

Northern Ireland Habitat Action Plan
***Modiolus modiolus* beds**
March 2005

1. Current Status

1.1 Physical and biological status

- 1.1.1 The horse mussel *Modiolus modiolus* is a long lived slow reproducing marine bivalve mollusc. *M. modiolus* has a widespread distribution throughout the Northern hemisphere. It is found from the White Sea and Norway, off the Faroes and Iceland to at least as far south as the Bay of Biscay and occasionally North Africa. It is also found from Labrador to North Carolina in the Atlantic and from the Bering Sea south to Japan and California in the Pacific. Although a widespread and common species around the British Isles, true beds forming distinctive biotopes are much more limited, and are unknown south of the Humber and Severn estuaries. *M. modiolus* beds occur on four areas in Northern Ireland. Large beds occur in Strangford Lough and there is an extended bed off the Millisle/Ballywalter coastline. Smaller areas occur in Carlingford Lough and inside the Skerries at Portrush.
- 1.1.2 *M. modiolus* is adapted to living epifaunally or semi-infaunally in a variety of substrates. Where it forms biogenic beds, these can vary greatly in size, density, thickness and form. The height and size of the reef can depend on the build up of biogenic sediments and water flow regimes. Horse mussel beds can occur in large continuous reefs or as isolated scattered clumps. In UK waters *M. modiolus* beds are generally restricted to between 5 and 50 m depth. *M. modiolus* beds provide a hard substratum in a usually sedimentary area. They accumulate a sediment of silt, organic rich faeces and pseudofaeces, and shell debris, forming raised beds, bound together by a matrix of byssus threads and horse mussels. Therefore, they significantly modify the habitat for a wide variety of organisms. The byssus threads secreted by *M. modiolus* have an important stabilising effect on the seabed, binding together living *M. modiolus*, dead shell and sediments. When *M. modiolus* beds are impacted upon they release sediment into the water column thus destabilising the seabed in the affected area.
- 1.1.3 *M. modiolus* beds can support a range of epibenthic species, which would otherwise not be found in an area. The Strangford Lough Ecological Change Investigation (SLECI) (Roberts *et al.*, 2004) found a total of 272 species living on or in the *M. modiolus* beds in Strangford Lough, including the variegated scallop *Chlamys varia*, queen scallop *Aequipecten opercularis*, black brittlestar *Ophiocomina nigra*, common brittlestar *Ophiothrix fragilis* and the rugose squat lobster *Munida rugosa*. *M. modiolus* is a long-lived species and individuals within beds are frequently 25 years old or more. Juvenile *M. modiolus* (3-6 years old) are heavily preyed upon, especially by crabs and starfish, but predation is low thereafter. Recruitment is slow and may be very sporadic. There may be poor recruitment over a number of years in some populations.
- 1.1.4 The JNCC Marine Habitat Classification for Britain and Ireland (Connor *et al.*, 2004) has described three *M. modiolus* biotypes. The first biotope, SS.SBR.SMus.ModT describes *M. modiolus* beds on mixed substrata (cobbles, pebbles and coarse muddy

sediments) in moderately strong currents or wave exposed areas, typically on the open coast. The second biotope, SS.SBR.SMus.ModHAs describes beds or scattered clumps of *M. modiolus* in generally sheltered conditions with only slight tidal movement, typically occurring in sea loughs. The final biotope, SS.SBR.SMus.ModCvar describes dense *M. modiolus* beds, covered by hydroids and bryozoans, on soft gravely, shelly mud with pebbles in areas of slight or moderate tidal currents.

1.1.5 In Strangford Lough, *M. modiolus* has been documented since the mid 1800's (Dickie, 1857). In the 1970s and 1980s, *M. modiolus* beds were known to be extensive in Strangford Lough (Seed & Brown, 1977; Erwin *et al.*, 1990). At the time of designation, 1600 ha of *M. modiolus* reefs were included in Strangford Lough candidate Special Area of Conservation. The *M. modiolus* reefs in Strangford Lough are divided into two distinct areas; the north of the lough is dominated by the *Modiolus/Chlamys* community SS.SBR.SMus.ModCvar biotope while the SS.SBR.SMus.ModHAs biotope and the SS.SBR.SMus.ModT biotope are restricted to the south of the lough. In the 1970s and 1980s the *Modiolus/Chlamys* community was subject to heavy trawling activity for queen scallops *Aequipecten opercularis* which has severely damaged the reefs particularly in the north (Brown, 1989). Current estimates put the area of intact *M. modiolus* beds within Strangford Lough to be no more than 377ha.

1.1.6 There have been few studies of the recovery of damaged beds but given the life history of *Modiolus* full recovery after severe damage could take many years. The SLECI project (Roberts *et al.*, 2004) found no evidence of recovery of *Modiolus* beds in impacted areas. Communities which are damaged by fishing gear attract predators and may be subject to heavy predation. A Restoration Plan for Strangford Lough *M. modiolus* beds is currently being prepared in partnership by DOE and DARD.

1.2 Links with other action plans

1.2.1 This *M. modiolus* beds Habitat Action Plan (HAP) identifies specific targets and actions required to deliver Northern Ireland's contribution to the UK *M. modiolus* beds HAP (UK Biodiversity Steering Group, 1998).

1.2.2 A number of marine HAPs for Northern Ireland contain similar actions to this plan, such as implementing a public awareness programme. In order to minimise costs, it is recommended that the implementation of the actions from the relevant plans be combined, for example, by carrying out one joint public awareness programme to cover all relevant marine habitats.

1.2.3 The actions proposed in this HAP should be combined with efforts to implement other action plans for adjacent marine habitats such as sublittoral sands and gravels, mud habitats in deep water, tidal rapids and maerl beds.

1.2.4 Northern Ireland *M. modiolus* beds are used by a number of Northern Ireland priority species, including the variegated scallop, a sea squirt *Pyura microcosmus* and a sea cucumber *Thyonidium drummondi*. The requirements of these species should be taken into account during the implementation of this plan.

2 Current Factors Affecting the Habitat

- 2.1** Demersal fishing - using trawls and dredges for scallops and queen scallops, is known to have caused widespread and long-lasting damage to beds in Strangford Lough. Effects include flattening clumps of *M. modiolus* causing fatalities, and loss of much of the associated epifauna, especially emergent types such as Dead man's fingers *Alcyonium digitatum*. Fishing impacts may be occurring on *M. modiolus* beds elsewhere.
- 2.2** Physical disturbance – *M. modiolus* beds are likely to be badly damaged by any other physical impacts, such as aggregate extraction, trenching and pipe/cable-laying, dumping of spoil/cuttings, or use of jack-up drilling rigs, pot fishing using anchors, long traces and swinging moorings.
- 2.3** Recruitment - natural fluctuations in spawning, settlement and recruitment into adult mussels occur in some beds, with predation of young mussels probably being very influential. These are likely to affect the population structure of *M. modiolus* beds over periods of a few years, but in the long term they seem to be stable features.
- 2.4** Pollution – as with other marine habitats, *M. modiolus* beds are potentially sensitive to pollution.
- 2.5** Renewable energy - using both wind and marine turbines is currently being proposed at a number of marine locations around Northern Ireland. Such developments may have the potential to impact on certain marine communities such as *M. modiolus* beds.

3 Current Action

3.1 Legal status

- 3.1.1** In 1992, the EC adopted the *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, known as the 'Habitats Directive'. The Habitats Directive requires member states to designate and manage Special Areas of Conservation (SACs) for selected habitats (listed in Annex 1 of the Directive) and species (listed in Annex 2). A small proportion of these habitats and species, which are considered to be most in need of conservation at a European level, are given priority status. Annex 1 contains 'Reefs' which is afforded priority habitat status and can include biogenic reefs. In Northern Ireland, 1600 ha. of *M. modiolus* reefs have been included as a selection feature for Strangford Lough candidate Special Area of Conservation (cSAC).
- 3.1.2** The *Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995* and *The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004* (The Habitat Regulations) require competent authorities, when considering a plan or project not directly connected with the management of a European site e.g. an SAC or SPA, to undertake an Article 6 assessment. This assessment will determine if the plan or project, either alone or in combination with other plans or projects, is likely to have a significant impact on the site. In the case of a negative or undetermined assessment, a competent authority may only agree to the

plan or project where it is satisfied that there are no alternative solutions and that the plan or project must be carried out for imperative reasons of overriding public interest, which may be of a social or economic nature. However, if the site hosts a priority habitat or species then the plan or project may only be approved for: a) reasons of human health, public safety, beneficial consequences of primary importance to the environment, or b) other reasons which the Department (DOE), having considered the opinion of the European Commission (EC), determines are imperative reasons of overriding public interest.

- 3.1.3 Under the terms of the Habitat Regulations, the above Article 6 assessment by the competent authority is required for plans or projects e.g. oil and gas exploration, aggregate extraction, marine construction work, land reclamation and dumping of dredged material, which are outside European sites but may still have an impact on the site.
- 3.1.4 Guidance to help competent authorities and others to interpret the Habitat Regulations has been published (EHS, 2002).
- 3.1.5 Guidance on the completion of an Article 6 assessment has also been published (European Commission, 2000)
- 3.1.6 In July 1995, Strangford Lough was designated as Northern Ireland's first Marine Nature Reserve (MNR). The reserve includes all the waters, seabed and shores (up to high water mark mean tide) of Strangford Lough itself plus those of an area around the mouth of the Lough, extending north to Kearney Village, south to Sheepland Harbour and offshore for a distance of 0.25 to 0.50 nautical miles.
- 3.1.7 The conservation of fish stocks and fishery management requires the enforcement of conservation regulations. Department of Agriculture and Rural Development (DARD) are responsible for conservation legislation to preserve adequate fish stocks and thereby ensure fisheries are managed locally for the long-term benefit of the catching and processing sectors. The Fisheries Act (Northern Ireland) 1966 allows the regulation of fisheries activities in Northern Ireland including fish culture, shellfish fishery and marine fishery. Whilst fisheries regulation is primarily aimed at developing and sustaining commercial fisheries, some regulations have provided indirect benefits to marine habitats and non-target species. Regulations of particular benefit in this respect have included the various Scallop Regulations which limit fishing effort for scallop and the Inshore Fishing (Prohibition of Fishing and Fishing Methods) Regulation (Northern Ireland) SR1993 which places vessel length restrictions and no-trawl zones in Northern Ireland sea lochs where immature fish are present.
- 3.1.8 In 1993, fisheries regulations were introduced in Strangford Lough by the Fisheries Division of the then Department of Agriculture (Northern Ireland), DANI, preventing the use of mobile fishing gear in areas which included some relatively undisturbed beds of *M. modiolus*.
- 3.1.9 Between March and November 2003, a review of options for a sustainable UK fishing industry in the medium to long term, was carried out by the Cabinet Office Strategy Unit and their 'Net Benefits' report was published for consultation in March 2004.

This report provides 33 recommendations for the sustainable management of the UK's fishing industry. The report calls "for all the key players to come together to manage the UK's fish resources – whether their interest is in scientific and environmental matters, the catching and process industry, or in tourism and development". UK Fisheries Departments are collating a joint UK response to the report, in consultation and collaboration with key industry interests.

- 3.1.10 EC Directive 2000/60/EC, *Establishing a Framework for Community Action in the Field of Water Policy* or the Water Framework Directive (WFD), was transposed into Northern Ireland law by the *Water Environment (WFD) Regulations (Northern Ireland) 2003*.
- 3.1.11 The WFD aims to rationalise much of the EC's water legislation with an overall purpose of providing a framework for the protection of surface waters including coastal waters. This aims at preventing the deterioration of aquatic ecosystems with a strong emphasis on ecological quality targets.
- 3.1.12 There is a requirement under Article 6 of the WFD to create a register of all areas which have been designated as requiring special protection under specific European Community legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water. Northern Ireland must achieve compliance with the WFD standards and objectives relating to these protected areas by December 2015. There is an onus on the UK government under the WFD to ensure that any changes in water quantity and quality do not adversely affect sites of international importance.
- 3.1.13 WFD will eventually supersede many other EU Directives and will form the basis for the statutory monitoring of water quality in the future. Previous EU legislation has been directed at controlling specific discharges or activities in the marine environment (eg. Urban Waste Water Directive, Bathing Water Directive), whereas the WFD aims to take a holistic view of all activities in the aquatic environment. To facilitate this approach the emphasis has been put on measuring the biological status of organisms rather than physiochemical parameters in discharges or receiving waters. In marine waters the biological status for WFD is calculated by measuring the following elements: benthic invertebrate fauna, macroalgae and angiosperms, phytoplankton and fish fauna (transitional waters only).
- 3.1.14 Ecological status is composed of the biological elements, hydromorphology and physiochemical elements, and is classified as high, good, moderate, poor or bad. The aim of WFD is to achieve at least good ecological status by 2015 and ensure that there is no downward movement between classes. Ecological status is compared to reference conditions. Reference conditions are the status of water bodies that are considered to be 'undisturbed'. The WFD also aims to link the ecological status back to anthropogenic pressures so that management and monitoring programs can be focused. Thus, the pressures on the marine environment are also monitored. To further aid the holistic approach to management under the WFD, emphasis is put on catchment management whereby the reporting and management is undertaken in River Basin Districts (RBDs). To facilitate this approach, the implementation of WFD in Northern Ireland has been completed in communication with colleagues in the

Environmental Protection Agency (EPA) and the Marine Institute in the Republic of Ireland

- 3.1.15 Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources (the Nitrates Directive) seeks to reduce or prevent the pollution of water caused by the application and storage of inorganic fertiliser and manure on farmland. It is designed to safeguard drinking water supplies and to prevent wider ecological damage in the form of the eutrophication of freshwater and marine waters generally.
- 3.1.16 Article 5 of the Nitrates Directive requires Member States to implement an Action Programme of mandatory measures in respect of designated Nitrate Vulnerable Zones (NVZs) or their total territory. Regulations establishing Northern Ireland as the territory to which an action programme under the Nitrates Directive applies came into operation in October 2004.
- 3.1.17 Discharges to the sea are controlled by a number of EC Directives, including the Dangerous Substances Directive, Shellfish (Waters) Directive, Integrated Pollution Control Directive, Urban Waste Water Treatment Directive and Bathing Waters Directive. The Oslo and Paris Convention (OSPAR) and the North Sea Conference declarations are also important. These commitments provide powers to regulate discharges to the sea and have set targets and quality standards for 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.
- 3.1.18 The Industrial Pollution and Radiochemical Inspectorate (IPRI) of EHS is responsible for enforcing environmental legislation that controls pollution from prescribed industrial processes and controls the use and disposal of radioactive materials. Industrial pollution control in Northern Ireland is currently governed by the Industrial Pollution Control (Northern Ireland) Order 1997. Under this order processes with the greatest potential to cause pollution are subject to a system of integrated pollution control i.e. the capacity to pollute air, water and land is taken into account. The Pollution Prevention and Control Regulations (Northern Ireland) 2003, which will eventually replace the IPC Order 1997, implement the *EC Directive 96/61/EC on Integrated Pollution Prevention and Control*. The PPC Regulations apply a similar integrated approach to pollution control, while extending the range of issues that must be considered.
- 3.1.19 The Food and Environmental Protection Act 1985 (FEPA) protects the marine ecosystem, human health and the legitimate uses of the sea by controlling deposits in the sea, including construction works, through a licensing system
- 3.1.20 Appointment of Local Biodiversity Officers by many District Councils in Northern Ireland will result in the development of Local Biodiversity Action Plans (LBAPs). These plans will encourage, co-ordinate and inform local biodiversity action.

3.2 Management, research and guidance

- 3.2.1 Environment and Heritage Service (EHS), as part of the requirements of the Habitats Directive, are preparing conservation objectives for those sites submitted as cSACs. Common standards monitoring protocols are also being established across the UK to assess the condition of *M. modiolus* beds within designated sites.
- 3.2.2 The Strangford Lough Management Scheme was formally launched on the 8th October 2001, with a new version currently being developed. It is intended to safeguard the conservation status of those features for which Strangford Lough has been selected as a candidate Special Area of Conservation (SAC) and classified as a Special Protection Area (SPA). The scheme sets the framework through which activities will be managed so as to achieve the conservation objectives of the European marine site.
- 3.2.3 Environment and Heritage Service (EHS) commissioned the Strangford Lough Ecological Change Investigation (SLECI) project to identify the current conservation status of the Lough and any factors which may have contributed to change (Roberts *et al.*, 2004). This investigation includes a report on the current status of *Modiolus* beds. This project available on the EHS website (www.ehsni.gov.uk).
- 3.2.4 As a result of the damage to the *M. modiolus* beds in Strangford Lough, trawling is currently banned within the lough. DOE and DARD are working closely on establishing a restoration project for the *M. modiolus* beds.
- 3.2.5 A broad scale habitat mapping project has been carried out by DARD, EHS and QUB. The mapping project uses acoustic techniques to identify the nature of seabed habitats with supplementary diving and grab samples out to the 50m depth contour (Mitchell & Service, 2004).
- 3.2.6 In 1990 the Inshore Marine Life of Northern Ireland (Erwin *et al.*, 1990) was published. This encompassed all the information derived from the Northern Ireland Sublittoral Survey (Erwin *et al.*, 1986) carried out by the Ulster Museum Diving team between 1980 and 1985.
- 3.2.7 Biological records of the NI marine environment 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 *M. modiolus* beds in Northern Ireland.
- 4.2 Where appropriate, maintain the area of *M. modiolus* beds in favourable condition.
- 4.3 By 2020, improve the condition of as much as is practical, of the 1200ha of *M. modiolus* beds currently in unfavourable condition within Strangford Lough.

5. Proposed Actions with Lead Agencies

5.1 Policy and legislation

- 5.1.1 Ensure that policy and legislation governing the use of the marine environment take appropriate accounts of affect on the favourable condition and conservation interest of *M. modiolus* beds.
(ACTION: DARD, Planning Service, Rivers Agency, EHS, DETI, Harbour Authorities, DCAL, DRD)
- 5.1.2 Ensure the importance of *M. modiolus* beds are recognised and, where appropriate, site protection measures are included Development Plans and other strategies, including Local Biodiversity Action Plans (LBAPs).
(ACTION: EHS, DARD, Loughs Agency, District Councils)
- 5.1.3 Continue to explore and maximise options for using statutory measures, aside from those specifically designed for nature conservation, to protect *M. modiolus* beds, where appropriate.
(ACTION: DARD, EHS, DCAL, DRD)
- 5.1.4 By 2009, ensure that *M. modiolus* beds are properly recognised within River Basin Management Plans as required by the Water Framework Directive.
(ACTION: EHS)
- 5.1.5 By 2006, develop a policy position and advice regarding possible aggregate extraction and its impact on Northern Irish *M. modiolus* beds.
(ACTION: EHS, DETI)

5.2 Site safeguard and management

- 5.2.1 By 2007, determine the extent of the resource within protected areas making sure to distinguish between different *M. modiolus* bed types.
(ACTION: EHS)
- 5.2.2 By 2006, identify *M. modiolus* beds that have been damaged or degraded and likely contributing factors.
(ACTION: EHS, DARD)

- 5.2.3 By 2005, consider the incorporation of the ecological requirements of the Northern Ireland HAP into inshore fishery management approaches.
(ACTION: EHS, DARD)
- 5.2.4 By 2009, establish the Water Quality Objectives consistent with both Good Ecological Status and the conservation objectives of marine protected areas,
(ACTION: EHS)
- 5.2.5 As required by WFD deliver the above Water Quality Objectives by 2015.
(ACTION: EHS)
- 5.2.6 By 2006, ensure that EHS staff dealing with Environmental Impact Assessment scoping and screening decisions have sufficient training and guidance to ensure that the scope of Environmental Impact Assessments fully take account of the needs of *M. modiolus* beds.
(ACTION: EHS)
- 5.2.7 By 2009, produce local nutrient control plans, involving all stakeholders, within the framework of river basin management plans.
(ACTION: DARD, EHS)
- 5.2.8 By 2005, review all registered standards for all wastewater treatment works.
(ACTION: EHS)
- 5.2.9 By 2005, carry out a review of sensitive areas (as specified in the *EC UWWT Directive*) and make further appropriate designations as required.
(ACTION: EHS)
- 5.2.10 Ensure that nutrient stripping is instigated on all wastewater treatment works serving population equivalents of over 10,000 within designated sensitive areas within 7 years following the designation of a sensitive area, where this would contribute to the control of pollution marine environments.
(ACTION: (EHS, Water Service)
- 5.2.11 By 2006, determine a methodology to review discharge consents for designated sites to ensure that they are contributing to an adequate level of water quality.
(ACTION: EHS)

5.3 Advisory

- 5.3.1 By 2006, provide advice to key interests involved in the development of the marine environment, on the importance and sensitivity of *M. modiolus* beds and on minimising the impacts of plans and operations on *M. modiolus* beds.
(ACTION: EHS, DARD)
- 5.3.2 By 2007, ensure appropriate guidance and training is developed and provided to Planning Service in relation to Northern Ireland biodiversity action plan species (including *M. modiolus*) to ensure that infrastructure and coastal development plans which may have an impact are effectively brought to the attention of EHS.
(ACTION: EHS, Planning Service)

- 5.3.3 By 2006, to provide appropriate guidance to all relevant authorities with responsibility for the management of Northern Ireland marine environment and provide simple, clear advice on the management implications of Northern Ireland priority marine habitats.
(ACTION: EHS, DARD DETI, Harbour Authorities, DRD, Planning Service)

5.4 International

- 5.4.1 Further develop links with the Republic of Ireland and other European and international organisations and programmes involved in developing the marine environment and promote the awareness of, and exchange of data and information relating to experience gained in research, management techniques, education and conservation strategies for the conservation of *M. modiolus* beds.
(ACTION: EHS, DARD)
- 5.4.2 Exchange information with experts in Ireland, UK and Europe on habitat distribution, the role in coastal ecosystems and the impacts of development.
(ACTION: EHS)

5.5 Research and monitoring

- 5.5.1 By 2007, develop standardised techniques for survey and monitoring of *M. modiolus* beds.
(ACTION: EHS, DARD)
- 5.5.2 By 2007, assess the distribution, extent and quality of beds of different types. This needs to include investigation of the associated flora and fauna in different conditions.
(ACTION: EHS, DARD)
- 5.5.3 By 2007, investigate the natural dynamics of *M. modiolus* beds.
(ACTION: DARD, EHS)
- 5.5.4 By 2005, assess the potential for recovery of beds after cessation of damaging activities.
(ACTION: DARD, EHS)
- 5.5.5 By 2006, carry out research into the factors, both natural and anthropogenic, which adversely affect *M. modiolus* beds to understand how these may be avoided or minimised.
(ACTION: EHS, DARD)
- 5.5.6 By 2006, establish an internal EHS protocol to ensure that all relevant information gathered on *M. modiolus* 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 web-based catalogue of environmental information.
(ACTION: EHS)
- 5.5.7 By 2007, contribute and ensure Northern Ireland participation in relevant research on recruitment patterns, pathology, aggregation behaviour and predation.
(ACTION: EHS, DARD)

5.6 Communications and publicity

- 5.6.1 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 marine BAP habitat and species, including *M. modiolus* beds, in Northern Ireland.
(ACTION: EHS)

6. Costings

- 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 Regional 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
MNCR	Marine Nature Conservation Review
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