

**Northern Ireland Habitat Action Plan**  
***Sabellaria spinulosa* Reefs**  
**March 2005**

**1. Current Status**

**1.1 Physical and biological status**

- 1.1.1 The polychaete worm *Sabellaria spinulosa* inhabits tubes made of sand grains cemented together. Over most of its distribution, the worm is solitary, attached to pebbles or stones, but in certain locations it can form reefs up to several metres across and 60cm deep. When found in reefs or crust form, the species provides structure for other organisms in the form of crevices and shelter. Some species also bore into the sandy crust. George & Warwick (1985) found that the structural complexity provided by *S. spinulosa* facilitated the development of a community with a large number of small species.
- 1.1.2 *S. spinulosa* has a widespread distribution within Europe. It is found from the Mediterranean Sea to at least as far North as the Shetlands. In terms of environmental requirements, well developed reefs typically occur in turbid waters between a few metres and at least 40m depth. Over most of its distribution, *S. spinulosa* is found subtidally, but it has been occasionally recorded from the intertidal. *S. spinulosa* reefs require a firm substratum to attach to. Communities have been recorded from rock as well as shell, and sandy gravel (Rees and Dare, 1993). The reefs are thought to develop best on sandy sediments with some hard substrate. The species thrives in highly turbid water, where sand grains are held in suspension in the water, which it requires to build its tubes. The species does not occur in low salinity areas. Larvae are strongly stimulated to settle by the cement secretion of adults or newly settled *S. spinulosa* (George and Warwick, 1985).
- 1.1.3 *S. spinulosa* reefs can support a range of epibenthic species including a specialised 'crevice' infauna, which would not otherwise be found in the area. This has been demonstrated by a study in the Bristol Channel which compared an area of *S. spinulosa* with other macrofaunal communities in the Bristol Channel and found that the former had a higher faunal diversity (more than 88 species) and higher annual production (dominated by suspension-feeders) than other benthic communities in the area. In addition, in the Wash, NRA (1994) found that sites with *S. spinulosa* had twice as many species and almost three times as many individuals than sites with no or low *S. spinulosa*. Associated communities on reefs are noticeably richer than surrounding areas but there is a lack of information on this aspect. The pink shrimp *Pandalus montagui* is often associated with *S. spinulosa* reefs.
- 1.1.4 *S. spinulosa* often acts as a fast growing annual. Reefs are understood to be reasonably fragile, for example they can be broken up by a Day grab, but areas where *S. spinulosa* has been lost can recolonise quickly up to a maximum observed 2-3cm thick sheet during the following summer. It is believed that taller reefs are created over a number of years.
- 1.1.5 The conservation value of *S. spinulosa* reefs can be determined by the condition of the habitat. Favourable condition is defined by setting targets or ranges for a series of

different attributes. These are components or characteristics of the reefs which are relatively easy to measure, but which are reliable indicators of the health of the habitat. While it is clear that there is often a rich and probably diverse community associated with well developed *S. spinulosa* reefs there are presently few details. Analysis of recruitment and population structure on a seasonal and interannual basis could substantially fill this gap.

- 1.1.6 There are a number of Northern Irish records and a total of 12 known sites around the Irish coast for *S. spinulosa* (including individuals and reefs) is recorded. However this distribution relates specifically to the presence of the worm (which may be solitary) rather than reefs. It is likely that reefs are found around all coasts of Ireland. Information on the location of reefs formed by *S. spinulosa* around the coast of the Republic of Ireland is extremely limited.
- 1.1.7 Only a few reefs of *S. spinulosa* have been located around Northern Ireland. The most important site is offshore of Magilligan Strand on the low lying pitted bedrock outcrops from mobile sand. This record originates from the Northern Ireland Sublittoral Survey (Wilkinson *et al.*, 1988) which recorded the reefs in 23-29m depth. A wide range of species were recorded associated with the reef.
- 1.1.8 Two other sites are recorded on the Marine Nature Conservation Review (MNCR) as occurring at Rinnagree Point near Portstewart and at Portstewart Point. The abundances of the reefs at these sites is recorded as 'occasional'. It is felt likely that the species is under recorded in Ireland and Great Britain. A more recent record of *S. spinulosa*, though not believed to be in reef form, is from Strangford Lough (near Ballyhenry Point) when it was located during an Inter-Agency marine training week in 1995.

## **1.2 Links with other action plans**

- 1.2.1 This *S. spinulosa* reefs habitat action plan identifies targets and actions required to deliver Northern Ireland's contribution to the UK action plan (UK Biodiversity Steering Group, 1999).
- 1.2.2 A number of the 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 habitat action plan should be combined with efforts to implement other action plans for marine habitats such as sublittoral sands and gravels.

## **2 Current Factors Affecting the Habitat**

- 2.1 Physical disturbance - *S. spinulosa* is sensitive to physical disturbance, for example from fishing gear. The impact of the mobile gear can break reefs down into small chunks which no longer provide a habitat for the rich infauna and epifauna associated with this biotope. This has been recorded in the Wadden Sea where the loss of the

large *S. spinulosa* reefs has been attributed to fishing activity. Due to the small number of records for *S. spinulosa* reefs in Northern Ireland, it is difficult to predict the extent to which the habitat is being affected by fishing. However, it is possible that the existing records are affected by this activity and because the reefs are likely to be under recorded, reef development in other areas may be affected as well.

- 2.2 Laying of cables and pipelines – the laying of cables and pipelines has resulted in the digging away, burying and harrowing of benthic habitats.
- 2.3 Aggregate extraction - dredging often takes place in areas of mixed sediment where *S. spinulosa* reefs may occur. The impacts of this activity on their long-term survival is unknown, but suspension of fine material during adjacent dredging could have detrimental effects on the habitat.
- 2.4 Pollution - *S. spinulosa* reefs may be affected by pollution but it is not considered highly sensitive to this influence, for example Walker and Rees (1980) recorded that in the discharge area and down tide of a sewage discharge, *S. spinulosa* was present in greater densities and diversities than elsewhere in the bay.
- 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.

### 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 habitats (listed in Annex 1 of the Directive) and species (listed in Annex 2). Sites designated under the Habitats Directive in addition to sites designated under the Birds Directive together form the European wide network of sites known as Natura 2000. 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. While the marine SAC selection features listed under the Habitats Directive include examples of biogenic reefs e.g. Strangford Lough *Modiolus modiolus* beds, there are currently no known examples of *S. spinulosa* reefs identified within the SAC network in Northern Ireland.
- 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 2000, the Northern Ireland Biodiversity Group (NIBG) made its recommendations to Government (NIBG, 2000). These were largely accepted by the Northern Ireland Executive in 2002, with the publication of the *Northern Ireland Biodiversity Strategy* (DOE, 2002).
- 3.1.7 Discharges to the sea are controlled by a number of EC Directives, including the Dangerous substances, Shellfish (Waters), Integrated Pollution Control, Urban Waste Water Treatment and Bathing Waters Directives. The Oslo and Paris Convention (OSPAR) and North Sea Conference Declarations are also important. The Environment Acts 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.
- 3.1.8 Government departments are responsible for the assessment of the potential impacts of oil and gas exploration and production, aggregate extraction, marine construction work, land reclamation and dumping of dredged material prior to licensing. The conditions attached to these licenses can stipulate that measures are adopted to minimise environmental impacts. Environmental concerns can be used as grounds for the refusal of a license.
- 3.1.9 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*.
- 3.1.10 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.

- 3.1.11 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.
- 3.1.12 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).
- 3.1.13 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

## **3.2 Management, research and guidance**

- 3.2.1 A broadscale habitat mapping project has been also been carried out by DARD, EHS and QUB. The mapping project used acoustic techniques to identify the nature of seabed habitats with supplementary diving and grab samples out to the 50m depth contour (Mitchell & Service, 2004).
- 3.2.2 The Fisheries Act (Northern Ireland) 1966 allows the regulation of fisheries activities in Northern Ireland including fish culture, shellfish fishery and marine fishery. Fisheries regulation is primarily aimed at developing and sustaining commercial fisheries, and some regulations have benefited to marine habitats and non-target species. Of particular benefit in this respect are regulations which limit fishing effort

for scallop and the Inshore Fishing (Prohibition of Fishing and Fishing Methods) Regulation (Northern Ireland) SR1993 which imposes vessel length restrictions and no-trawl zones in Northern Ireland sea loughs where immature fish are present. More recent legislation has banned the use of mobile gear in Strangford Lough, while from 2000 onwards, much of the Irish Sea has been closed to directed whitefish fisheries for 3 months during the spring, under European legislation reviewed each year at Fisheries Council.

- 3.2.3 Management functions are also vested in the Loughs Agency which replaced the Foyle Fisheries Commission in 1999 and assumed the functions of the Foyle, Carlingford and Irish Lights Commission in relation to the Foyle and Carlingford Areas. Its functions include the conservation, protection and improvement of the fisheries of the Foyle area and to promote the development of Lough Foyle and Carlingford Lough for commercial and recreational purposes. This will include specific responsibilities for development and licensing of aquaculture in these areas.
- 3.2.4 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.
- 3.2.5 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 Where appropriate, maintain the extent of *S. spinulosa* reefs and associated animal communities.
- 4.2 Maintain representative examples of *S. spinulosa* reefs and their associated animal communities which exhibit minimal anthropogenic influences.
- 4.3 Where appropriate, enhance the extent and condition of nationally important *S. spinulosa* reefs in Northern Ireland.

## **5 Proposed Actions with Lead Agencies**

### **5.1 Policy and legislation**

- 5.1.1 Ensure that dredging operations, fishing activities or other activities do not adversely affect the favourable condition or the conservation interest of nationally important *S. spinulosa* reefs.  
(ACTION: DARD, Planning Service, Rivers Agency, EHS, DETI, Harbour Authorities, DCAL, DRD)
- 5.1.2 Ensure that policy and legislation governing the use of the marine environment take appropriate account of affect on the favourable condition and conservation interest of *S. alveolata* reefs.  
(ACTION: Planning Service, DARD, Rivers Agency, EHS, DOE, DETI, Harbour Authorities, DCAL, DRD, Loughs Agency)
- 5.1.3 Ensure the importance of *S. spinulosa* reefs is recognised and, where appropriate, site protection measures are included in Local Biodiversity Action Plans (LBAPs).  
(ACTION: EHS, DARD, District Councils)
- 5.1.4 Continue to explore and maximise appropriate options for using statutory measures, additional to those specifically designed for nature conservation, to protect *S. spinulosa* reefs.  
(ACTION: DARD, EHS, DCAL, DRD)
- 5.1.5 Ensure that *S. spinulosa* reefs are properly recognised within River Basin Management Plans by 2009 as required by the Water Framework Directive.  
(ACTION: EHS)
- 5.1.6 By 2006 develop a policy position and advice regarding possible aggregate extraction and its impact on Northern Irish *S. spinulosa* reefs.  
(ACTION: EHS, DETI)
- 5.1.7 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: Planning Service, DARD, EHS, DETI, Harbour Authorities, DRD)

### **5.2 Site Safeguard and Management**

- 5.2.1 By 2006, review and re-survey all *S. spinulosa* reef records in Northern Ireland. An attempt should be made to identify natural change and/or sites that may have been damaged or degraded. For example, shore activities or adjacent developments may damage or degrade sites (e.g. coastal defences, drainage schemes, agricultural run-off and land reclamation).  
(ACTION: EHS)

- 5.2.2 By 2007, investigate potential sites for encouraging the restoration or recovery of nationally important *S. spinulosa* reefs in Northern Ireland.  
(ACTION: EHS)
- 5.2.3 By 2005 initiate discussions with DARD to consider the incorporation of the ecological requirements of the Northern Ireland HAP into inshore fishery management approaches.  
(ACTION: EHS, DARD)
- 5.2.4 By 2006, ensure that appropriate conservation requirements for *S. spinulosa* reefs 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, DARD, Loughs Agency)
- 5.2.5 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 *S. spinulosa*, including the need of sediment supply to the habitats.  
(ACTION: EHS)
- 5.2.6 By 2006, ensure appropriate guidance and training is developed and provided to Planning Service in relation to Northern Ireland biodiversity action plans (including *S. spinulosa*) 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 Advisory**

- 5.3.1 By 2005, provide advice to key interests involved in the development of the marine environment, on minimising impacts of plans and operations on *S. spinulosa* reefs especially nationally important sites.  
(ACTION: EHS, DARD)

### **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 *S. spinulosa* sites  
(ACTION: EHS)

### **5.5 Monitoring and Research**

- 5.5.1 By 2006, carry out a comprehensive survey and data review of the extent, quality and distribution of *S. spinulosa* reefs in Northern Ireland.  
(ACTION: EHS)

- 5.5.2 By 2006, carry out research into the factors, both natural and anthropogenic, which adversely affect *S. alveolata* reefs to understand how these may be avoided or minimised.  
(ACTION: EHS, DARD)
- 5.5.3 By 2006, review factors highlighted in Holt *et al.* (1998) in relation to *S. spinulosa* in Northern Ireland. Provide a prioritised list of site specific threats for each of the known nationally important sites in Northern Ireland.  
(ACTION: EHS, DARD).
- 5.5.4 By 2005, in collaboration with UK colleagues, develop a suite of attributes that can be monitored, and suitable monitoring techniques for *S. spinulosa*.  
(ACTION: EHS, DARD).
- 5.5.5 By 2006, establish standard *S. spinulosa* reef monitoring programmes and ensure they are compatible with UK, Republic of Ireland and others.  
(ACTION: EHS)
- 5.5.6 By 2006, establish a network of *S. spinulosa* monitoring stations around Northern Ireland. This should complement a network for the UK and Republic of Ireland.  
(ACTION: EHS)
- 5.5.7 By 2005, establish an internal EHS protocol to ensure that all relevant information gathered on *S. spinulosa* 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)
- 5.5.8 By 2007, contribute and ensure Northern Ireland participation in relevant research on growth rates, longevity, recruitment processes and persistence of both individual worms and associated reef dynamics, under a variety of environmental conditions including the edges of geographic ranges. Research on subtidal reefs should be carried out as a priority since virtually nothing is known about these habitats.  
(ACTION: EHS, DARD)
- 5.5.9 By 2006, set in place a reporting and monitoring structure to encourage progress towards the delivery of the targets and the completion of actions identified in this plan.  
(ACTION: EHS)

## **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 *S. alveolata* reefs 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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European Commission (2000). Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Luxemburg.

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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	Country side Management Division
CMS	Country side 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
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