Climate change. Summary predictions for temperature and sea level rise as a result of global warming have been modelled by the MONARCH project (Harrison *et al.*, 2001). The prediction of increased summer temperatures, may lead to an increased level of desiccation in the intertidal area, restricting the distribution of the intertidal species. The prediction of milder winters may be beneficial to Maerl since the incidence of loss due to severe winter frost or ice events will decrease and growth periods will be extended. Warming by a couple of degrees could encourage the flourishing of the cold sensitive *Lithothamnion coralloides* in more northerly areas, whereas *L. glaciale* may retreat (Birkett *et al.* 1998; Hiscock *et al.*; 2001). The decline of overall storminess predicted, is more than likely to be offset by the increased incidence of extreme events which could have an impact on maerl beds.
- 2.5** Sea level changes. Sea level changes will have a key impact on littoral communities which are adapted to certain amounts of desiccation and immersion and to certain tidal regimes. A net mean sea level rise in the region of 10 - 15cm is predicted for Northern Ireland by 2020 and 65 – 70cm by 2050 (Harrison *et al.*, 2001).

3 Current action

3.1 Legal Status

- 3.1.1** Strangford Lough is designated as a Marine Nature Reserve and is also included in the UK's list of candidate Special Areas of Conservation (cSACs) which has been submitted to Europe under the terms of the *European Community (EC) Habitats Directive*. A management scheme has been drawn up for the candidate SAC, which includes provisions to maintain specified habitats at favourable conservation status. Although maerl is not specifically listed in Annex I of the Directive, it is a recognised characteristic of *Coastal Lagoons* and *Submerged sandbanks covered by seawater all of the time*. They are also a characteristic feature of the Annex I habitats *Large shallow inlets and bays* and *Mudflats and sandflats not covered by the tide at low water*.
- 3.1.2** Maerl is currently listed under Annex Vb of the EU Habitats Directive. This means that member states shall take measures to ensure that the taking of the species in the wild and their exploitation is compatible with their being maintained at a favourable conservation status.
- 3.1.3** Discharges to the sea are controlled by a number of EC Directives, including *Dangerous substances*, *Shellfish (Waters)*, *Integrated Pollution Control*, *Urban Waste Water Treatment* and *Bathing Waters Directives*. The *Water Framework Directive* is also relevant. The 1992 Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR) and the North Sea Conference declaration are also important. These commitments provide powers to regulate

discharges to the sea and have set targets and quality standards to marine waters. An extensive set of standards covering many metals, pesticides and other toxic persistent and bioaccumulative substances and nutrients have been set under UK legislation.

3.2 Management, research and guidance

- 3.2.1 A partial mapping survey of the maerl beds off Cushendun has been undertaken by EHS(WMU) and DARD as part of a ‘post construction’ impact assessment to look at the possible impact of a sewage outfall on local seabed communities.
- 3.2.2 The Queen’s University of Belfast, is currently carrying out some research on maerl. Three projects (as research towards post-graduate degrees) are currently underway, which are looking at the geological aspects of maerl, the distribution around Northern Ireland, community composition and anthropogenic impacts as well as the mobility and dispersal of maerl nodules.
- 3.2.3 An EU-funded literature review of maerl and its conservation objectives has been carried out by The Queen’s University of Belfast as part of the Natura 2000 project (see Birkett *et al*, 1998).
- 3.2.4 Biological records are currently stored at the Museum and Galleries of Northern Ireland (MAGNI), at the Centre for Environmental Data and Recording (CEDaR). CEDaR was established in 1995 in partnership with EHS, MAGNI and the biological recording community. There are currently over 1.4 million records held by CEDaR and there are developments underway to make these records more accessible through the Internet. This will be achieved through the National Biodiversity Network, a union of organisations throughout the UK working together to create an information network of biological data to provide an accessible data source for biodiversity information.

4 Action plan targets

- 4.1 Maintain the extent of maerl beds and associated plant and animal communities in Northern Ireland.
- 4.2 Maintain the condition of maerl beds and associated plant and animal communities in Northern Ireland.
- 4.3 Where appropriate, enhance the extent and condition of maerl beds in Northern Ireland.

5 Proposed action with lead agencies

5.1 Policy and legislation

- 5.1.1 Ensure that development schemes, dredging operations, fishing activities or other activities do not adversely affect the integrity or the conservation interest of maerl beds.
(ACTION: Planning Service, DARD, Rivers Agency, EHS, DETI, Harbour Authorities, DCAL, DRD)
- 5.1.2 By 2004, review *Planning Policy Statement 2 (PPS2) – Planning and Nature Conservation* taking cognisance of the experience gained in the rest of the UK, the Republic of Ireland and where appropriate, other leading countries in environmentally sensitive planning.
(ACTION: Planning Service, EHS)
- 5.1.3 By 2005, produce a Planning Policy Statement (PPS) on the coast to incorporate the conservation of Maerl beds.
(ACTION: DRD)
- 5.1.4 Ensure that the importance of maerl beds are recognised and, where appropriate, site protection policies are included in Development Plans and other strategies including Local Biodiversity Action Plans (LBAPs).
(ACTION: Planning Service, EHS, DARD, District Councils)
- 5.1.5 By 2006 explore options for using statutory measures, aside from those specifically designed for nature conservation, to protect maerl beds. Particular consideration should be given to fisheries legislation, and port and harbour regulations.
(ACTION: EHS, DARD, DCAL, DRD)
- 5.1.6 By 2009 ensure that the *Water Framework Directive (WFD)* and the development of River Basin Management Plans address the conservation of sites designated for their maerl bed interest.
(ACTION: EHS)

5.2 Site Safeguard and Management

- 5.2.1 By 2004 carry out and publish an up to date record of the extent, quality and distribution of maerl beds in Northern Ireland.
(ACTION: EHS)
- 5.2.2 By 2004, identify maerl beds that have been damaged or degraded by, for example, coastal defences, drainage schemes, agricultural run-off and land reclamation.
(ACTION: EHS)
- 5.2.3 By 2006, where feasible, initiate remedial action to restore damaged or degraded maerl beds to favourable condition.
(ACTION: EHS)

5.2.4 By 2004, determine the extent and quality of the maerl beds resource which falls within protected areas and notify further sites, if required, to fill significant gaps. In particular, ensure that there is adequate representation of the full range of variation in maerl communities found around Northern Ireland.

(ACTION: EHS)

5.2.5 Ensure conservation requirements for maerl beds are included in the development and implementation of coastal zone management plans and ensure that they are not managed in isolation from other habitats and communities in these areas.

(ACTION: EHS, DOE)

5.2.6 By 2006, define water quality objectives for coastal and estuarine waters that meet the requirements of healthy maerl bed communities.

(ACTION: EHS)

5.3 Advisory

5.3.1 Publish guidelines on the selection and designation of intertidal ASSIs for their marine biological importance by 2004.

(ACTION: EHS)

5.3.2 Provide advice to local authorities and others on minimising impacts of plans and operations on maerl beds.

(ACTION: EHS)

5.4 International

5.4.1 Further develop links with the Republic of Ireland and other European and international organisations and programmes to promote the exchange of information and experience in research, management techniques, education and conservation strategies.

(ACTION: EHS)

5.4.2 Liaise with research institutes in Europe and elsewhere to exchange data and information on the conservation of maerl beds.

(ACTION: EHS)

5.5 Monitoring and Research

5.5.1 By 2005 carry out research into the factors, both natural and anthropogenic, which adversely affect maerl beds to understand how these may be avoided or minimised.

(ACTION: EHS)

5.5.2 By 2005 carry out research into the “natural” variability of maerl beds in space and time so that monitoring parameters/standards can be set.

(ACTION: EHS)

- 5.5.3 By 2006 carry out research into the historical variation in extent and distribution of maerl beds in Northern Ireland.
(ACTION: EHS)
- 5.5.4 By 2006 establish standard maerl bed monitoring programmes and ensure they are compatible with UK, Republic of Ireland and others.
(ACTION: EHS)
- 5.5.5 By 2006 establish a network of maerl bed monitoring stations around Northern Ireland. This should complement a network for the UK and the Republic of Ireland.
(ACTION: EHS)
- 5.5.6 Ensure that all relevant information gathered in surveys is passed to the Centre for Environmental Data and Recording (CEDaR) based at the Ulster Museum and to other relevant centres. Encourage access to, and exchange of these records, by contributing to the National Biodiversity Network www-based catalogue of environmental information.
(ACTION: EHS)

5.6 Communications and publicity

- 5.6.1 Promote awareness among coastal users of the conservation importance of maerl beds and how to avoid impact on these habitats.
(ACTION: EHS)
- 5.6.2 By 2006, implement at appropriate venues such as the Ulster Museum, the Exploris Aquarium and coastal EHS Countryside Centres, 'flagship' programmes for achieving education, increased public awareness and appreciation of maerl beds in Northern Ireland.
(ACTION: EHS)

6 Costing

- 6.1 A table showing the global costs for this and other HAPs is available on the EHS/Biodiversity web page.

7 References

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List of useful Acronyms

ASSI	Area of Special Scientific Interest
BTO	British Trust for Ornithology
CAP	Common Agricultural Policy
CEDaR	Centre for Environmental Data and Recording
CMD	Countryside Management Division
CMS	Countryside Management Scheme
DANI	Department of Agriculture for Northern Ireland
DARD	Department of Agriculture and Rural Development
DCAL	Department of Culture, Arts and Leisure
DETI	Department of Enterprise, Trade and Industry
DOE	Department of the Environment
DRD	Department of Rural Development
EC	European Commission
EHS	Environment and Heritage Service
EN	English Nature
ESA	Environmentally Sensitive Area
GFP	Good Farming Practice
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LFA	Less Favoured Area
MAGNI	Museums and Galleries of Northern Ireland
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
MOSS	Management of Sensitive Sites

NESA	New Environmentally Sensitive Area Scheme
NIBG	Northern Ireland Biodiversity Group
NICS	Northern Ireland Countryside Survey
NNR	National Nature Reserves
NT	National Trust
NVC	National Vegetation Classification
OSPAR	Convention for the Protection of the Marine Environment of the North East Atlantic
RSPB	Royal Society for the Protection of Birds
cSAC	candidate Special Area of Conservation
SAC	Special Area of Conservation
SLNCI	Site of Local Nature Conservation Interest
SNH	Scottish Natural Heritage
SoCC	Species of Conservation Concern
SPA	Special Protection Area
UWT	Ulster Wildlife Trust
WFD	Water Framework Directive
WWT	Wildfowl and Wetlands Trust