

**Broadhaven Bay SAC (site code 472)  
Conservation objectives supporting document  
-coastal habitats**

**NPWS**

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*Please note that the opinions expressed in the site reports from the Saltmarsh Monitoring Project are those of the authors and do not necessarily reflect the opinion or policy of NPWS.*

**Please note that this document should be read in conjunction with the following report:  
NPWS (2014). Conservation Objectives: Broadhaven Bay SAC 000472. Version 1.0.  
National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.**

## 1 Introduction

Achieving Favourable Conservation Status (FCS) is the overall objective to be reached for all Annex I habitat types and Annex II species of European Community interest listed in the Habitats Directive 92/43/EEC (Commission of the European Communities, 2007). It is defined in positive terms, such that a habitat type or species must be prospering and have good prospects of continuing to do so.

Broadhaven Bay is a large north-facing bay situated on the north-west Mayo coast. It encompasses a range of marine and coastal habitats from extremely exposed bedrock at Benwee Head to sheltered sediments in the inner bay. The Special Area of Conservation (SAC) extends from the innermost part of the bay at Belmullet to the outer marine area between Erris Head and Benwee Head. At its outermost part, the site is 10km wide. Exposure to prevailing winds and wave action diminishes from the mouth towards the head of the bay. Subsidiary inlets along the length of the bay provide additional sheltered areas.

Broadhaven Bay SAC (site code: 472) is designated for a range of marine, intertidal and coastal habitats including saltmarsh. The following coastal habitat is included in the qualifying interests for the site:

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (ASM) (1330)

This backing document sets out the conservation objectives for Atlantic salt meadows in Broadhaven Bay SAC, which is defined by a list of parameters, attributes and targets. The main parameters are (a) Range (b) Area and (c) Structure and Functions, the last of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The national inventory of saltmarshes in Ireland (Curtis & Sheehy-Skeffington, 1998) identified two saltmarsh sites within this SAC: Barnatra and Tallagh. Both are fringe types and Barnatra has a peat/sand substrate while Tallagh has a peat substrate. Both of these saltmarshes are situated in the extreme, sheltered, inner part of the bay. The saltmarsh at Tallagh is divided by a road, with the better area of marsh along the inflowing river (landward side of the road). South of the road the marsh has been partly improved and is classified as wet pasture grading into saltmarsh. These sub-sites are mostly good examples of fringe saltmarshes on peat with species characteristic of Atlantic salt meadows (NPWS internal files).

The targets set for the Atlantic salt meadows are based in part on the findings of the Saltmarsh Monitoring Project (SMP) (McCorry & Ryle, 2009) and this document should be read in conjunction with that report. However, as this site was not visited during the SMP, the

conservation objective for the Atlantic salt meadows within the entire SAC is quite generic and may be adjusted in the future in light of new information.

## **2 Conservation Objectives**

The conservation objective aims to define the favourable conservation condition of a habitat or species at a particular site. Implementation of these objectives will help to ensure that the habitat or species achieves favourable conservation status at a national level.

## **3 Saltmarsh habitats**

Saltmarshes are stands of vegetation that occur along sheltered coasts, mainly on mud or sand, and are flooded periodically by the sea. They are restricted to the area between mid neap tide level and high water spring tide level. In Ireland, there are four saltmarsh habitats listed under Annex I of the EU Habitats Directive (92/43/EEC):

- *Salicornia* and other annuals colonising mud and sand (1310)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)
- Mediterranean salt meadows (*Juncetalia maritimi*) (1410)
- Mediterranean and thermo-Atlantic halophilous scrub (1420)

Atlantic salt meadows (ASM) is the only habitat listed as a Qualifying Interest for Broadhaven Bay. It is likely that the site also supports the first and third habitats listed. The last habitat in the list is restricted in its distribution to a small number of sites in the southeast of the country.

The distribution of saltmarsh habitats within Broadhaven Bay SAC is presented in Appendix I. A total area of 13.53ha of potential saltmarsh habitat was mapped within the SAC. It was assumed during the SMP that this potential saltmarsh habitat was composed of a mosaic of ASM and Mediterranean salt meadow (MSM). Therefore it is estimated that 50% (or 6.765ha) represents the ASM qualifying interest.

### **3.1 Overall Objectives**

The overall objective for 'Atlantic salt meadows' in Broadhaven Bay is to 'maintain the favourable conservation condition'.

This objective is based on an assessment of the condition of the habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area (b) Range and (c) Structure and Functions.

## **3.2 Area**

### **3.2.1 Habitat extent**

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is no decrease in extent from the baseline which was established by McCorry and Ryle (2009). Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is assessed subject to natural processes, including erosion and succession.

Although this site was not surveyed during the Saltmarsh Monitoring Project (SMP), an area of 13.46ha of potential saltmarsh habitat was identified using the 2005 OSI series of aerial photographs (McCorry & Ryle, 2009). A distribution map for these areas of potential saltmarsh habitat is presented at the end of this document (Appendix I).

The target for this habitat is that the area should be stable or increasing, subject to natural processes, including erosion and succession.

## **3.3 Range**

### **3.3.1 Habitat distribution**

The national inventory of saltmarshes in Ireland, Curtis and Sheehy-Skeffington (1998) list two saltmarsh sites within this SAC at Barnatra and Tallagh. Both of these sites are situated in the extreme inner part of the bay where shelter is high. It is possible that additional areas of saltmarsh may be present within the SAC.

There should be no decline or change in the distribution of Atlantic salt meadow habitat, unless it is the result of natural processes, including erosion, accretion and succession.

## **3.4 Structure and Functions**

The location, character and dynamic behaviour of saltmarshes are governed by sediment supply, tidal regime, wind-wave climate and sea level change. The slope of the saltmarsh allows the development of several ecological gradients such as tidal submergence and salinity, and this influences the development of distinctive zones of halophytic and salt tolerant plant communities. Maintaining the favourable conservation condition of the ASM habitat in Broadhaven Bay in terms of its structure and functions depends on a range of attributes for which targets have been set as outlined below.

#### **3.4.1 Physical structure: sediment supply**

Accretion and erosion are natural elements of saltmarsh systems and Broadhaven Bay is a naturally highly dynamic system. Maintaining the sediment supply is vital for the continued development and natural functioning of a saltmarsh system. Interruption to the sediment circulation through physical structures can starve the system and lead to accelerated erosion rates.

The natural functioning of the saltmarsh at Tallagh has been affected by the presence of a road though this has been long established. Some reclamation has also gone on at Tallagh (NPWS internal files).

The target is therefore to maintain the natural circulation of sediment and organic matter, without any physical obstructions.

#### **3.4.2 Physical structure: creeks and pans**

Saltmarshes can contain a distinctive topography with an intricate network of creeks and pans occurring on medium to large-sized sites. Creek density is influenced by vegetation cover, sediment supply and tidal influence. Creeks absorb tidal energy and assist with delivery of sediment into the saltmarsh. The efficiency of this process depends on creek pattern. Creeks allow pioneer vegetation to become established along their banks higher up into the saltmarsh system. Major erosion of saltmarsh is indicated by internal dissection and enlargement of the drainage network, ultimately leading to the creation of mud basins.

Pools and channels occur within the saltmarshes at Barnatra and Tallagh (NPWS internal files).

The target is to maintain creek and pan networks where they exist and to restore areas that have been altered.

#### **3.4.3 Physical structure: flooding regime**

The regular ebb and flow of the tide brings salinity, but also nutrients, organic matter and sediment, which are central to the development, growth and indeed survival of saltmarshes. Saltmarsh vegetation consists of a limited number of halophytic (salt-tolerant) species that are adapted to regular immersion by the tides. Species in the lowest part of the saltmarsh require regular inundation, while those higher up on the marsh can only tolerate occasional inundation.

The target is to maintain a flooding regime whereby the lowest levels of the saltmarsh are flooded daily, while the upper levels are flooded occasionally (e.g. highest spring tides).

#### **3.4.4 Vegetation structure: zonation**

Saltmarshes are naturally dynamic coastal systems. In order to ensure the ecological functioning of all of the saltmarsh habitats it is vital to maintain the zonations and transitions to other habitats.

At the Barnatra and Tallagh sites, the fringe saltmarshes merge into wet pasture and bog habitats (NPWS internal files).

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes, including erosion and succession.

#### **3.4.5 Vegetation structure: vegetation height**

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing is often used as a tool for maintaining structural diversity in the sward but stocking levels need to be appropriate. Overgrazing can lead to loss of species and destruction of the vegetation cover, while undergrazing can lead to a loss of plant diversity due to competitive exclusion.

The saltmarshes at Barnatra and Tallagh are grazed by cattle at levels that are causing problems in places (NPWS internal files).

The target is to maintain structural variation within the sward. A general guideline is that there should be a sward ratio of 30% tall:70% short across the entire saltmarsh.

#### **3.4.6 Vegetation structure: vegetation cover**

Vegetation cover can have a major effect on saltmarsh development by reducing the velocity of the tide and thereby enhancing the deposition of sediment. Excessive bare mud can lead to destabilisation and accelerated erosion of the system.

The structure of the saltmarshes in Broadhaven bay has been affected by grazing which is heavy in places.

The target is to maintain more than 90% of the area of saltmarsh outside of the creeks vegetated.

### 3.4.7 Vegetation composition: typical species & sub-communities

Saltmarshes contain several distinct zones that are related to elevation and frequency of flooding. The lowest part along the tidal zone is generally dominated by the most halophytic (salt-tolerant) species including common saltmarsh-grass (*Puccinellia maritima*) and species more usually associated with *Salicornia* muds. The mid-marsh zone is generally characterised by sea thrift (*Armeria maritima*), sea plantain (*Plantago maritima*) and sea aster (*Aster tripolium*). This mid-zone vegetation generally grades into an herbaceous community in the upper marsh, dominated by red fescue (*Festuca rubra*), sea milkwort (*Glaux maritima*) and saltmarsh rush (*Juncus gerardii*).

Species at Barnatra include sea pink (*Armeria maritima*), sea arrowgrass (*Triglochin maritimum*), sea plantain (*Plantago maritima*), Buck's-horn plantain (*Plantago coronopus*), common saltmarsh grass (*Puccinellia maritima*), greater sea-spurrey (*Spergularia media*), common scurvey grass (*Cochlearia officinalis*), saltmarsh rush (*Juncus gerardii*), and sea rush (*Juncus maritimus*). Turf fucoids are also present (NPWS internal files).

The target for this attribute is to ensure that a typical flora of saltmarshes is maintained, as are the range of sub-communities within the different zones. Below are lists of typical species for the different saltmarsh zones, although some of these species have a restricted distribution nationally and may not occur in the Broadhaven Bay area.

Typical species		
Lower marsh	Low-mid marsh	Mid-upper marsh
<i>Salicornia</i> spp. <i>Suaeda maritima</i> <i>Puccinellia maritima</i> <i>Aster tripolium</i>	<i>Puccinellia maritima</i> <i>Triglochin maritima</i> <i>Plantago maritima</i> <i>Atriplex portulacoides</i> <i>Aster tripolium</i> <i>Spergularia</i> sp. <i>Suaeda maritima</i> <i>Salicornia</i> spp. <i>Glaux maritima</i> Turf fucoids	<i>Festuca rubra</i> <i>Juncus gerardii</i> <i>Armeria maritima</i> <i>Agrostis stolonifera</i> <i>Limonium humile</i> <i>Glaux maritima</i> <i>Seriphidium maritimum</i> <i>Plantago maritima</i> <i>Aster tripolium</i> <i>Juncus maritimus</i> <i>Triglochin maritima</i> <i>Blysmus rufus</i> <i>Eleocharis uniglumis</i> <i>Leontodon autumnalis</i> <i>Carex flacca</i> <i>Carex extensa</i> Turf fucoids



#### **3.4.8 Vegetation composition: negative indicator species**

The only invasive and non-native species recorded on saltmarshes during the SMP was common cordgrass (*Spartina anglica*). The aim is that negative indicators such as *Spartina* should be absent or under control. There is currently no record of this species at this site (Preston *et al.*, 2002).

The current target is that there should be no new sites for common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is known to occur.

## **4 References**

Commission of the European Communities (2007). *Interpretation Manual of European Union Habitats – EUR 27*. DG Environment – Nature and Biodiversity, Brussels.

Curtis, T.G.F. and Sheehy-Skeffington, M. J. (1998). The saltmarshes of Ireland: an inventory and account of their geographical variation. *Proceedings of the Royal Irish Academy*, Vol.98B, No.2. 87- 104.

McCorry, M. and Ryle, T. (2009). *Saltmarsh Monitoring Project 2007-2008*. Unpublished report to the National Parks and Wildlife Service, Dublin.

Preston, C.D., Pearman, D.A. and Dines, T.D. (2002). *Atlas of the British and Irish Flora*. Oxford University Press, Oxford.

# Appendix I – Distribution map of saltmarsh habitats within Broadhaven Bay SAC.

