

Northern Ireland Habitat Action Plan
Littoral and Sublittoral Chalk
March 2005

1. Current Status

1.1 Physical and biological status

- 1.1.1 The sedimentary rock chalk, is generally relatively soft, friable and easily eroded. It was laid down in the Upper Cretaceous period when most of north-west Europe was underwater. It is formed from the remains of invertebrate and algal exoskeletons, such as foraminiferans (protozoans), particles of bivalves and particularly coccolithophorid (calcite secreting) algae. Fossils are very common within the rock strata. While elsewhere in north-west Europe chalk was formed during Lower and Middle Cretaceous times, Northern Ireland only has chalk of Upper Cretaceous age where it is known as the Ulster White Limestone. These chalks are generally of high carbonate purity, typically greater than 95% calcium carbonate. Distinct bands of flint (a siliceous rock deposited along bedding planes or vertical joints in chalk strata) are widespread throughout the chalk. In contrast to the often relatively soft chalks of England, that found in Northern Ireland exhibits secondary calcite cementation within the pore spaces making it very resistant to erosion with limited potential for solution.
- 1.1.2 Studies have demonstrated marine chalk to be a scarce habitat in UK and EU waters. Such chalk habitats are considered to be of nature conservation importance because of their unusual features and specialised communities. While the soft nature of the rock results in characteristic flora and fauna, it often lacks the full range of species found on adjacent hard rocky areas. Distinctive rock boring invertebrates and algal communities are found within the littoral zone, such as spionid worms, e.g. *Polydora sp.*, and Piddocks (bivalves), e.g. *Pholas dactylus*. The porous, water retaining nature of the rock enables algae and lichen to bore into the surface layers allowing them to exist several metres above the high water mark. Many of the unusual algal species which are not found elsewhere on other rocky habitats (with few exceptions such as some calcareous sandstones), form some of the most interesting and scarce shoreline communities. Within chalk caves we can find unique bands of rare algae such as the red alga *Audouinella flordule*, the brown alga *Pilinae maritima*, and the green alga *Pseudendoclonium submarinum*. Meanwhile, examples of algae on the open rock faces include the filamentous green alga *Ulothrix flucca*, with *Fucus sp.* in the lower eulittoral levels. The littoral chalk displays successive zones of algae and animals as with other rocky shores. However, in areas of softer chalk, such as in southeast England, infralittoral communities are limited or absent, with animal dominated circalittoral communities due to the high turbidity, siltation and scouring. There will generally be a lack of species requiring cleaner water conditions. Large seaweeds tend to be scarce due to the friable and easily eroded nature of the rock, and are replaced by more opportunistic species. These communities are more diverse and extend into deeper water where harder rock occurs, but there are less unique algal species present. These special chalk specific algal communities are less well developed on south facing cliffs due to sun exposure and where sand and shingle beaches promote scouring of the cliff.

- 1.1.3 The chalk formations of Northern Ireland belong to the Ulster White Limestone Formation from the Upper Cretaceous period. It differs to the chalk typically exposed on the English coast in that it is extremely hard and of low porosity. The exceptionally hard and impervious nature of this chalk is a result of diagenetic recrystallisation of calcite in the pore spaces of the original matrix (Wilson, 1972). Erosion of the chalk cliff forms limited inter-tidal platforms. These can be dominated by cobble and boulder spreads, with subtidal reefs. In high energy environments, the platforms are swept clear and hold no lag deposits. Chalk is exposed on the seabed off the Antrim coast where faults are present, and off Rathlin there are spectacular, deep subtidal cliffs affected by strong tidal currents.
- 1.1.4 The Northern Ireland Littoral Survey (NILS) recorded the littoral communities present on chalk around Northern Ireland. NILS concluded that Ulster White Limestone is present mainly along the north Antrim coast and Rathlin Island, with occasional outcrops on the east Antrim coast. Limestone forms steep cliffs, wave cut platforms and, more rarely, boulder shores. Wilkinson *et al.* (1988) recorded that the communities present differed little from those on the adjacent basalt; however, other reports suggest that the chalk boulders support many more species than adjacent basalt boulders (P. Boaden, *pers. comm.*). The major difference between the two rock types is that on limestone shores the open rock has a rough, textured, pitted surface with small cracks due to wave action on the hard but relatively brittle limestone. These provide small but readily used subhabitats that help attachment of organisms (Wilkinson *et al.*, 1988).
- 1.1.5 On more gently sloping rock-faces, the chalk provides stable substrates with a comparatively wide variety of subhabitats. These include wave cut platforms along cliff bases, irregular rock outcrops, block scree shores which gently slope down to the sea, and shores composed of large relatively immobile boulders which allow the formation of sheltered subhabitats and stable communities (Wilkinson *et al.*, 1988).
- 1.1.6 On Rathlin Island, littoral chalk is present on the northern and southern coasts of the island. It forms irregular wide platforms, a good example of which is the series of platforms at Beddag. This is an extensive intertidal chalk area situated in the shelter of Church Bay. The rock here has a typical pitted surface texture, is very gently sloping and is particularly species rich (Wilkinson *et al.*, 1988).
- 1.1.7 Little is known of the extent or nature of chalk in the sublittoral zone. Rathlin has extensive underwater exposures of chalk, and sublittoral caves are known to be present in chalk down to at least 75m depth. These caves support rich populations of rare species. During the Northern Ireland Sublittoral Survey (NISS) (Erwin *et al.*, 1986) up to three species of rare sponge were found from chalk habitats, one of which was known from only one other locality, on the west coast of Sweden. It is reported that chalk and limestone have a far higher biodiversity than any other rock types in the sublittoral zone on the island (B. Picton, *pers. comm.*).
- 1.1.8 The White Rocks near Portrush, exhibit the best example of coastal chalk morphology in Northern Ireland with cliffs, arches, platforms and caves representing a diversity of sublittoral, littoral and supra-littoral habitats.

- 1.1.9 Much of the East Antrim chalk coastal marine habitat is related to slipped masses of chalk with chalk units typically lying on their side or entirely inverted.
- 1.1.10 Currently little is known of the extent of chalk in either the littoral and sublittoral zones in the Republic of Ireland.

1.2 Links with other action plans

- 1.2.1 This littoral and sublittoral chalk Habitat Action Plan (HAP) identifies targets and actions required to deliver Northern Ireland's contribution to the UK action plan (UK Biodiversity Steering Group, 1998)
- 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 are combined, for example, by producing one public information pack on all the relevant marine habitats.
- 1.2.3 The actions proposed in this HAP should be combined with efforts to implement other action plans for habitats such as the maritime cliff and slopes.

2 Current Factors Affecting the Habitat

- 2.1 Coastal defences - the biological interest of soft chalk cliffs can be significantly affected by the presence of coastal defences. Along the North Coast and along the East Antrim Coast, coastal defences are present at Portballintrae and Ballycastle. In Church Bay on Rathlin Island new breakwaters have been built to provide greater protection from storm waves at the harbour. Extensive works are also present alongside the Antrim Coast Road, which, in places is protected by a 3-4m high concrete retaining wall. The effects of these defence works on the biodiversity of the chalk habitats is unknown, particularly because the communities occur on hard rather than soft chalk. However, it is likely that the defence works could have resulted in the loss of uppershore and splash-zone communities.
- 2.2 Water quality - in the UK, the deterioration of water quality by pollutants and nutrients has caused the replacement of furoid dominated biotopes by mussel-dominated biotopes, and the occurrence of nuisance *Enteromorpha* spp. blooms (Anon, 1995). The degree to which this impact occurs in Northern Ireland is not known. However any impact is likely to be very localised because the majority of the chalk in Northern Ireland occurs along the north coast, which is very exposed to wave action and therefore any nutrient input is likely to be rapidly dispersed and diluted.
- 2.3 Physical disturbance - damage to sublittoral chalk could arise during demersal fishing operations, such as benthic trawling. This has the potential to cause severe damage to fragile benthic species such as sponges. Very little is known about the degree to which this impact occurs. It is likely that the sublittoral chalk habitats on Rathlin Island are afforded some protection by the steep vertical faces and high level of wave exposure, reducing fishing effort.

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. Annex 1 contains “*submerged or partially submerged sea caves*”.
- 3.1.2 Rathlin Island is included in the UK's list of candidate Special Area of Conservation (cSACs) which has been submitted to Europe under the terms of the European Community (EC) Habitats Directive. The interest features of the cSAC include submerged or partially submerged sea caves. The site is a well-developed example of submerged caves in chalk and basalt in strong tidal streams.
- 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 Under the *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985*, and more recently under *The Environment (Northern Ireland) Order 2002* Areas of Special Scientific Interest (ASSIs) are identified and declared by the Department of the Environment (DOE) through the Environment and Heritage Service (EHS). The *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985* also legislates for National Nature Reserves (NNRs), Marine Nature Reserves (MNRs) and Local Nature Reserves (LNRs). *The Environment (Northern Ireland) Order 2002*, strengthened the protection of ASSIs, recognising the importance of working in partnership with owners and occupiers and facilitating the positive management of these sites. All cSACs are designated as ASSIs prior to designation as cSACs.
- 3.1.8 A number of Areas of Special Scientific Interest (ASSIs) which have been designated on the north coast of Northern Ireland contain areas of chalk. Although these areas are generally designated for interests other than marine biology, they may offer some legal protection to the intertidal chalk habitats.
- 3.1.9 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).
- 3.1.10 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 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.
- 3.1.11 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 (e.g. 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.

3.2 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 selection features within designated sites, however standards for assessing favourable condition of the habitat have not yet been agreed.
- 3.2.2 A broadscale habitat mapping programme has been carried out by DARD, EHS and QUB. It used acoustic survey techniques supported by grabs and video recordings to map the distribution of seabed communities in Northern Ireland waters down to the 50m contour (Mitchell & Service, 2004).
- 3.2.3 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.

- 3.2.4 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.
- 3.2.5 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.
- 3.2.6 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 littoral and sublittoral chalk habitats and associated plant and animal communities in Northern Ireland.
- 4.2** Where appropriate, maintain the condition of littoral and sublittoral chalk habitats and associated plant and animal communities in Northern Ireland.
- 4.3** Improve the condition of as much of the resource as practical by 2020.

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 littoral and sublittoral chalk habitats.
(ACTION: Planning Service, DARD, Rivers Agency, EHS, DOE, DETI, Harbour Authorities, DCAL, DRD, Loughs Agency)
- 5.1.2 Ensure that the importance of littoral and sublittoral chalk habitats is recognised and, where appropriate, included in Development Plans and other strategies including Local Biodiversity Action Plans (LBAPs).
(ACTION: Planning Service, EHS, DARD, District Councils)
- 5.1.3 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)
- 5.1.4 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)
- 5.1.5 By 2007, consider the use of Shoreline Management Plans in the delivery of this plan.
(ACTION: EHS)
- 5.1.6 Continue to explore and maximise appropriate options for using statutory measures, additional to those specifically designed for nature conservation, to protect littoral and sublittoral chalk habitats.
(ACTION: EHS, DARD, DCAL, DRD)
- 5.1.7 Ensure that littoral and sublittoral chalk habitats are properly recognised within River Basin Management Plans by 2009 as required by the Water Framework Directive.
(ACTION: EHS)
- 5.1.9 By 2006, prepare an Integrated Coastal Zone Management Strategy for Northern Ireland.
(ACTION: DOE, EHS)
- 5.1.10 By 2007, establish a Northern Ireland cross-sectoral steering group, to take forward the requirements of coastal habitat action plans.
(ACTION: EHS, DARD)

5.2 Site safeguard and management

- 5.2.1 By 2010, carry out and publish an up to date record of the extent, quality and distribution of littoral and sublittoral chalk in Northern Ireland.
(ACTION: EHS)

- 5.2.2 By 2006, review available data relating to littoral and sublittoral chalk sites identified previously, and attempt to identify natural change and/or sites that may have been damaged or degraded.
(ACTION: EHS)
- 5.2.3 By 2010, where feasible, initiate remedial action to restore damaged or degraded littoral and sublittoral chalk to favourable condition.
(ACTION: EHS)
- 5.2.4 By 2006, determine the extent and quality of the littoral and sublittoral chalk 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)
- 5.2.5 By 2010, ensure littoral and sublittoral chalk 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)
- 5.2.6 By 2006, ensure appropriate guidance and training is developed and provided to DOE Planning Service in relation to Northern Ireland priority species and habitats 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)
- 5.2.7 By 2006, encourage a presumption against littoral stabilisation works except where human lives, or important natural or man-made assets are at risk.
(ACTION: DOE, EHS)
- 5.2.8 By 2006, consider non-replacement of coastal cliff defences which have come to the end of their useful life.
(ACTION: DARD, DOE, EHS)
- 5.2.9 By 2007, establish, with partners non-statutory initiatives to conserve nationally and internationally important examples of littoral and sublittoral chalk habitats in North Antrim and Rathlin.
(ACTION: EHS, DARD, District Councils)
- 5.2.10 By 2007, consider whether the restriction of fisheries activities around sensitive chalk habitats, especially around Rathlin Island, to prevent the degradation of the fragile and rare sponge communities is appropriate.
(ACTION: DARD)

5.3 Advisory

- 5.3.1 By 2006, 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 deep mud habitats.
(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 deep mud habitats.
(ACTION: EHS, DARD)

5.5 Monitoring and research

- 5.5.1 By 2007, commission research to identify coastal defence strategies that incorporate habitat conservation interests. The research should also identify locations where littoral stabilisation works may no longer be necessary in the future.
(ACTION: EHS)
- 5.5.2 By 2006, implement a surveying and monitoring programme to provide data on any future changes in extent and quality of littoral and sublittoral chalk resources in Northern Ireland. This will enable progress towards the objectives of this plan to be assessed.
(ACTION: EHS)
- 5.5.3 By 2008, develop and implement monitoring programmes for littoral and sublittoral chalk habitats in line with the statutory reporting requirements for ASSI and SAC management schemes.
(ACTION: EHS)
- 5.5.4 By 2007, carry out research into the factors, both natural and anthropogenic, which adversely affect littoral and sublittoral chalk to understand how these may be avoided or minimised.
(ACTION: EHS)
- 5.5.5 By 2006 carry out research into the historical variation in extent and distribution of littoral and sublittoral chalk in Northern Ireland.
(ACTION: EHS)
- 5.5.6 By 2010, carry out research into the “natural” variability of littoral and sublittoral chalk in space and time so that monitoring parameters/standards can be set.
(ACTION: EHS)

- 5.5.7 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)

- 5.5.8 By 2007, carry out research into the unique sublittoral chalk communities around Rathlin Island to increase knowledge of the extent and ecology of these habitats, with particular focus on the rare sponge species.

(ACTION: EHS)

5.6 Communications and publicity

- 5.6.1 Promote awareness among coastal users of the conservation importance of littoral and sublittoral chalk 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 priority species and habitats, including littoral and sublittoral chalk in Northern Ireland.

(ACTION: EHS)

- 5.6.3 By 2006, develop and implement an awareness-raising programme aimed at coastal users highlighting the conservation importance of littoral and sublittoral chalk and how to avoid impact on the reefs. This could include production of codes of conduct and advice to the key impact sectors, regular contact between EHS/local authority ranger staff with users.

(ACTION: EHS, District Councils)

- 5.6.4 Prepare and publish by 2007 a pamphlet for the general public describing the biodiversity of littoral and sublittoral chalk habitats and of the importance of allowing natural coastal processes such as erosion.

(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

- Anon, 1995. UK Biodiversity Group. Tranche 2, Volume 5 *Maritime Habitat Action Plans*.
- Council of the European Communities. 1992. *Council Directive 92/43/EEC on the conservation of natural habitats of wild fauna and flora*. The Council of the European Communities, Brussels.
- Department of the Environment for Northern Ireland. 1985. *The Nature Conservation and Amenity Lands (Northern Ireland) Order 1985*. Department of the Environment for Northern Ireland. Belfast.
- Department of the Environment for Northern Ireland. 1995. *The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995*. Department of the Environment for Northern Ireland. Belfast.
- Department of the Environment for Northern Ireland, 1998. Planning Policy Statement 2: Planning and Nature Conservation. Department of the Environment for Northern Ireland (Planning Service). Belfast.
- Department of the Environment, 2002. *Northern Ireland Biodiversity Strategy*. Environment and Heritage Service, Belfast.
- Department of the Environment for Northern Ireland. 2002. *The Environment (Northern Ireland) Order 2002*. Department of the Environment for Northern Ireland. Belfast.
- Environment and Heritage Service (2002) Habitats Regulations. A guide for competent authorities. EHS
- Erwin, D.G., Picton, B.E, Connor, D.W, Howson, C.M., Gilleece, P., and Bagues, M.J. 1986. *The Northern Ireland Sublittoral Survey*. Ulster Museum, Belfast.
- European Commission (2000). Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Luxembourg.
- Northern Ireland Biodiversity Group, 2000. *Biodiversity in Northern Ireland: Recommendations to Government for a Biodiversity Strategy*. HMSO, Belfast.
- UK Biodiversity Steering Group, 1998. *UK Biodiversity Group Tranche 2 Action Plans: Volume II – terrestrial and freshwater habitats*. HMSO, London.
- Wilkinson, M., Fuller, I.A., Telfer, T.C., Moore, C.G., and Kingston, P.F., 1988. *Northern Ireland Littoral Survey*. Report to Environment and Heritage Service.
- Wilson, 1972. *Regional Geology of Northern Ireland*. HMSO. Belfast.

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