

Northern Ireland Habitat Action Plan
***Sabellaria alveolata* reefs**
March 2005

1. Current Status

1.1 Physical and biological status

- 1.1.1 The polychaete worm *Sabellaria alveolata* lives in tubes constructed of sand grains cemented together which may occur in dense aggregations known as reefs. *S. alveolata* is widely distributed within northern Europe. Reefs are found as far south as Morocco (Gruet, 1982) and reach their northern limit in Britain and Ireland. The species is normally intertidal but has occasionally been recorded from the subtidal. For example, *S. alveolata* reefs have been reported to extend into the subtidal at Glassdrumman, Northern Ireland. *S. alveolata* reefs are generally limited to areas of hard substratum including cobble, adjacent to sand and with moderate to considerable wave exposure.
- 1.1.2 *S. alveolata*, which is a filter feeder, is known to not be affected by higher summer temperatures but is vulnerable to the cold, for example Crisp (1964) noted that there were many severe losses of *S. alveolata* in South and North Wales as well as Lyme Bay due to the severe winter of 1962-63.
- 1.1.3 In order to develop into reefs, *S. alveolata* requires a supply of suspended coarse sediment. Reefs can form on a range of substrata from pebble to bedrock (Cunningham *et al.*, 1984) but these must be in an area of sufficient water movement to hold sand grains in suspension.
- 1.1.4 The species has a short summer spawning period around July. It is thought that the larvae spend between 6 weeks and 6 months in the plankton and settlement occurs mainly on existing colonies or their dead remains. The species has rapid growth rates and it is promoted by high levels of suspended sand and by high water temperatures. The typical lifespan of worms in colonies or reefs has been recorded to be 4-5 years with a likely maximum of 9 years. There is evidence that intertidal reefs appear to be relatively unstable and undergo a cycle of development and decay. *S. alveolata* has a very variable recruitment and the cover in any one area may vary greatly over a number of years, although in the long term reefs tend mainly to be found on the same shores.
- 1.1.5 Intertidal *S. alveolata* reefs are not particularly diverse communities, though they do nevertheless provide some increased diversity of habitat, and older reefs have somewhat more diverse communities than younger ones, the increased diversity is usually associated with the crevices. Cunningham *et al.* (1984) carried out limited quantitative quadrat surveys of *S. alveolata* reefs and noted up to eighteen associated animal species and twenty associated plant species, mainly on older colonies.
- 1.1.6 The conservation value of *S. alveolata* 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. However, many biogenic reef biotopes (with the probable exception of most *Modiolus* biotopes) undergo natural fluctuations in populations which are either remarkably wide, so that even almost complete loss of reefs could be regarded as ‘normal’. The abundance and diversity of the associated fauna and flora will inevitably have their own sources of variation in recruitment, growth and survival superimposed upon the variations in the ‘supporting’ reef populations.

- 1.1.7 In general terms one can expect richer and more diverse communities on older and more stable reefs than on younger or less stable ones, but determining acceptable limits of change will again be very difficult in most cases. In the early years the primary benefit of many surveys will be in giving information about typical levels of natural variation, assuming that there are no major human influences.
- 1.1.8 A survey undertaken by Aquatic and Terrestrial Environmental Consultants (ATEC) in 2001 looked at the distribution of *S. alveolata* reefs in County Down by revisiting Northern Ireland Littoral Survey (NILS) sites where the species had been recorded in the mid 1980s and considered the extent and condition of the reefs. All of the sites visited are around the south-east coast ranging from Ringfad Point near Ardglass to Greencastle Point at the entrance to Carlingford Lough. Of the six NILS sites revisited (Minerstown, Rathmullan Point, Wreck Port, Glassdrumman, Greencastle, and Coney Island) only three were found to still have *S. alveolata* reefs present (Minerstown, Glassdrumman and Coney Island). The largest reefs are found at Glassdrumman where the reef grows between mid and lower shore boulders. *S. alveolata* reefs have also been reported to extend into the subtidal at this site. The site at Coney Island Bay represents the most northerly site for its occurrence in Northern Ireland.
- 1.1.9 In the Republic of Ireland, the Marine Nature Conservation Review (MNCR) database shows confirmed records of *S. alveolata* in Pollnagat, Easky in County Sligo. The reefs had the form of small patches on the lower shore. Another record is Sligo confirmed by the MNCR in Fort Promontory in Killala Bay. A subtidal reef of *S. alveolata* has been recorded off Wicklow Head, Ireland (De Grave and Whitakker, 1998)

1.2 Links with other action plans

- 1.2.1 This *S. alveolata* 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 those in this plan, such as raising public awareness. In order to minimise costs, it is recommended that the implementation of the actions from the relevant plans be combined, for example by producing one public information pack on all the relevant marine habitats.
- 1.2.3 *S. alveolata* is likely to form a key part of a number of other UK HAPs and at a local level if present, should form a keystone of the implementation of local BAPs in suitable areas of the intertidal and inshore marine environment of Northern Ireland.

- 1.2.4 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. Sites for *S. alveolata* reefs in Northern Ireland are widely separated geographically from *S. spinulosa* reefs but future research/survey may identify a need for a close relationship between these two plans.

2 Current Factors Affecting the Habitat

- 2.1 Climate change - *S. alveolata* reefs are at the northern end of their range in Britain and Northern Ireland and are affected by extremely cold winters. The impacts in Northern Ireland of temperature change on *Sabellaria* spp. are not well studied but experience from elsewhere (Crisp 1964, Gubbay 1988) suggests that die back is likely.
- 2.2 Sediment availability - by their nature, *S. alveolata* reefs occur in areas that are naturally subject to large-scale changes in the amount of sand suspending in the water column and they can tolerate burial for a period of days or even weeks. However, prolonged burial will cause mortality. *S. alveolata* reefs are therefore potentially vulnerable to accumulations or losses of sand.
- 2.3 Physical disturbance - trampling damage by beach users and extraction of the worms for angling bait both occur, but on a limited and local scale.
- 2.4 Interspecific competition - there is some evidence that competition for space with common mussels *Mytilus edulis* occurs, especially on boulder scars, but factors influencing this are unknown. Heavy settlement of mussels on *S. alveolata* reefs has been suspected of causing short-term destabilisation and loss of habitat.
- 2.5 Recruitment - *S. alveolata* is naturally subject to very variable recruitment, but the factors influencing this are not fully understood. Lack of larval supply and wave exposure are thought to be an important factor in the general absence of reefs on seemingly suitable areas in Northern Ireland.
- 2.6 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. alveolata* reefs identified as a selection feature within the SAC network in Northern Ireland. *S. alveolata* reefs may however represent important sub-features of certain Annex I habitats for which a SAC has been selected. For example, sandbanks which are covered by seawater at all times, large shallow inlets and bays and estuaries.

- 3.1.2 Intertidal protection for *S. alveolata* reefs can also be achieved through designating sites as Areas of Special Scientific Interest (ASSIs). The only site which is included within an ASSI is Coney Island Bay which is within Killough Harbour ASSI. At Greencastle, where *S. alveolata* had previously been recorded by the NILS lies within Carlingford Lough ASSI.
- 3.1.3 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.
- 3.1.4 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.
- 3.1.5 Guidance to help competent authorities and others to interpret the Habitat Regulations has been published (EHS, 2002).
- 3.1.6 Guidance on the completion of an Article 6 assessment has also been published (European Commission, 2000)
- 3.1.7 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).
- 3.1.8 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.

- 3.1.9 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.
- 3.1.10 *S. alveolata* reefs can also occur as sub-features of non-reef Annex 1 habitats (e.g. intertidal mudflats and sandflats) under the Habitats Directive. However no examples of *S. alveolata* reefs occur within any cSACs in Northern Ireland.
- 3.1.11 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*.
- 3.1.12 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.
- 3.1.13 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.
- 3.1.14 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).
- 3.1.15 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

- 3.1.16 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.

3.2 Management, research and guidance

- 3.2.1 There is, presently, negligible active research on *S. alveolata* in Northern Ireland. A survey of the distribution and condition of *S. alveolata* reefs in County Down was recently carried out on behalf of EHS (ATEC, 2001). A report summarising the dynamics and sensitivity of biogenic reefs, including *S.alveolata* reefs has been produced for the UK Marine SAC Project (Holt *et al.* 1998).
- 3.2.2 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 existing *S. alveolata* reefs in Northern Ireland.
- 4.2 Maintain the condition of existing of *S. alveolata* reefs within Northern Ireland.

5 Proposed Actions with Lead Agencies

5.1 Policy and legislation

- 5.1.1 Ensure that development schemes or other activities do not adversely affect the favourable condition or the conservation interest of Northern Irish *S. alveolata* reefs.
(ACTION: Planning Service, DARD, 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 By 2005, ensure all coastal management and beach management initiatives in Northern Ireland take account of the ecological requirements of *S.alveolata*.
(ACTION: Planning Service, EHS, coastal local authorities)
- 5.1.4 By 2006, review *Planning Policy Statement 2 (PPS2) – Planning and Nature Conservation*, to include policies relating to the conservation of priority habitat and species.
(ACTION: Planning Service, EHS)
- 5.1.5 By 2005, produce a Planning Policy Statement (PPS) on the coast to manage coastal development in a sustainable manner and protect the natural character and landscape of the coast.
(ACTION: DRD)
- 5.1.6 By 2006, prepare an Integrated Coastal Zone Management Strategy for Northern Ireland.
(ACTION: DOE, EHS)
- 5.1.7 By 2007, establish a Northern Ireland cross-sectoral steering group, to take forward the requirements of coastal habitat action plans.
(ACTION: EHS, DARD)
- 5.1.8 By 2007, consider the use of Shoreline Management Plans in the delivery of this plan.
(ACTION: EHS)
- 5.1.9 Ensure that the importance of *S. alveolata* is recognised and, where appropriate, included in Development Plans and other strategies including Local Biodiversity Action Plans (LBAPs).
(ACTION: Planning Service, EHS, District Councils, DARD)
- 5.1.10 Continue to explore and maximise appropriate options for using statutory measures, additional to those specifically designed for nature conservation, to protect *S. alveolata* reefs.
(ACTION: EHS, DARD, DCAL, DRD, District Councils)

- 5.1.11 Ensure that *S. alveolata* reefs are properly recognised within River Basin Management Plans by 2009 as required by the Water Framework Directive.
(ACTION: EHS)

5.2 Site Safeguard and Management

- 5.2.1 By 2006, determine the extent and quality of the *S. alveolata* 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 the types of communities found around Northern Ireland.
(ACTION: EHS).
- 5.2.2 Ensure *S. alveolata* reefs in designated sites are subject to site specific management and protection, including designated monitoring and research areas, which will ensure conditions for survival and persistence.
(ACTION: EHS)
- 5.2.3 By 2006, review and re-survey *S. alveolata* sites identified in the NILS (Wilkinson *et al.*, 1988) and the ATEC report (2001) and attempt to identify natural change and/or sites that may have been damaged or degraded.
(ACTION: EHS)
- 5.2.4 By 2006 ensure appropriate guidance and training is developed and provided to Planning Service in relation to Northern Ireland priority biodiversity species and habitats (including *S. alveolata*) 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)
- 5.2.5 By 2005, 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. alveolata*, including the need of sediment supply to the habitats.
(ACTION: EHS)

5.3 Advisory

- 5.3.1 By 2005, publish guidelines on the selection and designation of intertidal ASSIs for their marine biological importance.
(ACTION: EHS).
- 5.3.2 By 2005, provide advice to key interests involved in the development of the marine environment, on minimising impacts of plans and operations on *S. alveolata* reefs.
(ACTION: EHS).

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. alveolata* reefs.
(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 both littoral and sub-littoral *S. alveolata* 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 the development of *S. alveolata* reefs in Northern Ireland. Provide a prioritised list of site specific threats for each of the known 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. alveolata*.
(ACTION: EHS)
- 5.5.5 By 2006, establish a monitoring project considering the key sites in Northern Ireland. This should complement similar work underway in UK and the Republic of Ireland.
(ACTION: EHS)
- 5.5.6 By 2006, 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.
(ACTION: EHS, DARD)
- 5.5.7 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, develop and implement an awareness-raising programme aimed at coastal users highlighting the conservation importance of *S. alveolata* and how to avoid impact on the reefs.
(ACTION: EHS, District Councils).

- 5.6.2 Promote awareness among coastal users of the conservation importance of *S. alveolata* and how to avoid impact on these habitats.
(ACTION: EHS)
- 5.6.3 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 habitats 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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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
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