NPWS

Bellacragher Saltmarsh SAC
(site code: 002005)

Conservation objectives supporting document- Coastal habitats

Version 1

December 2016

Contents

Please note that the opinions expressed in the site reports from the Saltmarsh Monitoring Project (SMP) 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 (2016) Conservation Objectives: Bellacragher Saltmarsh SAC 002005. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

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 (European Commission, 2013). 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.

Bellacragher Bay is located to the east of Achill Island and north-west of Mallaranny, in west Mayo. The bay is a very sheltered inlet and has a narrow connection to the sea, which affects tides in the bay. Bellacragher Saltmarsh SAC is a relatively small SAC (circa 16ha) that covers only part of the north-eastern shoreline of the bay. The SAC is located immediately west of the N59, making the saltmarsh easily accessible. It is a site that is frequently used for educational purposes (NPWS, 2013).

Two types of saltmarsh fringe have developed at Bellacragher Bay. The largest areas of saltmarsh occur further south of the SAC in small sheltered inlets where the shallow slope of the land allows the development of saltmarsh vegetation. These patches are separated by more exposed shoreline where there is pebble/cobble beach (McCorry, 2007).

Other habitats within Bellacragher Saltmarsh SAC include stony shoreline, sandy beach, intertidal sand/mudflats and wet grassland. The bay is surrounded by blanket bog with dry heath, wet heath and wet grassland occurring on some of the steeper slopes of Claggan Mountain and other hills surrounding the site (NPWS, 2013).

Bellacragher Saltmarsh SAC (site code: 002005) is selected for the following two coastal habitat Qualifying Interests:

1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
1410	Mediterranean salt meadows (Juncetaliea maritimi)

The distribution of these saltmarsh habitats within Bellacragher Saltmarsh SAC is presented in Appendix I.

2 Conservation Objectives

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

This supporting document sets out the conservation objectives for the two coastal habitats listed above in Bellacragher Saltmarsh SAC, which are 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 targets set for the saltmarsh habitats are based primarily on the results of the Saltmarsh Monitoring Project (SMP) (McCorry, 2007; McCorry and Ryle, 2009) and this document should be read in conjunction with those reports.

The SMP surveyed, mapped and assessed one sub-site associated with Bellacragher Saltmarsh SAC (McCorry, 2007): Bellacragher Bay (site ID: SMP0021). Although small in area, this site is a typical example of west coast salt meadows of the fringe type on a peat substrate.

The distribution of saltmarsh habitats within Bellacragher Saltmarsh SAC is presented in Appendix I. As part of the SMP, detailed individual reports and habitat maps were produced for each sub-site and those produced for Bellacragher Bay are included in Appendix II.

The conservation objectives for the saltmarsh habitats in Bellacragher Saltmarsh SAC are based primarily on the findings of the SMP at the Bellacragher Bay sub-site. It is important to note however, that further unsurveyed areas may be present within Bellacragher Saltmarsh SAC.

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 (European Commission, 2013):

- *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 scrubs (Sarcocornetea fruticosi) (1420)

The last habitat is restricted in its distribution to sites in the south-east of the country. The two habitats in bold, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are listed as Qualifying Interests for Bellacragher Saltmarsh SAC. The distribution of both saltmarsh habitats within Bellacragher Saltmarsh SAC is presented in Appendix I.

3.1 Overall Objectives

The overall objective for 'Atlantic salt meadows' in Bellacragher Saltmarsh SAC is to '*restore the favourable conservation condition*'.

The overall objective for 'Mediterranean salt meadows' in Bellacragher Saltmarsh SAC is to '*maintain the favourable conservation condition*'.

These objectives are based on an assessment of the recorded condition of each 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 area

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is no decrease from the baseline which was established by McCorry (2007). 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.

A habitat map of the known saltmarsh habitats in Bellacragher Saltmarsh SAC has been produced and is presented in Appendix I.

The total areas of each saltmarsh habitat within the sub-site as mapped by the SMP and the total areas of each habitat within the SAC are presented in the tables below.

There are a number of differences in the figures below. Most of the differences can be explained by the fact that the SMP mapped the total saltmarsh resource and not all of the saltmarsh mapped is contained within the SAC boundary. In addition, the total area within the SAC can be greater than given in the SMP as the SMP did not include any mosaics when calculating their total areas.

The following rules were applied when calculating the areas for the SAC's conservation objectives:

1. Where a polygon was identified as a mosaic of an Annex I habitat and a non-Annex I habitat, then the entire area was counted as the Annex I habitat.
2. Where a polygon was identified as a mosaic of two Annex I habitats, the area was divided 50:50 for each habitat.

Atlantic salt meadows:

Sub-site	Total area (ha) of ASM (excluding mosaics) from SMP	Total area (ha) of ASM within SAC boundary (including mosaics)
Bellacragher Bay	1.82	0.80

Mediterranean salt meadows:

Sub-site	Total area (ha) of MSM (excluding mosaics) from SMP	Total area (ha) of MSM within SAC boundary (including mosaics)
Bellacragher Bay	2.61	0.88

The medium-term prospects of natural landward saltmarsh migration in response to sea level rise are good, as this site is a fringe-type saltmarsh. The saltmarsh fringe can easily migrate over the blanket peat layer in response to any sea-level rise. The ASM that occurs on narrow bands of mud overlying glacial material is likely to be eroded in response to sea level rise (McCorry, 2007).

The target for both habitats 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 SAC contains a fringe type saltmarsh, which is only several metres wide along much of the shoreline, sometimes less than 1m wide in places. Some of the larger patches are c. 60m wide. The area of saltmarsh generally relates to the shoreline topography (or the blanket peat topography), with narrow bands of saltmarsh forming where the land is steeply sloping upwards from the shore. Some of the larger patches of saltmarsh occur where a wide area of blanket peat falls below sea level. The larger areas are dominated by MSM, but there are significant fringe areas where sea rush (*Juncus maritimus*) is absent and ASM is present. Some of the saltmarsh vegetation also occurs as a mosaic of these two habitats. There are several small inlets with a saltmarsh fringe within the SAC (McCorry, 2007).

The western side of the bay includes shoreline with blanket peat along the shore and patches of rocky beach at the foot of the peat cliff. Some small patches of saltmarsh occur on a thin layer of mud/peat that has developed on these rocky deposits. They are generally well-grazed eroded patches of ASM similar to those recorded in the northern part of the SAC. ASM vegetation also occurs as a fringe on top of a deep peat layer. This band of ASM may vary from less than 1m wide to several metres wide in places, but is generally very narrow (McCorry, 2007).

The ASM fringe is quite convoluted and undulating in places. The ASM disappears in places where the mud is eroded and mosaics have frequently developed with shingle/cobble/pebble beach and rocky shore. Higher up in the small inlets the ASM develops in small isolated patches (2-5m long) (McCorry, 2007).

The known distribution of each habitat within Bellacragher Saltmarsh SAC can be found in Appendix I. It is important to note that further unsurveyed areas may be present within the SAC.

The target is that there should be no decline or change in the distribution of these saltmarsh habitats, 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 saltmarsh habitats in Bellacragher Saltmarsh SAC 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. 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.

At Bellacragher Saltmarsh SAC, the saltmarsh occurs mostly on a peat substrate, though some patches occur on the stony shoreline. This habitat varies depending on whether it occurs on a deep blanket peat layer or if it occurs on a thin band of mud/peat overlying rocky deposits. Within the SAC, it mainly occurs as a thin band of vegetation generally between 3-6m wide on a thin band of mud/peat generally overlaying rocky/shingle deposits (McCorry, 2007).

The target is to maintain, or where necessary restore, 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.

At Bellacragher Saltmarsh SAC, the ASM structure is poorly developed, which is typical of these fringe marshes and no creeks or pans are present (McCorry, 2007).

Within the MSM, the typical saltmarsh topography is poor and few salt pans have developed. The topography is uneven with low mounds and hollows occurring and areas with different layers of peat 'stepping' down to the shoreline. The seaward edge is generally very convoluted and undulating with a peat cliff face at the edge (McCorry, 2007).

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, including intertidal, shingle and sand dune habitats.

At Bellacragher Saltmarsh SAC, the saltmarsh vegetation that occurs on peat generally transitions to blanket bog, wet heath, wet grassland, dry grassland, bracken (*Pteridium aquilinum*) scrub and mosaics of these habitats. Some old pine (*Pinus* sp.) stumps are exposed along the shoreline where the peat is eroded. Some of the fringe saltmarsh is lined by a dense band of rhododendron (*Rhododendron ponticum*). Some of the saltmarsh is also overhung by Mediterranean heath (*Erica erigena*). Saltmarsh occurring on a thin band of sediment on a rocky beach can transition to a rocky terrestrial edge and then into wet/dry acid grassland. There are small mounds within the saltmarsh area that contain bog myrtle (*Myrica gale*) and bog cotton (*Eriophorum* spp.). Some mounds within the saltmarsh contain wet/dry grassland. The seaward edge of the saltmarsh usually borders intertidal mud or rocky shoreline (McCorry, 2007).

Zonation is generally poorly developed on these small bands of vegetation. However, at several locations some zonation can be seen, with bands of thrift (*Armeria maritima*)/sea plantain (*Plantago maritima*) dominated vegetation at the seaward edge and a band of saltmarsh rush (*Juncus gerardii*) occurring behind this band. A third band dominated by creeping bent (*Agrostis stolonifera*) occurs along the upper boundary and the strandline. Species such as silverweed (*Potentilla anserina),* yellow flag (*Iris pseudacorus*) and sea mayweed (*Tripleurospermum maritimum*) occur on the strandline or transition between saltmarsh and terrestrial habitats. This vegetation is typical of upper ASM and occurs as a green band along the blanket bog vegetation (McCorry, 2007).

There are some bands of brown algae (fucoid species) along the strandline in places. Patches of sea rush (*Juncus maritimus*) also occur in rocky and muddy areas in narrow bands at the foot of the peat cliff face and may form mosaics with ASM in places. There are also natural transitions from MSM to wet and dry grassland, blanket bog and wet heath (McCorry, 2007).

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.

At Bellacragher Saltmarsh SAC, the saltmarsh is mainly grazed by sheep and some areas are noticeably close-cropped. Also, the turf surface has been broken in places by trampling. Sheep graze much of the shoreline around the bay and grazing levels are generally moderate to high, with some patches being overgrazed (McCorry, 2007).

The sward level of the ASM is generally quite low and tightly grazed. Sheep poaching and grazing is exacerbating erosion of saltmarsh on narrow layers of mud/peat overlaying rocky deposits, creating saltmarsh/rocky mosaics. The MSM generally is not significantly overgrazed but can be poached moderately or heavily in localised places where the livestock create tracks (McCorry, 2007).

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, however, is often a sign of overuse by livestock or humans and can lead to destabilisation and accelerated erosion of the system.

At Bellacragher Saltmarsh SAC, there are signs of erosion around the edge of the shoreline, some of which is caused by overgrazing by sheep with bare ground (<10%) significant in places. Sheep grazing is causing some localised damage to MSM, although the area affected is generally quite small (<5%) (McCorry, 2007).

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

3.4.7 Vegetation composition: typical species and 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*).

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 Bellacragher Bay area of west Mayo.

Typical species

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

In the SAC, the small area of ASM means that structure and topography is poorly developed, (although this is to be expected in a fringe-type saltmarsh). The species diversity is typical of ASM with most of the typical species being present including saltmarsh rush (*Juncus gerardii*), common saltmarsh-grass (*Puccinellia maritima*), red fescue (*Festuca rubra*), buck's-horn plantain (*Plantago coronopus*), sea plantain (*P. maritima*) and thrift (*Armeria maritima*) (McCorry, 2007).

Other frequent species include creeping bent (*Agrostis stolonifera*), white clover (*Trifolium repens*), sea milkwort (*Glaux maritima*), autumn hawkbit (*Leontodon autumnalis*), sedges (*Carex* spp.) and sea arrowgrass (*Triglochin maritima*). In places, sea rush (*Juncus maritimus*) is dominant, indicating the presence of MSM (McCorry, 2007).

A feature of the marsh is the presence of 'turf fucoids', a term given to various species of brown algae which occur in miniature forms on saltmarshes, especially in western Ireland. These turf fucoids occur within the common saltmarsh-grass (*Puccinellia maritima*) and plantain (*Plantago* spp.) dominated sward. Of particular interest is that a community of these algae was first described from Bellacragher Bay and they are an indicator of local distinctiveness (McCorry, 2007).

The MSM habitat is dominated by dense sea rush (*Juncus maritimus*) and forms some of the largest areas of saltmarsh vegetation. The largest areas occur on deep peat layers. The vegetation is species-poor in places with monocultures of sea rush developing in parts. Other areas are grassier and contain frequent creeping bent (*Agrostis stolonifera*) and red fescue (*Festuca rubra*). Species such as thrift (*Armeria maritima*), sea milkwort (*Glaux maritima*), autumn hawkbit (*Leontodon autumnalis*), saltmarsh rush (*Juncus gerardii*), sea plantain (*P. maritima*) and common saltmarsh-grass (*Puccinellia maritima*) are occasional. Species such as soft rush (*Juncus effusus*), black bog-rush (*Schoenus nigricans*) and purple moor-grass (*Molinia caerulea*) can occur within the sea rush dominated areas towards the landward boundary. The distribution of sea rush extends above the high water mark in places. The species diversity is typical of this habitat, and overall is relatively poor. Some patches are composed entirely of dense sea rush. There are mosaics present with ASM that increase the structural diversity (McCorry, 2007).

The target for this attribute is to ensure that a typical flora of the saltmarsh habitats is maintained, as are the range of sub-communities within the different zones.

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*) (McCorry, 2007; McCorry and Ryle, 2009).

Common cordgrass (*Spartina anglica*) has not been recorded at Bellacragher Saltmarsh SAC. However, the invasive species rhododendron (*Rhododendron ponticum*) was noted to be naturalised in the area and at one point grows right down to the shoreline, though it is not thought to be having an impact on the saltmarsh habitats (McCorry, 2007).

The aim is that negative indicators, such as *Spartina anglica*, should be absent or under control. The current target for this particular SAC is that *S. anglica* should remain absent.

4 References

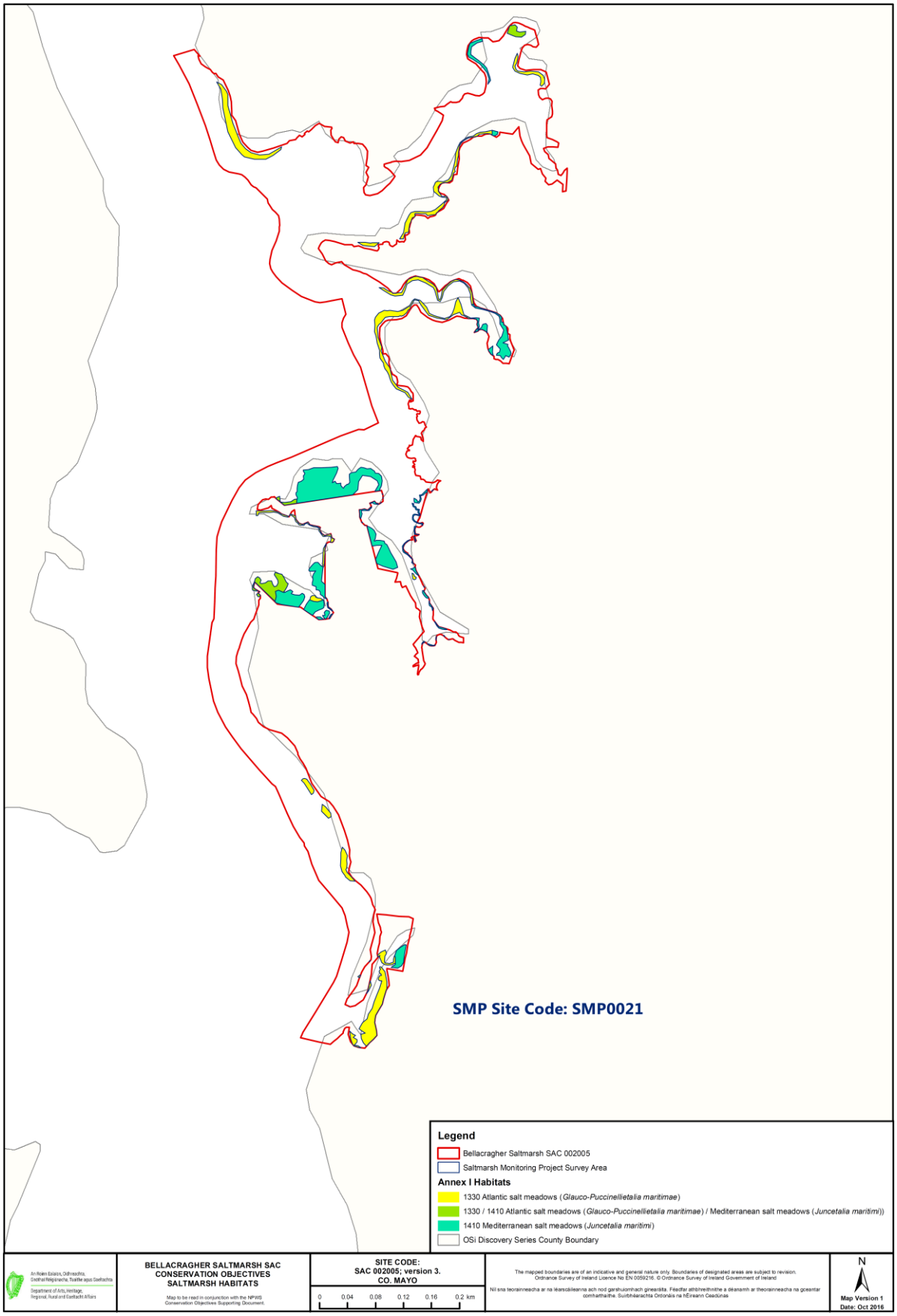
European Commission (2013) Interpretation Manual of European Union Habitats – EUR 28. DG Environment - Nature and Biodiversity, Brussels.

McCorry, M. (2007) Saltmarsh Monitoring Project 2006. Unpublished report to the National Parks and Wildlife Service, Dublin.

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

NPWS (2013) Site Synopsis: Bellacragher Saltmarsh SAC (002005)
https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002005.pdf

Appendix I – Distribution map of Saltmarsh habitats within Bellacragher Saltmarsh SAC



Appendix II – Bellacragher Bay site report and habitat map from the Saltmarsh Monitoring Project (McCorry, 2007)

1 SITE DETAILS

SMP site name: Bellacragher Bay	**SMP site code:** SMP0021
Site name (Curtis list): Bellacragher Bay	**CMP site code:**
	Site No: (Curtis list): 61
NPWS Site Name: Bellacragher Saltmarsh	**Dates of site visit:** 8-9/09/2006
NPWS designation **cSAC:** 2005 **pNHA:** 2005	**MPSU Plan:** no plan
County: Mayo	**Discovery Map:** 30 **Grid Ref:** 082310, 300960
6 inch Map No: Ma056, Ma066	**Aerial photos (2000 series):** 01715-a, 01715-c, 01715-d, 01776-a, 1776-b, 01776-c, 01776-d, 01837-a, 01837-b,

Annex I habitats currently designated for Bellacragher Saltmarshc SAC:

Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330)
Mediterranean salt meadows (Juncetalia maritimi) (1410)

Saltmarsh type: Fringe	**Substrate type:** Peat

2 SITE DESCRIPTION

Bellacragher Bay is located to the east of Achill Island and to the north of Mallaranny in western Co. Mayo. The bay is very sheltered and has a narrow connection to the sea. This affects tides in the bay. The bay is situated in a scenic mountainous area and is surrounded by mainly blanket bog with dry heath, wet heath and wet grassland occurring on some of the steeper slopes along the sides of Claggan Mountain and other hills surrounding the site.

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Both habitats are listed as a qualifying interest for the Bellacragher Bay cSAC.

The Bellacragher Bay cSAC/pNHA covers only part of the north-eastern shoreline of the bay (about 15% of the total shoreline in the bay) and is a relatively small site (16 ha dominated by intertidal and subtidal areas). This cSAC is the only site that was designated for the presence of saltmarsh habitats only. Significant amounts of saltmarsh habitat are excluded from the cSAC, as the 6 inch map shoreline boundary was used to draw the boundaries and there are small errors in rectification between this map and the 2000 aerial photos. However, with a relatively small site and a habitat that is only 5 metres wide in places, these errors are magnified so that significant amounts of saltmarsh habitat are excluded.

Saltmarsh also occurs in several small inlets along the eastern side further south of Bellacragher Bay cSAC but these are included with Owenduff/Nephin Complex cSAC (Site code 000534). Small

patches of saltmarsh on the west side of the bay are included within Lough Gall Bog cSAC (Site code 000522).

The N59 Mallarany-Bangor Road is situated close to the edge of the eastern side of the bay and the saltmarsh and shoreline is easily accessed via the road (one of the reasons why the site was designated). Some of the land between the road and the shoreline is grazed by sheep so care should be taken not to disturb livestock.

3 HABITATS

3.1 General description

This site is a fringe type saltmarsh with the saltmarsh being only several metres wide along much of the shoreline, sometimes < 1m wide in places. This is a relatively small site (Table 3.1). Some of the larger patches are about 60 m wide. The area of saltmarsh generally relates to the shoreline topography (or the blanket peat topography), with narrow bands of saltmarsh forming where the land is steeply sloping from the shore. Some of the larger patches of saltmarsh occur where a wide area of blanket peat falls below sea level. The larger areas are dominated by Mediterranean salt meadows (MSM), but there are significant fringe areas where sea rush (*Juncus maritimus*) is absent and Atlantic salt meadows (ASM) are present. Some of the saltmarsh vegetation also occurs as a mosaic of these two habitats. There are several small inlets with a saltmarsh fringe within the designated area.

Two types of saltmarsh fringe have developed. Saltmarsh vegetation occurs on a deep layer of peat where the sea covers the blanket peat, and a tall peat cliff is present at the edge. The peat layer is deepest higher up these small inlets and is 2 m high in some places. Saltmarsh also occurs on more marine sediments in places on mud/peat at the base of the blanket peat within the inlets and further out towards the main shoreline on cobble/pebble beach and glacial till. Some of these patches of saltmarsh have eroded and form mosaics with the rocky deposits.

The largest areas of saltmarsh occur further south of the cSAC in small sheltered inlets where the shallow slope of the land allows the development of saltmarsh vegetation. These patches are separated by more exposed shoreline where there is pebble/cobble beach. Old lazy-beds occur on ASM located further south of the cSAC. The land slopes quite steeply to the sea in the south-east corner and along the southern side of the bay and saltmarsh generally cannot develop apart from in several small areas where the slope shallows. The western side of the bay contains shoreline with blanket peat along the shore and patches of rocky beach at the foot of the peat cliff. This shoreline was not surveyed. However, some small patches of saltmarsh occur on thin layer of mud/peat that has developed on these rocky deposits. These saltmarsh patches were observed from the eastern shore but are too small to observe from the aerial photos. They are generally well-grazed eroded patches of ASM similar to those recorded in the northern part of the cSAC.

The saltmarsh vegetation that occurs on peat generally transitions to blanket bog, wet heath, wet grassland, dry grassland, bracken, scrub and mosaics of these habitats. Some old pine (*Pinus* sp.) stumps are exposed along the shoreline where the peat is eroded. Some of the fringe saltmarsh is lined by a dense band of rhododendron (*Rhododendron ponticum*). Some of the saltmarsh is also overhung by Mediterranean heath (*Erica erigena*). Saltmarsh occurring on a thin band of sediment on a rocky beach can transition to a rocky terrestrial edge and then into wet/dry grassland. The seaward edge of the saltmarsh usually borders intertidal mud or rocky shoreline.

Table 3.1. Area of EU Annex I habitats listed at Bellacragher Bay.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	1.82
1410	Mediterranean salt meadows (Juncetalia maritimi)	2.61
	Total	**4.43**

*note that saltmarsh habitat continues outside the surveyed site.

3.2 Atlantic salt meadows (H1330)

This habitat varies depending on if it occurs on a deep blanket peat layer or if it occurs on a thin band of mud/peat overlying rocky deposits. Within the cSAC it mainly occurs as a thin band of vegetation generally between 3-6 m wide on a thin band of mud/peat generally overlaying rocky/shingle deposits. The ASM fringe is quite convoluted and undulating in places. The ASM disappears in places where the mud is eroded and mosaics have frequently developed with shingle/cobble/pebble beach and rocky shore. Higher up in the small inlets the ASM develops in small isolated patches (2-5 m long). Most of the ASM is a low tightly grazed sward. The vegetation is dominated by sea pink (*Armeria maritima*), common saltmarsh-grass (*Puccinellia maritima*), sea plantain (*Plantago maritima*), buck's-horn plantain (*Plantago coronopus*) and saltmarsh rush (*Juncus gerardii*). Other frequent or occasional species include creeping bent-grass (*Agrostis stolonifera*), sea milkwort (*Glaux maritima*), sedge sp. (*Carex* sp.) and sea arrowgrass (*Triglochin maritimum*). Bare ground is also occasional (generally < 5%). Turf fucoids are also present within this habitat, occurring within the common saltmarsh-grass and plantain dominated sward. Zonation is generally poorly developed on these small bands of vegetation. However, at several locations some zonation can be seen, with bands of sea pink/plantain-dominated vegetation at the seaward edge and a band of saltmarsh rush occurring behind this band. A third band dominated by creeping bent-grass occurs along the upper boundary and the strandline. Species such as silverweed (*Potentilla anserina),* yellow flag (*Iris pseudacorus*) and sea mayweed (*Tripleurospermum maritimum*) occur on the strandline or transition between saltmarsh and terrestrial habitats. Notable species not recorded on the site include glasswort (*Salicornia* sp.) and annual sea-blite (*Suaeda maritima*). There are some bands of brown algae (fucoid spp.) along the strandline in places. The saltmarsh structure is poorly developed, which is typical of these fringe marshes and no creek or pans are present.

Atlantic salt meadow vegetation also occurs as a fringe on top of a deep peat layer. This band of ASM may vary from < 1 m wide to several metres wide in places but is generally very narrow (particularly within the cSAC). The vegetation is dominated by creeping bent-grass with other species such as white clover (*Trifolium repens*), autumn hawkbit (*Leontodon autumnalis*) and other saltmarsh species being present. This vegetation is typical of upper ASM and occurs as a green band along the brown blanket bog vegetation.

Further south along the eastern shoreline there are several inlets where ASM has developed to a greater extent compared to within the cSAC. Some of these patches of saltmarsh have developed where small streams enter the bay. This allows some zonation to develop. Old lazy beds on the adjacent wet/dry grassland in some of these little bays/inlets extend into the saltmarsh. Some of these have developed hollows with salt pans.

3.3 Mediterranean salt meadows (H1410)

This habitat is dominated by dense sea rush and forms some of the largest areas of saltmarsh vegetation. The largest areas occur on deep peat layers. The vegetation is species-poor in places with monocultures of sea rush developing in parts. Other areas are grassier and contain frequent creeping bent-grass and red fescue (*Festuca rubra*). Species such as sea pink, sea milkwort, autumn hawkbit, saltmarsh rush, sea plantain and common saltmarsh-grass are occasional. Species such as soft rush, (*Juncus effusus*), black-bog-rush (*Schoenus nigricans*) and purple moorgrass (*Molinia caerulea*) can occur within the sea rush dominated areas towards the landward boundary. The distribution of sea rush extends above the high water mark in places. There are small mounds within the saltmarsh area that contain bog myrtle (*Myrica gale*) and bog cotton (*Eriophorum* spp.).

The typical saltmarsh topography is poor and few salt pans have developed. The topography is uneven with low mounds and hollows occurring and areas with different layers of peat 'stepping' down to the shoreline. The seaward edge is generally very convoluted and undulating with a peat cliff face at the edge.

Patches of sea rush (MSM) also occur in rocky and muddy areas in narrow bands at the foot of the peat cliff face and may form mosaics with ASM in places. Further south of the SAC the MSM forms more extensive areas similar to the habitat described above and also forms mosaics with ASM. Some mounds within the saltmarsh contain wet/dry grassland.

4 IMPACTS

Sheep graze much of the shoreline around the bay including within the cSAC (code 143, Table 4.1). The grazing levels are generally moderate-high, with some patches being overgrazed. The sward level of the ASM is generally quite low. Sheep poaching and grazing is exacerbating erosion of saltmarsh on narrow layers of mud/peat overlaying rocky deposits, creating saltmarsh/rocky mosaics. The MSM generally is not significantly overgrazed but can be poached moderately or heavily in localised places where the livestock create tracks.

A track along the shoreline and across some ASM accesses some grazed land further from the main road (501). The saltmarsh may be affected by nutrient enrichment (701) by aquaculture practises within Bellacragher Bay and from livestock grazing. However, its impact is likely to be minor. Rhododendron is spreading along the edge of the saltmarsh within the cSAC but is not having an impact on the saltmarsh habitats. Old lazy-beds occur on ASM located further south of the SAC.

A comparison of the 1929 6 inch map and the 2000 aerial photos indicates that natural erosion is not significant at this site. There are signs of erosion around the edge of the shoreline. Some of this is caused by overgrazing by sheep.

Table 4.1. Intensity of various activities on saltmarsh habitats at Bellacragher Bay.

EU Habitat Code[1]	Activity code[2]	Intensity[3]	Impact[4]	Area affected (ha)	Location of activity[5]
13s	143	B	-1	4.43	Inside
1330	501	C	-1	< 0.01	Inside
13s	701	C	0	4.43	Inside

[1] EU codes as per Interpretation Manual. Code 13s is an additional code used to signify the entire saltmarsh habitat.
[2] Description of activity codes are found in Appendix III summary report.
[3] Intensity of the influence of an activity is rated as A = high, B = medium, C = low influence and D unknown.
[4] Impact is rated as –2 = irreparable negative influence, -1 = reparable negative influence, 0 = neutral, +1= natural positive influence and +2 = strongly managed positive influence.
[5] Location of activity: Inside = activities recorded within and directly impacting the saltmarsh habitat, outside = activities recorded outside but adjacent to saltmarsh habitat that are impacting the saltmarsh habitat.

5 CONSERVATION STATUS

5.1 Overall Conservation Status

Overall, the conservation status of the site is *unfavourable-inadequate* (Table 5.1). There are few impacts on the saltmarsh habitats, apart from sheep-grazing. However, the grazing level is moderate-high and is causing some damage through poaching and erosion. The NHA survey notes (1993) for this site are quite detailed. These indicate that the saltmarsh area within the cSAC has not changed significantly. The NHA survey noted that over-grazing by sheep was a problem at this stage as well.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Bellacragher Bay.

Habitat	EU Conservation Status Assessment			
	Favourable	Unfavourable - inadequate	Unfavourable - Bad	Overall EU conservation status assessment
Atlantic salt meadows (1330)	Extent		Structure and functions, Future prospects	Unfavourable Bad
Mediterranean salt meadows (1410)	Extent, Structure and functions, Future prospects			Favourable

The area of Annex I habitat inside and outside the cSAC is similar (Table 5.2). The patches of saltmarsh outside the cSAC are in similar condition to these inside the SAC. Grazing is moderate-high in these areas outside the cSAC as well.

Table 5.2. Area of EU Annex I habitats within Bellacragher Saltmarsh cSAC.

EU Code	Inside cSAC (Ha)	Outside cSAC (Ha)
1330	0.96	0.92
1410	1.29	1.23
Total	**2.25**	**2.15**

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are good, as this site is a fringe-type saltmarsh. The saltmarsh fringe can easily migrate over the blanket peat layer in response to any sea-level rise. The ASM that occurs on narrow bands of mud overlying glacial material is likely to be eroded in response to sea level rise.

A MPSU Conservation plan for this site has not been prepared.

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent is assessed as *favourable* as there has been no overall loss of habitat to erosion or to other impacts and activities.

5.2.2 Habitat structure and functions

The structure and functions of this habitat is assessed as *unfavourable-bad*. Four monitoring stops were carried out in the ASM and two out of four failed. The two stops failed as they did not reach targets for levels of bare ground, erosion and levels of poaching. The ASM generally has a very low sward due to sheep grazing. This is causing some erosion in places with bare ground (<10%) significant in places. The generally small area of ASM means that structure and topography is poorly developed, (although this is to be expected in a fringe-type saltmarsh). The species diversity is typical of ASM with most of the typical species being present. (Notable species not recorded include glasswort and annual sea-blite.) The presence of turf fucoids is an indicator of local distinctiveness. However, these are at risk as the overall habitat extent diminishes due to sheep-induced erosion.

5.2.3 Future prospects

The future prospects of the ASM are assessed as *unfavourable-bad* in the short term, assuming the current grazing regime is continued and sheep stocking rates are not reduced. There is no current conservation plan for this site to manage the level of grazing.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent is assessed as *favourable,* as there has been no overall loss of habitat to erosion or to other impacts and activities.

5.3.2 Habitat structure and functions

Four monitoring stops were carried out in the MSM and all four passed. Therefore, the overall structure and functions of this habitat is assessed as *favourable*.

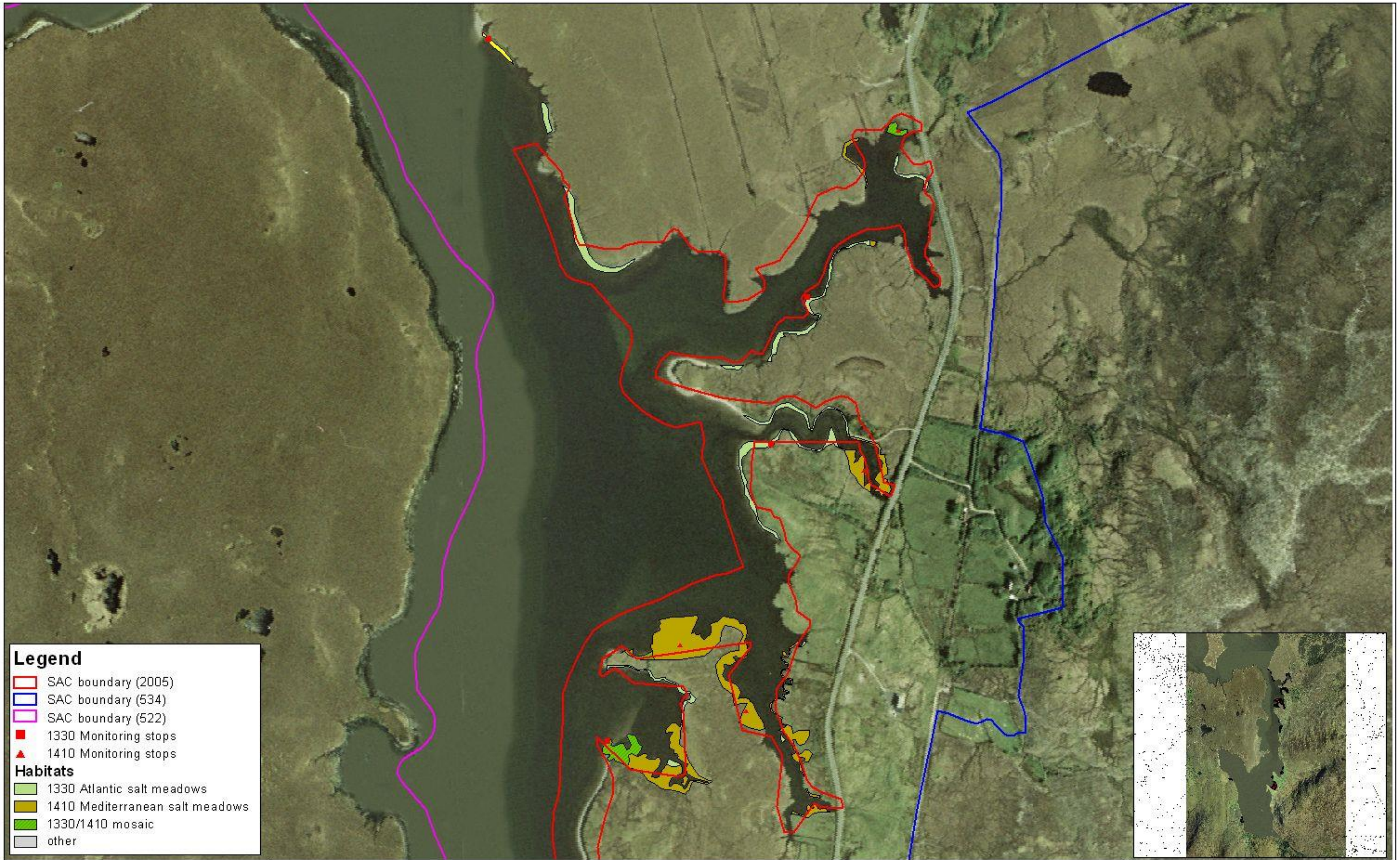
The MSM in general has adequate habitat structure and functions. Grazing is not significantly affecting the MSM overall, as the dense rush sward protects the other species to some extent. Sheep grazing is causing some localised damage, although the area affected is generally quite small (< 5%). Species diversity is typical of this habitat, and overall is relatively poor. Some patches are composed entirely of dense sea rush. There are mosaics present with ASM that increase the structural diversity. There are also natural transitions to wet and dry grassland, blanket bog and wet heath. Common cordgrass (*Spartina anglica*) was not recorded on this site.

5.3.3 Future prospects

The future prospects of the MSM are assessed as *favourable* in the short term, assuming the current grazing regime is continued and sheep stocking rates are not increased.

6 MANAGEMENT RECOMMENDATIONS

A MPSU Conservation plan is required to maintain and enhance the conservation status of the Annex I saltmarsh. The reduction of sheep grazing is required to improve the conservation status of the ASM and prevent further sheep-induced erosion of the thin bands of saltmarsh vegetation occurring on thin bands of mud. Some of the shore-line could possibly be fenced off to prevent grazing.



Saltmarsh Monitoring Project

Bellacragher Bay (north)

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision. Reproduced from Ordnance Survey material by permission of the Government. (Permit number 5953)

Níl sna teorainneacha ar an léarscáil seo ach nod garshuíomhach ginearálta. Féadfar athbhreithniú a dhéanamh ar theorainneacha na gceantar comharthaithe. Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas. (Ceadúnas Uimh. 5953)

Bellacragher Saltmarsh cSAC (002005)

SMP Code: SMP0021

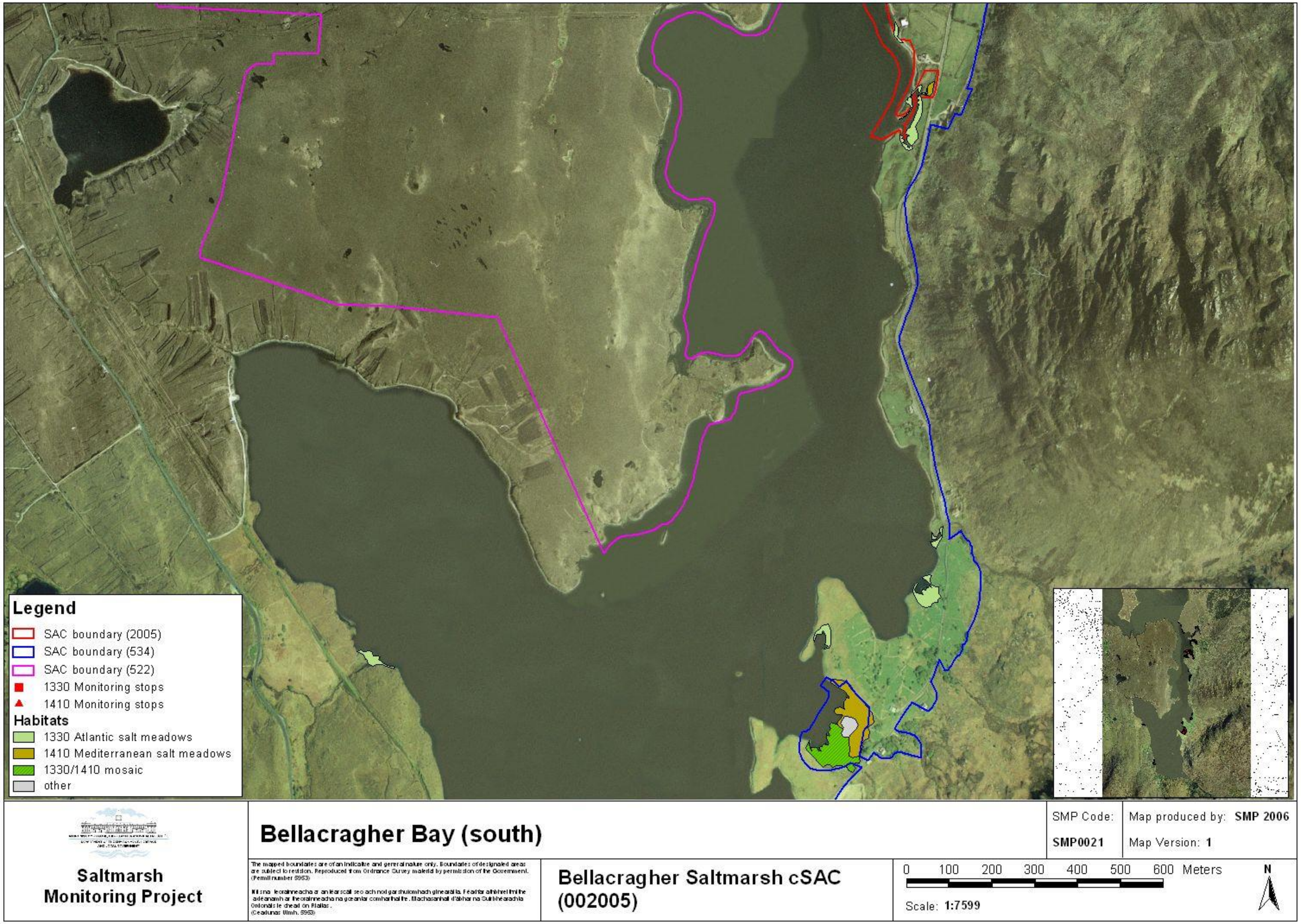
Map produced by: SMP 2006

Map Version: 1

0 90 180 270 360 Meters

Scale: 1:4483

N


Legend
SAC boundary (2005)
SAC boundary (534)
SAC boundary (522)
1330 Monitoring stops
1410 Monitoring stops
Habitats
1330 Atlantic salt meadows
1410 Mediterranean salt meadows
1330/1410 mosaic
other
Saltmarsh Monitoring Project
Bellacragher Bay (south)
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Bellacragher Saltmarsh cSAC (002005)
SMP Code:
SMP0021
Map produced by: SMP 2006
Map Version: 1
0 100 200 300 400 500 600 Meters
Scale: 1:7599
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