

**Northern Ireland Habitat Action Plan**  
**Saline Lagoons**  
**Final Draft – April 2003**

**1. Current Status**

**1.1 Physical and biological status**

- 1.1.1 Saline lagoons are bodies of water that have a restricted connection to the sea. This creates an environment where the salinity of the water body is considered to be neither marine or fresh but may vary from brackish to fully saline or hyper-saline. The salinity of any particular lagoon depends on the specific hydrodynamics associated with that lagoon and may show considerable variation in both time and space.
- 1.1.2 It is this variable salinity that gives rise to the distinctiveness of saline lagoons in that their flora and fauna is restricted and often highly specialised to cope with the environmental conditions. The flora and fauna that occur in saline lagoons can be categorised into three groups; marine species that are tolerant of low salinity, freshwater species that are tolerant of high salinity and lagoonal specialists. The presence of this specialist flora or fauna makes the conservation of saline lagoons important in maintaining biodiversity.
- 1.1.3 Although limited in extent, saline lagoons are also often an important habitat for large numbers of wildfowl and waders. They often provide important locations for high tide roosts and offer habitats for migrating birds.
- 1.1.4 Saline lagoons occur both naturally and artificially and are varied in both size and form. Natural lagoons include where a barrier to the sea is caused by a barrier of sand or shingle and seawater percolates through this. Artificial lagoons are often created when engineering works cut off part of an estuary or the sea from direct tidal influences and/or restricts the movement of the tide in and out of this body of water.
- 1.1.5 In Northern Ireland, saline lagoons are not commonly found with 30 being reported by Bamber, *et al*, (2001). Of the 19 saline lagoons investigated by Carrol (1994), Donnan (1994) and Gorman (1994), only 3 were considered to be natural - a brackish wetland at Rathgorman, a series of pools on Grannagh Island and a series of salt pans and creeks at The Dorn (both in Strangford Lough). The remainder were considered to be artificial.
- 1.1.6 It must be noted that this distinction between natural and artificial saline lagoons may be misleading as there may well have been a natural lagoon present before any construction work has taken place since natural lagoons often occur in areas that are prime candidates for reclamation. Though there may only be a small number of natural saline lagoons, artificial lagoons may still hold species that are of biodiversity importance.

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

- 1.2.1 This saline lagoons habitat action plan identifies specific targets and actions required to deliver Northern Ireland's contribution to the UK action plan, published in 1995. (UK Biodiversity Steering Group, 1995)
- 1.2.2 There is a strong link with the Northern Ireland Seagrass beds habitat action plan. Examination of the records from the Northern Ireland Lake Survey (Wolfe-Murphy *et al*, 1992) indicate that “beds” of Tassel Weed *Ruppia maritima*, while occurring in the intertidal zone, are also frequent in saline lagoons. The seagrass, Spiral Tassel Weed *R. cirrhosa* is confined to saline lagoons in Northern Ireland.
- 1.2.3 The Northern Ireland Species of Conservation Concern (SoCC) list is currently under review. This review will identify local priority species and those which may require action plans.

## **2 Current factors affecting the habitat**

- 2.1 Direct physical disturbance. Many saline lagoons are often seen as candidates for infilling or for land claim as part of coastal development. Areas of lagoons within the Belfast Harbour Estate have been in-filled for industrial development.
- 2.2 Pollution. Nutrient enrichment leading to eutrophication, can have a major detrimental effect on this habitat. By definition, saline lagoons have a restricted exchange of water thus making them particularly vulnerable to changes in water quality. This enrichment may result from direct inputs or indirectly via the supply of water to the lagoon.
- 2.3 Water regime. Artificial control of both seawater and freshwater supplies to lagoons can have profound influences on this habitat. For example, the lagoon in Victoria Park, Belfast, has become fresh water (T. Waterman, pers. comm.). Drainage activity can also alter the status of saline lagoons e.g. Strand Lough (R. Anderson, pers. comm.).
- 2.4 Climate change. Summary predictions for temperature and sea level rise as a result of global warming have been modelled by the MONARCH project (Harrison *et al*. 2001). The prediction of increased summer temperatures, may lead to an increased level of desiccation in the intertidal area, restricting the distribution of the intertidal species. The decline of overall storminess predicted, is more than likely to be offset by the increased incidence of extreme events which could also affect saline lagoons by increasing the level of wave energy at or around the sills at the mouth of the lagoons.
- 2.5 Sea level changes. One study estimated that about 120 ha of coastal lagoons in England (10% of the existing resource in England) would be lost over the subsequent 20 years, mainly as a consequence of sea level rise. (Smith & Laffoley, 1992). Sea level rise may present opportunities for creation of new lagoonal habitat where seawater inundates freshwater areas, including sites that were once coastal lagoons. A

net mean sea level rise in the region of 10 – 15cm is predicted for Northern Ireland by 2020 and 65 – 70cm by 2050 (Harrison *et al*, 2001).

### **3 Current Action**

#### **3.1 Legal Status**

3.1.1 Coastal lagoons are listed as a priority habitat on Annex 1 of the EC Habitats Directive and are listed as an interest feature in only one cSAC in Northern Ireland (Strangford Lough). A total of 16 saline lagoons occur in designated sites including ASSIs, SPAs and Ramsar sites. Lough Foyle ASSI & SPA include some saline lagoon habitat. Strand Lough is an SPA and is included in Killough Bay and Strand Lough ASSI.

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

3.2.1 There has been very little research/monitoring of saline lagoons in Northern Ireland, the most recent comprehensive study was carried out by The Queen's University of Belfast in 1994 as part of a series of projects carried out by MSc students. (Carrol, 1994; Donnan, 1994 and Gorman, 1994). These projects investigated the flora and fauna of 19 saline lagoons as well as their physical characteristics.

3.2.2 Some saline lagoons were studied for their flora as part of the Northern Ireland Lake Survey in 1988. There is currently little ongoing monitoring or management of saline lagoons. The Rivers Agency (DARD) currently monitors the salinity of the saline lagoons behind the sea defences on Lough Foyle. They also carry out weed cutting on a regular basis on these lagoons as part of their remit for flood prevention (M. Oliver (RA), pers comm).

3.2.3 The National Trust for Northern Ireland has carried out some management of an artificial lagoon at Annes Point (Strangford Lough). Salinity is monitored and some species surveys have been carried out, and the lagoon is considered brackish by the National Trust (not surveyed by Carrol (1994), Donnan (1994) or Gorman (1994)).

3.2.4 The Wildfowl and Wetlands Trust manage water levels at Mahee Point lagoon though it is considered to be mainly freshwater with only occasional seawater intrusion from exceptional tides or faulty sluices (K. Mackie (WWT), pers. comm.).

3.2.5 Water beetle and aquatic invertebrates from saline lagoons and related habitats have been surveyed (Nelson 1995, Nelson *et al*, 1999).

3.2.6 Biological records are currently stored at the Museum and Galleries of Northern Ireland (MAGNI), at the Centre for Environmental Data and Recording (CEDaR). CEDaR was established in 1995 in partnership with EHS, MAGNI and the biological recording community. There are currently over 1.4 million records held by CEDaR and there are developments underway to make these records more accessible through the Internet. This will be achieved through the National Biodiversity Network, a union of organisations throughout the UK working together to create an information

network of biological data to provide an accessible data source for biodiversity information.

#### **4. Action Plan targets**

- 4.1** Maintain the extent of saline lagoons and associated plant and animal communities in Northern Ireland.
- 4.2** Maintain the condition of saline lagoons and associated plant and animal communities in Northern Ireland.
- 4.3** Create lagoonal habitat to offset losses. (Although it is not clear how much of this habitat has been lost, it is apparent that there has been a loss. An interim target of 2 ha. by 2010 has been set, initially based on the requirement of UK habitat action plan).

#### **5. Proposed action with lead agencies**

##### **5.1 Policy and legislation**

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

## **5.2 Site Safeguard and Management**

- 5.2.1 By 2004, carry out and publish an up to date record of the extent, quality and distribution of saline lagoons in Northern Ireland.  
(ACTION: EHS)
- 5.2.2 By 2004, identify saline lagoons that have been damaged or degraded by, for example, coastal defences, drainage schemes, agricultural run-off and land reclamation.  
(ACTION: EHS)
- 5.2.3 By 2006, where feasible, initiate remedial action to restore damaged or degraded saline lagoons to favourable condition.  
(ACTION: EHS)
- 5.2.4 By 2004, determine the extent and quality of the saline lagoons 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 saline lagoons communities found around Northern Ireland.  
(ACTION: EHS)
- 5.2.5 Ensure conservation requirements for saline lagoons are included in the development and implementation of coastal zone management plans and ensure that they are not managed in isolation from other habitats and communities in these areas.  
(ACTION: EHS, DOE)
- 5.2.6 Define water quality objectives for coastal and estuarine waters that meet the requirements of healthy saline lagoon communities by 2006.  
(ACTION: EHS)

## **5.3 Advisory**

- 5.3.1 By 2004, publish guidelines on the selection and designation of intertidal ASSIs for their marine biological importance.  
(ACTION: EHS)
- 5.3.2 Provide advice to local authorities and others on minimising impacts of plans and operations on saline lagoons.  
(ACTION: EHS)

## **5.4 International**

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

- 5.4.2 Liaise with research institutes in Europe and elsewhere to exchange data and information on the conservation of saline lagoons.  
(ACTION: EHS)

## **5.5 Monitoring and Research**

- 5.5.1 By 2005, carry out research into the factors, both natural and anthropogenic which adversely affect saline lagoons to understand how these may be avoided or minimised.  
(ACTION: EHS)
- 5.5.2 By 2005, carry out research into the “natural” variability of saline lagoons in space and time so that monitoring parameters/standards can be set.  
(ACTION: EHS)
- 5.5.3 By 2006, carry out research into the historical variation in extent and distribution of saline lagoons in Northern Ireland.  
(ACTION: EHS)
- 5.5.4 By 2006, establish standard saline lagoons monitoring programmes and ensure they are compatible with UK, Republic of Ireland and others.  
(ACTION: EHS)
- 5.5.5 By 2006, establish a network of saline lagoons monitoring stations around Northern Ireland. This should complement a network for the UK and the Republic of Ireland.  
(ACTION: EHS)
- 5.5.6 Ensure that all relevant information gathered in surveys is passed to the Centre for Environmental Data and Recording (CEDaR) based at the Ulster Museum and to other relevant centres. Encourage access to, and exchange of these records, by contributing to the National Biodiversity Network www-based catalogue of environmental information.  
(ACTION: EHS)

## **5.6 Communications and publicity**

- 5.6.1 Promote awareness among coastal users of the conservation importance of saline lagoons 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 saline lagoons in Northern Ireland.  
(ACTION: EHS)

## 6. Costing

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

## 7. References

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**List of useful Acronyms**

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

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