

Saltmarsh Monitoring Project

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Comhshaoil, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

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Aasleagh Falls

1 SITE DETAILS

SMP site name: Aasleagh Falls	SMP site code: SMP0106
Date of site visit: 23/04/2008	CMP site code: N/A
SM inventory site name: Aasleagh Falls	SM inventory site code: 83
NPWS Site Name: Mweelrea/Sheefry/Erriff Complex	
NPWS designation cSAC: 1932	MPSU Plan: N/A
pNHA: 1932	SPA: N/A
County: Galway/Mayo	Discovery Map: 37 Grid Ref: 089167, 263880
Aerial photos (2000 series): O 2526-A,C	6 inch Map No: Ma 116
Annex I habitats currently listed as qualifying interests for Mweelrea/Sheefry/Erriff Complex cSAC:	
H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	
H1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	
Other SMP sites within this SAC/NHA: Dooaghtry	
Saltmarsh type: Fringe	Substrate type: Wood peat/ stumps

2 SITE DESCRIPTION

Aasleagh Falls saltmarsh is located along the south Co. Mayo border at the uppermost part of Killary Harbour on the northern side of the fjord. This is an upland area with steep sided slopes on both sides of the fiord meaning that there is little or no saltmarsh development along most of the fiord until suitable topography where the slopes become somewhat less steep at the head of the fiord. The northern side of the fiord is the lower slopes of Ben Gorm Mountain. The Erriff River flows into Killary Harbour from the east. A regional road (R335) between Louisburgh and Leenane is situated along the lower slope of this mountain and follows the shoreline. The main habitats adjacent to the shoreline are dominated by Bracken, wet grassland and Dry and Wet Heath on the adjacent mountain slopes and are typical upland habitats. There are some small low-lying fields containing acid grassland that are grazed. Scrub also develops along the coast where the road is positioned quite close to the shoreline.

The saltmarsh habitat is located in the narrow strip of land between the road and the shore. The site extends from just south of Aasleagh Bridge, where the river becomes tidal, along the shoreline for 1.5 km. The site also incorporates the shoreline of several small islands including Letterass Island. There is some development of intertidal habitats seaward of the saltmarsh and other shore habitats with mixed rocky and muddy sediments with or without Wrack cover and mud flats present. The saltmarsh eventually peters out further south and the shoreline is dominated by exposed rock as the steep-sided shoreline topography does not allow further development of saltmarsh.

The site is located within the Mweelrea/Sheefry/Erriff complex cSAC. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Both these habitats are listed as qualifying interests for this cSAC. Most of

the saltmarsh habitats mapped at this site is located within the cSAC boundary. There are several fragments of Annex I habitats located outside the boundary towards the southern end of the site. These are unintentional exclusions, as the lower shoreline boundary from the 6 inch map was used to draw the cSAC site boundary and the saltmarsh extends higher than this boundary as indicated from the aerial photos. Some of these habitat fragments are found in adjacent fields marked on the map that are excluded from the cSAC. There is a second SM inventory site in Killary Harbour located on the southern side at Leenane (Curtis and Sheehy-Skeffington 1998) but this site was unsurveyed during this project.

Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland.

The shoreline was easily accessed from the adjacent road. Due to the relatively narrow development of saltmarsh habitat along the shore there were no access issues.

3 SALTMARSH HABITATS

3.1 General description

Aasleagh Falls is a relatively small saltmarsh. The saltmarsh is dominated by Mediterranean salt meadows (MSM) (Table 3.1). Atlantic salt meadows (ASM) only form a minor portion of the saltmarsh habitat. The saltmarsh is mainly a relatively narrow band of habitat that extends along the shoreline. This band is sometimes quite narrow (< 5 m wide) and extends up to 25 m wide. The most extensive saltmarsh development is situated around a small peninsula that contains several knolls surrounded by saltmarsh. The larger terrestrial islands contain scrub and some woodland while the smaller mounds or 'islands' contain heath, wet grassland and exposed rock.

The saltmarsh substrate also varies somewhat. There are several sections with tall steep saltmarsh cliff with exposed peat faces (0.5-1 m high). Other sections have much thinner substrate which is eroding in places and the saltmarsh vegetation forms a mosaic with exposed rock and cobbles. Scattered rocks and cobbles are present on several portions of saltmarsh. There is also some exposed rock in places. The saltmarsh generally transitions to mixed substrate with abundant Wrack cover at the seaward boundary.

The upper saltmarsh boundary is also heterogeneous. Some of the saltmarsh is situated adjacent to mature Rhododendron-dominated scrub in places, which over-hangs the saltmarsh in places. At other locations the saltmarsh transitions to wet grassland. There is generally very little transitional vegetation as the shoreline topography and slope is relatively steep. This means the upper transition was generally quite obvious and was sometimes marked by a low cliff above which there was wet grassland with Soft Rush (*Juncus effusus*) and Yellow Flag (*Iris pseudacorus*) or vegetation dominated by Purple Moor-grass (*Molinia caerulea*) with Bog Myrtle (*Myrica gale*). There are also several minor patches with some Purple-Moor-grass spreading into saltmarsh vegetation dominated by Sea Rush (*Juncus maritimus*). Common Reed (Common Reed) and Sea Club-rush (*Bolboschoenus maritimus*) appears at several locations along the saltmarsh where there is freshwater influence at the outflows of several small streams. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

Table 3.1. Area of saltmarsh habitats mapped at Aasleagh Falls.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.352
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	2.331
	Total*	2.683

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

The ASM at this site is generally poorly developed with only small fragments present. The vegetation of these small areas is dominated by mid marsh communities with the *Armeria-Plantago* sward prominent in places. A second community also develops that is dominated by Saltmarsh Rush (*Juncus gerardii*). Some of the fragments are so small that only one community is present with a mixture of species such as Common Saltmarsh-grass (*Puccinellia maritima*) and Saltmarsh Rush and zonation is poorly developed. Creeping Bent (*Agrostis stolonifera*) sometimes extends down to the seaward boundary. Other species present include Sea Plantain (*Plantago maritima*), Buck's-horn Plantain (*Plantago coronopus*), Sea Pink (*Armeria maritima*), Long-bracted Sedge (*Carex extensa*), Sea Milkwort (*Glaux maritima*), Sea Aster (*Aster tripolium*), Sea Arrow-grass (*Triglochin maritimum*), Sea Spurrey sp. (*Spergularia* sp.) and Common Scurvy-grass (*Cochlearia officinalis*). Larger or wider sections of ASM have some zonation with Common Saltmarsh-grass more abundant at the lower seaward boundary.

The ASM also contain some Sea Rush at low cover values. Turf fucoids are also present at several locations. There is also a transition to upper saltmarsh vegetation dominated by Red Fescue (*Festuca rubra*) and Creeping Bent (*Agrostis stolonifera*) and zonation is evident at several locations. There are several patches of low marsh sward dominated by Common Saltmarsh-grass within the ASM and associated with some of the minor creeks.

The ASM sward height is variable (1-10 cm) and is light to moderately grazed. Some small sections are overgrazed but these cover a very minor area. The saltmarsh topography is poorly developed, which is typical of these small fragments of saltmarsh. However several small patches contain a typical mid marsh topography with small eroded pan-like hollows present containing cobbles and pebbles.

3.3 Mediterranean salt meadows (H1410)

The MSM habitat contained a typical species assemblage with the vegetation generally being dominated by Sea Rush with around 50% cover and frequent Creeping Bent. Other prominent species include Red Fescue, Saltmarsh Rush and Sea Plantain with cover of these species varying. Other species present include Sea Pink, Sea Aster, Common Scurvy-grass, Autumn Hawkbit (*Leontodon autumnalis*), Brookweed (*Samolus valerandi*), Sea Arrow-grass (*Triglochin maritimum*) and Sea Milkwort. Zonation in this habitat was generally poorly developed and the habitat was generally homogenous, although it varies in different locations on the site. One monitoring stop contained Common Saltmarsh-grass amongst Sea Rush at the seaward boundary of the saltmarsh. Turf Fucoids are also present in the MSM habitat.

The sward height of this habitat was typical of this habitat and varied between 50-10 cm. Some of the MSM is quite rocky and the Sea Rush is growing on mixed substrate with a

significant amount of natural bare substrate cover. Other sections are growing on deeper peaty substrates. The saltmarsh topography is also poorly developed in this habitat although there are some small creeks present in the most extensive area. This section also contains some low mounds and hollows within the SM that relate to underlying topography.

4 IMPACTS AND ACTIVITIES

A few impacts and activities affect this site with generally low intensities (Table 4.1). This is typical of a relatively small site where the saltmarsh has developed as a relatively narrow strip along the shoreline. The shoreline is grazed by sheep and there is also likely to be some natural grazing (140). The grazing intensity was generally low-moderate with some small minor patches being overgrazing (142).

There has been some recent infilling of spoil (800) along the road that has spilled over onto the shoreline and the saltmarsh. However the area affected is quite minor.

Erosion (900) is not a significant impact at this site and would not be expected as the upper part of Killary Harbour is quite sheltered. However there are some signs of erosion with saltmarsh cliffs present and patches of habitat with a mosaic of saltmarsh and mixed substrate. However this probably reflects the variation in topography and substrate depth along the site rather than an erosional trend. Some of the Sea Rush has colonised mixed substrate and this may be an indication of re-colonisation of the shoreline. A comparison of the OSI 2nd edition 6 inch map to the OSI 2005 series aerial photos shows that there have been no significant changes along the edge of the saltmarsh during this period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

Impacts and activities adjacent to the site include dispersed habitation (403) grazing (140) and a regional road (502). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Aasleagh Falls.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	0.350	Inside
1330	142	B	-1	0.002	Inside
1330	900	C	0	0.015	Inside
1410	140	C	0	2.331	Inside
1410	800	C	-1	0.001	Inside
1410	900	C	0	0.1	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

The overall conservation status of this site is assessed as *favourable* (Table 5.1). This site is a typical small western saltmarsh with few significant features of conservation interest that is in relatively good condition. There few impacts and activities significantly affecting this site. Grazing is the most obvious activity but the grazing intensity is low to moderate with very minor patches being overgrazed. The saltmarsh has developed along a rather inaccessible part of the shoreline and is therefore less vulnerable to damaging activities. There is also very little grassland adjacent to the site so grazing intensity is likely to remain low.

The NHA survey notes recorded some grazing on this saltmarsh. This survey (1993) also noted the presence of Saltmarsh Flat-sedge (*Blymus rufus*) which is a feature of local distinctiveness. This species is mainly confined to saltmarshes along the north-west coast Ireland but has a fragmented distribution and is found occasionally at other sites around the coast. This species was not recorded during this survey.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor. The saltmarsh is located on a relatively steep slope with limited possibilities for extensive saltmarsh development on higher slopes.

This site is located within the Mweelrea/Sheefry/Erriff complex cSAC. A NPWS Conservation Plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Aasleagh Falls.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to erosion or to land-use changes within the current monitoring period. There are some signs of erosion present but there is no evidence that a significant amount of habitat has been lost during the current monitoring period.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Three monitoring stops were carried out in this habitat and all passed. All of the attributes required for the structure and functions of this habitat reached their targets. Grazing was assessed as having a low-moderate intensity and the sward height varied between 1-10 cm high. Typical zonation of the shoreline was poorly developed. However, several ASM vegetation communities were present at different locations on the site including low, mid and upper marsh communities. Species diversity was typical of this habitat. Turf Fucoids, an indicator of local distinctiveness was recorded in this habitat, although this is fairly typical of fringe type marshes along the west coast of Ireland.

The saltmarsh topography was poorly developed although this is also typical of these small ASM fragments. There are natural transitions to other coastal habitats at both the lower and upper ASM boundaries. The ASM form part of a larger coastal ecosystem in Killary Harbour.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are few impacts or activities significantly affecting this site. There are few prospects for the loss of habitat due to erosion in the future. The site is within a cSAC so the habitat should not be affected by land-use changes such as development.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to erosion or to land-use changes within the current monitoring period. There are some signs of erosion present but there is no evidence that a significant amount of habitat has been lost during the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Five monitoring stops were carried out in this habitat and all passed. All of the attributes required for the structure and functions of this habitat reached their targets. The species assemblage and diversity of this habitat was typical. Shoreline zonation and saltmarsh topography were relatively poorly developed but this is typical of a small site like Aasleagh Falls. There are natural transitions to other coastal habitats at both the lower and upper MSM boundaries. The MSM forms part of a larger coastal ecosystem in Killary Harbour.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are few impacts or activities significantly affecting this site. The saltmarsh has developed along a rather inaccessible part of the shoreline and is therefore less vulnerable to damaging activities. There is also very little grassland adjacent to the site so grazing intensity is likely to remain low. There are few prospects for the loss of habitat due to erosion in the future. The site is within a cSAC so the habitat should not be affected by land-use changes such as development.

6 MANAGEMENT RECOMMENDATIONS

There are no management recommendations for this site.

7 REFERENCES









Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	0.320		0.320			
4	1410 Mediterranean salt meadow	2.330			2.330		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.834					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic	0.003			0.001		
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic	0.032		0.032			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	3.519		0.352	2.331		

Legend

-  SAC Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1410/other SM (CM2) mosaic
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops
-  1410 monitoring stops



Annagh Island

1 SITE DETAILS

SMP site name: Annagh Island	SMP site code: SMP0019
Site name (Curtis list): not listed	CMP site code:
NPWS Site Name: Clew Bay complex	Site No: (Curtis list): not on list
NPWS designation cSAC: 1482	Dates of site visit 11/07/2006
pNHA: 1482	MPSU Plan: none for coastal areas
County: Mayo	Discovery Map: 31 Grid Ref: 094970, 283650
6 inch Map No: Ma087	Aerial photos (2000 series): 02077-c, 02077-d, 02139-a, 02139-b
Annex I habitats currently designated for Clew Bay complex cSAC: Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Mallaranny, Tooreen, Rosmurrevagh, Tierna, Rockfleet, Roshanagh East, Caraholly South, Kiladangan, Bartraw	
Saltmarsh type: Sandflats	Substrate type: Sand/peat/mud

2 SITE DESCRIPTION

Annagh Island saltmarsh is located in the south-east part of Clew Bay, 5 km west of Westport in Co. Mayo. This site is situated at the base of the Croagh Patrick foothills. The landscape at this location has frequent small drumlin hills and islands typical of Clew Bay. Annagh Island is located adjacent to Kiladangan (to the south) and is an extension of the same coastal shingle/pebble bar. Annagh Island is mainly low-lying, has a complex shape and is a complex system of coastal habitats. The shingle/pebble/cobble beach and bank (Sruffonboun Strand) is situated along the western side of the island, facing the opening of Clew Bay. The bank is curved like a sickle and several wider areas of terrestrial and saltmarsh habitats have developed behind the pebble/cobble bank. These larger areas (Annagh East, Annagh Middle and Annagh West) are connected with narrow banks. Several low hills on the island contain dry coastal grassland and some patches of scrub. There are several enclosures on the island and it was inhabited in the past. Old Lazy beds were noted on coastal grassland and also on the higher saltmarsh zone at one location. Several small pools and one larger lagoon (Annagh Lough) are also present on the island. The lower-

lying land transitions from dry coastal grassland to saltmarsh below the high water mark and there are several small intertidal bays seaward of the saltmarsh containing sandflats/mudflats and rocky deposits. Bartraw saltmarsh is also situated 3.8 km to the west of Annagh Island.

Three Annex I habitats, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Only one, ASM, is listed as a qualifying interest for the Clew Bay Complex cSAC. A *Spartina* sward is also present at this site. The entire saltmarsh area is situated within the cSAC.

The site can be accessed from the main Westport-Louisburgh Road via Kiladangan saltmarsh and a track across the shingle/pebble bank. Annagh Island can only be visited at low tide as there is a water channel dividing the shingle/pebble bank between the two sites.

3 HABITATS

3.1 General description

The saltmarsh habitats have developed in low-lying areas and small sheltered bays and inlets between the elevated areas. Some of the site has a complicated topography with a complex network of low mounds, shallow depressions and several pools or tidal inlets overlaying glacial deposits. The saltmarsh at this site is likely to have a complex ontological development. The largest areas of MSM have developed on peat deposits while the ASM generally is present on shallower sandier/muddy deposits. There are similar amounts of ASM and MSM (Table 3.1). ASM is most frequent in these areas forming strips of saltmarsh around pools and mounds, following the topography. Strips of narrow ASM are also present along the steeper sloping shorelines. Patches of MSM are scattered over the site with the largest section being on Annagh Island West. The largest patch of saltmarsh is situated on Annagh Island East. This is a large mosaic area of saltmarsh dominated by MSM (75%) with a smaller area of ASM (25%). A small area of *Spartina* sward is situated on Annagh Island East (Table 3.1). There is also a small patch of *Salicornia* flats (1310) located at the south-east part of Annagh Island West.

The saltmarsh generally transitions to dry acid grassland or dry grassland with a coastal influence (some fixed dune indicators are present). This acid grassland is generally dominated by Fescue spp. (*Festuca* spp.), Bentgrass spp. (*Agrostis* spp.) and White Clover (*Trifolium repens*) with occasional Yorkshire Fog (*Holcus lanatus*) and Sweet Vernal-grass (*Anthoxanthum odoratum*). In some areas there is a very gradual transition as the slope is shallow and the boundary between ASM and terrestrial grassland is sometimes not distinct. Sometimes this is complicated by a complex system of low hummocks containing coastal grassland and hollows containing saltmarsh. Both habitats are heavily grazed with close-cropped swards. Some of the mounds contain Gorse (*Ulex europaeus*) -dominated scrub. Plant litter sometimes marks the strandline. Saltmarsh transitions to the shingle/pebble/cobble in places along the bank on the western boundary. Pebbles and cobbles are occasionally found on both saltmarsh habitats (blown over from the shingle/pebble/cobble barrier). The seaward boundaries of the saltmarsh are generally low saltmarsh cliffs. Below these low cliffs there are bands of rocky/muddy substrates that gradually transition into intertidal mud and sandflats. Occasionally there are patches of Annual Sea-blite (*Suaeda maritima*) and Orache sp. (*Atriplex* sp.) colonising the pebbly banks (but these areas are not classified as saltmarsh).

Table 3.1. Area of EU Annex I habitats listed at Annagh Island.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.01
	<i>Spartina</i> sward	0.33
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	4.45 ¹
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	4.46 ¹
	Total (not including <i>Spartina</i> sward)	8.92

¹total includes 50% of the 1330/1410 mosaic

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A very small patch of this habitat was present on the site. This was located at the south-west end of the island on the shingle/pebble bank separating Annagh Island from Kiladangan. The small patch has developed on the east side of the shingle/pebble bank (at the back of the bank). Glasswort (*Salicornia* sp.) and Annual Sea-blite appear together on a gravelly/muddy substrate. This habitat does not appear elsewhere on the site although there are intertidal areas of sediment that would be suitable for this habitat.

This habitat also is also present elsewhere on the site, although it was too small to be mapped. There are small bands of Glasswort and Annual Sea-blite on accreted mud along some of the creeks mainly within the MSM. There is generally no Glasswort in the pans of the ASM.

3.3 *Spartina* swards

This site contains a small area of *Spartina* sward. This sward was the only Common Cordgrass (*Spartina anglica*) recorded on the site although several clumps are situated on Kiladangan situated adjacent to this site. The sward is the only uniform area of Common Cordgrass found in Clew Bay. Several large clumps are also present in Westport Quay (Grid Refs. 098251, 284864), the only other site with Common Cordgrass in Clew Bay. Common Cordgrass was planted in Clew Bay in the vicinity of Westport House between 1929-1932 (Praeger 1932) where it was reported that many plants died. Nairn (1986) noted that there was only one clump present in Clew Bay near Westport House. The sward has colonised soft mud on intertidal flats in a small inlet. Common Cordgrass has formed a dense sward on the mud and there are few other saltmarsh species present. Some Common Saltmarsh-grass (*Puccinellia maritima*) and Glasswort are occasional along the edges of the *Spartina* sward. Common Cordgrass was heavily grazed creating a closely cropped sward 5-10 cm high. This is unusual and gives an indication of the high grazing pressure on the island.

Common Cordgrass has only colonised the soft intertidal mudflats and has not spread into the adjacent ASM and MSM saltmarsh. There is a distinctive boundary between the *Spartina* sward and the MSM sward, with a low saltmarsh cliff marking the edge of the MSM. There were very few seedlings at the seaward edge of the Common Cordgrass and few small isolated clumps. This indicates that the rate of spread is quite slow.

3.4 Atlantic salt meadows (H1330)

This habitat is found on each of the three sub-islands. It is generally heavily grazed by sheep and forms a characteristic low sward. In some areas it is overgrazed and the grazing pressure in conjunction with trampling and poaching is stripping the vegetation from the sediment surface leaving 5-10% bare substrate. Some of the

larger ASM areas have a complex mound/hollow and creek/pan topography creating complex zonation of vegetation communities according to elevation. A narrow band of ASM is also present along some of the steeper sloped shorelines with a band of saltmarsh < 5 m wide.

Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*) dominate the upper saltmarsh patches at the tops of the mounds. Other species present include Long-bracted Sedge (*Carex extensa*), Greater Sea Spurrey (*Spergularia media*) and Common Scurvy-grass (*Cochlearia officinalis*). Occasional clumps of Sea-Rush are present although they cover only 1-5% of the ASM area. The larger clumps of Sea Rush (*Juncus maritimus*) are mapped as ASM. Long-bracted Sedge is particularly prevalent in the gradual transition from low-lying coastal grassland to ASM. This upper zone does not seem to be as damaged as the lower saltmarsh zones and the bare substrate cover is < 1%. The sward height is generally quite low (2 cm high) and quite uniform.

Generally the most abundant plant community is the middle marsh community dominated by Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*). Other species present include Red Fescue, Saltmarsh Rush, Common Saltmarsh-grass, Glasswort and Sea Milkwort (*Glaux maritima*). This community generally has developed on sandy/muddy substrate. This community also appears to be most vulnerable to the overall damage by the heavy grazing pressure. Grazing has created a very low close-cropped sward (1 cm high) and individual plants are relatively small compared to other sites with less grazing. There may also be an element of natural wind erosion but overgrazing and poaching is exacerbated the damage to the sward cover. Some areas have up to 10-15% bare substrate cover. The grazing has probably affected species diversity in places compared to this community at other locations. Sea Plantain and Sea Pink are quite dominant.

The lower saltmarsh zone is not very extensive. Long strips dominated by Common Saltmarsh-grass and containing Glasswort and Annual Sea-blite are situated along the lower boundary of the creeks and pans with internal saltmarsh zonation. However this community does not cover large patches of saltmarsh. Common Cordgrass is not present in this habitat.

Common Saltmarsh-grass and Glasswort are both present in some of the narrow saltmarsh strips along the steeper sloped shorelines. However, these strips are generally not dominated by any one species and are more typical of fringe type saltmarshes with Saltmarsh Rush, Sea Plantain, Sea Pink and Common Saltmarsh Grass are appearing together.

The pan and creek topography is well developed in the larger sections although the creeks are quite small. There is generally no Glasswort in pans, which contain bare mud. There are some larger creeks in the larger saltmarsh areas dominated by MSM.

3.5 Mediterranean salt meadows (H1410)

This habitat is present in several areas on the site and dominates some of the largest saltmarsh areas. The MSM is characterised by a dense sward of Sea Rush. Clumps or large areas of Sea Rush may form mosaics with ASM vegetation. Where the ASM area within the MSM was greater than 10%, the whole saltmarsh area was mapped as a mosaic. The mosaic areas also have occasional patches of coastal grassland within the saltmarsh area on some low mounds that are slightly above the high water mark.

Other species found amongst the Sea Rush include Sea Milkwort, Red Fescue, Sea Pink, Sea Plantain, Sea Arrowgrass (*Triglochin maritimum*), Creeping Bentgrass (*Agrostis stolonifera*) and Spear-leaved Orache (*Atriplex prostrata*). Species such as Autumn Hawkbit (*Leontodon autumnalis*) and White Clover appear towards the upper saltmarsh boundary. Sea Rush sometimes spreads above the high water mark at the landward boundaries. Species such as Birdsfoot, Sweet Vernal-grass and Yorkshire Fog mark the transition to terrestrial habitats. There is some zonation of vegetation in the large mosaic area on Annagh East. The tops of the mounds contain species such as Creeping Bentgrass, Red Fescue and Autumn Hawkbit amongst the Sea Rush, while the lower hollows and channels contain species such as Sea Pink, Sea Plantain and Saltmarsh Rush amongst the Sea Rush.

The smaller areas of MSM generally do not contain much saltmarsh topography. There is a low saltmarsh cliff marking the boundary between the *Spartina* sward and the MSM on Annagh West. This cliff shows some signs of erosion. In other areas there are deep saltmarsh creeks where the saltmarsh has developed over peat. The largest area of MSM is located in Annagh Island East. This area is a mosaic

dominated by MSM. There are patches of ASM within the mosaic area and a ring of ASM also surrounds the mosaic area on elevated ground up the banks. There are patches of exposed single and pebbles in some of the pans. These areas have developed a relatively good topography of creeks and pans and interact with the hummocks and hollow glacial topography that underlies the saltmarsh. In the mosaic area, several large creeks drain the whole area and there are several smaller channels with ASM vegetation between the MSM on the taller mounds draining into these larger creeks. Patches of MSM also line some of the small intertidal inlets and pools on the island. A 1410/1330 (ASM/MSM) mosaic is also present in the NE section. This area shows signs of erosion. This may be induced somewhat by heavy sheep grazing.

4 IMPACTS AND ACTIVITIES

There are few activities affecting this saltmarsh site, due to its relative isolation (Table 4.1). However, the main activity, sheep grazing, is having a very significant impact. The activity codes used in Table 4.1 are given in brackets in the following text. There are several enclosures on the island but these are on the higher areas and contain dry acid grassland and improved grassland. All of the saltmarsh habitats are situated in common unfenced areas, which also contain the dry acid grassland, scrub and other terrestrial habitats. Sheep also move around the island over the intertidal flats at low tide and also visit some of the smaller islands around the Annagh Island site. There are signs of heavy grazing pressure and overgrazing all over the site with the ASM having a typical low close-cropped sward (143). The MSM areas are shielded somewhat from the most intense grazing as the rushes protect the rest of the vegetation, and some ASM species are much better developed in this habitat. However, the ASM patches within the MSM-dominated mosaics are also heavily grazed. Even the *Spartina* sward was heavily grazed with a low close-cropped sward developing. This gives an indication of the grazing pressure on the rest of the site if the sheep are grazing Common Cordgrass, which is generally unpalatable to sheep.

Common Cordgrass is present at this site. This species was planted here in the 1930s. Common Cordgrass is an invasive species (954) and has formed a dense sward on mudflats in a small intertidal inlet. However, there are no signs that this species has

invaded the existing saltmarsh vegetation surrounding this area. No other clumps were recorded on the saltmarsh, which would be expected (although some are present on an adjacent site at Kiladangan). There are also no signs of recent colonisation or significant spread on the mudflats. These observations indicate that the rate of spread has been quite slow in this area compared to other sites. This species is not likely to spread significantly in the near future and if it does spread it is more likely to spread on the unvegetated intertidal mud rather than on existing Annex I saltmarsh habitats. There are small areas of intertidal mud that would be suitable for Common Cordgrass all along the east side of the site (and along many of the other shorelines in Clew Bay).

There are several tracks across the site over both saltmarsh habitats (501). These tracks allow access to the various parts of the island for tractors. There are some wheel ruts in parts of the ASM but most of this habitat is unaffected.

Some of the saltmarsh shows signs of erosion, particularly in the north-east section (900). In this area there are patches of exposed peat and glacial sediments. There is probably natural erosion occurring in this area but it is likely to be exacerbated by the heavy sheep grazing, poaching and stripping of saltmarsh vegetation from the saltmarsh surface. Some of the low saltmarsh cliffs marking the seaward boundaries along the pools and some of the intertidal areas also show signs of erosion. However, an examination of the 2000 aerial photo and the 6 inch map indicates that there have been no significant losses of saltmarsh habitat due to erosion.

There are few activities immediately adjacent to Annagh Island saltmarsh habitats. Grazing affects the entire island with the terrestrial grassland also overgrazed. Some of the enclosures on the island contain improved grassland and one of these has been cut for fodder (120, 140). There is some aquaculture (oyster trestles) in the intertidal and subtidal areas to the west of Annagh Island (200).

Table 4.1. Intensity of various activities on saltmarsh habitats at Annagh Island.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1310	140	C	0	0.01	Inside
1330	143	A	-1	4.45	Inside
1410	140	C	0	4.46	Inside
13s	501	C	-1	< 0.1	Inside
13s	900	C	-1	1.5	Inside
13s	954	C	0	0	Inside
13s	120	C	0	8.92	outside
13s	143	C	0	8.92	outside
13s	200	C	0	8.92	outside

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 this site has a poor conservation status (Table 5.1). The most significant activity on this site is sheep overgrazing and the heavy grazing pressure is mainly affecting the ASM by creating a low uniform closely cropped sward, probably lowering diversity and creating patches of bare substrate cover from stripping of vegetation and poaching.

The conservation value of the site is enhanced by its relative isolation from the mainland and from disturbance. There are also interesting transitions present between the saltmarsh and the terrestrial grassland due to the complex topography overlying the glacial material and due to its complex ontological development with some areas having a peat substrate and some areas having a marine-sediment substrate.

A comparison of the 2000 aerial photo to the 1929 6 inch map indicates that this site is relatively stable and there has not been much accretion or erosion during this period. The heavy grazing pressure may be exacerbating erosion of the both the ASM

and MSM, with signs of erosion present, but there are no indications that areas of saltmarsh have been lost due to erosion.

Common Cordgrass is present at this site. This is an invasive species, but it is unlikely to become extensive at this site under current conditions. If current conditions favoured the spread of Common Cordgrass it is likely to have already happened considering the time it has been present (since the 1930s). There may be some more spread of Common Cordgrass within salt pans, along creeks and bare mud at the site in the future but it is unusual for a site to have Common Cordgrass in just one location. More clumps scattered over the saltmarsh and in some of the creeks and pans are to be expected. The absence of these clumps indicates that its rate of spread is very slow and seed production is probably poor. The current management conditions and the heavy grazing pressure are likely to increase the potential for Common Cordgrass to spread but eroding the saltmarsh and creating bare areas of peat/mud that are suitable for colonisation by a pioneer species like Common Cordgrass.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are moderate-good. Annagh Island has a complex topography with a series of small hills, low mounds and gradually sloping areas containing terrestrial grassland. These areas will allow migration of saltmarsh habitats as they adjust to rises in sea level. Any geomorphological changes to the shingle/pebble/cobble barrier/bank are likely to have a significant impact on the saltmarsh.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Annagh Island.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable – inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent, Structure and functions, Future prospects			Favourable
Atlantic salt meadows (1330)	Extent,		Structure and functions, Future prospects	Unfavourable - Bad
Mediterranean salt meadows (1410)	Extent, Structure and functions, Future prospects			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 *Extent*

Only a small area of this habitat was mapped at this site (0.1 ha). There is no information on the previous extent of this habitat in Clew Bay. There are several small unmapped patches within some of the bare mud creeks in the MSM area. The extent is assessed as favourable maintained as there is no evidence that it was more extensive in the recent past. The intertidal area covered by Common Cordgrass is likely to have contained suitable habitat for Glasswort, but this was colonised prior to the current period of assessment.

5.2.2 *Habitat structure and functions*

The structure and functions of this habitat were assessed as favourable. Glasswort and Annual Sea Blite have colonised a sheltered band of stony sediment. No other saltmarsh species are present and this area is not likely to act as a pioneer zone for any saltmarsh vegetation as it is isolated from the main saltmarsh areas. There are no impacts or activities affecting this habitat. Small areas of Glasswort-dominated habitat are transient in nature and are dependant on local tidal conditions providing

banks of bare accreting (or eroding) mud/sand dominated substrate. Accreted banks of sediment may change position or disappear very quickly depending on the tidal conditions.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *favourable* as they are not affected by any activities. These patches of habitat are not vulnerable to spread of Common Cordgrass in the current conditions but any sea level rise could make these areas vulnerable to erosion or colonisation by Common Cordgrass.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. There are no indications of any loss of habitat due to erosion at this location and no indications of any loss of habitat due to other activities.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Five monitoring stops were carried out on this habitat and four stops failed. The failed stops did not reach targets for % bare ground and were assessed as being heavily grazed and or heavily poached. Heavy grazing pressure has created these conditions. The heavy grazing may also be affecting species diversity with several species appearing infrequently or were absent such as Sea Arrowgrass and Lax-flowered Sea Lavender (*Limonium humile*). Grazing has created miniature saltmarsh plants and the abundance of Sea Pink and Sea Plantain in the middle marsh zone is significant and probably exacerbated by the heavy grazing. Other ASM plant communities such as the upper community dominated by Saltmarsh Rush and Red Fescue and the lower community dominated by Common Saltmarsh-grass has a lower bare substrate cover but still have a very low sward height and the overall sward structure is quite uniform (apart from the clumps of Sea Rush). There are also some signs of erosion, particularly in the mosaic area in the north-east section, which is probably being exacerbated by the heavy grazing.

Other attributes such as zonation and pan and creek structure are present and increase the habitats quality. There are frequent transitions to dry coastal grassland, sometimes in complex mosaics, which also increase the conservation value. Common Cordgrass, an invasive species and a negative indicator was recorded on the site but is not present in this habitat.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts continue in the near future. Heavy grazing pressure is having a significant impact on this site and is likely to continue in the future. There is no conservation plan available for the coastal habitats in this cSAC.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. There are no indications of any loss of habitat due to erosion at this location and no indications of any loss of habitat due to other activities.

5.4.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Five monitoring stops were carried out in this habitat and all passed. Overall, the species diversity is typical for this habitat. There are several other typical indicators of good structure and function present including well-developed creeks and pans. The MSM is grazed but the intensity is low as the dense Sea Rush tends to shield the other species. The MSM-dominated mosaic area on Annagh East contains some plant zonation due to its complex topography of low mounds and hollows. The small ASM patches within the MSM tend to be targeted by the sheep and are grazed as heavily as the other ASM areas. The habitat is quite fragmented and found in several areas on the island, adding to the diversity. Common Cordgrass, an invasive species and a negative indicator was recorded on the site but is not present in this habitat.

5.4.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future. Grazing is not having as significant an impact on MSM compared to ASM.

6 MANAGEMENT RECOMMENDATIONS

Significant reduction in grazing levels is required to allow the saltmarsh habitats recover at this site.

7 REFERENCES

- Nairn, R.G.W. (1986). *Spartina anglica* in Ireland and its potential impact on wildfowl and waders - a review. *Irish Birds*, 3, 215-258.
- Praeger, R.L. (1932). Some noteworthy plants found in or reported from Ireland. *Proceedings of the Royal Irish Academy*, 41B, 95-124.



Legend

- SAC boundary
- 1330 Monitoring stops
- ▲ 1410 Monitoring stops

Habitats

- 1310 Salicornia flats
- Spartina swards
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- other



**Saltmarsh
Monitoring Project**

Annagh Island

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)

Mí na leathneacha ar an karscál seo ach níl garthuimhach ginearálta. Féidir aibhreltí na adéanmh ar theorainneacha na goeantar comharthaí le. Mochasairthail d'áthar na cúltheorachtaí. Ordánáil le d'eal ón Rialtas. (©Cealtúnar Ulmh, 5953)

Clew Bay complex cSAC (001482)

SMP Code: SMP0011
Map produced by: SMP 2006
Map Version: 1

0 100 200 300 Meters

Scale: 1:4481

Aughness

1 SITE DETAILS

SMP site name: Aughness	SMP site code: SMP0111
Date of site visit : 25/04/2008	CMP site code: N/A
SM inventory site name: Aughness	SM inventory site code: 85
NPWS Site Name: Tullaghan Bay and Bog pNHA	
NPWS designation cSAC: N/A	MPSU Plan: non available
pNHA: 1567	SPA: 4037
County: Mayo	Discovery Map: 22 Grid Ref: 079085, 316837
Aerial photos (2000 series): O 1374-D	6 inch Map No: Ma035
Other SMP sites within this NHA: Tullaghan Bay, Doona,	
Saltmarsh type: Fringe	Substrate type: Sand/Peat

2 SITE DESCRIPTION

Aughness saltmarsh is located in north-west Co. Mayo in the south-east corner of Tullaghan Bay and about 12 km south of Bangor. The landscape of this area is low-lying and dominated by blanket bog. There is some land improvement along several river valleys and along the coastline with some development of wet grassland and other habitats such as scrub. This area is quite isolated and sparsely populated with several farm houses in the area.

The saltmarsh has developed at the mouth of a small river where it flows into the south-east corner of Tullaghan Bay. The catchment area of this river includes the adjacent blanket bog. The river has cut a small valley about 20-30 m wide through the surrounding blanket bog. A small sheltered area developed in the mouth of this river where this valley widened and saltmarsh has developed in this sheltered area and further upstream in the floodplain of this river. There are extensive mudflats exposed at low tide in Tullaghan Bay adjacent to the saltmarsh. Further along the shoreline there is some development of shingle and cobble beaches where it is too exposed to allow saltmarsh development.

The site is located within the Tullaghan Bay and Bog NHA (1567). This NHA is a large bay containing extensive intertidal flats and also includes large areas of Atlantic blanket bog that has developed along this shoreline. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Saltmarsh has also developed at several other locations around this bay. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project. Doona is located to the south-west of this site in the outer part of the bay while Tullaghan Bay SM incorporates saltmarsh that has developed at several locations around the head of the bay. Sraghnamanragh Bridge SM was not surveyed during the SMP and is also located to the south of this site along a river estuary in the outer part of the bay.

Most of saltmarsh habitat mapped at this site is located outside the pNHA boundary. This is mainly due to the fact that the lower shoreline on the OSI 6 inch map was used to draw the

pNHA boundaries and most of the saltmarsh is positioned landward of this shoreline boundary. There are also some notable differences between shoreline boundary on the OSI 6 inch map and the current shoreline. Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland.

The site was accessed via a minor road that accesses several farms located in this area.

3 SALTMARSH HABITATS

3.1 General description

Both Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM) are present at this site with ASM being the most dominant habitat (Table 3.1). Saltmarsh habitat is likely to be found outside the survey area in small sheltered areas further along the shoreline of Tullaghan Bay where sheltered conditions allows the development of this habitat. There are only several small patches of MSM in the survey area. The saltmarsh fringes both sides of the small inlet at the mouth of the river. It extends quite far upstream within the channel or small valley/floodplain cut by the river that is influenced by the tide.

The saltmarsh around this site is heterogeneous in structure and development. Some of the saltmarsh has developed on deep peat with steep face-banks (1.5 m high) on the seaward boundary along the edges of the river channel. Saltmarsh is also found on thinner peaty substrate and isolated peat hags along the more exposed north-east shoreline further out in the bay. The saltmarsh at this location forms a shoreline mosaic with shingle and cobble beach. There is a very tall blanket bog face-bank 2-3 m high along parts of the north-west shoreline.

Saltmarsh is also present on modified or cutover blanket bog along both sides of the river. Some of the bog has been cut for peat or improved in the past and there are some low-lying enclosures that have developed saltmarsh vegetation due to tidal inundation. Some of these low-lying enclosures are flooded by connecting drains and some are located with terrestrial plant communities such as scrub and cutover bog on the landward side of the bog and the shoreline has a complex topography. These low-lying areas also contain transitional saltmarsh/terrestrial vegetation with blanket bog species appearing amongst saltmarsh vegetation. ASM vegetation extends high up some deep drainage channels into the adjacent blanket bog and modified bog habitats.

The saltmarsh generally transitions to intertidal mudflats in the outer part of the bay and in the mouth of the river. There is a band of shingle/cobble beach developed along some of the lower saltmarsh boundary. The upper saltmarsh boundary is indistinct and difficult to map in places due to an irregular topography where the saltmarsh is perched on a deep peat platform and is characterised by the development of terrestrial vegetation communities containing species such as Purple Moor-grass (*Molinia caerulea*) and Carnation Sedge (*Carex panicea*).

Further upstream the saltmarsh vegetation transitions to typical swampy wet grassland vegetation communities along-side the river within the narrow floodplain. This area contains some notable transitional brackish vegetation communities characterised by the presence of species such as Jointed Rush (*Juncus articulatus*) amongst more typical saltmarsh species

such as Saltmarsh Rush (*Juncus gerardii*) and Sea Arrowgrass (*Triglochin maritimum*). There is also some brackish vegetation dominated by Spike-rush (*Eleocharis* sp.). The riparian vegetation is characterised by species such as Soft Rush, Bog Cotton, Purple Moor-grass and abundant moss cover. The ground cover is quite swampy and water-logged and the saltmarsh has developed on a mixed muddy substrate interspersed with patches of gravel on the stream bed. The transitional area contains some mounds with typical wet grassland vegetation amongst saltmarsh vegetation.

Table 3.1. Area of saltmarsh habitats mapped at Aughness.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	2.678
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.178
	Total*	2.856

*note that saltmarsh habitat may extend outside the mapped area.

3.2 Atlantic salt meadows (H1330)

This habitat dominates the saltmarsh. There are several different plant communities present and this is related to the variable topography of the saltmarsh along this site. The majority of the ASM is comprised of mid-marsh communities dominated by Sea Pink, Sea Plantain, and Red Fescue with a closely cropped well-grazed sward on deep peat platforms and terraces along the river channel. The zonation within the ASM is created by the varying level of peat terraces in places. Low marsh vegetation appear on peat platforms positioned at a lower level compared to adjacent higher platforms that contain mid and high marsh vegetation. There is bare peat exposed between these terraces. The low-mid community is dominated by a closely cropped Sea Pink sward with a low sward height. This community also contains Turf furoids. There are also several mid and mid-upper marsh communities dominated by Saltmarsh Rush and also by Red Fescue. Some clumps of Sea Rush are also present in the ASM vegetation. These clumps were generally too small to be mapped as MSM vegetation. Some lower marsh vegetation dominated by Common Saltmarsh-grass appears in the channels but this community is poorly represented. An upper ASM community is dominated by Creeping Bent and also contains species such as Common Scurvy-grass (*Cochlearia officinalis*), White Clover and Buck's-horn Plantain (*Plantago coronopus*).

Several other communities are present. ASM is also found as a narrow fringe 2-3 m wide further out along the shoreline. Saltmarsh vegetation has developed along the edge of the blanket bog on peat and this fringe also contains other transitional and coastal species such as Daisy (*Bellis perennis*), Sedge sp. (*Carex* spp.) and Willowherb sp. (*Epilobium* sp.). This fringe is somewhat transitional due to its relatively high position. Another type of saltmarsh vegetation has developed in the disturbed ground in the north-east of the site. This area contains a series of old enclosures with old lazy bed features. The ridges within these features are dominated by terrestrial bog vegetation. The hollows between these ridges contain vegetation dominated by Saltmarsh Rush and Red Fescue and also containing Sea Arrow-grass and Autumn Hawkbit.

Upper ASM saltmarsh communities have developed further upstream with a freshwater influence. Vegetation is dominated by Creeping Bent in places and can also be dominated by Saltmarsh Rush on muddy and swampy ground. Other species present include Knotted Pearlwort (*Sagina nodosa*), White Clover, Sea-spurrey (*Spergularia* sp.), Sea Beet, Buck's-

horn Plantain and Common Scurvy-grass. A third community is dominated by Spike-rush sp. (*Eleocharis* sp.)

The saltmarsh topography at this site is relatively poorly developed. There are some 'islands' or peat hags that contain ASM vegetation and are not grazed and are separated from the main shoreline by narrow channels of mud. There are some deep pan like features within this habitat where it has developed on deeper peat. Some ridges vegetated by Gorse (*Ulex europaeus*) extend into the saltmarsh habitat. There are frequent cobbles blown up onto the ASM along the more exposed shoreline further out in the bay.

3.3 Mediterranean salt meadows (H1410)

Mediterranean salt meadows are not a significant saltmarsh habitat at this site. There are only several small patches of vegetation dominated by Sea Rush and Red Fescue (*Festuca rubra*) around the site. Most of these small MSM patches are typically zoned and located at the seaward side of ASM vegetation, although there is some MSM positioned along the seaward boundary. This vegetation has developed on deep peat. Other species present in the Sea Rush dominated vegetation include Sea Plantain, Autumn Hawkbit, Creeping Bent and Buck's-horn Plantain.

The saltmarsh topography is poorly developed in this habitat. However, this is typical of these small patches of habitat. The sward height is typical, being between 0.5-1 m high and the sward cover is generally high. These patches of habitat are generally not grazed to the same extent as the surrounding ASM. There is some development of transitional vegetation along the upper MSM boundary with species such as Black Bog-rush (*Schoenus nigricans*), Purple Moor-grass, Carnation Sedge and bog Cotton appearing with Sea Rush.

4 IMPACTS AND ACTIVITIES

The main impact or activity noted at this site is grazing (Table 4.1). This site is located in a relatively isolated location so there are few other impacts or activities affecting this site related to land-use, development or amenity use.

The most significant impact is grazing (140) and all of the saltmarsh shows signs of sheep grazing. The intensity of grazing varies across the site and much of the ASM that has developed on deep peat is in adequate condition with good sward cover, although the sward height is quite low and uniform. The grazing intensity was generally assessed as moderate or low. Some of the ASM displays signs of heavy grazing and poaching damage by sheep with patches of bare peat substrate (142). ASM that has developed on waterlogged swampy substrates higher up stream is very poached, although this habitat is more vulnerable to this type of damage.

There are definite signs of natural erosion (900) along the outer part of the surveyed area. Shoreline to the east and west of the river mouth is more exposed. The eastern shoreline has a series of indentations cut into the blanket bog face bank due to coastal erosion. There are also frequent peat hags, some with saltmarsh vegetation, that have been isolated by coastal erosion. The main habitat along this shoreline is a cobble beach that transitions to mixed sediment.

A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos shows that there have been significant changes to the shoreline during this period. This is mainly indicated by erosion and retreat of the blanket bog in the aerial photos compared to the 6 inch map. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. Therefore, the loss of any saltmarsh is not assessed as it mainly occurred outside the current monitoring period although the data indicates an erosional trend. The impact of erosion is assessed as having a low negative impact on the saltmarsh. There moderate prospects for retreat of saltmarsh habitat at this site.

There are also signs of old land-use on the saltmarsh habitats. Some of the saltmarsh has developed on old cutover blanket bog or bog that was improved into grassland in the past. There are old lazy bed features on some of the low-lying bog that has now developed saltmarsh vegetation. However there has not been any peat cutting (230), cultivation (120) or land improvement/reclamation (802) for some time.

Impacts and activities adjacent to the site include dispersed habitation (403), grazing (140) and a road (502). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Aughness.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	2.178	Inside
1330	142	B	-1	0.5	Inside
1330	900	B	-1	0.5	Inside
1410	140	C	0	0.178	Inside
1410	900	C	0	0.05	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

The overall conservation status of this site is assessed as *unfavourable-inadequate* (Table 5.1). Aughness saltmarsh is a relatively small saltmarsh, with few features of significant

conservation interest. The saltmarsh is relatively poorly developed although the saltmarsh vegetation is relatively diverse considering its size and several communities are present. Saltmarsh has developed in adjacent blanket bog that has been modified by cultivation in the past. Most of the saltmarsh is in adequate condition with some patches of localised damage due to grazing damage. The site is also affected by natural coastal erosion in the outer part of the site.

This site is located adjacent to Tullaghan Bay and Bog pNHA, which incorporates the intertidal habitats in this area and extends up the river channel. The saltmarsh habitat is mainly found outside the pNHA boundary as the lower shoreline boundary was used as the NHA boundary and the saltmarsh is mainly positioned above this boundary, although there is some overlap. A NPWS Conservation management plan is not available for this pNHA.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Aughness.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion over much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Nine monitoring stops were carried out in this habitat and three stops failed. The main reasons for the failed stops were a combination of damage caused by overgrazing by sheep and erosion of the ASM along the outer part of the bay. The majority of the ASM is in adequate condition and the sward cover is generally intact. However, there are some localised patches with grazing damage and expose substrate and some patches with poaching damage. The sward structure is also quite homogenous due to grazing pressure and a low closely cropped sward is most prominent. The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site due to the heterogeneous structure of the saltmarsh. Typical zonation is poorly developed and zonation is mainly related to the variety of peat platforms at different levels.

Two of the three stops failed due to the impacts of coastal erosion. However this is natural coastal erosion and not related to any other activity. There is also potential for saltmarsh migration at this site into adjacent terrestrial habitats. This saltmarsh is part of a larger coastal system (Tullaghan Bay) and saltmarsh may be accreting in other parts of this bay. Therefore these negative indicators are not taken into account for the overall assessment and the assessment of structure and functions is assessed as *unfavourable-inadequate*.

There are some natural successional communities to terrestrial vegetation present but these are generally poorly developed due to the relatively steep shoreline topography. The saltmarsh topography is relatively poorly developed but this is typical of these relatively small saltmarsh sites. Turf furoids were recorded in this habitat but these are fairly typical of heavily grazed fringe type saltmarshes on peat along the west coast of Ireland.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep and natural erosion are the main activities damaging the ASM at this site. Most of the ASM is located outside the adjacent pNHA so there are few prospects for grazing management in the future. The ASM is likely to be vulnerable to over-grazing compared to the surrounding blanket bog, as this habitat is preferred by sheep. Grazing is difficult to manage on these open areas of shoreline grazed as commonage.

Natural erosion is also a significant impact at this site. While there was no evidence that significant area of habitat was eroded away during the current monitoring period there are obvious signs of an erosional trend acting on parts of this site that is likely to continue into the future. This natural coastal erosion is likely to be related to the exposed nature of this part of the bay. There are no indications that this erosion is related to any other activity. Therefore this erosion is not taken into account during this assessment and the assessment is revised as *unfavourable-inadequate*. This saltmarsh is part of a larger coastal system (Tullaghan Bay) and saltmarsh may be accreting in other parts of this bay.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are only several small patches of this habitat present at this site. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. There are significant signs of erosion at this site but most of this habitat is positioned seaward of other ASM vegetation and is not affected. There is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Two monitoring stops were carried out in this habitat and all of the attributes required for the structure and functions of this habitat reached their targets. Most of the MSM is in relatively good condition and is much less heavily grazed compared to the ASM. The species composition and diversity of this habitat was typical of this habitat. The sward structure was also in good condition. However zonation is poorly developed, although this is typical of relatively small fragments of

habitat. There is some development of transitional vegetation to terrestrial bog communities, particularly in the area where the MSM has developed on modified blanket bog and along the upper saltmarsh boundary.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting this site but does not affect the MSM to the same extent as the ASM. The site is affected by erosion but this does not affect the patches of MSM. The MSM is less vulnerable to erosion due to their position landward of the ASM.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES




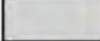


Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

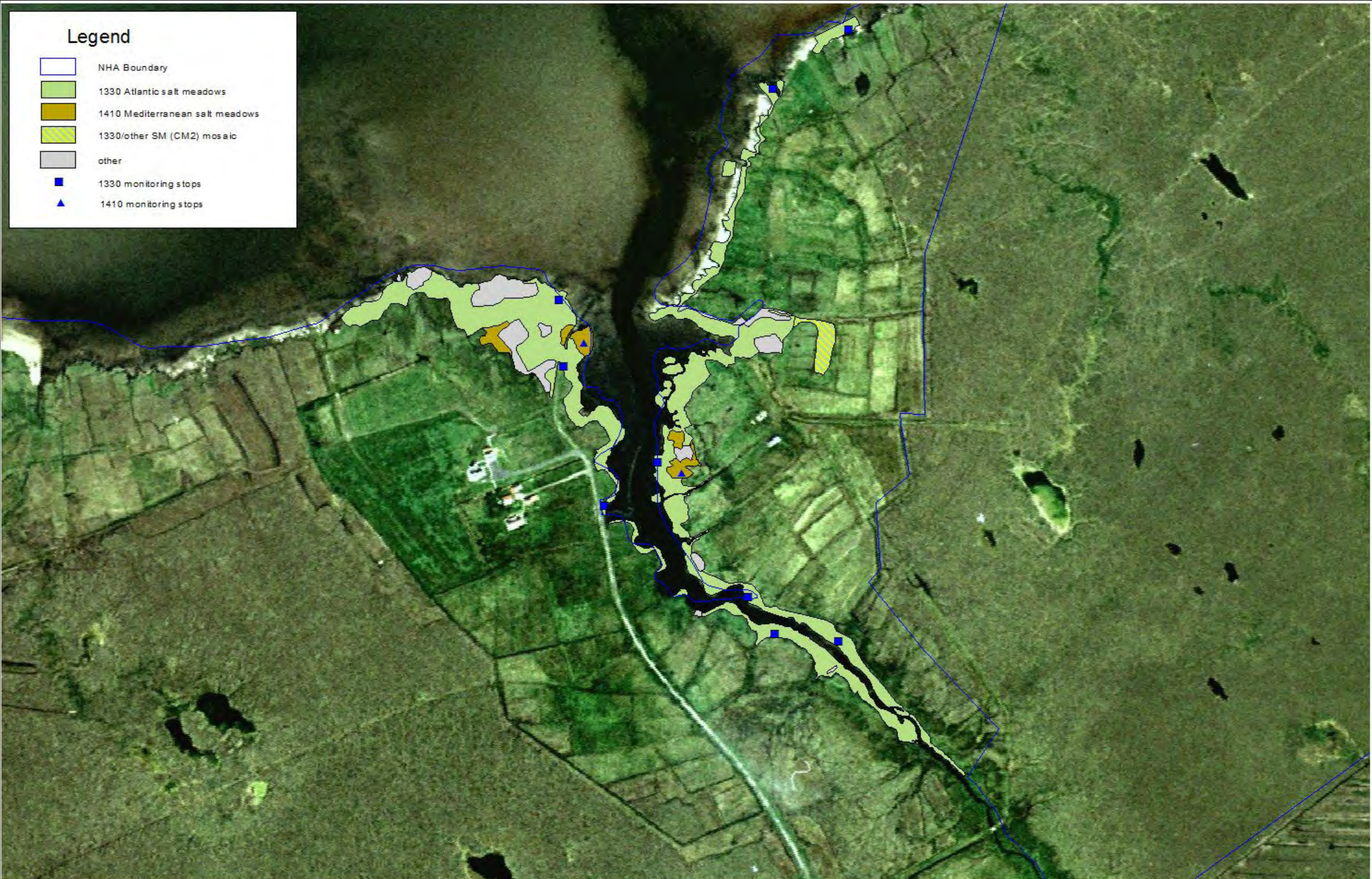
8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	2.63		2.630			
4	1410 Mediterranean salt meadow	0.178			0.178		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic	0.096		0.048			
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.435					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	3.339		2.678	0.178		

Legend

-  NHA Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1330/other SM (CM2) mosaic
-  other
-  1330 monitoring stops
-  1410 monitoring stops



Bartragh Island

1 SITE DETAILS

SMP site name: Bartragh Island	SMP site code: SMP0023
Site name (Curtis list): Bartragh Island	CMP site code: 131
	Site No: (Curtis list): 41
NPWS Site Name: Killala Bay/Moy Estuary	Dates of site visit: 29/09/2006
NPWS designation cSAC: 458	MPSU Plan: Draft 2 (old format)
pNHA: 458	
SPA: Killala Bay/Moy Estuary SPA 4036	
County: Mayo	Discovery Map: 24 Grid Ref: 124150, 330000
6 inch Map No: Ma015, Ma022	Aerial photos (2000 series): 01121-a, 01121-c, 01120-a, 01120-b, 01060-c, 01060-d
Annex I habitats currently designated for Killala Bay/Moy Estuary cSAC:	
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Ross, Rusheens, Castleconor	
Saltmarsh type: Sandflats	Substrate type: Sand/Gravel

2 SITE DESCRIPTION

Bartragh Island is a long narrow barrier island (4.6 km long) located in the mouth of Killala Bay in north County Mayo. It is dominated by a large sand-dune system, which was surveyed by the Coastal Monitoring Project. The island is separated from the mainland by wide expanses of intertidal sandflats (0.5-1 km wide) and is located on a sand bar. A sandy beach and sandflats also occur on the northern side of the island. There are several small islands to the south-east of Bartragh Island. The eastern side of the island has other terrestrial grassland habitats over bedrock and is not a sand bar. The island is un-inhabited at present but Bartragh House is located at the eastern end and some of the land around the house has been cultivated in the past (1950s). Bartragh House is currently unoccupied.

Saltmarsh is also present around the edges of some of the smaller low-lying islands located to the south-east of Bartragh Island including Baunrosmore, Baunrosbeg and Horse Island.

The site was accessed by boat from Killala at high tide. The site can also be accessed at certain low tides by crossing the intertidal flats. The island is used for recreation by walkers and campers. The site has been the subject of a high profile proposal to create a golf course in recent times.

Three Annex I habitats, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. The entire saltmarsh habitat is located within the cSAC. Mediterranean salt meadows is not listed as a qualifying interest for Killala Bay/Moy Estuary cSAC.

The intertidal areas around the island are part of Killala Bay/Moy Estuary SPA (Site code 4036). A large part of the saltmarsh is also included within the SPA. Bartragh Island was excluded from the SPA and the boundary used was the 1929 6 inch map boundary. However, the island has shifted within the bay since this time so part of the island is located within the SPA (and some of the intertidal flats are excluded). Killala Bay qualifies as a RAMSAR site but has not been designated as one yet. The cSAC and SPA are important for wintering waders and wildfowl.

3 HABITATS

3.1 General description

A long band of saltmarsh (2.5 km) is present along the southern central section of the island where it is more sheltered. Small patches of saltmarsh occur further south-east near to Bartragh House in small sheltered areas. A narrow band of saltmarsh continues towards the south-east tip of the island at the bottom of low cliff and this transitions into rocky shoreline with pebbles and cobbles. The saltmarsh eventually stops with a small transition to embryonic dune and sandy beach towards the north-western end of the island. The saltmarsh is almost totally dominated by Atlantic saltmeadows (ASM) (1330) (Table 3.1). There are several small patches of Sea Rush (*Juncus maritimus*) (< 5 m diameter) along the narrow band of saltmarsh at the south-eastern end of the island that could be classified as Mediterranean salt meadows (1410), but they are small and not significant. Small clumps of Sea Rush occur along the length of the saltmarsh but on the whole it is quite rare. A small patch of

Salicornia spp. is located on sandflats at the western end of the saltmarsh that can be classified as ‘*Salicornia* and other annuals colonizing mud and sand’ (1310).

Table 3.1. Area of EU Annex I habitats listed at Bartragh Island.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.26
1330	Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	29.11 ¹
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.01
	Total	29.38

¹ this total includes 50% of the 1330/rocky shore mosaic and 50% of the 1330/semi-fixed dune mosaic.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A small patch of this habitat is located at the western end of the main part of the saltmarsh on a small sand bar. It contains relatively sparse Glasswort (*Salicornia* sp.) plants scattered over a small area. Glasswort and Annual Sea-blite (*Suaeda maritima*) also occur at other locations along the seaward side of the saltmarsh, particularly along the saltmarsh at the eastern end and parts of this community could be classified as this Annex I habitat. However, the area is very minor in size and is included in the ASM habitat for this survey.

3.3 Atlantic salt meadows (H1330)

The largest section of saltmarsh is located in the central section of the island (along the southern side) in a band adjacent to the sand dune system. This area has a generally uniform topography with a low slope from the front to the back of the marsh and is about 60 m wide at the eastern end. The widest areas are 0.2 km wide. The saltmarsh has the appearance of being relatively recently developed as the creek and pan development is relatively poor. The lack of pans on this saltmarsh is distinctive. The 1929 6 inch map also does not show any saltmarsh development along this part of the island. This section is also significant for the fairly uniform zonation of different vegetation communities similar to the saltmarsh at Bull Island (Co. Dublin) or Ballyteige (Co. Wexford).

The saltmarsh is dominated by the *Armeria-Plantago* zone. This vegetation community is dominated by Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*), with frequent or occasional Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Milkwort (*Glaux maritima*) and Common

Scurvygrass (*Cochlearia officinalis*). There is a relatively narrow band of vegetation at the landward side of this zone that is dominated by Red Fescue (*Festuca rubra*) and Sea Rush. The saltmarsh eventually transitions to sand dune vegetation dominated by Marram Grass (*Ammophila arenaria*) through a narrow band dominated by Creeping Bentgrass (*Agrostis stolonifera*). This zone also contains species such as Silverweed (*Potentilla anserina*), Buck's-horn Plantain (*Plantago coronopus*) and Curled Dock (*Rumex crispus*).

The pioneer/lower vegetation community is dominated by Common Saltmarsh-grass and frequent Glasswort (*Salicornia* spp.) and has relatively small amounts of Annual Sea-blite (*Suaeda maritima*) compared to the narrow band of saltmarsh. Sea-spurrey sp. (*Spergularia* sp.) is also present. This community transitions to the *Armeria-Plantago* zone on low mounds that eventually coalesce. The narrow bands of saltmarsh vegetation that extend into the sand dune system contain significant bare ground patches or green algae patches.

Significant parts of the seaward boundary are accreting at present with Common Saltmarsh-grass and Glasswort prominent. The seaward boundary also shows several low cliffs (about 0.3 m high) indicating older periods of erosion at times. The saltmarsh transitions with a generally sharp boundary into the sand dune system with semi-fixed dunes dominated by Marram Grass prominent. There are several areas where a mosaic of semi-fixed sand dune mounds and saltmarsh vegetation has developed and the boundary between the two habitats is less distinctive. There are several narrow 'channels' only 2-15 m wide that contains saltmarsh vegetation and encroach into the sand dune system.

There are two small areas of Atlantic saltmarsh to the south of Bartragh House in sheltered areas surrounded by sloping land. Both these areas have low old seawalls or protection works at the seaward side with the saltmarsh developing behind the walls, which may be as a result of infilling. There are low saltmarsh cliffs at the seaward side of both these areas. Both areas have some minor creek and pan development. Zonation of vegetation is evident with *Agrostis*-dominated, *Juncus/Festuca*-dominated and *Puccinellia*-dominated vegetation. The second area closest to Bartragh House has not totally infilled and there is a bare mud area in the centre. Common Saltmarsh-grass is colonising the area around the edges of mud. There is a

transition to freshwater marsh and wet Willow-dominated woodland/scrub at the back of the saltmarsh on somewhat higher ground. A narrow band of saltmarsh continues around the shore with some breaks containing rocky shoreline/pebble beach.

Saltmarsh is also present to the north of the courtyard. This area of saltmarsh is accreting at the seaward side across sandflats, with patches of Common Saltmarsh grass. This area is one of the better-developed patches of saltmarsh with a natural transition at the back to wet grassland/freshwater marsh. Dry grassland has developed along the sides of the saltmarsh. There is a variable micro-topography with low mounds and shallow hollows developing into pans. These show zonation of vegetation with the mounds dominated by Saltmarsh Rush (*Juncus gerardii*). Parts of the saltmarsh are moderately grazed with the *Puccinellia*-dominated zone showing the most damage with some local poaching. This section of saltmarsh is located in a small bay with a sand spit extending along the western side. The saltmarsh here also develops into brackish marsh, freshwater marsh and dune slack-like vegetation. Saltmarsh on this side of the small bay is also accreting.

A narrow band of ASM is located along the shoreline at the south-eastern end, east of Bartragh House. This narrow band of saltmarsh (2-5 m wide) is eroding and patchy in places and forms a mosaic with rocky shoreline/pebble beach. The saltmarsh has developed along the edge of a low cliff with exposed rock in places. The saltmarsh vegetation eventually disappears and the pebble-rocky shoreline continues towards the south-eastern tip of the island. The saltmarsh is dominated by Common Saltmarsh-grass and Saltmarsh Rush which forms zones in places. Other species present include Annual Sea-blite, Sea Milkwort, Sea Aster, Red Fescue, Long-bracted Sedge (*Carex extensa*), Spear-leaved Orache (*Atriplex prostrata*) and Common Scurvygrass. Curled Dock appears rarely along the upper boundary with a narrow band of Creeping Bent-grass. There are several patches of Grey Club-rush (*Schoenoplectus tabernaemontani*) along the upper boundary at the edge of the low cliff. This band of saltmarsh is grazed lightly by sheep.

The flora is notable for the absence of Lax-flowered Sea Lavender (*Limonium humile*). This species is present on adjacent saltmarsh at Ross.

3.4 Mediterranean salt meadows (H1410)

There are several small patches of *Juncus maritimus*-dominated vegetation along the south-east shoreline. These patches occur in rocky areas with eroded mud. Other species present include Sea Aster, Sea Milkwort, Common Scurvygrass and Common Saltmarsh-grass.

4 IMPACTS

The saltmarsh overall has a relatively low level of impacts and activities compared to other sites (Table 4.1). This is related to the fact that the saltmarsh is part of an uninhabited island that is dominated by semi-fixed dunes. The activity codes use in Table 4.1 are given in brackets in the following text. Sheep graze the island and the saltmarsh but the overall intensity is low (140). There are some small local areas where the intensity is moderate and there is also some moderate poaching. The saltmarsh is also likely to be grazed by Rabbit and Hare, although the intensity is likely to be low (NHA site notes indicate that Rabbit were wiped out in the 1990's by myxomatosis). Some Rabbit and Hare were observed on the island but not specifically on the saltmarsh. The saltmarsh is likely to be grazed by wintering waders and wildfowl.

Bartragh Island is the subject of a high profile proposal to create a links golf course. This development could potentially have some direct and indirect impact on the saltmarsh habitats. The island is used for recreation by walkers and campers, with local people visiting at weekends during the summer (622). There are several animal tracks across the saltmarsh. Some parts of the saltmarsh also have tractor tracks but this is relatively minor (501).

Two small areas of saltmarsh have old seawalls at their seaward side. This may be evidence of old land reclamation (802) with the saltmarsh developing after the construction of the walls, or it may have been some coastal protection works (871). Both these areas of saltmarsh are indicated on the 6 inch map.

The saltmarsh overall shows signs of natural accretion (910) with an accretion ridge present at the seaward side of the saltmarsh, although there is evidence of periods of

natural erosion (900) with low saltmarsh cliffs present further back from the accretion ridge in places.

Table 4.1. Intensity of various activities on saltmarsh habitats at Bartragh Island.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1310	140	C	0	0.26	Inside
13s	140	C	0	29.38	Inside
13s	501	C	0	< 0.001	Inside
13s	622	C	0	< 1	Inside
13s	871	C	+1	0.47	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 saltmarsh habitats on Bartragh Island are in relatively good condition (Table 5.1). A conservation plan is available for this cSAC. The short-term future prospects are good if the current level of grazing is not increased. The long-term future prospects are poor if the proposed golf course development (or other development on the island) is carried out. Any development of the island may directly impact on the saltmarsh by loss of habitat to other land-use, disturbance of wildlife on the saltmarsh and indirectly may affect the balance of accretion/erosion along the edge of the saltmarsh if piers and coastal protection works are constructed and channels are dredged.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Bartragh Island.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent, Structure and functions, Future prospects,			Favourable
Atlantic salt meadows (1330)	Extent, Structure and functions, Future prospects,			Favourable
Mediterranean salt meadows (1410)	Extent, Structure and functions, Future prospects,			Favourable

5.2 Atlantic salt meadows (H1330)

5.2.1 EXTENT

This habitat dominates the area of saltmarsh. There is no data on the previous historical extent of this habitat on Bartragh Island. Comparisons of the 6 inch map to the current aerial photos indicate that the western portion of the island has shifted somewhat in size, position and shape. The western part of the island has become narrower while the central part has widened. The main area of saltmarsh behind the sand dunes on Bartragh Island is not actually mapped on the 6 inch map (1929). Other saltmarsh to the southeast on Bartragh Island is mapped on the 6 inch map so this may indicate that this area of saltmarsh is a recent development and is related to changes in the size and shape of the island since the 1920's. These changes could be related to development of pipelines, piers, coastal protection and dredging of channels in the Killala and Ross area.

There are indications that the saltmarsh extent is increasing at present due to accretion at its seaward edge (at the expense of intertidal mud and sandflats, H1140). However, there may also be some loss of saltmarsh habitat as mounds on the marsh continue to develop small areas of sand dune habitat. Both these trends are likely to be related to

natural transition due to accretion and erosion cycles. While there are likely to be few impacts on the island affecting these natural geomorphological cycles, these cycles can be affected indirectly by impacts on the intertidal area and the mainland shoreline. The extent is assessed as *favourable* as the area is mainly changing due to natural impacts.

5.2.2 HABITAT STRUCTURE AND FUNCTIONS

The structure and functions of this habitat are assessed as *favourable*. Twelve monitoring stops were carried out in this habitat and they all passed. Each stop passed for all attributes. Pans and creek structure are poorly developed relative to other sites but this may be related to the relative young age of the marsh. The sward height and plant ground cover are both satisfactory. Sheep graze the island at present and the grazing is impacting on sward height but grazing overall is generally low in intensity. Likewise there is very little poaching with only some localised damage of creeks and pans covering a minor area and this is typical of any marsh with some livestock grazing. The species diversity is typical of saltmarshes in this area, although the absence of Lax-flowered Sea Lavender is notable. The presence of a relatively large saltmarsh area has allowed the development of distinctive zonation of plant communities. This site shows some of the most distinctive zonation in plant communities related to elevation along the marsh seen during the survey and is comparable to sites like Ballyteige. No Common Cordgrass (*Spartina anglica*) was recorded and there were no other negative indicators. There are interesting natural transitions with saltmarsh going to brackish and freshwater wetland plant communities at the eastern end of the island and mosaics of semi-fixed dunes and saltmarsh also present.

5.2.3 FUTURE PROSPECTS

The future prospects for this habitat (and the saltmarsh as a whole) are good. The future prospects are assessed as '*favourable*' assuming the proposed golf course development does not go ahead. This site has significant conservation value due to the relatively few impacts on the saltmarsh habitats and on the island as a whole, as the island is not inhabited and not farmed intensively. Any development of the island is likely to affect the saltmarsh either directly or indirectly. This site is also significant as nearly all the saltmarsh habitat has the capacity to naturally transition to

other habitats at its seaward and landward edges. Therefore the saltmarsh has the capacity to respond naturally to any future changes in sea level due to climate change. Recreational pressure on the saltmarsh and on the island as a whole are relatively low. The grazing level is currently not having a negative impact on the saltmarsh so stocking rates should not increase above this level. The grazing levels should be routinely monitoring to ensure that stocking levels are not too high as grazing from birds, rabbits and hares may increase naturally.

5.3 *Salicornia* and other annuals colonizing mud and sand (H1310)

The area of this habitat was relatively small. However, there is no data on the historical extent of *Salicornia* flats in Killala Bay. Therefore the extent is assessed as *favourable*. The habitat structure and functions are typical of this habitat with sparse Glasswort plants occurring in a single species stand. Species such as Annual Sea-blite, Sea Spurrey and Common Saltmarsh-grass occur only rarely. The habitat structure and functions are assessed as *favourable*. The future prospects are also assessed as *favourable*, assuming the proposed development on the island does not go ahead. The extent of this habitat is also dependant on erosion/accretion cycles in the intertidal within the Killala area. The habitat may naturally disappear or increase in size as the sand bar on which it is located moves due to erosion and/or accretion. These cycles may be affected by coastal development along the mainland of pipelines, piers and coastal protection works.

5.4 Mediterranean salt meadows (H1410)

The area of this habitat on the island is relatively minor (0.01 ha) and can be considered not to have changed significantly in the past. The extent is assessed as '*favourable*'. No monitoring stops were carried out in this habitat on this site as the area was so small. However, the species diversity was typical of this habitat and similar to narrow bands of Sea Rush seen at other sites in Killala Bay such as Ross (SMP0024). The structure and functions are assessed as '*favourable*'. The future prospects are also assessed as '*favourable*' assuming the proposed development does not go ahead.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site. Routine monitoring is required to ensure the site does not suffer from overgrazing.



Legend

- SAC boundary
- 1330 Monitoring stops
- 1310 Monitoring stops

Habitats

- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/dune mosaic
- 1330/rocky shore mosaic
- other



**Saltmarsh
Monitoring Project**

Bartragh Island

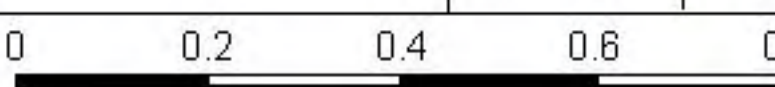
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision. Reproduced from Ordnance Survey material by permission of the Government. (Permit number 5953)

Máthair na h-Éireann agus an tSráidbhídeán, 2006. Tá na sonraí seo ar fáil arís le cead na h-Éireann. (Ceadúnas: 5953)

**Killala Bay/Moy Estuary
cSAC (000436)**


SMP Code: SMP0023	Map produced by: SMP 2006
	Map Version: 1

0 0.2 0.4 0.6 0.8 Kilometers



Scale: 1:10389

N



Bartraw

1 SITE DETAILS

SMP site name: Bartraw	SMP site code: SMP0020	
Site name (Curtis list): Bartraw	CMP site code: 111	
	Site No: (Curtis list): 81	
NPWS Site Name: Clew Bay complex	Dates of site visit: 14/07/2006	
NPWS designation cSAC: 1482	MPSU Plan: none for coastal areas	
pNHA: 1482		
County: Mayo	Discovery Map: 30	Grid Ref: 090490, 283220
6 inch Map No: Ma087	Aerial photos (2000 series): 02138-b, 02076-d	
Annex I habitats currently designated for Clew Bay complex cSAC:		
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)		
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)		
Other SMP sites within this cSAC/pNHA: Mallaranny, Tooreen, Rosmurrevagh, Tierna, Rockfleet Castle, Roshanagh East, Caraholly South, Kiladangan, Annagh Island		
Saltmarsh type: Sand flats	Substrate type: Sand/glacial till	

2 SITE DESCRIPTION

Bartraw saltmarsh is located along the southern edge of Clew Bay in Co. Mayo, at Murrisk 8 km west of Westport. This site is situated at the base of the Croagh Patrick foothills. The saltmarsh is part of a larger system of coastal habitats and is associated with a long sand spit containing a sandy beach and sand dune system. Bartraw Beach is a Blue Flag Beach and is a popular site for locals and tourists. The sand dune habitats were surveyed by the Coastal Monitoring Project. The adjacent land is farmed with agricultural grassland predominant. There are also frequent dwellings in this area.

The Annex I habitat, Atlantic salt meadows (ASM), is present at this site. This habitat is listed as a qualifying interest for this cSAC. Nearly all the saltmarsh habitat is situated within the Clew Bay Complex cSAC. A small area of habitat is excluded outside the boundary because an old field boundary from the 6inch map was used to mark the cSAC boundary, and the position of this boundary has since changed.

This site is assessed easily via the minor roads to Bartraw beach. A carpark is situated at the southern end of the beach adjacent to the saltmarsh.

3 HABITATS

3.1 Atlantic salt meadows (H1330)

The saltmarsh has developed at the back of the sand spit in a small sheltered area between the sand spit and the mainland. This was one of the smallest sites visited during the survey (Table 3.1). A small patch of Atlantic salt meadow (ASM) is present where muddy sand has been allowed to deposit. A thin band of saltmarsh continues east along the Murrisk shoreline outside the surveyed area.

Table 3.1. Area of EU Annex I habitats listed at Bartraw.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.41*
	Total	0.41

*note that saltmarsh habitat continues outside the surveyed area.

This site was not grazed and relatively tall rank vegetation was present. Several vegetation communities have developed with zonation dependant on elevation. A lower saltmarsh community dominated by Common Saltmarsh-grass (*Puccinellia maritima*) and Glasswort (*Salicornia* sp.) is present along the seaward edge. Sea Plantain (*Plantago maritima*), Lax-flowered Sea Lavender (*Limonium humile*), and Sea Arrowgrass (*Triglochin maritimum*) become more frequent towards the upper part of this zone. Other species present include Sea Pink (*Armeria maritima*), Sea Milkwort (*Glaux maritima*), Annual Sea-Blite (*Suaeda maritima*) and Lesser Sea-spurrey (*Spergularia media*). There are small patches with a typical mid-marsh community dominated by Sea Pink and Sea Plantain. The south-east section contains a patch of mid-upper saltmarsh dominated by Red Fescue (*Festuca rubra*) and Saltmarsh Rush (*Juncus gerardii*) and containing many of the other species listed above.

The small area of saltmarsh means that the topography is generally poorly developed. Only several small salt pans are present. Small creeks drain the central section.

There are several small mounds towards the southern side of the site that may have been artificially created.

The saltmarsh transitions to semi-fixed dune grassland along the northern side at the back of the sand spit. The southern boundary is marked by a stone wall and fence-line enclosing improved grassland. The transition to grassland is marked by a band of vegetation on the strandline dominated by Creeping Bentgrass (*Agrostis stolonifera*) and containing frequent Frosted Orache (*Atriplex laciniata*) and Common Scurvygrass (*Cochlearia officinalis*). These upper saltmarsh communities also develop on some mounds along the landward boundary.

4 IMPACTS AND ACTIVITIES

There are few activities on the saltmarsh at this site (Table 4.1). The activity codes used in Table 4.1 are given in brackets in the following text. The site is not grazed as the sand dune system and sandy beach is an important amenity. One notable feature of this site is the luxuriant development of Lax-flowered Sea Lavender, probably due to the lack of grazing. There are several tracks (501) along the front and at the sides of the saltmarsh. These allow vehicles to access the Murrisk shoreline from the Bartraw car park, but are probably only used for boating/fishing/agricultural activities and not for amenity access. There is a small vegetated mound at the inner part of the saltmarsh adjacent to the public toilets that are likely to be soil/spoil deposited after construction but it is not known how long it has been there.

A comparison of the 2000 aerial photo to the 1929 6 inch map indicates that some accretion has taken place during this period and the saltmarsh has got larger as a result.

Activities adjacent to the saltmarsh habitats include farming (120, 140), dwellings (403), roads (502) and leisure activities associated with the beach (609).

Table 4.1. Intensity of various activities on saltmarsh habitats at Bartraw.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	501	C	-1	< 0.1	Inside
1330	120	C	0	0.41	Outside
1330	140	C	0	0.41	Outside
1330	403	C	0	0.41	Outside
1330	502	C	0	0.41	Outside
1330	609	C	0	0.41	Outside

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 Atlantic salt meadows (H1330)

5.1.1 Extent

Overall, the extent of this habitat is assessed as *favourable* (Table 5.1). There is no previous information on the extent of saltmarsh at this location. A comparison of the 1930 6 inch map to the 2000 aerial photo indicates that there has been accretion and growth of saltmarsh in this period.

5.1.2 Habitat structure and functions

Overall, the structure and functions of this habitat are assessed as *favourable*. Two monitoring stops were carried out at this site and both passed. It was decided that two stops represented the site adequately as it was so small. The species diversity at this site was typical of this habitat and several different saltmarsh plant communities were present, with zonation dependant on elevation. The vegetation was in good condition as there was no grazing. No grazing has allowed the vegetation to become rank in places but due to zonation there is a variety of sward heights from 3-20 cm. All the other targets were reached including plant ground cover and no poaching. The creek and pan topography are poorly developed but this is typical of a small site. This is one of the few ungrazed saltmarshes in Clew Bay and is therefore locally distinctive.

No Cordgrass (*Spartina anglica*) was recorded at this site. However, this site is close to Annagh Island and Kildanagan, where this species is present. Bartraw is therefore vulnerable to the spread of Cordgrass in the future.

5.1.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Bartraw.

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

6 MANAGEMENT RECOMMENDATIONS

None



Legend

- SAC boundary
- 1330 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- other



**Saltmarsh
Monitoring Project**

Bartraw

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)

Míre na leathneacha ar an karscál seo ach níl garthuiscíocht ginearálta. Féadfaidh athrú na líneanna ar leithneacha na goeantar comharthaí fe. Mochas anhall d'ádh na cúlthearachta. Ordainís le dteal ón Rialtas. (Ceartúnar: Ulmh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0020** Map produced by: **SMP 2006**
Map Version: **1**



Scale: 1:1344



Bellacragher Bay

1 SITE DETAILS

SMP site name: Bellacragher Bay	SMP site code: SMP0021
Site name (Curtis list): Bellacragher Bay	CMP site code:
NPWS Site Name: Bellacragher Saltmarsh	Site No: (Curtis list): 61
NPWS designation	Dates of site visit: 8-9/09/2006
cSAC: 2005	MPSU Plan: no plan
pNHA: 2005	
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 Saltmarsh cSAC:	
Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) (1330)	
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (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 534). Small patches of saltmarsh on the west side of the bay are included within Lough Gall Bog cSAC (Site code 522).

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 can not 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 (<i>Glauco-Puccinellietalia maritimae</i>)	1.82
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	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 Bentgrass (*Agrostis stolonifera*), Sea Milkwort (*Glaux maritima*), Sedge sp. (*Carex* sp.) and Sea Arrowgrass (*Triglochin maritimum*). Bare ground is also occasional (generally < 5%). Turf Fucooids 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 Bentgrass 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 (Furoid 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 Bentgrass 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 Bentgrass 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			Overall EU conservation status assessment
	Favourable	Unfavourable - inadequate	Unfavourable - Bad	
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.

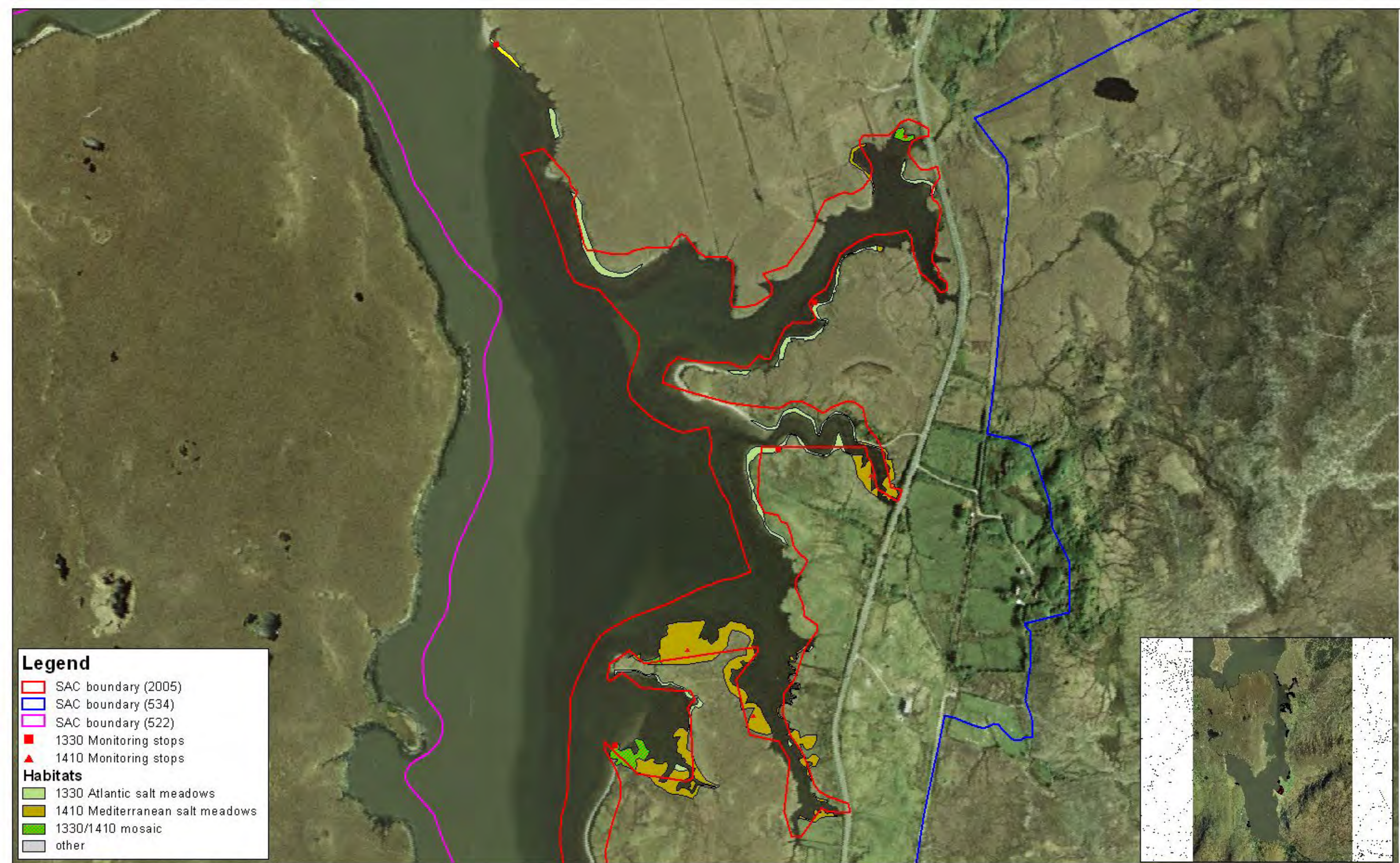
There are also natural transitions to wet and dry grassland, blanket bog and wet heath. Common Cordgrass (*Spartina anglica*) was not recorded on this site.

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.

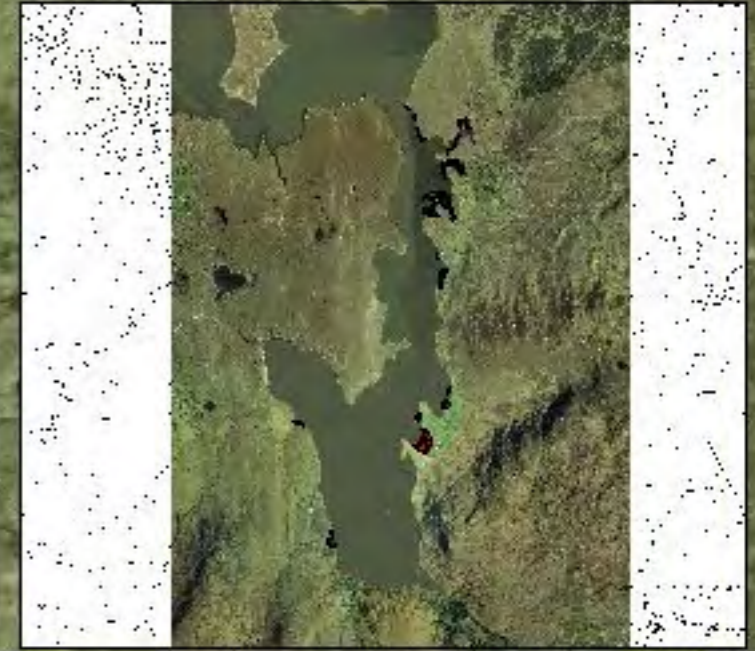


Legend

- 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 (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)

Míre na leathneacha ar an karscál seo ach níl garthuimhach ginearálta. Féadfaidh bheith mí-threoir na míreanna ar leathneacha na geoinnir comharthaí le. Míchairníth d'ádh ar na cúlthreacha Ordnáire le dteal ón Rialtas. (©Ceartúnaí Ulmh. 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



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



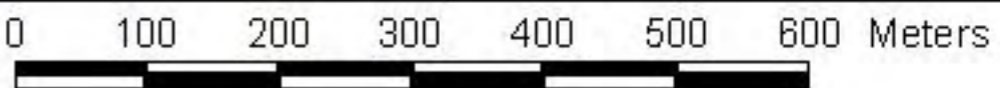

**Saltmarsh
Monitoring Project**

Bellacragher Bay (south)

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Míreanna leathneacha ar an karscail seo ach níl garshuíomhach ginearálta. Fearfar athbhreithníocht a déanamh ar na crainneacha na goianar comharthaí le Maichasánhal d'ádh na Gúilleáradha. Ordúnáil le dteal ón Rialtas. (©Ceartúnar Ulmh, 5953)

**Bellacragher Saltmarsh cSAC
(002005)**

SMP Code: SMP0021	Map produced by: SMP 2006 Map Version: 1
 <p>Scale: 1:7599</p>	
	

Bunnahowen

1 SITE DETAILS

SMP site name: Bunnahowen	SMP site code: SMP0114
Date of site visit 30/09/2008	CMP site code: N/A
SM inventory site name: Bunnahowen	SM inventory site code: 51
NPWS Site Name: Mullet/Blacksod Bay Complex	
NPWS designation cSAC: 000470	MPSU Plan: none available
NHA: 000470	SPA: 004037
County: Mayo	Discovery Map: 22 Grid Ref: 074888, 329062
Aerial photos (2000 series): O 1108-B,C,D	6 inch Map No: Ma 017
Annex I habitats currently listed as qualifying interests for Mullet/Blacksod Bay Complex cSAC: H1310 <i>Salicornia</i> and other annuals colonizing mud and sand	
Other SMP sites within this SAC/NHA: Ely Harbour Saleen Harbour, Doolough	
Saltmarsh type: Bay	Substrate type: Sand

2 SITE DESCRIPTION

Bunnahowen saltmarsh is located in north-west Co. Mayo, 5 km south-east of Belmullet Town. The site is located at the north-east corner of Blacksod Bay in a sheltered narrow inlet off a smaller bay called Trawmore Bay. A stream flows into the head of the main inlet that is orientated north-east to south-west. A second river flows into the east side of the bay. This shallow bay completely empties at low tide to expose sand and mud flats. There is a second smaller sub-inlet towards the south-east part of the site that was also surveyed. A small stream flows into the head of this inlet.

The landscape around the bay is low-lying and dominated by blanket bog modified by drainage, peat cutting and land improvement. A significant amount of the bog has been improved to create farmland along the northern part of the inlet. There is also a significant amount of wet grassland where fields have reverted back because of poor drainage. Further south towards the mouth of the main inlet there is more frequent cutover and blanket bog modified by drainage and cutting. There are minor roads along both sides of the bay and there are scattered dwellings lining both these roads and around the site. The main road accessing the Belmullet Peninsula (R313) crosses the northern end of the bay.

The saltmarsh is mainly found at the head of the main inlet. Saltmarsh has developed on mud and sand in the intertidal area. There is a narrow band of saltmarsh along most of the rest of shorelines of both inlets. This saltmarsh is sometimes eroded and forms a mosaic with a rocky shoreline. A narrow band of habitat is typically found alongside a peat bank marking the edge of the blanket bog. The saltmarsh habitat occasionally encroaches over the peat in places where it is low-lying and can be inundated by the tide.

Much of this saltmarsh around the shoreline of the inlet could be classified as 'fringe type' saltmarsh as it has developed on or adjacent to blanket bog with a peat substrate. The larger sections of saltmarsh have developed on mud and sand at the northern end of the main inlet.

The majority of the site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. This is a large coastal site that includes the northern part of Blacksod Bay, coastal habitats on both sides of the peninsula and coastal habitats along the mainland. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). However a third saltmarsh habitat, *Salicornia* flats (1310) is the only Annex I saltmarsh habitat listed as a qualifying interest for this cSAC and this habitat was not recorded at Bunnahowen. Saltmarsh is frequently found in many of the sheltered coastal sites around this cSAC. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project (Elly Harbour and Saleen Harbour on the peninsula, Doolough along the mainland). A fourth site listed on the SM inventory called Gweesalia and located to the south of this site was not surveyed during the SMP.

The main saltmarsh developed at the head of the inlet is located in the cSAC. A significant portion of narrow saltmarsh habitat mapped along the shorelines at this site is located outside the digital cSAC boundary. This is partly due to the fact that saltmarsh habitat extends above the upper shoreline boundary on the OSI 6 inch map, which was used to draw the cSAC boundaries. The shoreline has also been modified in places and this fact combined with the fact that much of the saltmarsh is quite narrow, means that saltmarsh has been excluded.

Turf fucoids were one species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland. Another species of local distinctiveness recorded at this site is Saltmarsh Flat-rush (*Blasmus rufus*). This species is mainly confined to saltmarshes in the north-west of Ireland but has a fragmented distribution around the rest of Ireland's coast.

The site was easily accessed via a lane at the south-west corner of the site that gave right-of-way onto the shoreline

3 SALTMARSH HABITATS

3.1 General description

The main saltmarsh habitat found at this site is Atlantic salt meadows (ASM) (Table 3.1). The saltmarsh habitat is poorly developed as a narrow band of habitat that extends along the outer more exposed parts of the main inlet. A narrow strip of saltmarsh several metres wide has developed on a moderate slope on the shoreline. This saltmarsh is underlain by glacial till and this is exposed along the lower saltmarsh boundary. This boundary is variable depending on the depth of substrate underlying the saltmarsh and is marked in places by a low saltmarsh cliff (< 0.5 m high). An accretion ramp or ridge is present in several places where mud or sand is accumulating. Higher up the inlet there are tall saltmarsh cliff with exposed peat face banks that have been exposed due to scouring along the adjacent channel. There are extensive intertidal mudflats and sand flats developed lower down on the shore within the inlet. The intertidal mud increases in extent further up the inlet as it gets more sheltered.

There are several places that are more exposed and the saltmarsh is found on very thin mud and peat that is eroding to expose the underlying rocky glacial till. There are some larger patches along these shorelines where the saltmarsh is better developed due to increased shelter and more suitable shoreline topography with a gentler slope. Most of this saltmarsh is found adjacent to an exposed peat bank of various heights, which marks the lower extent of the blanket bog (now mainly modified). Gorse (*Ulex europaeus*)-dominated scrub has developed along this dried out peat bank in places. However the bank is mainly dominated by heather cover, wet grassland or more typical vegetation of blanket bog with species such as Purple Moor-grass (*Molinia caerulea*), Bog Myrtle (*Myrica gale*), Bog Cottons (*Eriophorum* spp.), Heather (*Calluna vulgaris*), Bog Asphodel (*Narthecium ossifragum*), Carnation Sedge (*Carex panicea*) all present. A band of transitional grassland develops in places between the saltmarsh and the adjacent modified blanket bog that contains Glaucous Sedge (*Carex flacca*) along with other typical ASM species such as Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardii*), White Clover (*Trifolium repens*) and Autumn Hawkbit (*Leontodon autumnalis*). The saltmarsh sometimes extends up over the edge of the peat where it is low-lying, creating saltmarsh on two different levels.

There is a small area at the south-west corner of the site on the southern side of the inlet where a mosaic of ASM and MSM has developed on peat that has been significantly modified by old peat cutting. Saltmarsh has developed in old channels and depressions where peat has been removed. Bog vegetation extends down into the saltmarsh on old peat ridges that remain uncut. The upper boundary in this area is quite heterogeneous and this area was difficult to map accurately.

The largest patches of saltmarsh are located at the northern end of the main inlet. Saltmarsh has developed in several low lying areas on peat and on mud. The topography is more suitable for the greater development of saltmarsh in the intertidal area with a wide gently sloped intertidal zone. Some of this saltmarsh is quite fragmented into small vegetated mounds by long-term grazing. The main stream channels divide the saltmarsh into several sections. The saltmarsh transitions into wet grassland at the northern end where the habitats adjacent to the main channel are beyond the reach of the highest tides. The wet grassland transition is marked by the presence of species such as Soft Rush (*Juncus effusus*) and Yellow Flag (*Iris pseudacorus*).

Table 3.1. Area of saltmarsh habitats mapped at Bunahowen.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	12.455
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	1.374
	Total*	13.829

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

There are some signs of zonation within the narrow bands of ASM along the shoreline found in the southern part of the main inlet. However there is generally little development of distinct communities. This vegetation is generally between 5-10 m wide. Zonation is visible in the distribution of individual species such as Saltmarsh Rush, which is generally found along the upper boundary, and Common Saltmarsh-grass (*Puccinellia maritima*) along the lower

saltmarsh boundary. Other species present include Sea Pink (*Armeria maritima*), Sea Milkwort (*Glaux maritima*), Sea Aster (*Aster tripolium*), Sea Plantain (*Plantago maritima*) and Red Fescue. Saltmarsh Flat-rush (*Blysmus rufus*) is found on the upper boundary but is rare in occurrence. This vegetation is eroded in places with some scattered rocks over the saltmarsh surface.

The saltmarsh is somewhat better developed in several small areas. A small little inlet near the south-west end of the northern side contains an accreting ramp dominated by pioneer ASM vegetation. This vegetation is dominated by Common Saltmarsh-grass and also contains small amounts of Sea Milkwort, Sea Aster, Sea Plantain and Glasswort (*Salicornia* sp.).

The largest sections of ASM at the northern end of the site display typical zonation of communities with upper, mid and lower marsh communities all present. Similar communities are also found in the saltmarsh developed on the north-east side of the site. The upper and mid-upper saltmarsh predominates in this area. These are predominately grassy communities. The upper community is dominated by Red Fescue and also contains smaller amounts of Creeping Bent, Saltmarsh Rush, White Clover, Autumn Hawkbit, Buck's-horn Plantain (*Plantago coronopus*), Sea Arrowgrass (*Triglochin maritimum*) and Common Scurvygrass (*Cochlearia officinalis*). There are several mounds in this saltmarsh with terrestrial grassland developing with species such as Yorkshire Fog (*Holcus lanatus*), Sow-thistle (*Sonchus* sp.), Curled Dock (*Rumex crispus*), and Silverweed (*Potentilla anserina*) appearing. These areas also have a moderately well-developed saltmarsh topography with creeks and pans present. There are some old drainage channels within the ASM that acted as former stream channels and divide the saltmarsh into several sections. The lower zone is dominated by Common Saltmarsh-grass, Sea Arrowgrass and Sea Pink and also contains some Sea Aster, Sea Milkwort and Sea Plantain. This zone is found around the channels and along the lower saltmarsh boundary. The lower zone is also better developed on some of the recently accreted saltmarsh on low platforms.

The saltmarsh along the smaller inlet at the south-west part of the site is mainly poorly developed. The northern shoreline shows signs of significant erosion with frequent bare glacial till appearing in a narrow band of ASM vegetation. The SM vegetation is growing of thin bands of peat. The largest patches of saltmarsh are found at the head of this inlet. There is some development of an upper marsh community influenced by freshwater runoff at the head of the smaller inlet. This area is dominated by Creeping Bent. A very narrow fringe along the southern side of this inlet is dominated by Common Saltmarsh-grass. An upper zone develops along the bottom of the old face-banks that is dominated by Saltmarsh Rush.

3.3 Mediterranean salt meadows (H1410)

There are several small patches of MSM in the main inlet that are dominated by Sea Rush (*Juncus maritimus*) and contain a typical species assemblage. These have developed on deep peat on the lower edges of the blanket bog.

Most of the MSM is found at the south-west corner of the site along the southern side of the main inlet. The MSM forms a mosaic with small patches of ASM in places. This area has been modified by peat cutting in the past. Old peat face-banks and drains extend down into the MSM. The ridges are dried out and dominated by heather and some scrub. There are also patches of wet grassland dominated by Purple Moor-grass. It has also been damaged recently by burning. The burnt zone has extended down into the upper saltmarsh, dominated

by Sea Rush. Deergrass (*Trichophorum cespitosum*) is colonising the bare peat within the saltmarsh zone along with Sea Milkwort, Creeping Bent, Brookweed (*Samolus valerandi*), Sea Pink, Spear-leaved Orache (*Atriplex prostrata*), Silverweed and Purple Moor-grass. Sea Rush extends up the slope into the adjacent modified bog zone in some of the many channels. The dominance of Purple Moor-grass with heathers marks the transition to blanket bog vegetation. The upper boundary of this area was difficult to map accurately.

The MSM in this area that is unburnt is dominated by Sea Rush and contains frequent Red Fescue. Other species present include Sea Pink, Sea Arrowgrass, Common Scurvy-grass, Creeping Bent, Spear-leave Orache, Sea Plantain and Autumn Hawkbit. The saltmarsh topography is poorly developed and related to old modifications created by peat-cutting.

4 IMPACTS AND ACTIVITIES

The main impact affecting this site is grazing (Table 4.1). Parts of the site are grazed by cattle, although most of the site is grazed by sheep. Most of the site is grazed lightly by sheep moving along the shoreline (140). Some parts are not grazed significantly. The larger sections of saltmarsh at the northern end of the site have different owners and are divided into several sections with fences around their lower boundaries. Some of these enclosures have been badly damaged by long-term over-grazing (sheep) and the saltmarsh surface has fragmented into small vegetated tussocks and mounds that are related to poaching-induced erosion (142).

Some of the narrow band of saltmarsh along the shoreline is used as track, as the shoreline is used to access other areas around the inlet (501). The tracks are used by vehicles, although not heavily. The vehicles have eroded ruts into the saltmarsh in places.

Some of the bog adjacent to the saltmarsh at the south-western corner of the site on the southern side of the inlet was burnt recently (180). Some of the upper MSM vegetation was also burnt leaving a patchy mosaic of standing dead and live rush cover. The area damaged by burning is not extensive and does not extend to the lower saltmarsh boundary. Saltmarsh species are re-colonising bare patches of peat within this burnt zone.

The saltmarsh is affected both by erosion (900) and accretion (910) in different places. The narrow band of saltmarsh found along the north side of the smaller inlet is quite eroded as this area is much more exposed. There is also some erosion and slumping of saltmarsh along the lower boundary due to channel scouring as the main stream channel flows adjacent to parts of the saltmarsh creating tall peat face-banks. Accretion is occurring in other parts of the saltmarsh, mainly in the larger sections in the main inlet. There are accretion ramps present where pioneer ASM vegetation is spreading down onto the adjacent mud flats. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh as there is also some accretion.

A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos shows that there have been some fairly minor changes to the shape of the shoreline during this period, mainly in the upper more exposed part of the inlet. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series and the GPS survey points shows that there have been no measurable growth or loss of saltmarsh habitat due to erosion or accretion during the current monitoring period.

The main Impacts and activities adjacent to the site are related to agriculture. Improved grassland is grazed (140) and some is also fertilised (120) and cut (102) for cattle fodder, Other impacts and activities include dispersed habitation (403) and roads (502). The agricultural activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Bunahowen.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	3.00	Inside
1330	142	B	-1	6.00	Inside
1330	501	C	-1	1.00	Inside
1330	900	C	0	0.6	Inside
1330	910	C	0	0.3	Inside
1410	140	C	0	1.374	Inside
1410	180	B	-1	0.500	Inside
1410	900	C	0	0.06	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

Bunahowen saltmarsh is a medium sized site with few features of conservation interest. The overall conservation status of this site is *unfavourable-bad* (Table 4.1). A significant part of the site is damaged by long-term overgrazing that has fragmented the structure of these sections. The saltmarsh topography of one section has been significantly modified in the past by peat-cutting.

This site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. A NPWS Conservation management plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Bunahowen.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Eleven monitoring stops were carried out in this habitat and two stops failed. A significant area of the ASM found in the northern part of the site is damaged by long-term over-grazing and poaching by sheep. Negative indicators such as high bare mud cover and a disturbed sward cover are locally frequent. The structure of a large area has also been damaged by long-term grazing and is quite fragmented.

The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site including some pioneer vegetation. The saltmarsh topography is also well-developed in the northern section. The zonation within this habitat is also well-developed. There is also some development of ASM vegetation on peat as well as on muddy substrate. Overall, the sward structure is also quite heterogeneous due to variable grazing levels around the site and that a substantial area of ASM is not grazed.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing is the main activity affecting the ASM at this site and this activity affects a large part of the site at the northern end. The rest of the site is in good condition and there are few damaging activities. There is no NPWS conservation management plan available for this site so there are few prospects for favourable conditions to improve the conservation status of this habitat.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Three monitoring stops were carried out in this habitat and they all passed. All of the attributes required for the structure and functions of this habitat reached their targets. However, the MSM has been recently damaged by burning in one area. The bare peat along the upper saltmarsh boundary was being colonised by both saltmarsh species and blanket bog species. The MSM structure has also been significantly modified by old peat-cutting damage with drains, ridges and face-banks frequently found in this area. The MSM is not located in the area that is being damaged by overgrazing. The species assemblage of the MSM is typical of this vegetation type. There is some internal zonation within this habitat due to the irregular topography. There is also some development of transitional MSM vegetation with the appearance of species such as Purple Moor-grass, Deergrass, Soft Rush and Silverweed appearing in the upper saltmarsh zone.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are few impacts significantly affecting this habitat apart from some burning of the adjacent blanket bog.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

8 APPENDIX I

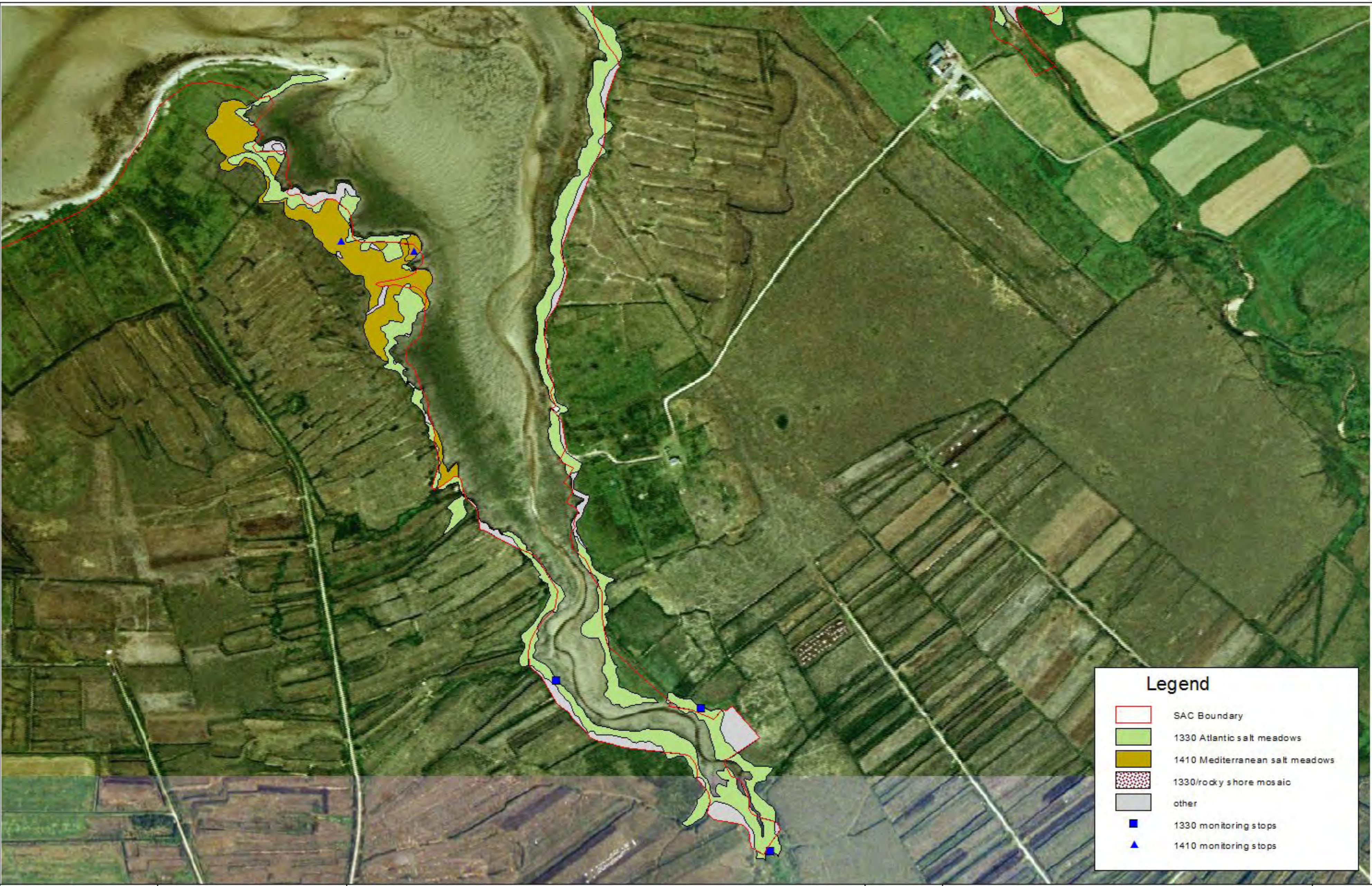
Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	12.421		12.421			
4	1410 Mediterranean salt meadow	1.374			1.374		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	2.939					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic	0.068		0.034			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	16.802		12.455	1.374		



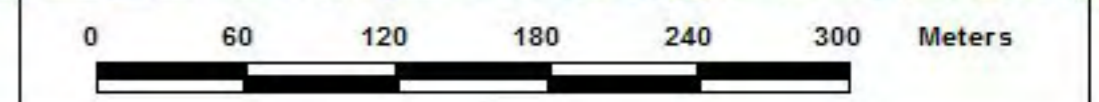
Legend

- SAC Boundary
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/rocky shore mosaic
- other
- 1330 monitoring stops
- 1410 monitoring stops



Legend

- SAC Boundary
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/rocky shore mosaic
- other
- 1330 monitoring stops
- 1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Caraholly South

1 SITE DETAILS

SMP site name: Caraholly South	SMP site code: SMP0017	
Site name (Curtis list): Caraholly South	CMP site code:	
	Site No: (Curtis list): 79	
NPWS Site Name: Clew Bay Complex	Dates of site visit: 14/07/2006	
NPWS designation cSAC: 1482	MPSU Plan: None for coastal areas	
pNHA: 1482		
County: Mayo	Discovery Map: 31	Grid Ref: 095500, 285440
6 inch Map No: Ma087	Aerial photos (2000 series): 02077-b	
Annex I habitats currently designated for Clew Bay Complex cSAC:		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)		
Other SMP sites within this cSAC/pNHA: Mallaranny, Tooreen, Rosmurrevagh, Teirna, Rockfleet, Roshanagh East, Annagh Island, Kiladangan, Bartraw		
Saltmarsh type: Bay	Substrate type: Sand	

2 SITE DESCRIPTION

Caraholly South saltmarsh is located along the eastern shoreline of Clew Bay, 3.5 km north-west of Westport in County Mayo. The saltmarsh is adjacent to the site of Bawn Castle (national monument) located in a neighbouring farmyard. The landscape at this location has frequent low-lying small drumlin hills and islands typical of Clew Bay. The shoreline is quite irregular and a small bay (Bawn Strand) has developed between two elevated areas. This is a relatively small saltmarsh site with the widest area being 50 m narrowing to a 5 m wide band along the outer shoreline of the bay. The saltmarsh has developed around the shoreline of Bawn Strand, which is a small intertidal bay facing westwards. Caraholly South is located 7 km south of Roshanagh East saltmarsh.

The site can be accessed easily by minor roads from Westport. The shoreline has to be accessed by crossing privately-owned land and permission was sought before hand.

One Annex I habitat, Atlantic salt meadows (ASM) is found at this site. This habitat is listed as a qualifying interest for the Clew Bay Complex cSAC. Nearly all of the saltmarsh is excluded from the cSAC. This is an unintentional boundary error, as the

1929 shoreline boundary (usually the lower edge of the saltmarsh) was used as the cSAC boundary in this small inlet. Using this boundary has excluded the intertidal saltmarsh habitats (situated landward of this boundary). Using the high water boundary would have included most of the saltmarsh habitat and the cSAC boundary switches to the high water boundary further along the shoreline. The rectification between the 2000 aerial photo and the 1929 6 inch map is also poor (10 m error).

3 HABITATS

3.1 General description

The only Annex I habitat found at this site is Atlantic Salt Meadows (ASM) (Table 3.1) and this surrounds the bay, varying in width. The saltmarsh develops into a narrow band towards the outer parts of the bay (Hoban's Hill headland) and eventually grades into a cobble/pebble beach shoreline. The outer parts of the saltmarsh are eroded and there are patches of mosaic habitat with saltmarsh and rocky shoreline. A small stream/drain flows into the eastern side of the bay and divides the saltmarsh into two sections (north and south). A small 'island' within the bay also contains ASM. There are eroded saltmarsh cliffs at the seaward edge of the saltmarsh (0.3-1 m high). The northern seaward edge of the saltmarsh is highly fragmented. The bay contains intertidal sand and mudflats at the seaward edge of the saltmarsh. There are some mosaics of rocky/muddy substrates in the intertidal area with large patches of brown algae.

Fences generally mark the landward boundary of the saltmarsh and divide the intertidal shoreline from the terrestrial improved grassland. Some of the fences are built on old stone walls or low stony embankments. Some of the saltmarsh has patches of Twitch (*Elytrigia repens*) -dominated grassland at the landward transition. Some of this could be classed as saltmarsh (CM2) but this plant community is not considered to be part of the ASM Annex I habitat (*Glauco-Puccinellietalia maritima*). Twitch-dominated grassland is situated along the strandline and may spread below the high water mark. However, it can spread significantly above the high water mark. Improved grassland in fields surrounds the north and south of the site. The saltmarsh extends eastwards back to the minor road. There is some improved grassland between the road and saltmarsh. Part of the saltmarsh in the

south-eastern section, adjacent to the road, has been infilled since the 2000 aerial photo was taken.

Table 3.1. Area of EU Annex I habitats listed at Caraholly South.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	1.68
	Total	1.68

3.2 Atlantic salt meadows (H1330)

This habitat is dominated by mid-upper saltmarsh communities. Some zonation of plant communities is present and this is dependant on elevation. The mid-marsh community is dominated by Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*) with occasional Sea Milkwort (*Glaux maritima*), Sea Arrowgrass (*Triglochin maritimum*), Sea Aster (*Aster tripolium*) and Common Saltmarsh-grass (*Puccinellia maritima*). Higher up the saltmarsh the vegetation is dominated by increasing amounts of Red Fescue (*Festuca rubra*) and Saltmarsh Rush (*Juncus gerardii*) in addition to the other species mentioned above. Greater Sea-spurrey (*Spergularia media*) is also present.

The lower saltmarsh boundary generally contains small tussocks or mounds dominated by Common Saltmarsh-grass. Other species present include frequent Sea Plantain and Sea Aster, and occasional Lax-flowered Sea Lavender (*Limonium humile*), Sea Pink, Glasswort (*Salicornia* sp.) and Greater Sea-spurrey. There are only small amounts of internal zonation around the small salt pans on the marsh. A pioneer zone dominated by Glasswort and/or Common Saltmarsh-grass is absent

The northern side of the saltmarsh contains a series of low ridges. The vegetation on the top of some of the ridges is transitional with species such as Twitch, Silverweed (*Potentilla anserina*) and Curled Dock (*Rumex crispus*). Upper saltmarsh vegetation dominated by Red Fescue (*Agrostis stolonifera*) and bands of Creeping Bentgrass lie behind these transitional ridges. Several clumps of Sea Rush (*Juncus maritimus*) are present along the northern side of the saltmarsh in the upper saltmarsh. However, these were too small and scattered to be mapped as Mediterranean salt meadows.

A small island in the bay contains saltmarsh. An eroded saltmarsh cliff is present around the edges of the island (0.5-1 m high). This island has salt pans that contain pebbles. The vegetation is dominated by the mid-marsh Sea Pink and Sea Plantain plant community. Other species include Sea Aster, Glasswort, Common Sea-blite (*Suaeda maritima*), Lax-flowered Sea Lavender (*Limonium humile*), Sea Arrowgrass, Sea Milkwort and Common Saltmarsh-grass. There is some plant zonation present with a fringe of Common Saltmarsh-grass and Lax-flowered Sea Lavender around the edges. A higher ridge on the island contains vegetation dominated by Red Fescue. Small clumps of Sea Rush are present. This saltmarsh is ungrazed and the sward height is 0.2-0.4 m high.

The narrow band of saltmarsh located along the outer northern and southern boundaries eventually grades into a shingle/pebble bank. This is vegetated by Common Sea-blite and Spear-leaved Orache (*Atriplex prostrata*). This is not classified as saltmarsh vegetation as the substrate is rocky. The saltmarsh is represented by a narrow band of Common Saltmarsh-grass with frequent Sea Plantain and Lax-flowered Sea Lavender. Orache sp. is present along the upper boundary as the saltmarsh transitions to a band of pebbles/cobbles between the saltmarsh and the terrestrial vegetation on the bank.

The saltmarsh topography is poorly developed and this is due to the small size of the site. There are few creeks draining the saltmarsh, although small pans are frequent in places. Some of the pans are quite deep and this may be related to poaching in the past. The seaward edge of the saltmarsh is relatively badly eroded in places. This may be poaching induced. The saltmarsh cliff varies in height between 0.3-1 m high. There are some sections where saltmarsh has re-established at the base of the saltmarsh cliff. There are no signs from a comparison of the aerial photo and the GPS points that saltmarsh extent has been reduced.

The northern side of the saltmarsh is currently not grazed significantly. However, there are signs of severe poaching particularly along the seaward edge and in the lower saltmarsh zone. The sward height varies between 5-30 cm and plant sizes are typical. This indicates that sheep are not grazed on this site and grazing is by cattle, although none were present on the site during the survey. The poaching has exposed

small amounts of bare substrate in places (1-5%). This increases to 10% in some heavily damaged areas. The southern saltmarsh is grazed.

4 IMPACTS AND ACTIVITIES

There are several different activities on this site (Table 4.1) but the main activity is cattle grazing. The activity codes used in Table 4.1 are given in brackets in the following text. Cattle were not present on the site at the time of the site visit and the sward height indicated that there had been some time since the site was grazed (perhaps 1 month). The sward height was generally between 5 and 30 cm but the grazing has caused poaching (143). This has caused damage in the past and the erosion along the seaward edge looks to be poaching induced. Poaching along the southern side is minor.

A small amount of the saltmarsh (< 0.05 ha) has been infilled recently (800). Most of the infilling has been carried out on the adjacent improved grassland. Telegraph poles cross the bay (Bawn Strand) with one pole present on saltmarsh (511). Some of the saltmarsh seems to be disturbed in the past with one drain/creek being infilled (803). Tracks leading from an adjacent fields cross the saltmarsh and access the shoreline (501).

Activities adjacent to the site include farming, with improved grassland dominating the surrounding areas (120, 140). There is a minor road (502) close to the edge of the saltmarsh and bay, and several houses are scattered in the area around the bay (403). The site was also used for equestrian leisure activities with several horse riders accessing the intertidal mud and sandflats to exercise horses (622).

Table 4.1. Intensity of various activities on saltmarsh habitats at Caraholly South.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	140	C	0	1.68	Inside
1330	143	B	-1	0.5	Inside
1330	501	C	-1	< 0.1	Inside
1330	511	C	-1	< 0.01	Inside
1330	800	C	-1	0.05	Inside
1330	120	C	0	1.68	Outside
1330	140	C	0	1.68	Outside
1330	403	C	0	1.68	Outside
1330	502	C	0	1.68	Outside
1330	602	C	0	< 0.01	Outside

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, this site has an *unfavourable-inadequate* conservation status (5.1). Most of the saltmarsh has been damaged light-moderately by cattle poaching with some heavily damaged localised areas. A small area has been infilled recently. The overall conservation status is assessed as unfavourable-bad as most of the saltmarsh habitat is excluded from the adjacent cSAC. This is likely to affect the future prospects of the site and the site may be vulnerable to further infilling in the future.

A comparison of the 2000 aerial photo to the 1929 6 inch map indicates that this site is relatively stable and there has not been much accretion or erosion during this period. There are signs of erosion and accretion around the seaward edge of the saltmarsh, but has not affected extent significantly.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor-moderate. The southern side of the bay is adjoined by moderately sloping land close to the edge of saltmarsh and the prospects for migration are poor. However, the land to the north and east of the bay is lower-lying

and a moderate sea-level rise will inundate some of this area depending on the topography.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Caraholly South..

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. Even though there are signs of erosion along the seaward edge, there are no indications of any loss of habitat due to erosion at this location. There has been some accretion and subsequent saltmarsh growth along part of the saltmarsh cliff on the site. Some of the saltmarsh is likely to have been destroyed by infilling of construction waste. However, the area affected is likely to be less than 3% of the total saltmarsh extent.

5.2.2 Habitat structure and functions

The structure and functions of the ASM area assessed as *unfavourable-inadequate*. Four monitoring stops were carried out on this site and three passed and reached all their targets. Stop 2 failed due to significant erosion close to the saltmarsh edge. This erosion is likely to be poaching-induced. Most of the saltmarsh is affected by poaching to some extent (low-moderate levels) but the damage caused was not significant enough or created significant amounts of bare substrate to fail the other stops. Stop 2 is typical of the damage along much of the saltmarsh edge but the heavily damaged areas do not dominate and this stop is representative of the level and extent of the damage. The other attributes reached all their targets. The species diversity was typical of this habitat and several plant communities were present with zonation dependant on elevation. The pioneer and lower saltmarsh communities were more limited compared to other sites. This can be related to the erosion and damage

along the seaward edge. There are relatively few creeks present on this site but this can be related to the relatively small size of the saltmarsh habitat. Some of the salt pans have also been damaged by poaching.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment is based on the fact that most of the saltmarsh habitat is excluded from the SAC and is therefore not protected from activities such as infilling. This assessment also assumes that the current management activities and level of impacts continue in the near future. Cattle grazing, although the intensity is low-moderate, is causing some poaching-induced erosion. There is no conservation plan available for the coastal habitats in this SAC.

6 MANAGEMENT RECOMMENDATIONS

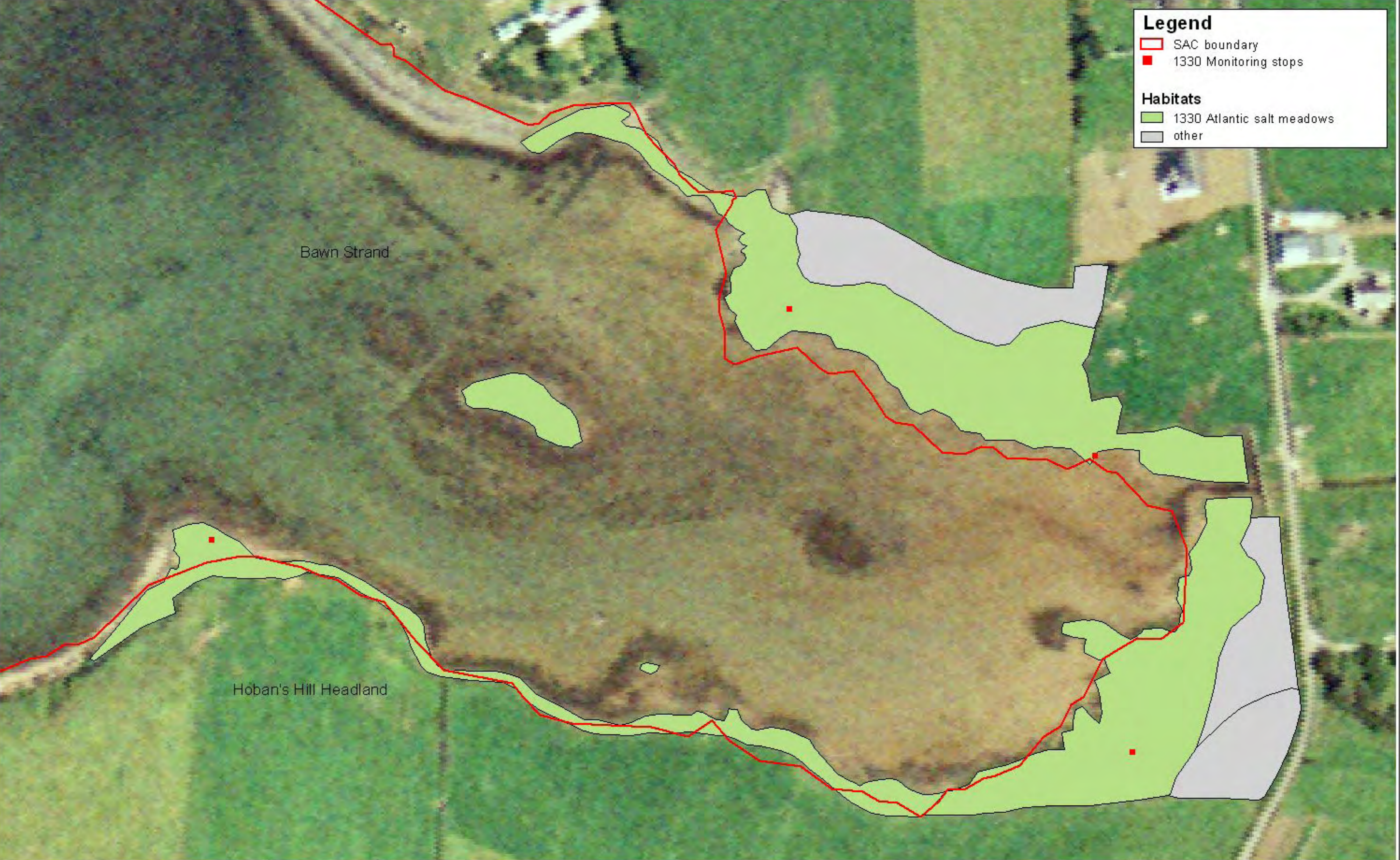
There are no management recommendations as most of the site is outside the cSAC. A boundary change is required to protect the Annex I habitat present at this site.

Legend

- SAC boundary
- 1330 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- other



Bawn Strand

Hoban's Hill Headland



**Saltmarsh
Monitoring Project**

Caraholly South

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)

Míreanna leoraíneacha ar an t-earscail seo ach níl garshuíomhach ginearálta. Féadfaidís bheith in éirí le athrannamh ar leoraíneacha na goeantair comharthaí fe. Macasárthaí d'ádhair na Gúillthe arachta. Orlonáil le dteal ón Rialtas. (Cealtúnar Ulmh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0017**
Map produced by: **SMP 2006**
Map Version: **1**



Scale: 1:1414



Dooaghtry

1 SITE DETAILS

SMP site name: Dooaghtry	SMP site code: SMP0010
Site name (Curtis list): Dooaghtry	CMP site code: 108
NPWS Site Name: Mweelrea/Sheeffry/Erriff Complex	Site No: (Curtis list): 82
NPWS designation cSAC: 1932 pNHA: 1932	Dates of site visit 12/07/2006
County: Mayo	MPSU Plan: old version
6 inch Map No: Ma105	Discovery Map: 37 Grid Ref: 075760, 268190
	Aerial photos (2000 series): 02385-b, 02385-c, 02386-c, 02453-b
Annex I habitats currently designated for Mweelrea/Sheeffry/Erriff Complex cSAC: Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Saltmarsh type: Sandflats	Substrate type: Sand

2 SITE DESCRIPTION

Dooaghtry is located at the foot of Mweelrea Mountain, about 10 km south-west of Louisbergh in south-west County Mayo. The site is also located near the northern side of the mouth of Killary Harbour. The saltmarsh is part of a larger coastal system of significant conservation value, which includes machair, sand dune habitats, coastal lagoon, freshwater lake and freshwater marsh. The machair and sand dune system were surveyed by the Coastal Monitoring Project in 2006. The vegetation of Dooaghtry has been surveyed in the past (Bekkers *et al.* 1976, Crawford *et al.* 1996) along with surveys of many of the other habitats. A vegetation map of the saltmarsh is available from Crawford *et al.* (1996) survey. The coastal habitats occur adjacent to wet grassland, wet and dry heath and blanket bog that extends up the steep slopes towards the upland areas that extend up Mweelrea Mountain.

There have been significant changes to the seaward side of Corragaun Lough and the channel connecting it to the sea since the 1920s. The Mweelrea/Sheeffry/Erriff Complex cSAC conservation plan noted that up to half the lough (actually classified as a lagoon) has been infilled due to accretion. This has affected saltmarsh and other vegetation communities that are located in this area. This area has the appearance of being unstable or in transition at present as the channel is still shifting and sand banks

are still accreting. This action (coupled with wind erosion) has created significant areas of pioneer saltmarsh vegetation.

The Annex I habitat Atlantic salt meadows (ASM) present at this site is listed as a qualifying interest for this cSAC. However, a second Annex I habitat Mediterranean salt meadows (MSM) is also present at Dooaghtry. Nearly all of the saltmarsh habitat area is located within the boundary of Mweelrea/Sheeffry/Erriff Complex cSAC. There is a minor area (0.1 ha) excluded from the northern section due to an inappropriate boundary line.

This site is accessed by minor roads via Killadoon that lead to extensive beaches at Trawleckachoolia and Corragaun. There are car-parks at the end of both roads.

3 HABITATS

3.1 General description

This is a moderately sized saltmarsh that is divided into two sections (Table 3.1). The main section of saltmarsh occurs to the south-east of Dooaghtry machair (Trawleckachoolia Bay). A small sheltered plain at the back of the bay has developed saltmarsh. This area is mainly dominated by Atlantic salt meadows (ASM) (1330) on a sandy substrate. There is a thin band of Mediterranean salt meadow habitat (MSM) (1410) along the back of the saltmarsh. Clumps of Sea Rush (*Juncus maritimus*) are scattered through the ASM but are most common closer to the back of the saltmarsh. There are several areas mapped as mosaics between MSM/ASM, where there are frequent small clumps. A stream flows from the north-west along the seaward side of the saltmarsh and meets a second stream/river along the south-east side. This second stream enters the back of the saltmarsh at the eastern corner and cuts a channel close to the southern boundary. A large sandy beach is present at the front of the bay. This area of saltmarsh is enclosed by steeply sloping land and there is a sudden transition to terrestrial habitats. There is a narrow band of freshwater marsh/wet grassland vegetation with patches of Yellow Flag (*Iris pseudacorus*) along the landward boundary. There are occasional clumps of Sea Club-rush (*Bolboschoenus maritimus*) in this transitional zone. Several exposed rock outcrops jut into the saltmarsh.

Saltmarsh also occurs around the seaward side of Corragaun Lough. This area of saltmarsh occurs to the east of the Dooaghtry machair and sand-dune system. The saltmarsh is dominated by ASM. It is present on both sides of the entrance/outflow from Corragaun Lough with the largest area being located to the south. The largest section of saltmarsh is part of a large flat coastal plain and there is a gradual transition to machair vegetation communities towards the west. The saltmarsh plain (and transition to machair) has a sand-based substrate and geomorphologically probably has closer affinities to machair than to traditional saltmarsh. Wind-assisted erosion and accretion of sand is important in this area and probably is a factor accounting for the lack of salt pans in the saltmarsh plain. This area is badly affected by overgrazing. The saltmarsh plant communities found in this area differ from traditional saltmarsh zones and this is probably related to the mode of development and to the disturbance from overgrazing.

There are generally narrow transitions to wet and dry grassland, wet and dry heath, rock outcrops and blanket bog to the landward side of the saltmarsh on moderate to steep slopes along the boundaries of the northern section. The appearance of species such as Daisy (*Bellis perennis*), Birdsfoot (*Lotus corniculatus*), Black Bog-rush (*Schoenus nigricans*), Soft Rush (*Juncus effusus*) and Sweet Vernal Grass (*Anthoxanthum odoratum*) mark some of the transitions to these terrestrial habitats.

Table 3.1. Area of EU Annex I habitats listed at Dooaghtry.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	17.77 ¹
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	1.17 ²
	Total	18.94

¹ this total includes 75% of the 1330/1410 mosaic and 50% of the 1330/coastal grassland mosaic.

²this total includes 25% of the 1330/1410 mosaic.

3.2 Atlantic salt meadows (H1330)

3.2.1 Southern Section

The two main areas of saltmarsh are dominated by this habitat but are distinctly different. The southern section contains well-developed ASM. Sheep grazing has created a very low sward with miniature versions of salt marsh plants occurring. However, species diversity is relatively high. The vegetation is dominated by mid-

high zone species and there is some zonation evident. There is a band of vegetation at the seaward side of the saltmarsh that is dominated by Saltmarsh Rush (*Juncus gerardii*) and Sea Milkwort (*Glaux maritima*). This zone also contains frequent Sea Pink (*Armeria maritima*) and Red Fescue (*Festuca rubra*), and occasional Creeping Bentgrass (*Agrostis stolonifera*), Sea Plantain (*Plantago maritima*), Buck's-horn Plantain (*Plantago coronopus*), Long-bracted Sedge (*Carex extensa*), Sea Arrowgrass (*Triglochin maritimum*) and Common Saltmarsh-grass (*Puccinellia maritima*). This zone may be on a low ridge with the ASM being dominated by a Sea Pink/Sea Plantain-dominated sward behind the ridge. This zone also contains many of the above species. There is some internal saltmarsh zonation along the edges of creeks and salt pans. Here a lower saltmarsh zone is present, dominated by Common Saltmarsh-grass and Sea Milkwort. Some of the salt pans contain pioneer vegetation with frequent Annual Sea-blite (*Suaeda maritima*), Sea Milkwort and Common Saltmarsh-grass. Some of these pans are badly poached and disturbed. Small clumps of Sea Rush are scattered through the ASM area. Some of the larger clumps are mapped as MSM. The sward height is fairly uniform but is varied in the Sea Rush (MSM) dominated areas. Notable absences from the plant flora include Lax-flowered Sea Lavender (*Limonium humile*) and Glasswort (*Salicornia* sp.).

This main section has an excellent creek and salt pan structure. The salt pans at the front of the marsh contain sand and pebbles. Mud and sand is present in the creeks. There is a saltmarsh cliff at the front of the marsh with some eroded sections. A stream flows along the edge of the saltmarsh cliff.

A small area of beach adjacent to the southern area is being colonised by Common Saltmarsh-grass. This is a transient pioneer saltmarsh zone that probably appears and disappears depending on the local geomorphological cycles and the movement of the sediment along the seaward edge of the saltmarsh.

3.2.2 Northern Section

The northern area of saltmarsh is mainly located between Dooaghtry sand-dune system and Corragaun Lough. The main area of saltmarsh vegetation is located on the southern side of the outflow from Corragaun Lough. This area of saltmarsh has developed on a sandy plain and there is a natural transition to machair at the western side. This area has been badly damaged by sheep overgrazing and vehicle tracks.

Saltmarsh vegetation is also present on the northern side of the channel, though in smaller amounts. The vegetation is dominated by Sea Plantain, Saltmarsh Rush and Sea Milkwort. Other species present include Common Saltmarsh-grass, Red Fescue, Sea Pink, Sea Plantain, Sea Arrowgrass, Creeping Bentgrass, Brookweed (*Samolus valerandi*) and Buck's-horn Plantain. Many of the damaged areas have the appearance of pioneer vegetation because they are disturbed. The heavy grazing has created a low close-cropped sward with frequent bare ground cover. There are several sandy channels and large pools along the eastern side that contain Spike-rush sp. (*Eleocharis* sp.). The saltmarsh topography is poorly developed in this area with few salt pans and creeks. There is one channel acting as an outflow to a stream that acts as a creek draining the largest area.

There are significant amounts of bare sand cover in the badly damaged areas. However, the northern section also contains areas of pioneer saltmarsh vegetation on sand along the Corragaun Lough channel and these patches contain naturally occurring bare sand cover. This whole area seems to be in transition and several large blowouts have appeared along the channel since the 2000 aerial photo. The channel is shifting and accreting bare sand banks that are being colonised by saltmarsh vegetation. Wind erosion is probably also a significant factor in this area. These recently vegetated areas are also more vulnerable to damage from overgrazing. The vegetation is dominated by Common Saltmarsh-grass and Sea Milkwort. There is occasional Buck's-horn Plantain. There are frequent low hummocks containing Sea Pink.

The transitional area to machair contains small raised hummocks with machair vegetation interspersed with ASM saltmarsh vegetation on the lower areas. Eventually the low hummocks begin to coalesce and machair becomes dominant. The change in vegetation from saltmarsh to machair or other coastal grassland is not distinctive.

Saltmarsh is also present on the northern side of the lake and along the channel. Small patches of saltmarsh have developed between rocky outcrops, where the topography allows. The ASM vegetation on this side is similar, being dominated by Common Saltmarsh-grass and Sea Milkwort. A similar closely-cropped sward has developed. Grazing is moderate-heavy in this area. Clumps of Sea Rush occur on

peat and the saltmarsh vegetation quickly transitions to wet grassland with Soft Rush and Black Bog-rush on peat between these rock outcrops. Some zonation is evident in the saltmarsh vegetation on the larger areas with bands dominated by Saltmarsh Rush, Red Fescue and Creeping Bentgrass developing along the landward terrestrial boundaries. Creek and pan formation is also poor on this side of the channel. Creeks only drain some of the larger areas and several stream channels drain some of the other areas.

3.3 Mediterranean salt meadows (H1410)

This habitat is present in the southern section and is mainly located along the landward boundary. This habitat is also relatively diverse. The larger clumps have been mapped as MSM. There are several areas mapped as mosaic between MSM/ASM, where there is frequent small Sea Rush clumps interspersed amongst ASM vegetation. These are dominated by a dense fairly uniform sward of Sea Rush. Some of the larger clumps contain small patches of ASM but these cover less than 5% of the total area. The small ASM areas within the Sea Rush clumps are also well grazed with a low sward. Other species that occur frequently amongst the Sea Rush include Red Fescue, Sea Pink, Autumn Hawkbit (*Leontodon autumnalis*), Sea Plantain and White Clover (*Trifolium repens*), along with Buck's-horn Plantain, Saltmarsh Rush, Sea Aster (*Aster tripolium*), Common Scurvygrass (*Cochlearia officinalis*), Creeping Bentgrass, Parsley Water-dropwort (*Oenanthe lachenalii*), Sea Milkwort and Sand Sedge (*Carex arenaria*). The MSM does not contain many salt pans.

Several patches of Sea Rush are located along the northern side of the channel connecting Corragaun Lough to the sea.

4 IMPACTS AND ACTIVITIES

4.1.1 Southern section

There are several different activities at this site (Table 4.1). The activity codes used in Table 4.1 are given in brackets in the following text. The main activity is grazing and this varies significantly on the two different main areas. The southern section is grazed by sheep and has created a distinctive very low sward (140). However, the

vegetation is still diverse and the plant ground cover is high. There are only small minor areas of poaching and overgrazing in the southern section. The Sea Pink zone has some low light poaching. There is some minor cattle poaching on the southern area (143).

A small area of saltmarsh (0.25 ha) in the southern section has been covered by a car-park (490), which was built by Mayo County Council. This is located at the north-west corner of the saltmarsh. The saltmarsh was previously used as a car-park and for access to the beach (Mweelrea/Sheeffry/Erriff Complex cSAC conservation plan). The creation of a car-park was one of the objectives listed in the conservation plan. It was hoped that the development of this car-park will lower the impact of car-parking on the remaining saltmarsh. There are still some wheel ruts (501) on the saltmarsh, but these affect a very small area. There is a line of telegraph poles across the southern section (511).

A comparison of the 1929 6 inch map and the 2000 aerial photo indicates there a small area (0.12 ha) at the south end of the saltmarsh (Trawleckachoolia Bay) has been eroded away (900). This has probably been caused by shifts in the stream channel at the southern end, and this has increased erosion along the seaward edge. However, there has been some corresponding accretion (910) and new development of saltmarsh (0.14 ha) on the opposite side of the channel along the southern side of Trawleckachoolia Bay.

4.1.2 Northern section

The northern section around seaward side of Corragaun Lough is badly affected by overgrazing via sheep (142) (Table 4.1). The damage is being made worse by frequent wheel ruts (501). An access track infilled with hardcore is located along the edge of the transition area (501).

A comparison of the 1929 6 inch map and the 2000 aerial photo indicates that there has been significant amounts of accretion and saltmarsh (and other habitats) creation (6.1 ha) at the seaward end of Corragaun Lough. This has occurred on both sides of the channel. This new saltmarsh area is in transition due to shifts in the channel bed, wind erosion and further accretion of sediment from the beach and sand flats. A

comparison of the 2000 aerial photos to the 2006 fieldwork indicates that some of the relatively 'new' area has actually been eroded since 2000 (0.3 ha).

Table 4.1. Intensity of various activities on saltmarsh habitats at Dooaghtry.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
13s	140	C	0	18.94	Inside
1330	143	A	-1	13	Inside
13s	490	A	-2	0.25	Inside
1330	501	A	-1	5	Inside
1330	511	C	0	< 0.1	Inside
1330	900	C	0	1	Inside
1330	910	C	0	1	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 this site is poor (Table 5.1). A conservation plan is available for this cSAC. The current main activity is sheep grazing and the intensity of this activity is high. However, the two main areas of saltmarsh have significantly different status. The southern section has a favourable conservation status while the northern section is unfavourable. No Common Cordgrass (*Spartina anglica*) was recorded at this site.

The Mweelrea/Sheeffry/Erriff Complex cSAC conservation plan noted that overgrazing is a problem for much of the site but only localised areas of the coastal habitats (saltmarsh and machair) were overgrazed. This seems to indicate that damage from overgrazing has worsened during this period (1999-2006). One of the management objectives is to manage grazing levels.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor-moderate. The southern section has very limited scope for migration of saltmarsh habitats landward in response to sea-level rise. This is because of steeply sloping land at the terrestrial boundaries. Much of the saltmarsh is enclosed by rocky outcrops. In the northern section there is a significant transition

area from saltmarsh to machair south to the Corragaun Lough channel. This will allow some migration of saltmarsh, but at the expense of machair. The rest of the saltmarsh is enclosed by moderately or steeply sloping land so the opportunities for migration are poor. The northern section is likely to change in the short-term in response to further accretion in Corragaun Lough and its channel. Changes in the sand-dune system will also have an impact on the saltmarsh.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Dooaghtry.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

Overall, the extent of this habitat is assessed as *favourable*. A small area of habitat (~0.15 ha estimated from 2000 aerial photo) has been lost due the construction of a car-park but this is only 3% of the overall area of the southern section and 0.8% of the total ASM habitat. A small area of habitat in the southern section has also been lost due to natural erosion. There has been accretion in both sections, but particularly along the Corragaun Lough channel, since 1929.

A comparison of the 2006 habitat map to 1996 habitat map (Crawford *et al.* 1996) shows some changes in extent (and classification) to the northern section during this period. A relatively large area of saltmarsh (ASM) that was located north of the road (and car park) on the 1996 map is now significantly reduced. A large part of this area has now been classified as machair, dry grassland and wetland habitats (see CMP 2006 survey). A large section of the saltmarsh plain to the south of the Corragaun Lough channel was previously classified as mesotrophic grassland (MGXI) in 1996

but is now classified as ASM. Some land to the south-east of the fence marking the south-east boundary was classified as saltmarsh on the 1996 map. However the 2006 survey indicates that this area was wet grassland/wet heath. These changes in classification have increased the overall extent of ASM

5.2.2 *Habitat structure and functions*

Overall, the structure and functions of this habitat are assessed as *unfavourable-bad*. The two saltmarsh sections can be assessed separately.

The southern section can be assessed as *favourable*. Four monitoring stops were carried out in this area and they all passed. Sheep grazing has created a characteristic low uniform ASM sward. However, this sward is species rich with most of the characteristic species being present. There is some zonation of ASM saltmarsh vegetation with two main zones (middle-marsh and mid-upper) being present. There was a significant area of pioneer saltmarsh developing on the sandy beach at the western side of the stream. The creek and pan structure is also well-developed. There is also internal zonation of saltmarsh plant communities along the edges of the creeks and pans. Some of the salt pans show signs of poaching but the area involved is minor. There are some small patches of transitional habitats between ASM and terrestrial habitats along the landward boundary, but most of the transitional habitats are located along side the MSM in the southern section.

The absence of Glasswort is notable, but this is probably a natural phenomena. Annual Sea-Blite is present in the lower-pioneer zones along the edges of creeks and within some of the pans in conjunction with Sea Milkwort and Common Saltmarsh-grass.

The northern section can be assessed as *unfavourable-bad*. Seven stops were carried out in this area and five stops failed. The area affected means that the overall status is *unfavourable-bad*. These failed stops were located on both the northern and southern sides of the Corragaun Lough channel. The failed stops failed to reach targets for 90% plant cover and sward height. This damage was caused by heavy overgrazing by sheep and by vehicle wheel ruts. Significant portions (> 10%) of the ground cover are bare with exposed sand or a green algal mat present. The surface is heavily churned up in places. Species diversity however, has not been affected significantly and the

failed stops are generally as diverse as the passed stops. This section did not have a well-developed saltmarsh topography, although the lack of salt pans is probably a natural phenomena. The saltmarsh vegetation to the south of the Corragaun Lough channel is generally quite uniform with some variation towards the landward boundaries where there are transitions to other zones. There is also a transitional vegetation community present between the saltmarsh and the machair.

A large section of the saltmarsh/machair plain to the south of the Corragaun Lough channel was previously classified as containing a *Juncus bufonius-Agrostis stolonifera* mesotrophic grassland community (MG10) in 1996. This area is now ASM saltmarsh. The area mapped as a transitional machair-saltmarsh habitat was previously mapped as saltmarsh in 1996. It is possible that the vegetation has changed between 1996-2006, as this area is so disturbed. However, differences due to habitat classification between the two surveys should not be ruled out as the habitats in this area are not distinctive and there are gradual transitions between them.

The overgrazing damage is exacerbated by the fact that a significant part of this area seems to be in natural transition due to wind-assisted accretion in the Corragaun Lough channel and on the adjacent coastal areas. This is affecting the plant communities that are colonising the newly accreting areas. The saltmarsh plain (and transition to machair) to the south of the Corragaun Lough channel has a sand-based substrate and geomorphologically probably has closer affinities to machair than the traditional saltmarsh. Wind-assisted erosion and accretion of sand is important in this area and probably is a factor accounting for the lack of salt pans in the saltmarsh plain. The sand based substrate also means the saltmarsh plant communities are more vulnerable to damage from over-grazing and poaching.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management practises and stocking rates continue in the near future. The current stocking rates and management practises are causing overgrazing, specifically in the northern section.

5.3 Mediterranean salt meadows (H1410)

5.3.1 *Extent*

Overall, the extent of this habitat is assessed as *unfavourable-bad*. This habitat is mainly found in the southern section. A small area of habitat (~0.10 ha estimated from the 2000 aerial photo) has been lost due the construction of a car park on the southern section. This area is only 3% of the overall area of the southern section but is 8% of the total MSM habitat.

5.3.2 *Habitat structure and functions*

This habitat is mainly located in the southern section. Four monitoring stops were carried out in this habitat and they all passed. All targets were reached. Sheep grazing in this area is not having a significant impact on the clumps of Sea Rush. The dense stands of Sea Rush actually protect the other plants from grazing to some extent and species such as Sea Plantain and Red Fescue grow much larger in these clumps. This also increases the overall sward height diversity of the whole saltmarsh. Species diversity within the clumps of Sea Rush are relatively high. There are few creeks and pans within the MSM but this is due to the fact that its area is not extensive and the clumps of Sea Rush are scattered amongst the ASM salt pan and creek topography. The MSM generally is located at the back of the southern saltmarsh area and there are only narrow patches of transitional (brackish and freshwater marsh) habitats before the development of terrestrial habitats, as the slope is relatively steep at the back of the saltmarsh.

Small patches of MSM that are located along the Corragaun Lough channel have been negatively affected by overgrazing and poaching in this area. This is due to the high level of overgrazing in the overall area.

5.3.3 *Future prospects*

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management practises and stocking rates continue in the near future. The current sheep stocking rates are not having a significant impact on the Sea Rush dominated (MSM) areas in the southern section.

6 MANAGEMENT RECOMMENDATIONS

Overgrazing in the northern section is the most significant activity affecting the saltmarsh at this site. Sheep stocking rates need to be lowered significantly in the short term and for an extended period to allow the vegetation to recover.

7 REFERENCES

Beckers, A., Brock, T. & Klerkx, J. (1976). *A vegetation study of some parts of Dooaghtry, Co. Mayo, Republic of Ireland*. Thesis, Laboratory for Geobotany, Catholic University of Nijmegen.

Crawford et al. (1996). Machair survey. A Report for NPWS.



Legend

- SAC boundary
- 1330 Monitoring stops
- ▲ 1410 Monitoring stops

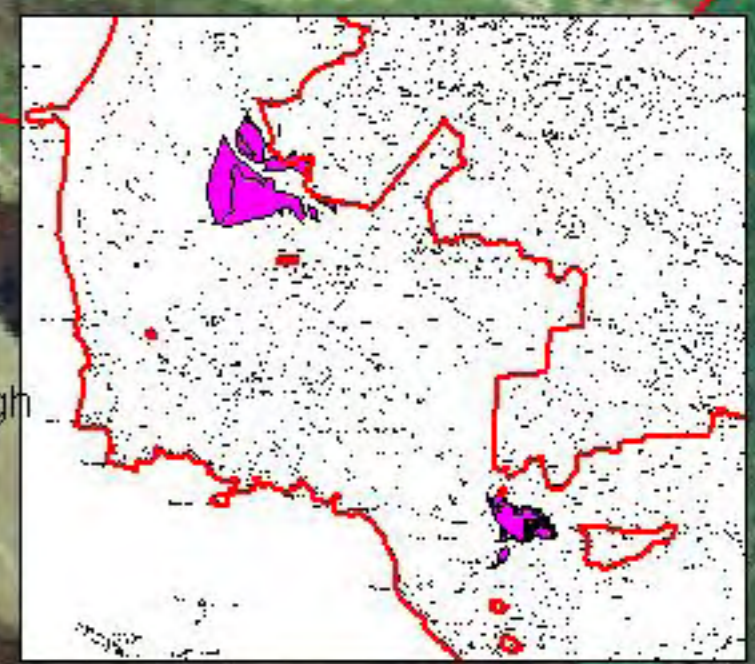
Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/coastal grassland mosaic
- other

sand dunes

machair

Corragaun Lough



**Saltmarsh
Monitoring Project**

Dooaghtry (north) (Map 1 of 2)

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)

Míre na leathneacha ar an karscál seo ach níl garthuomhach ginearálta. Féadfaid sibhréirí na dátaí níos nua ar leathneacha na goeantar comharthaí le Machair na h-Éireann na Gailtíearachta. Ordúnáil le déal ón Rialtas. ©Cealtúnar Ulmh, 5953




**Mweelrea/Sheefry/Erriff complex
cSAC (001932)**

SMP Code: **SMP0010**
Map produced by: **SMP 2006**
Map Version: **1**








Trawleckachoolia Bay

Legend

-  SAC boundary
-  1330 Monitoring stops
-  1410 Monitoring stops

Habitats

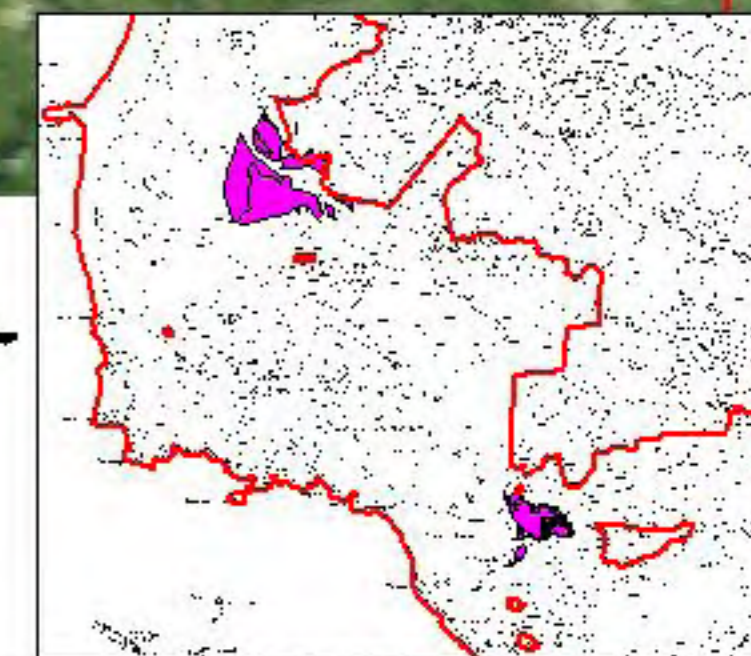
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1330/1410 mosaic
-  1330/coastal grassland mosaic
-  other

Dooaghtry (south) (Map 2 of 2)

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)

Mí na leathneacha ar an t-earcail seo ach níl garshuímhach ginearálta. Feidh ar bheith na leathneacha ar an t-earcail seo ach níl garshuímhach ginearálta. Míchairníal d'ádh na cúlthearachtaí. Ordainis le d'eal ón Rialtas. (Cealtúnar Ulmh, 5953)

Mweelrea/Sheefry/Erriff complex cSAC (001932)



SMP Code: SMP0010
Map produced by: SMP 2006
Map Version: 1

0 30 60 90 120 150 180 Meters

Scale: 1:1762



**Saltmarsh
Monitoring Project**

Elly Harbour

1 SITE DETAILS

SMP site name: Elly Harbour	SMP site code: SMP0115
Date of site visit 25/07/2008	CMP site code: N/A
SM inventory site name: Elly Harbour	SM inventory site code: 50
NPWS Site Name: Mullet/Blacksod Bay Complex cSAC	
NPWS designation cSAC: 000470	MPSU Plan: none available
pNHA: 000470	SPA: 004037
County: Mayo	Discovery Map: 22 Grid Ref: 064875, 326875
Aerial photos (2000 series): Ma 016	6 inch Map No: O 1167-A,B,C,D
Annex I habitats currently listed as qualifying interests for Mullet/Blacksod Bay Complex cSAC: H1310 <i>Salicornia</i> and other annuals colonizing mud and sand	
Other SMP sites within this SAC/NHA: Doolough, Bunnahowan, Saleen Harbour	
Saltmarsh type: Bay	Substrate type: Sand

2 SITE DESCRIPTION

Elly Harbour saltmarsh is located on the Belmullet Peninsula in north-west Co. Mayo. The site is located along the east side of the peninsula, 8 km south-west of Belmullet Town. This site borders the northern part of Blacksod Bay. Elly Harbour is a small sheltered bay where the peninsula becomes quite narrow. There is a strong oceanic influence on the Belmullet Peninsula but this site is somewhat sheltered being on the east side. The landscape of this area is low-lying and is dominated by coastal habitats. This part of the peninsula is quite narrow (1.65 km) and the site is situated adjacent to extensive fixed dune habitat with tall sand dunes present. There is some improved grassland and wet grassland also present in the area. This area is sparsely populated with scattered dwellings along the main road (R313) that accesses the southern end of the peninsula and divides the site into two sections.

The saltmarsh is divided into two main sections by the main road. Saltmarsh east of the road is located along the shoreline of a small sheltered half-mooned bay called Elly Harbour. This saltmarsh has developed behind a sand dune/shingle barrier. Saltmarsh west of the road has developed around the shoreline of Leam Lough. This area is not actually a lough but a circular bay that drains at low tide to expose extensive sandflats. The surface of Leam Lough is somewhat higher in elevation (0.6 m) than the shoreline of the outer bay, so it is only completely inundated by spring tides. The bay is connected to the other section of saltmarsh by one main channel that drains under the road and also drains the eastern section before entering Elly Harbour. The development of saltmarsh around Leam Lough is an unusual and notable conservation feature of this site.

The majority of the site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. This is a large coastal site that includes the northern part of Blacksod Bay, coastal habitats on both sides of the peninsula and coastal habitats along the mainland. Three Annex I saltmarsh habitats are present at this site, *Salicornia* flats, Atlantic salt meadows (ASM) and

Mediterranean salt meadows (MSM). *Salicornia* flats (1310) are the only Annex I saltmarsh habitat listed as a qualifying interest for this cSAC. Saltmarsh is frequently found in many of the sheltered coastal sites around this cSAC. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project (Saleen Harbour on the peninsula to the north of this site, Bunnahowan and Doolough along the mainland). A fourth site listed on the SM inventory, Gweesalia, was not surveyed during the SMP. All of saltmarsh habitat mapped at this site is located within the SAC boundary.

Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland. One species of note that has been recorded in this area is Common Cordgrass (*Spartina anglica*) (Preston *et al.* 2002). There is one isolated record in north-west Mayo in a 10 km square positioned over the southern end of the peninsula. However, this species was not recorded on the Bellmullet Peninsula or in north-west Mayo during the SMP.

The site was easily accessed via an adjacent main road that is positioned close to the shoreline. The area east of the road and north of the drainage channel could not be accessed due to livestock on this part of the site.

3 SALTMARSH HABITATS

3.1 General description

This site is divided into two main sections by the main road. The largest area of saltmarsh is located to the east of the road. This saltmarsh has developed on peat and is sheltered by a sand/shingle barrier. The substrate is sandier towards the southern end and this influences the vegetation types that have developed in this area. This area contains the MSM habitat, which dominates the section north of the main drainage channel. The southern section is flooded via tidal inundation from the new drains along the road, so the saltmarsh structure has been modified.

This area has been significantly modified by old land use, cultivation and drainage and there are still signs of peat cutting with old face-banks present. Some of the saltmarsh is likely to have been created by peat cutting, which has lowered the ground level to a level that could be inundated by the tide. Some of the remaining peat-banks are at a higher level and contain boggy-transitional grassland with Glaucous Sedge (*Carex flacca*) and Carnation Sedge (*Carex panicea*) prominent and other upper saltmarsh species such as Creeping Bent (*Agrostis stolonifera*), Buck's-horn Plantain (*Plantago coronopus*) and Autumn Hawkbit (*Leontodon autumnalis*) also present. This type of acid grassland is also found on some naturally occurring mounds within this area. Some of these mounds are vegetated with transitional MSM vegetation with Sea Rush (*Juncus maritimus*) prominent but other species such as Purple Moor-grass (*Molinia caerulea*) and Glaucous Sedge present.

The saltmarsh east of the road has a band of Common Reeds (*Phragmites australis*) along the northern boundary. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. A grassy roadside embankment marks the western boundary of this saltmarsh. There is a natural succession of vegetation from saltmarsh to fixed dune type coastal grassland along the sand barrier that protects this site.

There is a brackish gradient across Leam Lough from the western to the eastern end. Most of the lough contains bare sandflats but there are small patches of Eel-grass (*Zostera* sp.) present in shallow pools. The eastern end has a greater saline influence and greater development of ASM vegetation. There is very little ASM vegetation along the western side of the lough, which is flooded by fewer tides. The western shoreline of the lough is dominated by brackish vegetation (mainly classified as CM2 or non-Annex I vegetation types) with stands of Sea Club-rush (*Bolboschoenus maritimus*) and Common Reed on the shoreline. There are complicated mosaics of brackish vegetation dominated by Sea Club-rush, transitional brackish-wet grassland vegetation and some typical ASM vegetation along this shoreline. Transitional vegetation also develops on low ridges adjacent to the ASM in places with Sea Mayweed (*Tripleurospermum maritimum*), Sow-thistle (*Sonchus* sp.) and Twitch (*Elytrigia repens*) all appearing. The more typical ASM vegetation sometimes is present behind a stand of Sea Club-rush that is spreading on the shoreline. There is notable development of natural successions between the brackish and wet grassland vegetation communities around the lough, which increases the overall diversity of the site. There is a small 'island' or mound present in the eastern side of the lough. This is dominated by rank coastal grassland and has a fringe of ASM around its shoreline.

The eastern side of the lough shoreline has been modified by old land use and the development of the road, although the rest of the shoreline is still fairly intact and unmodified. The south-east sections have been significantly modified by old drainage channels and old peat-cutting. There has led to the creation of small mosaic areas with saltmarsh and terrestrial vegetation intermixed. ASM, transitional and brackish vegetation dominated by stands of Sea Club-Rush are inter-mixed. The saltmarsh and brackish vegetation is associated with the drainage channels and adjacent low-lying areas. The appearance of vegetation dominated by Soft Rush (*Juncus effusus*) and also containing Yellow Flag (*Iris pseudacorus*), Glaucous Sedge, marks the transition to more typical wet grassland (GS4). There is also a small area near the opening of the main drainage channel where there is a mosaic of ASM and small mounds containing dry grassland with species such as Tufted Vetch (*Vicia cracca*), Birdsfoot (*Lotus corniculatus*), Sow-thistle (*Sonchus* sp.) Yorkshire Fog (*Holcus lanatus*) and False Oat-grass (*Arrhenatherum elatius*) present. This topography may have been created by dumping of spoil in the past.

Table 3.1. Area of saltmarsh habitats mapped at Elly Harbour.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.024
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	7.205
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	4.158
	Total	11.387

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A small patch of this habitat has developed on the sand flats in Leam Lough. This pioneer saltmarsh has developed on bare sand on a small raised mound. The habitat is dominated by Glasswort (*Salicornia* sp.) with few other saltmarsh species present apart from a small amount of Common Saltmarsh-grass (*Puccinellia maritima*). There are several other isolated patches on Leam Lough. This vegetation type also appears as a very narrow band (unmapped) in places associated with the lower seaward boundary of the pioneer ASM.

A very small patch of *Salicornia* flats also developed in a large salt pan east of the main road.

3.3 Atlantic salt meadows (H1330)

Several different communities are present within the ASM at this site. The ASM is best developed at the southern end of the eastern section. The main communities present are mid-upper vegetation communities and the zonation of the communities is moderately well-developed with higher communities towards the sand barrier and lower communities towards the road. There is a low sward dominated by Sea Plantain (*Plantago maritima*), Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*). Other species present towards the southern end include Long-bracted Sedge (*Carex extensa*), Sea Milkwort (*Glaux maritima*), White Clover (*Trifolium repens*) and Sea Arrowgrass (*Triglochin maritimum*). This area also contains a large salt pan with development of a small patch of *Salicornia* flats. The ASM also contains some small patches of Sea Rush, (too small to be mapped as MSM). There is some development of low marsh vegetation along the drain adjacent to the road, dominated by Common Saltmarsh-grass and also containing Glasswort and Annual Sea-blite (*Suaeda maritima*). Typical grassy upper marsh vegetation develops on the sand barrier along the upper SM boundary and along the track in this area. There are transitional elements within the upper ASM such as Red Clover (*Trifolium pratense*). The sward heights are low due to light levels of grazing. The saltmarsh topography is well-developed in this area.

Less typical upper saltmarsh ASM develops in places along the western shoreline of Leam lough. The ASM development is quite narrow and brackish vegetation types dominate in this area. There is no real zonation within the ASM into different communities although there is zonation to other vegetation types. The ASM contains Red Fescue, Creeping Bent, Sea Aster (*Aster tripolium*), Saltmarsh Rush, Common Scurvy-grass, Sea Arrowgrass, Common Saltmarsh-grass, Sea Milkwort and Sea Plantain. This ASM has developed on a slight ridge along the shoreline in places, but there are signs of some spread of vegetation onto the sandflats in places. The sward height is generally tall as this saltmarsh is not grazed. There are other more typical patches of Red Fescue dominated upper ASM present in places with White Clover, Sea Plantain and Distant Sedge (*Carex distans*). There are transitional elements within this sward with Curled Dock (*Rumex crispus*) and Sow-thistle present.

There are also signs of brackish influence on the ASM at other locations along the western and northern shorelines with the presence of species like Common Reed and Sea Club-rush spreading into the ASM and Spike-rush sp present. Spike Rush (*Eleocharis* sp.) dominates some ASM vegetation along the northern side of Leam Lough. Saltmarsh Flat-rush (*Blysmus rufus*) is also present in places but is rare.

Pioneer ASM is developing in the north-eastern part of the lough near the main drainage channel. This consists of small low mounds of sand being vegetated by Common Saltmarsh-grass. Other species present include Sea Pink, Sea Plantain, Sea Milkwort, Annual Sea-blite, Sea Aster and Glasswort. This vegetation type is quite open with bare sand dominating cover. This community is associated with a large area of mid marsh vegetation. The mid-marsh vegetation is more established with a fuller fairly flat sward, although it is still immature and the saltmarsh topography is poorly developed, indicating it has only recently formed.

A more typical mid-upper vegetation community develops at the eastern side of the lough in a small mosaic area with low mounds. The ASM is found in the hollows and channels and is dominated by Red Fescue, Sea Plantain and Saltmarsh Rush. Each of these species may

dominate due to the complex zonation within this mosaic area. Some of the ASM along the southern side of the lough is poached and damaged.

3.4 Mediterranean salt meadows (H1410)

The MSM is found on the saltmarsh east of the road. Several vegetation communities are present. There is some patches of Sea Rush found in association with mid marsh vegetation dominated by Sea Plantain and also containing Greater Sea-spurrey (*Spergularia media*), Common Saltmarsh-grass, Sea Aster and Sea Arrowgrass. Other more typical MSM vegetation has developed at a higher level adjacent to the sand barrier. This vegetation type is dominated by Sea Rush and contains frequent Red Fescue and smaller amounts of Saltmarsh Rush and Distant Sedge. MSM at the southern end of this area has moderately well-developed saltmarsh topography. There are some pans and small creeks present within the MSM. The MSM in the other sections has been disturbed significantly by land-use activities in the past, such as cultivation and peat-cutting.

The saltmarsh found to the north of the main drainage channel contains some mosaic areas of ASM and MSM (not mapped) although this area is dominated by MSM. The topography of this area is quite variable and there are several mounds that contain transitional type MSM. This vegetation type can be seen towards the northern side of the saltmarsh where Common Reed is spreading into the MSM in places.

4 IMPACTS AND ACTIVITIES

The main impact affecting this site is grazing (Table 4.1). This site is located in a relatively isolated location so there are few other impacts or activities affecting this site related to land-use, development or amenity use.

A large section of saltmarsh east of the road is grazed by cattle (140). There is some localised damage from poaching within the area north of the main channel (143). A smaller area at the southern end is not grazed. Some of the saltmarsh around the Leam Lough shoreline is grazed but most is not. Fences generally fence off the saltmarsh and the sandflats from the adjacent wet grassland or improved grassland around the bay. However, there are several sections where the saltmarsh habitat extends into the grazed enclosures.

There is a small track extending onto the saltmarsh on the east side of the road. There is access to the shoreline from this track and there has been some infilling (501).

A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos shows that the shoreline of Leam Lough is quite dynamic and there have been some changes during this period. There is some accretion (910) and growth of saltmarsh in the north-eastern end of Leam Lough near to the start of the drainage channel. There are accretion ramps in this area leading to the development of pioneer ASM and *Salicornia* flats. A comparison of the 1995, 2000 and 2005 OSI aerial photos series and the GPS survey points shows that there has been some growth of saltmarsh at this location during this period. There have been smaller changes along the other parts of the shoreline with some expansion of Sea Club-rush dominated stands into the sand flats. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos also shows that there have been some changes to the saltmarsh east of the road. There has been some natural transition (990) of saltmarsh habitats to sand dune and shingle bank habitats along the Elly Harbour shoreline where sand has blown over the barrier and encroached onto the saltmarsh. These changes are visible from a comparison of the 2000 and 2005 aerial photos. The saltmarsh is protected from erosion by this sand/shingle barrier. There is some minor erosion along the main channel draining Leam Lough due to scouring (900).

There are frequent old signs of land use on the saltmarsh with numerous drainage channels (810) and some old peat cutting face-banks (311) in the southwest section. These have modified the former saltmarsh structure. The main Leam lough drainage channel has also been modified to improve drainage. The saltmarsh east of the road also shows signs of modification with old drainage channels, signs of old cultivation (100) old peat cutting face-banks (311) and attempts at land reclamation (802). The road crossing the site was built on an embankment that was probably built across former saltmarsh. The impacts of these activities are not assessed as they occurred prior to the current monitoring period. However, they are still having a residual impact on the structure and development of the saltmarsh habitat.

The main Impacts and activities adjacent to the site are related to agriculture. Improved grassland is grazed (140) and some is also fertilised (120) and cut (102) for cattle fodder. Other impacts and activities include dispersed habitation (403) and roads (502). The agricultural activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Elly Harbour.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1310	910	C	+1	0.024	Inside
1330	140	B	0	3.000	Inside
1330	143	C	-1	0.100	Inside
1330	501	B	-2	0.005	Inside
1330	900	C	0	0.005	Inside
1330	910	C	+1	0.300	Inside
1330	990	C	0	0.050	Inside
1410	140	C	0	3.158	Inside
1410	143	B	-1	1.000	Inside
1410	990	C	0	0.050	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

Elly Harbour is a medium sized saltmarsh with some features of conservation interest. The overall conservation status of this site is *unfavourable-inadequate* (Table 4.1). The saltmarsh topography has been significantly modified in the past by land use practices such as cultivation and peat-cutting and these impacts are having a residual impact on the structure and zonation of the saltmarsh vegetation. Most of the site is in good condition but there is some localised damage caused by cattle grazing. There are no other impacts or activities significantly affecting this site. The presence of saltmarsh, brackish and wet grassland vegetation communities around the Leam Lough shoreline is a feature of notable conservation interest due to the added diversity of these habitats and the complicated zonation and transitions between these vegetation types.

This site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. A NPWS Conservation management plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Elly Harbour.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions, Future prospects		Unfavourable - Inadequate
Mediterranean salt meadows (1410)	Extent	Structure and functions, Future prospects		Unfavourable - Inadequate

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period. Only a small

area of this habitat is present at the site. There are no indications that this habitat was more extensive in the past in Leam Lough.

It should be noted that this is the only surveyed site in Blacksod Bay where this habitat was recorded. *Salicornia* flats was the only saltmarsh habitat listed as a qualifying interest for this cSAC but a very low extent was recorded at the 4 sites within the cSAC that were surveyed as part of the SMP.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. One monitoring stop was carried out in this habitat and all the attributes required for favourable conservation status passed. The presence of this habitat is related to the accretion of sediment near the entrance to the main drainage channel.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are no significantly damaging activities affecting this habitat at this site. The extent of this habitat is likely to be dynamic and related to sedimentation within Leam Lough. There may be losses and gains of habitat related to changes in sedimentation patterns in the future.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period. There actually has been some minor growth of saltmarsh habitat at this site due to accretion at the eastern end of Leam Lough.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Eight monitoring stops were carried out in this habitat and one stop failed. The majority of the ASM is in good condition and the sward cover is generally intact. However, a minor area of the saltmarsh habitat located along the southern side of Leam Lough was damaged by overgrazing and poaching damage. Negative indicators such as high bare mud cover and a disturbed sward cover are present within this small area. Some of the ASM that is grazed on the east side of the road has contains some localised poaching damage. The structure of the ASM to the east of the road has been significantly modified in the past due to last-use activities and this is still having a residual impact on the structure of the habitat.

The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site including some notable brackish communities around the shoreline of Leam Lough. The brackish gradient that is present in the vegetation around this lough is a notable feature of interest. The saltmarsh topography is well-developed in parts of the ASM at this site. The zonation within this habitat is also well-developed. Overall, the sward structure is also quite heterogeneous due to variable grazing levels around the site and a substantial area of ASM is not grazed. There are some natural successional

communities to terrestrial vegetation and other coastal habitats such as fixed dune vegetation on the sand barrier present. There is some recent growth of saltmarsh in Leam Lough and pioneer ASM vegetation is present. This is a positive indicator.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing is the main activity affecting the ASM at this site and this activity only affects a small area of habitat. There is no NPWS conservation management plan available for this site. There is currently an accretional trend in part of the site (Leam Lough) although any growth of saltmarsh in this area may be a short-term gain and may be lost if there are changes in sedimentation patterns.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.4.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. One monitoring stop was carried out in this habitat and it passed. All of the attributes required for the structure and functions of this habitat reached their targets. However, there are some signs of localised poaching damage in the area north of the main drainage channel (no monitoring stops in this area). The MSM is not affected to the same extent by overgrazing as the ASM. The species assemblage of the MSM is typical of this vegetation type. There is some internal zonation within this habitat due to the irregular topography of the saltmarsh east of the main road with mounds, shallow hollows and salt pans present. There is also some development of transitional MSM vegetation with the appearance of species such as Purple Moor-grass, Common Reed and Carnation Sedge in the upper MSM on some of the higher mounds.

5.4.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Localised overgrazing by cattle is the main activity affecting this site but it does not significantly affect the MSM.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

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

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.024	0.024				
2	Spartina swards						
3	1330 Atlantic salt meadow	7.078		7.288			
4	1410 Mediterranean salt meadow	4.136			4.136		
5	ASM/MSM mosaic (50/50)	0.044		0.022	0.022		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic	0.210		0.105			
9	Other (non saltmarsh)	18.603					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	1.563					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	31.658	0.024	7.205	4.158		



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/coastal gld mosaic
- Other Saltmarsh (CM2)
- other
- 1310 monitoring stops
- 1330 monitoring stops
- ▲ 1410 monitoring stops

Doona

1 SITE DETAILS

SMP site name: Doona	SMP site code: SMP0110
Date of site visit 02/10/2008	CMP site code: 117
SM inventory site name: Doona	SM inventory site code: 57
NPWS Site Name: Tullaghan Bay and Bog pNHA	
NPWS designation cSAC: N/A	MPSU Plan: none available
pNHA: 1567	SPA: 4037
County: Mayo	Discovery Map: 22 Grid Ref: 077365, 313501
Aerial photos (2000 series): O 1440-A,C,D; O 1507-A	6 inch Map No: Ma034
Other SMP sites within this /NHA: Aughness, Tullaghan Bay	
Saltmarsh type: Bay	Substrate type: Mud/sand

2 SITE DESCRIPTION

Doona saltmarsh is located in north-west Co. Mayo, 13 km south-west of Bangor. This saltmarsh is located in the southern part of outer section of Tullaghan Bay. This part of the bay is the outer section of a small estuary of the Owenduff River. This part of the bay is sheltered from the sea by a sand dune spit. The sand hills adjacent to this site were surveyed by the CMP in 2006 (Ryle *et al.* 2009)(Trawboy). The landscape of this area is low-lying and dominated by blanket bog towards the east. Land around the shoreline of the bay and on the adjacent sand spit has been improved and contains farmland. This area is quite isolated and is sparsely populated with scattered dwellings along the minor roads in the area.

The main part of the saltmarsh has developed along sheltered low-lying area at the back of the sand dune spit. Typical sand dune habitats only develop at the back of the northern end of the saltmarsh, and most of the saltmarsh is located adjacent to improved farmland in the area where the sand spit is connected to the mainland. The bay drains at low tide to expose extensive sand flats adjacent to the seaward side of the saltmarsh. A narrow band of saltmarsh continues east along the shoreline around a small headland and continues into a small inlet. The Owenbeg River flows into this inlet.

This site is classified as a Bay type saltmarsh in the SM saltmarsh inventory (Curtis and Sheehy-Skeffington 1998). However, it is more typical of a sand flats type saltmarsh, especially as it has developed adjacent to a sand spit and in a bay with extensive intertidal sand flats.

The site is located within the Tullaghan Bay and Bog pNHA (1567). This pNHA is a large bay containing extensive intertidal flats and also includes large areas of Atlantic blanket bog that has developed along this shoreline. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Saltmarsh has also developed at several other locations around this bay. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the

Saltmarsh Monitoring Project. Aughness is located to the north-east of this site in the inner part of the bay while Tullaghan Bay SM incorporates saltmarsh that has developed at several locations around the head of the bay. Sraghnamanragh Bridge SM was not surveyed during the SMP and is also located to the west of this site along the inner Owenduff river estuary.

Nearly the entire saltmarsh habitat is located within the pNHA designation. There are several small fragments of habitat excluded from the pNHA as they are located above the upper shoreline boundary and this boundary on the OSI 6 inch map was used to map a lot of the pNHA boundary. Some saltmarsh high up the Owenbeg River inlet was also excluded.

The site was accessed via a lane that was a right-of-way to the shoreline.

3 SALTMARSH HABITATS

3.1 General description

The main Annex I saltmarsh habitat found at Doona is Atlantic salt meadows (Table 3.1). There were only several small patches of MSM mapped at the site, although Sea Rush is found sparsely in some of the ASM.

The main area of ASM is quite uniform and flat. It has developed on a peaty mud and sand substrate that is exposed along the lower boundary. It is divided into several sections by several drainage channels that cross the saltmarsh and drain adjacent land. Wet grassland on a gradual slope is found adjacent to the southern landward side of the ASM. There is a ditch/low embankment marking the upper boundary of the ASM in this area. Further north along the sand spit there is increasing influence of sandy substrate and some of the grassland adjacent to the landward side of the saltmarsh was classified as Machair by the CMP. There is natural vegetation succession between the saltmarsh and the machair communities that is dependant on the elevation of the shoreline. Machair develops beyond the influence of the regular high tides. Species such as Carnation Sedge (*Carex flacca*), Sand Sedge (*Carex arenaria*), Birdsfoot (*Lotus corniculatus*) and Common Mouse-ear (*Cerastium fontanum*) indicate the transition to terrestrial vegetation. There is a steep tall saltmarsh cliff (0.5-1 m high) along the lower saltmarsh boundary adjacent to sand flats. There are frequent signs of erosion along this boundary with isolated vegetated and bare mud tussocks along the cliff.

Table 3.1. Area of saltmarsh habitats mapped at Doona.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	8.717
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.124
	Total*	8.941

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

The zonation within the main saltmarsh is well-developed as the marsh is quite flat. This has led to the development of several distinctive ASM communities. The most prominent ASM community is a mid marsh sward dominated by Sea Plantain and Red Fescue and also

containing Sea Milkwort, Sea Pink, Saltmarsh Rush, Sea Aster and Greater Sea-spurrey. The salt pan topography is well developed in this zone with frequent shallow salt pans present.

There are also frequent shallow channels in the main saltmarsh that are vegetated with a low-mid marsh community dominated by Common Saltmarsh-grass. This community type does not form an extensive area and is also found around some of the salt pans. Other species present include Common Scurvy-grass, Sea Pink, Sea Aster, Sea Milkwort and Glasswort.

There is some significant development of a mid-upper ASM community that is dominated by grasses with Red Fescue and Saltmarsh Rush most prominent. Both these species dominate in various sections. Other species present include Creeping Bent, Sea Arrowgrass, Buck's-horn Plantain (*Plantago coronopus*) and Autumn Hawkbit (*Leontodon autumnalis*). This community is found on a slightly elevated ridge on the saltmarsh. Saltmarsh Flat-rush (*Blysmus rufus*) is also present in this zone.

The main section of the ASM is divided into several enclosures and there are various grazing intensities present within the different enclosures. This has led to the creation of different sward heights on the ASM although most of the ASM has a low closely cropped sward. The ASM found around the headland to the east of the site is not heavily grazed and a taller sward is present.

3.3 Mediterranean salt meadows (H1410)

This habitat is only found in several small patches around the survey site and is not well-developed. Several large patches of Sea Rush that may be individual clones are present in the upper saltmarsh in the main section. MSM is also found on several small saltmarsh islands within the Owenbeg inlet and a linear band develops further east along the shoreline in this area.

4 IMPACTS AND ACTIVITIES

The main impact affecting this site is cattle grazing (Table 4.1). This site is located in a relatively isolated location so there are few other impacts or activities affecting this site related to land-use, development or amenity use. The main saltmarsh area was divided into several enclosures and some of these were grazed heavily causing some damage (143). These are linked to the strip divisions used to divide the adjacent machair. Most of the saltmarsh is grazed with a light-moderate intensity (140). There is some localised poaching in several of the enclosures but some of the enclosures are more badly damaged than others. Some of the saltmarsh in the east section of the survey site including along the west side of the Owenbeg River is not grazed at all.

The saltmarsh around the shoreline of the headland in the east part of the site is used as a track (501).

There are indications of erosion (900) along the lower saltmarsh boundary with isolated tussocks and mud mounds present. Some of this erosion of the saltmarsh may be induced by long-term poaching damage in places. A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos shows that there has been erosion of about 5-20 m of saltmarsh in this period along the seaward edge. However, a comparison of the 1995, 2000

and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. Therefore, the loss of any saltmarsh is not assessed as it mainly occurred outside the current monitoring period although the data indicates an erosional trend. Erosion is assessed as having a low negative impact on a small portion of the saltmarsh. There are moderate prospects for landward retreat of saltmarsh at this site.

The northern border of the main saltmarsh area is subject to some natural habitat transition with sand blowing into area (990). There is some development of pioneer vegetation in this area

Impacts and activities adjacent to the site include dispersed habitation (403), grazing (140) and a road (502). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Doona.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	6.70	Inside
1330	143	A	-1	2.0	Inside
1330	501	C	0	0.001	Inside
1330	900	C	-1	0.4	Inside
1330	990	C	0	0.2	Inside
1410	501	C	0	0.05	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

Doona is a small-medium saltmarsh with few features of significant conservation interest. The overall conservation status of this site is unfavourable-inadequate (Table 4.1). Most of the site is in good condition but there is some localised overgrazing. There are no other impacts or activities significantly affecting this site. The CMP report for Trawboy assessed the conservation status of the Machair and Fixed Dune habitat on the adjacent sand dunes as *unfavourable-bad* and *unfavourable-inadequate* due to the impacts of land improvement and a range of intensive farming practises.

The site is located within Tullaghan Bay and Bog pNHA. There is no NPWS conservation management plan for this site.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Doona.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion over much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Four monitoring stops were carried out in this habitat and one stops failed. The majority of the ASM is in good condition and the sward cover is generally intact. However, there is localised damage caused by overgrazing and poaching damage. Negative indicators such as high bare mud cover and a disturbed sward cover are present.

The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site. The saltmarsh topography is well-developed at this site. The zonation within this habitat is well-developed. Overall the sward structure is also quite heterogeneous due to variable grazing levels around the site. There are some natural successional communities to terrestrial vegetation and other coastal habitats such as machair present.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Most of this habitat is in good condition but there is some localised damage from overgrazing. There is also an erosional trend at the site although there was no measurable loss of habitat during the current monitoring period. In the long term there may be a further loss of habitat. Some of the erosion may be related to long-term

heavy grazing and poaching damage. This saltmarsh is part of a larger coastal system (Tullaghan Bay) and saltmarsh may be accreting in other parts of this bay.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. The extent of this habitat in the survey site is relatively low. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion over much of the site but this does not significantly affect the MSM habitat.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. No monitoring stops were carried out in this habitat due to the relatively small extent present on the survey site. However, a visual assessment indicated that this habitat is in relatively good condition. The MSM is not affected to the same extent by overgrazing as the ASM. The species assemblage of the small patches of MSM is typical of this vegetation type. However the habitat structure is poorly developed due to the relatively small extent of this habitat

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Localised overgrazing by cattle is the main activity affecting this site but does not affect the MSM to the same extent as the ASM. The site is affected by erosion but this does not affect the patches of MSM. The MSM is less vulnerable to erosion due to their position landward of the ASM.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Ryle, T., Connolly, K., Murray, A. & Swann, M. (2009). *Coastal Monitoring Project. 204-2006*. Report to the National Parks and Wildlife Service, Dublin.



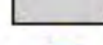

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	8.717		8.717			
4	1410 Mediterranean salt meadow	0.124			0.124		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	1.473					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	0.018					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	10.332		8.717	0.124		



Legend

-  NHA Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number: 5953)

Doolough

1 SITE DETAILS

SMP site name: Doolough	SMP site code: SMP0113
Dates of site visit 29/09/2008	CMP site code:
SM inventory site name: Doolough	SM inventory site code: 52
NPWS Site Name: Mullet/Blacksod Bay Complex	
NPWS designation cSAC: 470	MPSU Plan: none available
NHA: 470	SPA: 4037
County: Mayo	Discovery Map: 22 Grid Ref: 073540, 32488
Aerial photos (2000 series): O 1168-B; O 1169-A,C; O 1235-A,B	6 inch Map No: Ma 017, 025
Annex I habitats currently listed as qualifying interests for Mullet/Blacksod Bay Complex cSAC: H1310 <i>Salicornia</i> and other annuals colonizing mud and sand	
Other SMP sites within this SAC/NHA: Ely Harbour, Bunnahowan, Saleen Harbour	
Saltmarsh type: Fringe	Substrate type: Sand/peat

2 SITE DESCRIPTION

Doolough saltmarsh is located in north-west Co. Mayo, 12 km west of Banger. This site is located in a small semi-circular bay bordered by the Townlands of Bunawillin to the north, Doolough to the south and Muingmore to the east. This small bay is one of the many small inlets of Blacksod Bay. This shallow bay completely empties at low tide to expose sand flats. The western side of the bay is sheltered by a sand spit extending south from the northern side called Corraun Point. These sand hills were surveyed by the CMP and were part of a CMP site called Srah (Ryle *et al.* 2009). A small stream flows into the bay at the eastern end. The landscape around the bay is low-lying. Land around the shoreline of the bay and along the coast has been modified and contains farmland including improved grassland. Further east the landscape is dominated by blanket bog, cutover bog and other associated habitats. There are minor roads along both sides of the bay and there are scattered dwellings lining both these roads and around the site.

A second bay is located to the south of this site. Doolough Townland also borders the northern side of this bay. The Townland forms a small peninsula between the two bays. There is some saltmarsh development around this bay. This site was labelled as Gweesalia. This village is located along the south-east of this other bay.

The main saltmarsh development is mainly found in the sheltered area behind the sand spit at Cooraun Point (or Srah South) at the north-west of the survey site. There is a further band of saltmarsh around most of the other bay shoreline, although much of the saltmarsh is much narrower and less developed.

The majority of the site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. This is a large coastal site that includes the northern part of Blacksod Bay, coastal habitats on

both sides of the peninsula and coastal habitats along the mainland. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). However a third saltmarsh habitat, *Salicornia* flats (1310) is the only Annex I saltmarsh habitat listed as a qualifying interest for this cSAC and this habitat was not recorded at Doolough. Saltmarsh is frequently found in many of the sheltered coastal sites around this cSAC. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project (Elly Harbour and Saleen Harbour on the peninsula, Bunnahowan along the mainland). A fourth site listed on the SM inventory called Gweesalia and located to the south of this site was not surveyed during the SMP.

Most of saltmarsh habitat mapped at this site is located within the cSAC boundary. However there are several small patches located outside the boundary. This is mainly due to the fact that saltmarsh habitat extends above the upper shoreline boundary on the OSI 6 inch map, which was used to draw the SAC boundaries. These exclusions are mainly found along the northern side of the bay.

Turf fucoids were one species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland. Another species of local distinctiveness recorded at this site is Saltmarsh Flat-rush (*Blysmus rufus*). This species is mainly confined to saltmarshes in the north-west of Ireland but has a fragmented distribution around the rest of Ireland's coast.

The site was easily accessed via an adjacent minor road that is positioned close to the shoreline on the southern side of the bay. The sandflats were quite firm around the bay.

3 SALTMARSH HABITATS

3.1 General description

The main saltmarsh habitat found on this site is Atlantic salt meadows (ASM) (Table 4.1). The largest area of saltmarsh is located adjacent to the sand hills at the north-western corner of the site. This saltmarsh is divided from the rest of the bay by a small stream flowing into the bay at the northern end. This area of saltmarsh contains the best developed salt pan topography, with pans present in the saltmarsh on both sides of this stream. Saltmarsh is also found as a nearly continuous fringe around the edges of the circular bay. This fringe is best developed in the north-east corner and along the northern side of the bay. The fringe narrows and is quite thin along the southern side of the bay.

This site is notable as saltmarsh has developed on different substrates and this has influenced saltmarsh development. ASM has developed along the back of the sand hills on sandy substrate. There is a natural vegetation succession to fixed dune and machair vegetation along the landward boundary. This saltmarsh has a relatively even surface with a gradual slope to the upper landward boundary. A low saltmarsh cliff marks the lower saltmarsh boundary and there are intertidal sand flats situated adjacent to this boundary. This saltmarsh could be classified as 'Sandflats' type according to the SM inventory (Curtis and Sheehy-Skeffington 1998).

Saltmarsh further east around the bay has developed on peat. Much of the adjacent land has been improved for agriculture. This saltmarsh can be classified as 'Fringe' type saltmarsh

according to the SM inventory (Curtis and Sheehy-Skeffington 1998). Some MSM vegetation is present in this section, along the northern side of the bay. This saltmarsh has an irregular surface and the micro-topography is quite variable. There is also some evidence of old lazy-beds along the shoreline in this area. A mound is present on the shoreline and there is saltmarsh development around the back of this mound. There is some development of transitional vegetation around this mound with elements of the wet grassland appearing in the upper MSM zone. There are transitions to wet grassland and Gorse-dominated scrub on peat of various depths along the landward boundary. A low embankment with an associated ditch sometimes marks the upper saltmarsh boundary. Elements of the former blanket bog vegetation are still present in the adjacent terrestrial vegetation such as Heathers (*Calluna vulgaris*, *Erica tetralix*) and Purple Moor-grass (*Molinia caerulea*).

Some of the peat has eroded and the saltmarsh has developed on thinner mixed substrates along the shoreline. Glacial till underlies the peat in places and the saltmarsh has developed on this material with some deposited mud. There are frequent signs of erosion in this area with mud mounds and isolated peat tussocks scattered along the edge of the saltmarsh. There are also some bare eroding peat platforms at various locations that are exposing some old Pine tree stumps. Some of the saltmarsh is perched on tall peat face-banks that are still covered by the tide. There are also accretion ridges present along the lower saltmarsh boundary with newer saltmarsh growth on thinner substrate. Some of the saltmarsh along the east side of the stream flowing into the bay is being eroded as the stream channel in the bay is located adjacent to the shoreline.

Table 3.1. Area of saltmarsh habitats mapped at Doolough.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	12.789
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.354
	Total	13.143

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

This habitat is well-developed at this site. The largest area of ASM is found behind the sand-hills in the north-west corner of the site. This area is dominated by mid-marsh communities with Sea Plantain (*Plantago maritima*), Sea Pink (*Armeria maritima*) and Red Fescue (*Festuca rubra*) all prominent parts of the vegetation. However, zonation is well-developed within this area. There is a distinctive upper zone present that is dominated by Red Fescue and contains Buck's-horn Plantain (*Plantago coronopus*), White Clover (*Trifolium repens*) and Creeping Bent (*Agrostis stolonifera*). The appearance of Glaucous Sedge (*Carex flacca*) marks the transition to Machair. Low marsh communities are confined to shallow depressions around the small creeks and pans and are dominated by Common Saltmarsh-grass (*Puccinellia maritima*). The low marsh community also contains Turf fucoids, Glasswort (*Salicornia* sp.), Sea-spurrey sp. (*Spergularia media*), Sea Plantain and Sea Pink. More extensive low marsh and pioneer vegetation has developed near the tip of Corraun Point. This vegetation is dominated by Common Saltmarsh-grass on sand. The pioneer zone is more open and contains patches of common Saltmarsh-grass on open sand.

The micro-topography of the northern section of the saltmarsh is well-developed and the surface is quite variable in height with mounds, hollows and salt pans present. This has

influenced the zonation of this area and the vegetation is a mosaic of different zones depending on their height relative to the shoreline. Various species dominate in this area depending on the zonation. Mid-upper marsh vegetation predominates with Red Fescue, Sea Arrowgrass (*Triglochin maritimum*), Sea Plantain, Sea Pink and Saltmarsh Rush (*Juncus gerardii*) dominating the vegetation and Sea Aster (*Aster tripolium*) and Sea Milkwort (*Glaux maritima*) also present. Sea Rush is present in the ASM vegetation around the bay on peat at low densities but its occurrence is low overall. The upper zone develops on some mounds and is dominated by Red Fescue and Saltmarsh Rush. This community also contains Distant Sedge (*Carex distans*), Common Scurvy-grass (*Cochlearia officinalis*), Autumn Hawkbit (*Leontodon autumnalis*), Spear-leaved Orache (*Atriplex prostrata*), Creeping Bent, Sea Arrowgrass and White Clover.

There is some newer growth of ASM vegetation at the base of some of the older saltmarsh cliffs in places. A band of lower-mid marsh vegetation has developed in places on thinner substrate. This is an indication of a dynamic site with shifts between periods of erosion and periods of relative accretion and saltmarsh growth, although quite minor. Accretion ridges appear in places along the edge of the saltmarsh where there is newer growth of vegetation. Common Saltmarsh-grass is dominant and Sea Pink, Glasswort, Lax-flowered Sea Lavender (*Limonium humile*) and Sea Aster are all present. Saltmarsh Flat-rush is also present but is rare.

Some of the ASM is perched on higher peat banks and there is a tall face bank along the edge of the saltmarsh. Some of these peat banks have a mosaic of saltmarsh and terrestrial bog vegetation due to small micro-topographical changes in the height of the peat bank. These peat banks are quite dried out and exposed.

3.3 Mediterranean salt meadows (H1410)

This habitat is poorly developed at this site and does not cover a significant area. The largest area is found on peat at the north-west part of the site, adjacent to a small mound on the shoreline that contains scrub and wet grassland in the higher areas. The MSM has developed in an area with a variable topography and there are mounds and hollows present with vegetation dominated by MSM. The MSM extends to the lower saltmarsh boundary where there is a low saltmarsh cliff. There are some pans present in this area.

The vegetation is typical of MSM and is dominated by Sea Rush. Red Fescue is also frequent and there are small amounts of Sea Milkwort, Saltmarsh Rush, Sea Plantain, Creeping Bent, White Clover, Spear-leaved Orache, Sea Mayweed (*Tripleurospermum maritimum*) and Sea Plantain. There is also some transitional vegetation along the upper boundary adjacent to the mound with species such as Black bog-rush (*Schoenus nigricans*) and Purple Moor-grass present. The sward height is higher within the MSM compared to the surrounding ASM due to the frequency of the taller rushes. The MSM is not affected by grazing to the same extent as the surrounding ASM.

There are several small patches of MSM vegetation at other locations around the site.

4 IMPACTS AND ACTIVITIES

The main impact affecting this site is grazing (Table 4.1). The sand dune/saltmarsh complex at the north-western part of the site is grazed as commonage by cattle. There are frequent

signs of overgrazing in this section, especially towards the northern end, with negative indicators such as heavy poaching levels and a high bare substrate cover present (143). The sward is quite low and uniform in height due to a heavy grazing intensity. The saltmarsh on sandier substrate at the southern end of the sand hills at Corraun Point is in better condition and not heavily poached. Some of the saltmarsh at the northern end is located within an enclosure fenced off from the rest of the sand hills. Grazing is less intensive on the eastern side of the stream. However, sheep still access this area and graze the shoreline (140). The southern side of the bay is not grazed significantly.

There is one track onto the saltmarsh at the north-western corner of the site, accessing the shoreline. Some of this track has been infilled with spoil (501). There is also some damage from vehicle use on the saltmarsh adjacent to the sand hills. Wheel ruts are visible across parts of the saltmarsh and there are probably related to farming. Some drains along the back of the saltmarsh in the north-west part of the site have been recently cleaned (810).

There are signs of both accretion (910) and erosion (900) at different locations around the bay. Saltmarsh has grown somewhat at the tip of Corraun Point due to sand accretion. There is pioneer saltmarsh developing at this location on an accretion ridge. There are frequent signs of erosion around other more established parts of the shoreline around the bay. These are most frequently seen along the northern side of the bay with mud mounds, peat tussocks and exposed peat platforms along the shoreline. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

A comparison of the OSI 2nd edition 6 inch map to the current OSI 2005 series aerial photos shows that there have been significant changes to the shoreline during this period. This is mainly seen at Corraun Point, which has grown significantly and extended southwards during this period. This has led to significant growth of fixed dunes and saltmarsh habitat in this area in the past 100 years. The signs of accretion at Corraun Point show that there is still an accretional trend at this location. However, further north a saltmarsh cliff develops along the seaward boundary indicating some erosion. There has been no significant measurable loss of saltmarsh habitat in other parts of the site, even though there are signs of erosion present. There is also likely to be some natural transition of habitats from saltmarsh to machair during this period (990).

A comparison of the 1995, 2000 and 2005 OSI aerial photos series and the GPS survey points shows that there have been some changes to the tip of Corraun Point during this period. This area is quite dynamic and there has been visible growth of fixed dune habitat between 2000-2005. There has also been some growth of saltmarsh during this period when the GPS points are compared to the most recent aerial photos (about 0.25 ha).

The main Impacts and activities adjacent to the site are related to agriculture. Improved grassland is grazed (140) and some is also fertilised (120) and cut (102) for cattle fodder. Other impacts and activities include dispersed habitation (403) and roads (502). The agricultural activities have little or no measurable impact on the saltmarsh habitats. The impacts of the harbour and the development of road infrastructure have already been considered.

Table 4.1. Intensity of various activities on saltmarsh habitats at Doolough.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	2.0	Inside
1330	143	A	-1	5.0	Inside
1330	501	C	-1	0.005	Inside
1330	810	C	-1	0.250	Inside
1330	900	C	0	0.3	Inside
1330	910	C	+1	0.25	Inside
1410	140	C	0	0.354	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

Doolough is a medium sized saltmarsh with some features of conservation inertest. The overall conservation status of this site is *unfavourable-bad* (Table 4.1). Most of the site is in good condition but there is a significant area damaged by cattle overgrazing. There are no other impacts or activities significantly affecting this site. There is an accretional trend present at this site and the saltmarsh has grown significantly in size in the past 100 years, related to growth of the sand spit at Corraun Point.

This site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. A NPWS Conservation management plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Doolough.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period. There actually has been some growth of saltmarsh habitat at this site due to the continued development of the sand dune spit at Corraun Point. There has been a long-term accretional trend in this area with the growth of the sand dune spit leading to the growth of saltmarsh.

There are indicators of erosion along the seaward boundary at other locations around the site. However, there is no evidence that any measurable area of habitat has been lost during the current monitoring period due to erosion. Accretion ridges are also present in this area showing that the site is quite dynamic.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Eight monitoring stops were carried out in this habitat and one stop failed. The majority of the ASM is in good condition and the sward cover is generally intact. However, a large part of the saltmarsh habitat located behind the sand spit is damaged by overgrazing and poaching damage (> 25% of the ASM habitat). Negative indicators such as high bare mud cover, a uniform low sward height and a disturbed sward cover are present. The heavily poached areas in the lower marsh contain frequent Turf fucoids in places and this is a feature of local distinctiveness.

The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site. The diversity of the site is increased by the development of saltmarsh on sand and on peat. The saltmarsh topography is well-developed at this site. The zonation within this habitat is well-developed. Overall the sward structure is also quite heterogeneous due to variable grazing levels around the site. There are some natural successional communities to terrestrial vegetation and other coastal habitats such as machair present. This site is quite dynamic and there are accretion ramps present around the site with pioneer saltmarsh vegetation present. This is a positive indicator.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. A significant area of ASM habitat adjacent to the sand dune system is being damaged by overgrazing and poaching by cattle. The rest of the site is in good condition and there are few damaging activities. There is no NPWS conservation management plan available for this site.

There is currently an accretional trend at the site and this has led to the growth of saltmarsh habitat in the past 100 years. This related to the development of the sand spit at Corraun Point. However the position of this sand spit is quite dynamic and a comparison of the earlier 1st edition 6 inch map to the current position of the spit shows that it has moved significantly during this period. Therefore the saltmarsh may be vulnerable to further movement in the position of the san spit that are related to natural changes in geo-morphological trends at this site.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are only several small patches of this habitat present at this site. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. One monitoring stop was carried out in this habitat and it passed. All of the attributes required for the structure and functions of this habitat reached their targets. The MSM is not affected to the same extent by overgrazing as the ASM. The species assemblage of the small patches of MSM is typical of this vegetation type. There is some internal zonation within this habitat due to the irregular micro-topography with mounds, shallow hollows and salt pans present. There is also some development of transitional vegetation with the appearance of species such as Purple Moor-grass and carnation Sedge in the upper MSM on a moderately sloped mound.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Localised overgrazing by cattle is the man activity affecting this site but does not affect the MSM to the same extent as the ASM. The site is affected by erosion but this does not significantly affect the patches of MSM. The MSM is less vulnerable to erosion due to their position landward of the ASM.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Ryle, T., Connolly, K., Murray, A. & Swann, M. (2009). *Coastal Monitoring Project. 2004-2996*. Report to the National Parks and Wildlife Service, Dublin.




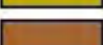



8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	12.789		12.789			
4	1410 Mediterranean salt meadow	0.354			0.354		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	4.336					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	0.007					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	17.486		12.789	0.354		



Legend

-  SAC Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops
-  1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Kiladangan

1 SITE DETAILS

SMP site name: Kiladangan		SMP site code: SMP0018	
Site name (Curtis list): Kiladangan		CMP site code: not surveyed	
NPWS Site Name: Clew Bay complex		Site No: (Curtis list): 80	
NPWS designation cSAC: 1482		Dates of site visit: 11/07/2006	
pNHA: 1482		MPSU Plan: none for coastal areas	
County: Mayo	Discovery Map: 31	Grid Ref: 094220, 282480	
6 inch Map No: Ma087	Aerial photos (2000 series): 02139-a, 02139-b		
Annex I habitats currently designated for Clew Bay Complex cSAC:			
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)			
Other SMP sites within this cSAC/pNHA: Mallaranny, Tooreen, Rosmurrevagh, Tierna, Rockfleet, Roshanagh East, Caraholly South, Annagh Island, Bartraw			
Saltmarsh type: Sandflats		Substrate type: Peat/sand	

2 SITE DESCRIPTION

Kiladangan saltmarsh is located in the south-east part of Clew Bay, 5 km west of Westport in Co. Mayo. This site is situated at the base of the Croagh Patrick foothills. This area is also known as Gortbraud and is the location of standing stones and several other features of archaeological importance. These standing stones date back to the late Bronze Age. The landscape at this location has frequent small drumlin hills and islands typical of Clew Bay. The mainland has moderate to steep slopes leading to the foothills of Croagh Patrick. The saltmarsh has developed behind a shingle/pebble bar and is located adjacent to the main Westport-Louisbergh road. Kiladangan is located adjacent to Annagh Island saltmarsh (to the north). This is part of the same coastal system as the shingle/pebble bar extends out into Clew Bay and Annagh Island has developed behind this bar. Bartraw saltmarsh is also situated 3.8 km to the west of Kiladangan.

Two Annex I habitats, Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM) are found at this site. Only ASM is listed as a qualifying interest for the Clew Bay Complex SAC. The entire saltmarsh habitat is situated within the cSAC.

The site is easily accessed from the main Westport-Louisbergh Road.

3 HABITATS

3.1 General description

The saltmarsh has formed behind a shingle/pebble ridge in a sheltered area, forming a triangle-shaped marsh with the mainland. The site is moderate in size being 0.35 km long and 0.2 km wide. This saltmarsh is quite uniform and is dominated by Mediterranean salt meadow (MSM) (Table 3.1). Atlantic salt meadow (ASM) patches are situated around the edge of the marsh in narrow bands. These strips are discontinuous and MSM occasionally extends to the saltmarsh edge. Tall saltmarsh cliffs mark the seaward boundaries. Common Cordgrass (*Spartina anglica*) is present at this site but only forms small clumps in conjunction with the other vegetation. This is only one of three sites in Clew Bay with Common Cordgrass. The pebble bank at the western side has also enclosed a large pool at the northern end between the bank and the saltmarsh and a small inlet allows the tide to flow into the pool.

The back of the saltmarsh is marked by a hard embankment along the Westport-Louisburgh Road. There is very little transitional vegetation along this boundary apart from occasional clumps of Sea Club-Rush (*Bolboschoenus maritimus*). A small patch in this area contains transitional and terrestrial habitats as the elevation of this area is slightly raised above the high water mark. The terrestrial area on the western side contains some dry coastal grassland and scrub on a small mound. There is a transitional area between the saltmarsh and the terrestrial section. This transitional area contains small mounds containing species such as Birdsfoot (*Lotus corniculatus*) amongst the upper saltmarsh vegetation dominated by Creeping Bentgrass (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*) that occupies the shallow hollows. Saltmarsh vegetation dominates this section with the small terrestrial mounds covering 25% of the area.

Table 3.1. Area of EU Annex I habitats listed at Kiladangan.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.86 ¹
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	4.57
	Total	5.44

¹note that this value contain 75% of the (1330/transitional grassland habitat. .

3.2 Atlantic salt meadows (H1330)

This habitat only covers minor areas of the saltmarsh around the seaward edge and is also present in the transitional area towards the eastern side between the mound and the saltmarsh. The vegetation around the edges of the saltmarsh is dominated by Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*) with frequent Saltmarsh Rush and occasional Common Saltmarsh-grass (*Puccinellia maritima*), Lax-flowered Sea Lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritimum*). Sea Rush (*Juncus maritimus*) is spreading into the ASM vegetation from the Sea Rush-dominated areas. These areas are grazed lightly-moderately. There are small amounts of bare mud/peat exposed by poaching. The saltmarsh cliffs around the edge of the marsh and edges of some of the pans show signs of erosion. Some of the erosion may be poaching induced. There are several pans within some of the larger ASM areas.

The vegetation in the transition area to the east of the saltmarsh is dominated by Red Fescue and Sea Plantain, with small amounts of Sea Milkwort (*Glaux maritima*), Saltmarsh Rush, Bucks'horn Plantain (*Plantago coronopus*), Autumn Hawkbit (*Leontodon autumnalis*), Creeping Bentgrass and White Clover (*Trifolium repens*). There are occasional low raised mounds with species such as Birdsfoot and Curled Dock (*Rumex crispus*).

3.3 Mediterranean salt meadows (H1410)

This saltmarsh is dominated by Sea Rush, which generally forms dense swards. Other frequent species are Saltmarsh Rush, Sea Milkwort, Sea Plantain and Red Fescue. Species such as Sea Aster (*Aster tripolium*), Sea Pink, Creeping Bentgrass, Lax-flowered Sea Lavender, Common Saltmarsh-grass, Sea Arrowgrass, Long-bracted

Sedge (*Carex extensa*) and Autumn Hawkbit are occasional or rarely present. Plant community zonation within the MSM is poor but this is typical of a habitat defined by the presence of Sea Rush only. There is some minor zonation along the edges of creeks and pans with Common Saltmarsh-grass, Lax-flowered Sea Lavender, Annual Sea-Blite (*Suaeda maritima*) and Glasswort (*Salicornia* sp.) appearing. There are small patches of ASM vegetation dominated by Sea Pink and Sea Plantain within the MSM mapped area. There are several clumps of Common Cordgrass present within the MSM, generally growing in salt pans. The vegetation is generally in good condition and grazing levels are low. There is some minor poaching but this is generally localised in the areas without Sea Rush (the ASM) or along creeks and pans.

The saltmarsh has a well developed creek and salt pan topography. One of the creeks has been canalised and is developing into a long drain along the pebble bank. Salt pans are scattered over the saltmarsh. Shoreweed (*Littorella uniflora*) is present in some pans at the back of the marsh.

4 IMPACTS AND ACTIVITIES

The main activity on Kiladangan saltmarsh is grazing (140). Several cattle and a larger flock of sheep are both present. The sheep move to Annagh Island along the shingle bar. The grazing level is generally low as much of the saltmarsh is Sea Rush dominated and this shields the other species somewhat. There is some heavy poaching at localised areas, particularly along the creeks and the ASM areas within the MSM (142). However, the area of saltmarsh badly damaged by poaching is minor. A water trough is also present on the saltmarsh for the livestock. An old enclosure on the eastern side now contains scrub. The saltmarsh is the site of standing stones and other archaeological features dating to the Bronze Age. These attract tourists and visitors.

One of the old creeks adjacent to the shingle bar has been canalised and straightened. This drain pre-dates the 1930 6 inch map.

Activities adjacent to the saltmarsh habitats include farming (120, 140), dwellings (403) and roads (502). A track across the shingle/pebble bank allows access to Annagh Island (502).

Table 4.1. Intensity of various activities on saltmarsh habitats at Kiladangan.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
13s	140	C	0	5.44	Inside
1330	142	A	-1	0.1	Inside
13s	120	C	0	5.44	Outside
13s	140	C	0	5.44	Outside
13s	403	C	0	5.44	Outside
13s	502	C	0	5.44	Outside

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.

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, this site has a good or favourable conservation status (Table 5.1). The MSM, which dominates the site, is in good condition. Grazing is the main activity. Only minor areas are damaged by poaching. The ASM has an unfavourable conservation status, but this only covers a minor area in comparison to the MSM (< 15%) so the damaged areas have a more significant impact on the conservation status assessment.

Common Cordgrass is present on the site but only several isolated clumps are present and these don't cover a significant area. Common Cordgrass is an invasive species. Common Cordgrass was planted in Clew Bay in the vicinity of Westport House between 1929 and 1932 (Praeger 1932), where it was reported that many plants died. Nairn (1986) noted that there was only one clump present in Clew Bay near Westport House. The most extensive area of Common Cordgrass is on Annagh Island adjacent to this site. Annagh Island is a likely source of the Common Cordgrass on this site. However, Common Cordgrass is unlikely to become extensive at this site under current conditions. The saltmarsh is dominated by MSM, a plant community that favours the upper marsh. Common Cordgrass favours the pioneer and the lower saltmarsh zones so it is unlikely to spread significantly as it would be uncompetitive compared to the Sea Rush and other species. There may be some more spread of Common Cordgrass within salt pans, along creeks and bare mud at the site. If current conditions favoured Common Cordgrass spread it is likely to have already happened considering the time it has been present.

Changes in the conditions on the site may favour further spread of Common Cordgrass. These include a significant increase in poaching and grazing and sea level rise inducing erosion. Both of these impacts would lead to the vegetation being damaged and bare sediment being produced. The bare sediment areas would favour pioneer species such as Common Cordgrass.

A comparison of the 2000 aerial photo to the 1929 6 inch map indicates that this site is relatively stable and there has not been much accretion or erosion during this period. Some erosion noted along the edges of some of the salt pans and the large pool is likely to be poaching induced (ASM stop 2).

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor. This saltmarsh is constrained by a 'hard' landward boundary with an embankment protecting the main Westport-Louisburgh road. This site is likely to be eroded in response to sea-level rise although initially the shingle/pebble bank will offer some protection.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Kiladangan.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. There are some signs of erosion along the edges of some of the salt pans and the large pool adjacent to this habitat.

However, there are no indications that significant areas of saltmarsh have been eroded away due to this damage.

5.2.2 *Habitat structure and functions*

The structure and functions of this habitat are assessed as *unfavourable-bad*. Two monitoring stops were carried out in this habitat with one passing and one failing. It was decided that two stops represented the ASM adequately as it covered a small area and these two stops reflect the relative damage. The species diversity at this site was typical of this habitat and several different saltmarsh plant communities were present, with zonation dependant on elevation. There is some lower saltmarsh zone vegetation along the edges of the creeks and salt pans within the saltmarsh but overall the ASM is dominated by mid-upper zone vegetation. The ASM is grazed but not excessively by sheep and cattle. However, cattle are poaching parts of the saltmarsh surface. Some salt pans are present in some of the larger ASM areas. Clumps of Common Cordgrass are present in this habitat but this species is not likely to have significant impact on the structure and functions of this habitat.

The conservation status is enhanced due to the presence of a transitional area dominated by ASM between the saltmarsh and the low hill in the north-east section. This area contains a mixture of terrestrial and saltmarsh species in a slightly elevated area between the two zones.

5.2.3 *Future prospects*

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts continue in the near future. There is some damage from cattle poaching and this is likely to continue in the future. There is no conservation plan available for the coastal habitats in this cSAC.

5.3 Mediterranean salt meadows (H1410)

5.3.1 *Extent*

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. There are no signs of erosion at this location.

5.3.2 *Habitat structure and functions*

The structure and functions of this habitat are assessed as *favourable*. Four monitoring stops were carried out in this habitat and all passed. Overall, the species diversity is typical for this habitat. There are several other typical indicators of good structure and function present including well-developed creeks and pans and internal zonation of vegetation communities along the creeks. The MSM is grazed but the intensity is quite low as the dense Sea Rush tends to shield the other species. The small ASM patches within the MSM tend to be targeted by the cattle. Clumps of Common Cordgrass are present in this habitat but this species is not likely to have significant impact on the structure and functions of this habitat. The presence of this species actually enhances the species diversity and the sward structure of the saltmarsh.

5.3.3 *Future prospects*

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future. There is no conservation plan available for the coastal habitats in this cSAC.

6 MANAGEMENT RECOMMENDATIONS

The current grazing and stocking levels should be maintained and they are not having an overall negative impact on the site.

7 REFERENCES

- Nairn, R.G.W. (1986). *Spartina anglica* in Ireland and its potential impact on wildfowl and waders - a review. *Irish Birds*, 3, 215-258.
- Praeger, R.L. (1932). Some noteworthy plants found in or reported from Ireland. *Proceedings of the Royal Irish Academy*, 41B, 95-124.



Legend

-  SAC boundary
-  1330 Monitoring stops
-  1410 Monitoring stops

Habitats

-  Spartina swards
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1330/transitional gsd
-  other



**Saltmarsh
Monitoring Project**

Kiladangan

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)

Mi foinn leoraíneacha ar an t-áras seo ach níl garbhúimhach ginearálta. Feidh ar ábhréil trí le adéanamh ar leoraíneacha na goeantair comharthaí le. Maicástanthaíl d'ábhara na cúlúthearachta. Orlonáil le dteal ón Rialtas. (Cealtúnar Uimh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: Map produced by: **SMP 2006**

SMP0018 Map Version: **1**

0 50 100 150 Meters

Scale: 1:1817



Lackan

1 SITE DETAILS

SMP site name: Lackan	SMP site code: SMP0023	
Site name (Curtis list): Lackan	CMP site code: 129	
	Site No: (Curtis list): 44	
NPWS Site Name: Lackan saltmarsh and Kilcummin Head	Dates of site visit: 11/09/2006	
NPWS designation	cSAC: 516	MPSU Plan:
	pNHA: 516	
County: Mayo	Discovery Map: 24	Grid Ref: 118170, 335750
6 inch Map No: Ma008, Ma014, Ma015,	Aerial photos (2000 series): 01000-a, 01000-b, 01000-c, 01000-d, 00944-d	
Annex I habitats currently designated for Lackan saltmarsh and Kilcummin Head cSAC:		
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)		
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)		
Saltmarsh type: Sandflats	Substrate type: Sand/Mud	

2 SITE DESCRIPTION

Lackan saltmarsh is located 8 km north-west of Killala Town in north Mayo. The saltmarsh is located in a sheltered valley, filling the valley plain. The Cloonalaghan River flows through the saltmarsh and into Lackan Bay. Moderately sloping land extends from the edge of the saltmarsh plain up the slopes of the valley and is dominated by improved agricultural grassland, with significant amounts of wet grassland in places. The saltmarsh is fairly extensive being 0.7 km wide and 1.6 km long. Lackan Bay contains extensive sandflats and is enclosed by a spit with a sand dune system at the seaward end. Part of this site was also surveyed by the Coastal Monitoring Project, which surveyed the sand-dune systems to the north-east of the saltmarsh.

Three Annex I habitats, *Salicornia* flats (1310), Atlantic salt meadows (ASM) (1330), Mediterranean salt meadows (MSM) (1410), are present at this site. All these habitats are listed as qualifying interests for the Lackan saltmarsh cSAC. Nearly the entire saltmarsh habitat is included within the Lackan saltmarsh and Kilcummin Head cSAC. Some saltmarsh habitat along the landward boundaries is excluded 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. A small area of saltmarsh has been excluded in the south-east corner of the site. The cSAC is important for several species of wintering waders and wildfowl.

The western part of the site is fairly easily assessed via a minor road that accesses the shoreline at the north-east end of the saltmarsh. The southern part of the saltmarsh was accessed by crossing farmland (after gaining permission). The western side can also be accessed via the north-west corner of the site.

3 HABITATS

3.1 General description

The saltmarsh is mostly contained in one large main unit. A band of saltmarsh extends along the north-western and north-eastern shorelines of Lackan Bay, which eventually narrow out and transition to sand-dune and sandy beach habitats. There is a typical distribution of Mediterranean salt meadows (MSM) and Atlantic salt meadows (ASM) with ASM occurring at the front (seaward) side of the marsh and MSM occurring at the back of the marsh. Overall, the site is dominated by Mediterranean salt meadows. This habitat dominates the western side of Cloonalaghan River and the southern part of the salt marsh. Atlantic salt meadows occur in the north-eastern section of the saltmarsh and along a narrow band in the north-west area. There are several significant areas of ASM/MSM mosaic with low ASM sward occurring between the large clumps of Sea Rush (*Juncus maritimus*). Very few patches of 'Salicornia and other annuals colonizing mud and sand' (1310) were recorded. There are significant patches with Common Reed (*Phragmites australis*) spreading into the MSM in the south-west section (classified as brackish habitat).

The Cloonalaghan River flows along the northern boundary of the saltmarsh eastwards into Lackan Bay and is eroding the saltmarsh, with a high saltmarsh cliff present. A low ridge containing dry grassland extends from the mid-eastern boundary. Towards the south-east corner there is a mound containing dry grassland, dry heath and some Gorse (*Ulex europaeus*) scrub. The boundary along the eastern

side is fairly distinct with a sharp transition between the saltmarsh habitats and adjacent improved grassland that develops where the slope begins. There are some narrow bands of wet grassland dominated by Yellow Flag (*Iris pseudacorus*) creating a diverse transitional habitat. The saltmarsh boundary is less distinct along the southern boundary as there is transitional area with frequent Common Reed and Sea Club-rush (*Bolboschoenus maritimus*) stands amongst patches of Sea Rush (MSM) and disturbed areas of ASM (possibly recovering from recent land reclamation). Occasional clumps of (*Schoenoplectus tabernaemontani*) also occur in this transitional area. Some of the boundary along the western side is distinct with a sharp transition between Common Reedbeds and the Sea Rush stands. Along other parts of the boundary there is a transition between Sea Rush and Soft Rush (*Juncus effusus*) (wet grassland) where a low slope develops, indicating the saltmarsh boundary. There are usually fences or overgrown hedgerows along the saltmarsh boundary. Gorse-dominated scrub extends into the saltmarsh along enclosure edge/drains on low ridges/ditches in the north-west section.

Table 3.1. Area of EU Annex I habitats listed at Lackan.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.001
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	28.27
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	66.00
	Total	94.27

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

While this site is listed for this Annex I habitat, very little of this habitat was recorded. Only several small patches (1-3 m in diameter) containing Glasswort (*Salicornia* sp.) were present on sand and mud banks located in some of the large creeks and the Cloonalaghan River channel within the saltmarsh. No Glasswort was recorded on the intertidal sandflats.

3.3 Atlantic salt meadows (H1330)

This habitat is mainly found in the north eastern section of the saltmarsh. Several different ASM plant communities reflecting zonation are present. This area contains a typically well-grazed short ASM turf. The front of the marsh is dominated by a Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*) sward. Other

frequent species in this turf include Sea Milkwort (*Glaux maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Red Fescue (*Festuca rubra*) and Saltmarsh Rush (*Juncus gerardii*). Occasional species include Glasswort, Annual Sea-blite (*Suaeda maritima*), Common Scurvygrass (*Cochlearia officinalis*) and Sea Arrowgrass (*Triglochin maritimum*).

There are also significant patches of vegetation dominated by Red Fescue/Saltmarsh Rush on slightly raised mounds occurring further back in the ASM. This vegetation type also contains many of the species listed above in addition to Sea Aster (*Aster tripolium*), Greater Sea-spurrey (*Spergularia media*), Buck's-horn Plantain (*Plantago coronopus*) and Long-bracted Sedge (*Carex extensa*).

There is additional internal zonation of vegetation along the creeks with narrow bands of Common Saltmarsh-grass-dominated vegetation developing. These bands occasionally develop on 'steps' or lower ground at the edge of the creek. This vegetation type also occurs at the seaward boundary along the north-east corner of the site. There is frequent Glasswort and occasional Annual Sea-blite associated with these areas.

The saltmarsh topography is well developed with salt pans of all sizes occurring all through the habitat. Some of these are unusually very deep. The creek network is also well-developed. There are also patches of ASM in a mosaic area dominated by Sea Rush in the south-east section. This ASM is not grazed significantly. ASM is also frequent along the edges of the larger creeks and the main river channel.

ASM also occurs along the western side of Lackan Bay. It occurs in mosaic with some fixed dune grassland on some of the higher mounds and there are patches of embryonic dune developing in this area as well. The saltmarsh is developing on sand in this area. Species such as Sand Sedge (*Carex arenaria*) occur here on the marsh.

3.4 Mediterranean salt meadows (H1410)

This habitat dominates the saltmarsh. At the front of the marsh there are several well-defined clumps of dense Sea Rush present amongst the ASM and develop on slightly raised ground. The MSM becomes more frequent further back in the marsh and develops along the landward boundaries. Other frequent species include Creeping

Bent-grass (*Agrostis stolonifera*), Red Fescue (*Festuca rubra*) and Saltmarsh Rush. Other occasional species include Autumn Hawkbit (*Leontodon autumnalis*), Sea Milkwort, Sea Aster, Sea Arrowgrass, Common Scurvygrass and Sea Plantain. Other species recorded include Long-bracted Sedge, Lax-flowered Sea Lavender (*Limonium humile*), Spear-leaved Orache (*Atriplex prostrata*) and Parsley Water-dropwort (*Oenanthe lachenalii*). The occurrence of Lax-flowered Sea Lavender in this habitat is notable as it was not recorded here before. A Spike-rush sp. (*Eleocharis* sp.) was also recorded in an area with some freshwater influence. The creek and pan topography is very well developed with frequent pans and a dense network of creeks. Many of the creeks contain very soft mud and are quite deep.

Dense stands of Sea Rush occur to the west of Cloonalaghan River. There are patches of almost 100% monocultures of Sea Rush. Some mounds along the western side contain species such as White Clover (*Trifolium repens*), Birdsfoot (*Lotus corniculans*) and Silverweed (*Potentilla anserina*) indicating the ground level is close to the terrestrial transition. Common Reed begins to spread into the MSM along the western side and where it is frequent it is classed as brackish habitat.

4 IMPACTS

There have been drainage works in the past (810) with regular-spaced drains across the north-western section of the saltmarsh linking drains from adjacent wet grassland on slopes to the Cloonalaghan River. The western boundary has a significant freshwater/brackish influence along the edge of the saltmarsh that probably has been influenced by the old drainage works. Spoil from drains across the saltmarsh has been deposited on the saltmarsh and forms low ridges. These drains are also likely to have been deepened/cleaned in the past. The original creek network in this area has been affected by this drainage. Some of the channels in the mid-eastern part of the saltmarsh have probably been artificially deepened and straightened in the past.

There has been some land reclamation in the past (802), particularly in the south-west along the upper part of the Cloonalaghan River (outside the cSAC) and along the southern and western sides. Some of this land has probably reverted back to saltmarsh (although it has been disturbed). This drainage and land reclamation is

relatively old and is not considered in the current impacts (although is probably having some residual impact).

Sheep graze the eastern side of the saltmarsh (140). The grazing level on the ASM is moderate overall, with a short turf being formed. However, poaching occurs in small localised areas and overgrazing (striping plant cover) is not present. The grazing level is low-absent in the MSM as the dense patches of Sea Rush protect the other vegetation. The level of grazing decreases towards the southern end of the marsh. Parts of the western side of the marsh are grazed by cattle but overall the grazing level is low. There is significant cattle grazing and poaching in a small area (enclosure) (142) in the north-eastern corner.

There are vehicle tracks and wheel ruts on the ASM at the north-western and north-eastern corners of the saltmarsh, where the minor roads allow access to the sandflats and Lackan Bay (501). The NHA survey notes indicate that the cSAC is used for hunting and this probably includes the saltmarsh as Snipe and other wetland birds roost on the saltmarsh.

The saltmarsh is probably affected by agricultural run-off from the adjacent farmland, as the saltmarsh occurs in a basin (701). This leads to nutrient enrichment of the marsh but its impact is difficult to assess. Nutrient enrichment may lead to the spread of Common Reeds but the saltwater influence of the tide will act to restrict its spread.

Natural erosion (900) is occurring along northern saltmarsh boundary, as the Cloonalaghan River channel is situated along the edge of the saltmarsh. The river has caused significant erosion of the saltmarsh cliffs indicated by a comparison of the 2000 aerial photos and 1929 6 inch map. Between 20-40 m of saltmarsh has been eroded away on both sides of the saltmarsh (but mainly on the eastern side) during this period (2.8 ha). A comparison of the GPS mapping with the 2000 aerial photo indicates that 2-3 m has been eroded in this period (0.1 ha). The erosion is being caused by shifts in the Cloonalaghan River channel, which previously flowed through the central part of Lackan Bay, but now flows along the eastern side of the bay. Some accretion is currently occurring at present on the northern side of the river channel.

A comparison of the 2000 aerial photos and 1929 6 inch map indicates that new saltmarsh has developed (910) along the western side of Lackan Bay extending along

the shoreline from the main area of saltmarsh (2.9 ha). These erosion/accretion cycles are natural reactions to geomorphological changes within Lackan Bay. The recently developed saltmarsh probably along the western side of Lackan Bay compensates for the area lost by erosion. This area is likely to be eroded in the future as the river channel shifts again. The erosion and accretion mainly affects the ASM. Some minor erosion and accretion also occurs within the MSM further up the river channel.

Table 4.1. Intensity of various activities on saltmarsh habitats at Lackan.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
13s	140	C	-1	30	Inside
1410	142	A	-1	6	Inside
1330	501	C	-1	< 0.1	Inside
13s	701	C	0	94.27	Outside
1330	900	B	0	N/A	Inside
1330	910	C	0	0.1	Inside
1410	900	C	0	N/A	Inside
1410	910	C	0	N/A	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 this site is favourable (Table 5.1). There are some current negative impacts and activities such as heavy cattle poaching or vehicle damage, but these are localised to relatively small areas in comparison to the whole marsh. Sheep grazing, while being more extensive, is not having a significant negative impact on the saltmarsh. Drainage and land reclamation has had significant impacts in the past and is probably still having some residual impacts. However, these impacts pre-date the current period for assessment.

Natural erosion is occurring along the northern boundary in response to shifts in the position of the Cloonalaghan River channel. However, this erosion is being compensated by accretion creating new saltmarsh in other parts of Lackan Bay, specifically along the western boundary and in the north-eastern corner of the saltmarsh.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are moderate. There are natural transitional habitats, such as Reedbeds, brackish areas and wet grassland bordering about 70% of the landward saltmarsh boundaries on relatively to low slopes. These areas will allow some medium-term migration of saltmarsh habitat. Saltmarsh already occurs adjacent to moderately-sloping land in the north-eastern section so there is less scope here for saltmarsh migration.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Lackan.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable – inadequate	Unfavourable – Bad	
<i>Salicornia</i> flats (1310)			Extent, Structure and functions, Future prospects,	Unfavourable Bad
Atlantic salt meadows (1330)	Extent, Structure and functions, Future prospects			Favourable
Mediterranean salt meadows (1410)	Extent,	Structure and functions, Future prospects		Unfavourable – inadequate

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

This habitat was assessed as unfavourable as no areas of any significance were recorded. This Annex I habitat was probably listed for this site due to records of Glasswort and Annual Sea-blite occurring on the saltmarsh in association with other saltmarsh species. However, the pioneer saltmarsh community dominated by Common Saltmarsh-grass and containing frequent Glasswort is classified as ASM for the purposes of this survey. No large areas dominated by Glasswort on sand or mud were recorded during this survey (a small area 1-2 m long was recorded in the Cloonalaghan River channel). There is no information to indicate that the area of *Salicornia* flats was more significant in the past.

This habitat could be expected to be more extensive in a site of this size. However, the location of the Cloonalaghan River channel along the northern boundary of the saltmarsh has eliminated any pioneer plant communities or raised sand bars where this habitat would be expected to develop. Small patches are likely to develop along the Cloonalaghan River channel within the saltmarsh.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent is assessed as *favourable* as there has been no overall loss of habitat to erosion. Losses of habitat along the northern boundary are being compensated by the creation of new ASM along the western boundary of Lackan Bay and at the north-east corner of the saltmarsh.

5.3.2 Habitat structure and functions

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

The ASM has adequate habitat structure and functions. Sheep grazing has created a typical low sward (1-2 cm high). However, species diversity has not been affected and is typical of this habitat. Poaching is only localised or at a low level. Further back in the saltmarsh grazing is not as significant and there are patches of taller ASM (0.4 m high). Zonation is evident with the typical low/mid and upper ASM saltmarsh plant communities present. There are mosaics present with MSM that could be considered transition areas between the two habitats. There minor areas with some natural transitional habitats to wet and dry grassland, and fixed dune grassland. (Most of the transitional saltmarsh habitat occurs alongside MSM.). Common Cordgrass (*Spartina anglica*) was not recorded on this site.

5.3.3 Future prospects

The future prospects of the ASM are assessed as *favourable* in the short term, assuming the current grazing regime is continued, sheep stocking rates are not increased and heavy poaching by cattle remains limited.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The extent is assessed as *favourable* as there has been no overall loss of habitat to erosion. There have probably been some losses in the past to drainage and land reclamation but there have been no recent losses.

5.4.2 Habitat structure and functions

Eight monitoring stops were carried out in the MSM and seven passed. Therefore, the overall structure and functions of this habitat is assessed as *unfavourable-inadequate*. The only stop that failed, failed due to heavy poaching damage with the target for plant ground cover not being reached. The area affected by the heavy poaching is about 10% of the total area of MSM.

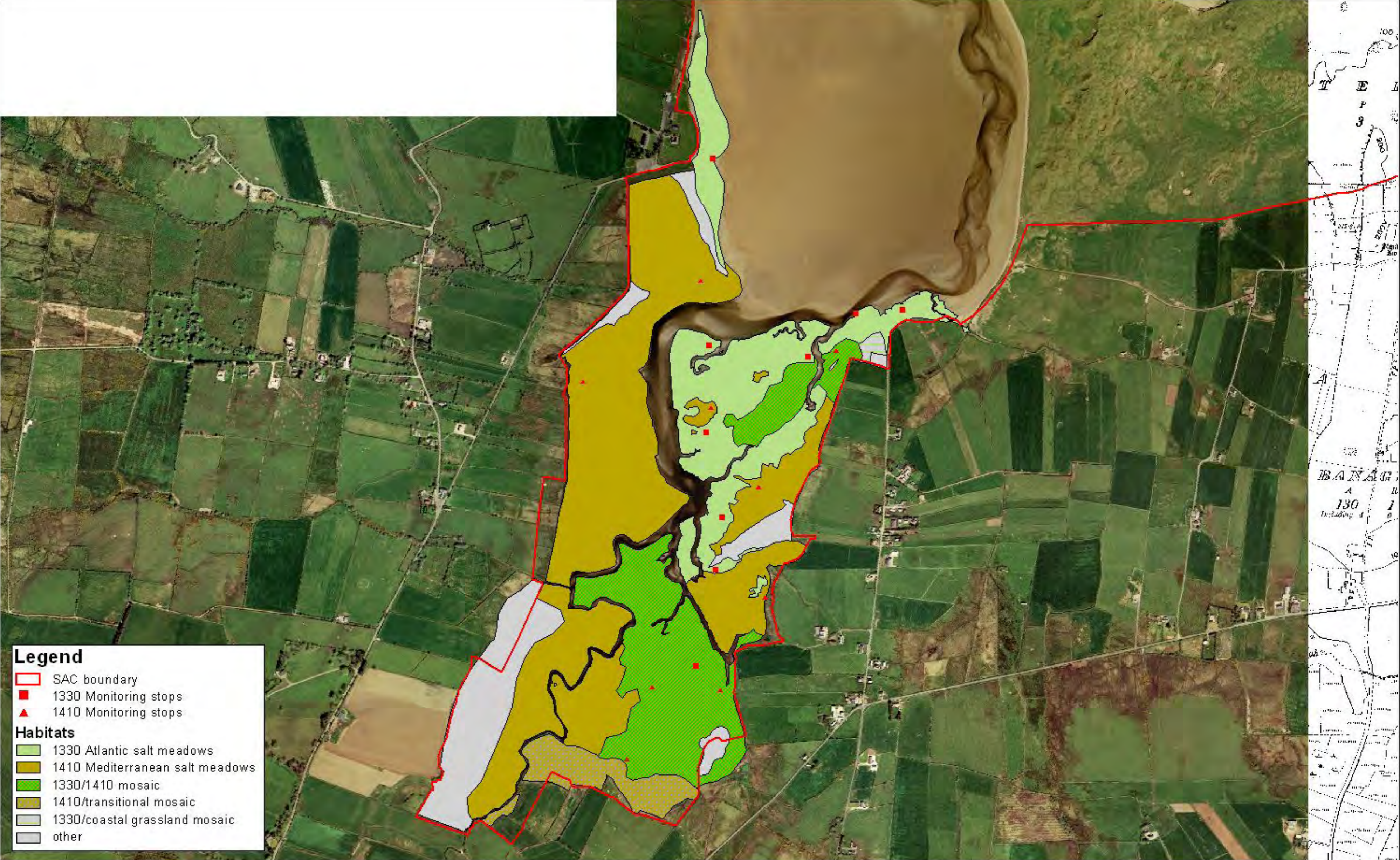
The MSM in general has adequate habitat structure and functions. Grazing is not significantly affecting the MSM, as the dense Rush sward protects the other species to some extent. Species diversity is typical of this habitat. There are mosaics present with ASM that increase the structural diversity. There are significant transitional habitats to wet and dry grassland, and fixed dune grassland (Most of the transitional saltmarsh habitat occurs alongside MSM.).

5.4.3 Future prospects

The future prospects of the MSM are assessed as *unfavourable-inadequate* in the short term, assuming the current grazing regime is maintained. Reduction of cattle grazing is required in some of the enclosures in the north-west of the site to prevent further poaching and allow the saltmarsh to recover somewhat.

6 MANAGEMENT RECOMMENDATIONS

Monitoring is required to prevent potential further land reclamation and infilling. Deepening or cleaning of drains and creeks on the saltmarsh is also potentially likely in the future. The current grazing levels are not affecting the saltmarsh significantly overall, apart from the heavily poached area in the north-west section of the saltmarsh.



Legend

- SAC boundary
- 1330 Monitoring stops
- ▲ 1410 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1410/transitional mosaic
- 1330/coastal grassland mosaic
- other

**Saltmarsh
Monitoring Project**

Lackan

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)

Míre na leathneacha ar an karscail seo ach níl garthuilleadh ginearálta. Feidh ar bheith na leathneacha ar leithneacha na goeantar comharthaí. Machairneacha d'áir na cSAC (000516) ar ndóig le dealán Rialtas. (Ceathúar Uimh. 5953)

**Lackan saltmarsh and Kilcummin
Head cSAC (000516)**

SMP Code: SMP0022	Map produced by: SMP 2006
	Map Version: 1

0 0.2 0.4 0.6 0.8 Kilometers

Scale: 1:10198

Mallaranny

1 SITE DETAILS

SMP site name: Mallaranny	SMP site code: SMP0011
Site name (Curtis list): Mallaranny	CMP site code: 112
	Site No: (Curtis list): 68
NPWS Site Name: Clew Bay Complex	Dates of site visit: 13/07 & 07/09/2006
NPWS designation cSAC: 1482	MPSU Plan: not for coastal areas
pNHA: 1482	
County: Mayo	Discovery Map: 30 Grid Ref: 082680, 295950
6 inch Map No: Ma066	Aerial photos (2000 series): 01837-b, 01837-d
Annex I habitats currently designated for Clew Bay Complex cSAC: Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Tooreen, Rosmurrevagh, Teirna, Rockfleet, Roshanagh East, Caraholly South, Kiladangan, Annagh Island, Bartraw	
Saltmarsh type: Lagoon/Sand flats	Substrate type: Mud/Sand

2 SITE DESCRIPTION

Mallaranny saltmarsh is located along the north-west shoreline of Clew Bay in County Mayo. This saltmarsh is a well known site and was formerly a pNHA (Site code 1541) before being integrated into the Clew Bay Complex cSAC/pNHA. The site is situated south of Mallaranny Village (also spelt Malranny or Mulrany), which overlooks the saltmarsh. The intertidal habitats have developed in a sheltered bay (Trawoughter Strand) and they are surrounded by steeply sloping land that forms the foothills of uplands surrounding this site (Cushlecka, Mallaranny Hill and Cleggan Mountain). These uplands are dominated by dry heath, wet heath, blanket bog and exposed rock. The lower slopes adjacent to Trawoughter Strand contain a ribbon of dwellings and building that are part of Mallaranny Village. Trawoughter Strand is dominated by intertidal sandflats. The largest section of saltmarsh is situated in a small enclosed lagoon to the west of the strand and has developed behind a barrier. The saltmarsh is enclosed to the east by a footbridge and causeway built in 1899 as part of the Great Western Railway Hotel development.

A smaller section of saltmarsh is located to the north-east adjacent to Mallaranny Golf Course (Gannivbaun). The Coastal Monitoring Project also surveyed machair and sand dune habitats at Gannivbaun and Rosmurrevagh in 2006. These coastal habitats are located on a peninsula between Mallaranny saltmarsh and Rosmurrevagh/Tooreen saltmarshes. Mallaranny saltmarsh is situated 2.5 km south of Bellacragher saltmarsh (SMP0010), and 2.5 km west of Tooreen (SMP0012) and Rosmurrevagh (SMP003).

Three Annex I habitats, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Only one, ASM, is listed as a qualifying interest for the Clew Bay Complex cSAC. Nearly all of the saltmarsh habitat is situated within the cSAC. A small strip along the southern section of the main area is excluded unintentionally, as the 6 inch map was used to draw the cSAC site boundary. This map is slightly inaccurate in places or boundaries may have changed slightly during the intervening period so that small areas of saltmarsh have been excluded.

The site can be accessed easily by minor roads leading from Mallaranny Village to the beach and pier where car parking is provided by the County Council.

3 HABITATS

3.1 General description

The main saltmarsh area is dominated by Atlantic salt meadows (ASM) (Table 3.1). This is a moderate-sized saltmarsh. Mediterranean salt meadows (MSM) are situated along the western landward boundary and become dominant in the north-west section of the saltmarsh. There is only a minor amount of *Salicornia* flats habitat (1310) present in this area (Table 3.1). A narrow band of ASM is situated along the northern shoreline of Pollnagorr. Narrow ASM is also situated along the northern side of Trawoughter Strand. This connects the main saltmarsh with the smaller saltmarsh area in the north-east section of the strand. The smaller saltmarsh is made up of ASM and MSM is not present. Several clumps of Sea Rush (*Juncus maritimus*) are scattered along this part of the shoreline but they are too small to map as MSM.

The main saltmarsh area is fairly enclosed and sheltered by other habitats. This site was classed as a lagoon-type saltmarsh by Curtis and Sheehy-Skeffington (1998).

The southern side is enclosed by a small peninsula extending from the west and a small hill (Pollnagorr). A rocky beach extends along the southern side of these two areas and creates a barrier to enclose the southern side of the saltmarsh. A road extends along this barrier to Mallaranny Pier at Pollnagorr. There are some landward boundaries along the western and the northern parts of the main saltmarsh. These landward boundaries are dominated by wet grassland and scrub. Some of the western landward boundary is marked by an old embankment ditch in the south-west corner. This ditch has cut off a small area of saltmarsh. A fence extends along the top of the embankment and along the landward boundary. A stream flows into the saltmarsh along the western side and the channel through the saltmarsh forms a townland boundary. Conifer trees and Rhododendron (*Rhododendron ponticum*) overhang the saltmarsh along the northern boundary. The eastern side of the saltmarsh is enclosed partly by a man-made causeway with several footbridges. The footbridges cross the large channels that drain the saltmarsh. The causeway also encloses a large intertidal sandflat area in the north-east corner. The causeway links to a ridge in the centre containing machair grassland. This ridge also contains a concrete hut (toilets). There is a rocky area in the south-east section with rocks, cobble and pebbles extending down onto the saltmarsh. These are probably blown over from the storm beach along the southern side of the barrier.

There is another smaller area of saltmarsh located along the north-eastern side of Trawoughter Strand (Gannivbaun). This saltmarsh has developed in the area where the Murrevegh River enters Trawoughter Strand so there is some minor estuarine development. Saltmarsh has developed on both sides of the river channel and is enclosed by sandy ridge along the southern side with the outflow on the western side. The sandy ridge is dominated by machair grassland. There are also patches of eroding lower/pioneer saltmarsh vegetation along the southern side of this sandy ridge. Between the saltmarsh and the vegetated sandy ridge there is bare sand and patches of embryonic dune. The northern and eastern landward boundaries are marked by Gorse (*Ulex europaeus*) -dominated scrub and wet grassland.

Table 3.1. Area of EU Annex I habitats listed at Mallaranny.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.002
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	19.93
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	2.1
	Total	22.03

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

This habitat is present on some of the larger creeks on the main saltmarsh. These areas were generally too small to map and were represented by thin strips of (Glasswort (*Salicornia* sp.) -dominated vegetation on (generally < 1 m wide) on narrow sand banks within some of the creeks. These patches are not widespread and are fairly localised in their distribution.

Pioneer saltmarsh is also present along the seaward edge of the main saltmarsh (Info Point 19). This vegetation contains frequent Annual Sea-Blite (*Suaeda maritima*) but it is dominated by Common Saltmarsh-grass (*Puccinellia maritima*) so it is classified as ASM.

3.3 Atlantic salt meadows (H1330)

3.3.1 Main section

Atlantic salt meadow is the predominant saltmarsh habitat at this site. Mallaranny saltmarsh has a very characteristic low tightly cropped (ASM) sward. This sward contains dwarf versions of saltmarsh plants than those seen at other less-intensely grazed sites and there is very little flowering. The vegetation is similar to the southern section of Dooaghtry (SMP0010). A large part of the saltmarsh is situated at a fairly uniform elevation and is dominated by mid-saltmarsh zone plant communities. The sward is dominated by Sea Pink (*Armeria maritima*) with frequent Sea Plantain (*Plantago maritima*), Common Saltmarsh-grass, Saltmarsh Rush (*Juncus gerardii*) and Sea Milkwort (*Glaux maritima*). Other species present include Buck's-horn Plantain (*Plantago coronopus*), Sea Arrowgrass (*Triglochin maritimum*), Creeping Bentgrass (*Agrostis stolonifera*), Red Fescue (*Festuca rubra*) and Glasswort. Turf

Fucoids are also present in this community and this is a feature of local distinctiveness.

There are small mounds within this area with mid-upper zone saltmarsh vegetation but these are generally rare. Upper saltmarsh zone vegetation is mainly situated around the edges of the saltmarsh where there are steeper slopes up to the transitional vegetation or landward boundaries. The vegetation in this zone is characterised by the dominance of Saltmarsh Rush and the occurrence of Bucks'horn Plantain and Long-bracted Sedge (*Carex extensa*).

A complex network of creeks creates an internal network of lower saltmarsh zone vegetation in bands along these creeks. This zone is dominated by Common Saltmarsh-grass with occasionally frequent Glasswort and occasional Annual Sea-Blite. This zone tends to be the most damaged part of the saltmarsh with frequent signs of erosion and poaching. Lower zone and pioneer saltmarsh is situated close to the landward boundary in the south-west section. There are small tussocks remaining that are colonised by Sea Pink. This is unusual and gives an indication of the relative uniformity of the elevation of the saltmarsh surface (quite flat) so that lower zone saltmarsh becomes more extensive.

The lower saltmarsh and pioneer zone is not extensive along the seaward edge of the saltmarsh within the causeway and internal zonation is more prevalent. There are small areas where the lower creek areas are being colonised by Common Saltmarsh-grass-dominated vegetation. A small area of pioneer saltmarsh is located outside the causeway area. This area contains small patches of Common Saltmarsh-grass and scattered Glasswort colonising the sandy shoreline. A narrow band of saltmarsh is situated outside the causeway area along the shoreline of Pollnagarr. This band is dominated by a mixture of Common Saltmarsh-grass and Saltmarsh Rush amongst other saltmarsh species.

The creek structure is very well developed in the main saltmarsh (one of the best seen during the survey). Some of the creeks are internally linked and create saltmarsh 'islands'. A creek is also located along the north-western landward edge of the main saltmarsh. The creek structure is likely to be related to the relatively large extent of saltmarsh being at a similar elevation (0.35 km wide at one point). Pans are much less

frequent compared to the creek network. The pans generally are not colonised by Glasswort or other pioneer species. The seaward edge of this habitat along the intertidal flats inside the causeway area is highly dissected with small islands of saltmarsh being created with steep saltmarsh cliffs up to 1 m high. There are several isolated 'islands of saltmarsh at the northern end of the main saltmarsh.

3.3.2 North-west Section

The ASM vegetation of this saltmarsh is similar to the main section. The vegetation is dominated by mid marsh communities and a typical low close-cropped sward has developed. There is internal zonation with lower saltmarsh vegetation appearing along the edges of the smaller creeks and the frequent salt pans in this area. There is a band of upper marsh vegetation with Red Fescue and Long-bracted Sedge predominant in places and Creeping Bentgrass is dominant along the northern side. This area of saltmarsh has a natural transition to machair vegetation along the southern ridge.

This topography of this saltmarsh contrasts with the main area. This saltmarsh contains more frequent salt pans. The creek network is much less developed and this contrast with the main area can be related to differences in the ontological development of the various saltmarshes. There are fewer signs of erosion along the edges of the salt pans and creeks compared to the main section. Poaching damage is reduced in this area. There are signs of erosion and accretion along the river channel dividing this saltmarsh, as the channel shifts position. Banks of accreted sediment are situated on the inside of the meanders of the channel while there is fracturing of the saltmarsh sward and mud balls on the outside edge of the river channel.

There are several patches of ASM saltmarsh to the south of the machair ridge. Eroded patches of mud are present at the western side and there are patches of Common Saltmarsh-grass colonising newly accreted sediment (sandy). This band of lower and pioneer saltmarsh has a band of embryonic dune along the upper boundary adjacent to the edge of the machair ridge, which is eroding. There are patches of mid marsh vegetation in some of the larger sections dominated by Sea Pink and Sea Plantain.

A narrow band of saltmarsh links this saltmarsh to the causeway along the northern boundary of Trawoughter Strand. This band varies between 3-15 m wide and

contains some clumps of Sea Rush. The band also displays some zonation of plant communities with a band of upper marsh vegetation along the landward boundary dominated by Creeping Bentgrass. Parsley Water-dropwort (*Oenanthe lachenalii*) is present along this saltmarsh. There are transitions to wet grassland with patches of Yellow Flag (*Iris pseudacorus*). Other species present include Autumn Hawkbit (*Leontodon autumnalis*) and Silverweed (*Potentilla anserina*). The landward boundary is a rocky embankment/dry stone wall along the bottom of a steep embankment.

3.4 Mediterranean salt meadows (H1410)

This habitat is situated within the causeway area in the narrower north-west section of the main saltmarsh. The MSM is generally between 40-70 m wide and dominates this section, although there are patches of ASM along the seaward boundary. There are several isolated clumps of Sea Rush in the south-west section. A mosaic ASM/MSM area is located at the southern end of the main MSM area, as clumps of Sea Rush become more frequent. This mosaic area contains clumps of Sea Rush interspersed between the typical close-cropped ASM sward (75% MSM). Some plant zonation is evident within the MSM. Species such as Creeping Bentgrass are more prevalent towards the landward side and on some of the mounds while species such as Sea Pink are more prevalent towards the seaward side. Small clumps within the MSM contain ASM vegetation dominated by Saltmarsh Rush and Sea Pink.

The vegetation is dominated by dense Sea Rush creating uniform high sward about 0.5 m high. Other species present include frequent Sea Plantain, Saltmarsh Rush, Creeping Bentgrass and Red Fescue. Species such as Sea Pink, Sea Aster (*Aster tripolium*), Sea Milkwort, Common Scurvygrass (*Cochlearia officinalis*) and Autumn Hawkbit are occasional. The MSM vegetation is generally not affected significantly by grazing.

There are several larger mounds within the MSM that contain coastal grassland species such as White Clover (*Trifolium repens*). One mound contains Gorse bushes. These indicate that these mounds extend above the high water mark.

There are occasional small pans within the MSM. The MSM is also dissected by creeks, although to lesser extent than the ASM, and creeks become less common

towards the northern end. This is likely to be due to the narrowing of the saltmarsh. One creek within this area is being revegetated by Common Saltmarsh-grass and Creeping Bentgrass. The north-western section of the saltmarsh is much more topographical variable compared to the main ASM area with mounds and shallow hollows present. A relatively tall saltmarsh cliff is present along the seaward edge of the saltmarsh.

4 IMPACTS AND ACTIVITIES

The most significant activity is sheep grazing (Table 4.1). The activity codes used in Table 4.1 are given in brackets in the following text. Heavy grazing pressure has created a distinctive low sward in the main section. The grazing intensity has not affected the plant sward cover (bare substrate generally < 1%) but at some locations there is poaching induced erosion along the creek and pan edges and in some low-lying areas (142). There is some cattle poaching but this is minor compared to sheep poaching.

The level of poaching is moderate compared to other sites. This has created small eroded hummocks of mud in places. These areas are dominated by lower marsh vegetation with mid marsh vegetation on the small hummocks. These areas have the appearance of recovering slightly from older heavy poaching damage, as there is a predominance of Common Saltmarsh-grass colonising in these areas close the landward side of the marsh. This is an example of reverse zonation of saltmarsh vegetation that has been seen on British saltmarshes prone to erosion of the upper saltmarsh zones. Mallaranny Saltmarsh has a distinctive complex network of creeks. This creek network is unusual due to the width of the creeks in some places. This is likely to be related to the wide expanse of saltmarsh at a uniform elevation. However, the poaching-induced erosion may be also widening some of the creeks. It is difficult to quantify the influence of sheep poaching on the creek structure at this location as the ontological development of this saltmarsh in a lagoon system is also likely to have had a significant influence on the development of the creek system.

There is some difference in grazing pressure between the main saltmarsh area and the north-east section of saltmarsh. The north-east section has a similar characteristic low

sward, but there are much fewer signs of poaching induced erosion in this section. This area is not considered to be overgrazed (Table 4.1).

There are several activities affecting this site due to the close proximity of the main saltmarsh section to the track (Table 4.1) and the minor road accessing the beach car park and pier. The saltmarsh is used for overflow car parking during the summer. The saltmarsh is also used for parking several caravans (presumably only during neap tides) (608). This vehicle use has created wheel ruts on the saltmarsh surface (501). A causeway and footbridge extends along the eastern side of the saltmarsh and provides a track from the hotel in Mallaranny Village to the beach. This allows for easy access to the saltmarsh for walkers and dogs (622). There are several telegraph poles crossing the saltmarsh (511). A track used by sheep and walkers is also present on the north-eastern saltmarsh section (501). Some old embankments cross the saltmarsh at the south-west boundary and have cut off some saltmarsh from the main area.

The main saltmarsh is likely to have been affected in the past by the development of the causeway and footbridge, which was built in 1899. A comparison of the 1st edition and 2nd edition 6 inch OS maps indicates that the saltmarsh did not accrete significantly after the construction of the causeway and bridge. The development of the causeway may have affected geomorphological and tidal cycles somewhat and lead to further accretion and growth of the saltmarsh or some erosion (910). A comparison of the 2000 aerial photo to the 1930 2nd edition 6 inch map indicates that some of the main saltmarsh (and sand dune) has been eroded during this period (0.9 ha) (900). There is currently some accretion and development of pioneer saltmarsh (0.25 ha) in this area (910).

Erosion (900) and accretion (910) is occurring along the Murrevegh River channel in the north-eastern saltmarsh section. These impacts are probably compensated each other.

Activities adjacent to the site include some farming on the lower lying areas. Farming activities are mainly grazing of cattle and sheep (140). There is very little improved land (120) and small fields are frequently abandoned and contain wet grassland and scrub. There are several houses are scattered in the area around the bay (403) and

Mallaranny Village is situated close to the saltmarsh (401). Mallaranny Beach to the south of the site is used heavily in the summer (629) and there is a small caravan park in adjacent fields (608).

Table 4.1. Intensity of various activities on saltmarsh habitats at Mallaranny.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	140	C	-1	19.93	Inside
1330	142	B	-1	12.2	Inside
1330	501	C	-1	< 0.1	Inside
13s	511	C	-1	< 0.001	Inside
1330	608	C	-1	< 0.01	Inside
1330	622	C	-1	12.2	Inside
1330	900	D	-1	12.2	Inside
1330	910	C	+1	0.25	Inside
1410	140	C	-1	2.1	Inside
13s	120	C	0	22.03	Outside
13s	140	C	0	22.03	Outside
13s	401	C	0	22.03	Outside
13s	403	C	0	22.03	Outside
13s	608	C	0	22.03	Outside
13s	629	C	0	22.03	Outside

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 this site has a moderate or unfavourable inadequate conservation status (Table 5.1). Only one stop failed out of twelve spread over the MSM and ASM. The most significant activity on this site is sheep grazing. There is moderate-heavy grazing pressure on this site. This has created a distinctive close-cropped sward. However, the relatively high stocking rate is also causing poaching-induced erosion of the creek and pan edges. These signs of overgrazing are fairly widespread but they do not occur at a level to fail more stops.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor. Mallaranny saltmarsh is bordered by steeply sloping land at its landward boundaries. This means that there are limited prospects for saltmarsh migration up-slope in response to sea level rise. Rises in sea level are

likely to erode the seaward edge of the saltmarsh. Much of the main saltmarsh is situated at a similar elevation so a large area will be vulnerable to erosion. There will only be small narrow bands of new saltmarsh created and this will not compensate for habitat lost due to erosion at the seaward edges.

No MPSU Conservation plan is available for the intertidal habitats at this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Mallaranny.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable – inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent, Structure and functions, Future prospects			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions, Future prospects		Unfavourable – inadequate
Mediterranean salt meadows (1410)	Extent, Structure and functions, Future prospects,			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

The extent of this habitat is quite small and it is confined to several narrow strips of Glasswort-dominated vegetation on sediment banks in some of the creeks. The intertidal area within the causeway is a suitable area for this habitat and it is unusual that the extent of this habitat is not greater in this area. These sheltered intertidal areas are typical locations for this habitat with patches of Glasswort colonising sediments at suitable elevations. However, the extent of this habitat is assessed as *favourable*, in the absence of no information on the previous extent of this habitat at this site.

5.2.2 *Habitat structure and functions*

The structure and functions of this habitat is assessed as *favourable*. No monitoring stops were carried out due to the very small extent of the habitat.

5.2.3 *Future prospects*

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future. There are no major impacts or activities affecting this habitat. The sediment banks that this habitat colonises are prone to sudden erosion or accretion in response to geomorphological cycles or storm events.

5.3 Atlantic salt meadows (H1330)

5.3.1 *Extent*

Overall, the extent of this habitat is assessed as *favourable* in the absence of other information on the previous extent of this habitat. There are signs of poaching-induced erosion along creeks and pans of the main saltmarsh section. Some of these eroded areas are dominated by lower saltmarsh zone vegetation so the overall extent of saltmarsh has not been reduced. The main saltmarsh at Mallaranny is characterised by a complex creek network with some relatively wide creeks. The width of some of these creeks could be related to poaching-induced erosion. However, is difficult to estimate the amount of saltmarsh that has been eroded (and not replaced by lower zone communities) along the edges of these creeks.

There are no indications of any significant loss of habitat due to erosion along the seaward edge of this saltmarsh (within the causeway). Some of the undulations mapped on the 6 inch map are still present in 2000 so some of the seaward edge is relatively stable. There are two small isolated islands of ASM saltmarsh present at the northern end that were not mapped on the 6 inch map and this may be an indication of accretion during this period.

A comparison of the outer seaward boundary of the saltmarsh area mapped on the 6 inch map to the 2000 aerial photo shows that there has been some erosion during this period. However, the eroded area probably was dominated by machair grassland so the loss of saltmarsh in this area may not be significant. The machair grassland ridge may be migrating north-westwards.

5.3.2 *Habitat structure and functions*

The structure and functions of this habitat is assessed as *unfavourable-inadequate*. Eight stops were carried out in this habitat and seven passed. One stop failed in the main section due to excessive localised erosion that was poaching induced. Sheep grazing is moderate to heavy on this site and has produced a low close cropped sward with dwarfed saltmarsh plants. However, the grazing has generally not caused striping of the sward surface like that seen at Annagh Island. The heavy grazing is impacting indirectly by poaching and this is particularly seen along the lower saltmarsh zones following the edges of the creeks. Some of the edges of the creeks show signs of erosion but the saltmarsh surface was generally not poached significantly. Poaching-induced erosion may be causing the widening of the creek network and some reverse zonation of saltmarsh communities but more detailed monitoring is required to confirm these impacts. Only the main section is affected by excessive poaching-induced erosion and these impacts are not seen on the north-east saltmarsh.

The high levels of grazing on the sward were not excessive enough to fail more than one stop due to the criteria used. The grazing has created a low uniform sward in the ASM and the sward structure is generally quite uniform, although this attribute was not used to fail individual stops.

Other attributes for ASM reached their targets and this saltmarsh has several other features that enhance its conservation value. The ASM has a species diversity typical of this habitat and has several features of local distinctiveness, such as turf fucoids and dwarfed saltmarsh plants. There is some plant zonation particularly along the creeks but the main saltmarsh area is dominated by one main zone. This is due to the general uniform topography and the general flatness of this saltmarsh area. This can also be considered a feature of local distinctiveness and is probably related to the ontological development of the saltmarsh. The north-east saltmarsh section has better-developed zonation with transitions to machair grassland. The lower pioneer zone is represented by patches of Common Saltmarsh-grass, and occasional Glasswort and Annual Sea-blite. These colonise sandy areas around the edges of Trawoughter Strand (outside the causeway area) and along the seaward edge of the machair grassland area.

The creek and pan structure is also very well developed. There is a complex network of creeks in the main section and the north-east section has well-developed salt pans. The north-east section also has a natural transition to machair grassland. The main saltmarsh section does not have significant transitional habitat, as the saltmarsh is situated adjacent to land that has slopes that are too steep for significant transitional habitats to develop. The saltmarsh is part of a larger coastal ecosystem in Trawoughter Strand that contains intertidal sand and mudflats. These transitional and adjacent habitats enhance the conservation value of the saltmarsh. Common Cordgrass (*Spartina anglica*) is not present at this location.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts continue in the near future. Heavy grazing pressure is having a significant impact on this site and is likely to continue in the future. There is no MPSU Conservation plan available for the intertidal habitats in this cSAC.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

Overall, the extent of this habitat is assessed as *favourable*. There is no previous information on the extent of this habitat, although it was noted during the NHA survey (1993) that that site did contain a plant community dominated by Sea Rush.

5.4.2 Habitat structure and functions

The structure and functions of this habitat is assessed as *favourable*. Four monitoring stops were carried out in this habitat and they all passed. Grazing is not having as significant impact on the vegetation in this habitat as the Sea Rush shields the other saltmarsh species somewhat. Full size saltmarsh plants are present in the Sea Rush clumps (compared to the dwarfed plants present in the grazed ASM). Other attributes for this habitat reached their targets. This habitat had a typical species diversity. Some plant zonation was present in this habitat with some species such as Creeping Bentgrass being more abundant nearer the landward boundary. The mosaic area has a diverse sward height structure due to the presence of the Sea Rush clumps. Transition habitats along the MSM are not developed (apart from some signs of freshwater

influence at the landward boundary with species such as Yellow Flag). This is due to the fact that the saltmarsh occupies a flat plain surrounded by steeply sloping land, so the transition zone is quite narrow. The creek network is not as complex in this habitat but this is due to the general topography and the fact that the habitat occupies a much narrower area. There is some poaching-induced erosion in the creeks in this habitat but the creek network is not as extensive so this impact is not as significant.

5.4.3 Future prospects

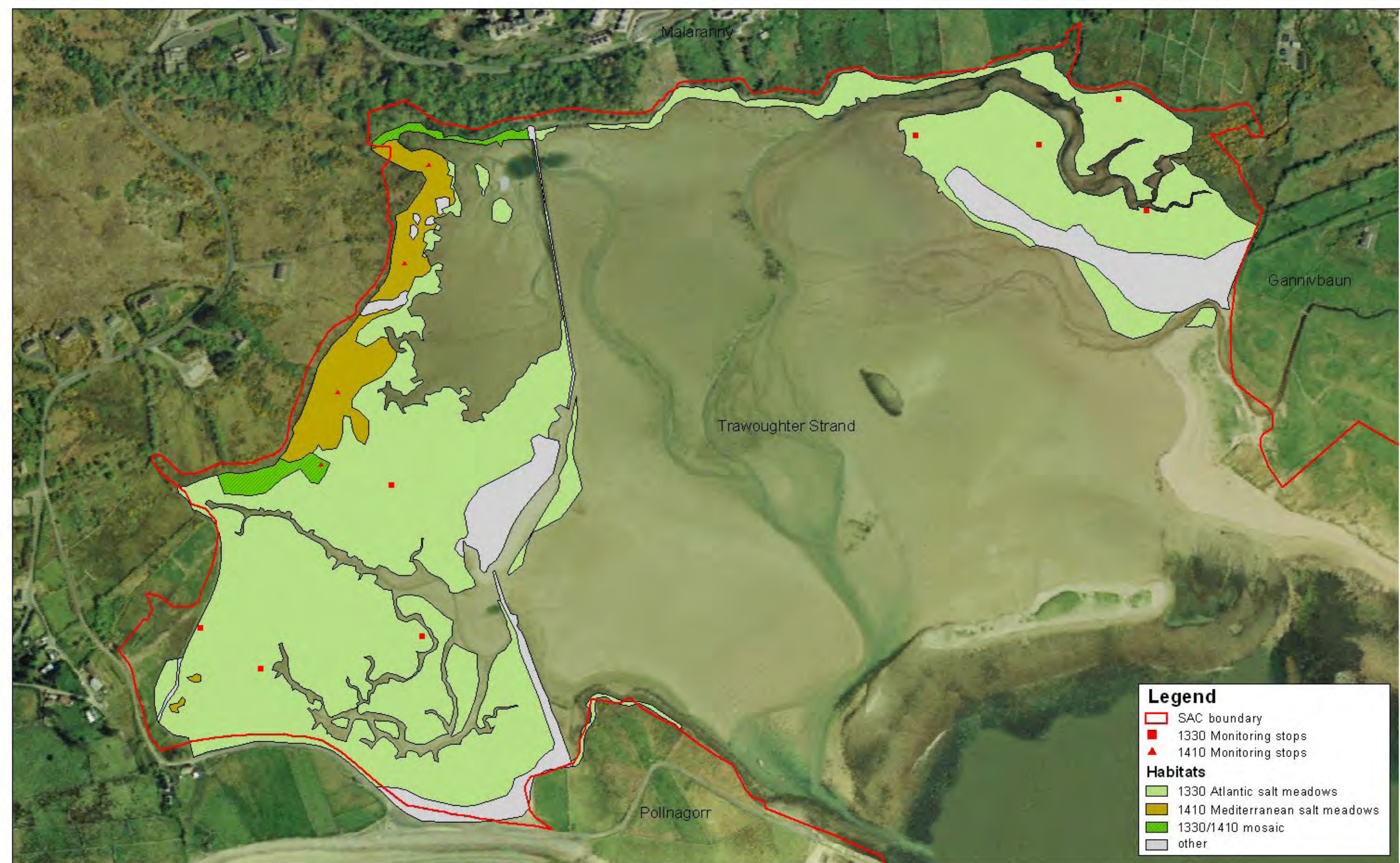
The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future.

6 MANAGEMENT RECOMMENDATIONS

Some reduction in grazing levels is required to increase the conservation status of the saltmarsh habitats at this site. While grazing is not having the same impact on this site compared to some heavily grazed sites such as Annagh Island and Dooaghtry, it was at a moderate-heavy level and the associated poaching may be inducing erosion.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The Salt Marshes of Ireland: An Inventory and Account of their Geographical Variation. *Biology and Environment: Proceedings of the Royal Irish Academy* 98B, 87-104.



**Saltmarsh
Monitoring Project**

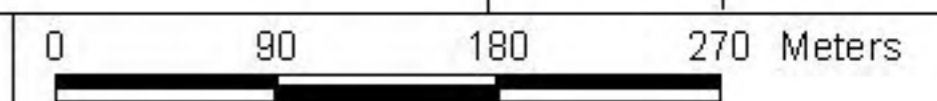
Mallaranny

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)

Máilín na leabharthaigh ar an t-áras seo a bhfuil na gairneoireachtaí á ghlacadh. Féadfaidís a bhíodh na h-áiteanna ar an t-áras seo a bhfuil na gairneoireachtaí á ghlacadh. (Ceadúnas Uimh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: SMP0011
 Map produced by: SMP 2006
 Map Version: 1



Scale: 1:4081



North Achill Sound

1 SITE DETAILS

SMP site name: North Achill Sound	SMP site code: SMP0107
Date of site visit : 23/04/2008	CMP site code: N/A
SM inventory site name: North Achill Sound	SM inventory site code: 66
NPWS Site Name: no designations	
NPWS designation cSAC: N/A	MPSU Plan: N/A
pNHA: N/A	SPA: N/A
County: Mayo	Discovery Map: 30 Grid Ref: 073030, 300760
Aerial photos (2000 series): O 1713-A,C; O 1774-A	6 inch Map No: Ma 055
Saltmarsh type: Fringe	Substrate type: Peat/stumps

2 SITE DESCRIPTION

This site is located on the east side of Achill Island in Co. Mayo, 1.2 km north of North Achill Sound Village. The landscape of this area is relatively flat and low-lying and is dominated by blanket bog and cutover bog. There is scattered habitation in this area. The saltmarsh is on the shoreline around an intertidal area known as Bleannahooey Strand. The intertidal area contains mud flats some mixed sediment and patches vegetated by Wrack.

The site is centred on a small inlet. A small stream flows into this inlet from the adjacent blanket bog. This is a fringe type saltmarsh and the habitat is generally developed as a relatively narrow strip of habitat around both sides of this inlet.

This site is not located in any nature conservation designations. The shoreline was accessed via a minor road at a road bridge where a small stream flows into the main inlet. There were no access issues at this site.

3 SALTMARSH HABITATS

3.1 General description

Both Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM) are present at this site with ASM being the most dominant habitat (Table 3.1). The MSM patches generally form small mosaics with the ASM. The saltmarsh development is generally quite poor and is found as a band of vegetation about 5 m wide on a terrace at the base of a peat face-bank that is sometimes quite tall (1-2 m high in the NE section). The shoreline is quite irregular and the saltmarsh is fragmented in places. Some patches of habitat are larger and are up to 20 m wide. The saltmarsh has generally developed on a thin band of substrate that is quite eroded in places and the saltmarsh forms a mosaic with underlying rocky glacial deposits.

There is a transition at the lower saltmarsh boundary to mixed muddy and rocky substrates with abundant Wrack cover. A low saltmarsh cliff (0.1 m high) marks the lower seaward boundary in places. However, much of the saltmarsh at the lower boundary is on quite thin substrate so the vegetated substrate breaks up in places at the lower boundary and there is no distinctive boundary.

There are varied transitions at the upper boundary to wet grassland, bare rocky deposits, scrub or blanket bog in places. At some parts of the site the saltmarsh has developed on the shoreline adjacent to a dry blanket bog face bank which is vegetated by Gorse (*Ulex europaeus*), Heather (*Calluna vulgaris*) and other scrub species. Parts of the site, particularly at the head of the inlet where the stream channel meets the shoreline, have a tall exposed peat face bank with no saltmarsh development at the base of the face bank. However there is some minor development of ASM on top of these face banks in places, generally less than 1 m wide. There are several patches where there is exposed peat, perhaps related to turf cutting, that are being revegetated by saltmarsh species such as Sea Rush as well as terrestrial species such as Purple Moor-grass (*Molinia caerulea*) and Heather. These patches do not have established vegetation and have an irregular micro-topography. There are occasional small freshwater seepages that extend into the saltmarsh from the adjacent blanket bog. The ASM also transitions to a dry acid grassland vegetation type.

Table 3.1. Area of saltmarsh habitats mapped at North Achill Sound.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	1.272
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.394
	Total	1.666

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

The ASM at this site is generally quite poorly developed compared to other sites. Some of the ASM at this site exists as a homogenous narrow zone of vegetation less than 5 m wide and is dominated by Sea Plantain (*Plantago maritima*) and Sea Pink (*Armeria maritima*) with patches of Saltmarsh Rush (*Juncus gerardii*) on a thin muddy or peaty substrate. Other species found in this habitat include Sea Aster (*Aster tripolium*), Buck's-horn Plantain (*Plantago coronopus*), Sea Arrowgrass (*Triglochin maritimum*), Red Fescue (*Festuca rubra*), Common Saltmarsh-grass (*Puccinellia maritima*) and Common Scurvy-grass (*Cochlearia officinalis*). Typical zonation of this habitat is poorly developed. However there are some small examples of ASM zones present including vegetation dominated by Creeping Bent (*Agrostis stolonifera*) along the upper part of these narrow bands. A second community with a mixture of Red Fescue, Saltmarsh Rush and Buck's-horn Plantain is also present near the upper saltmarsh boundary in places.

Much of the ASM sward is overgrazed by sheep and there are parts with frequent cover of a green algal mat, a negative indicator. However the heavy grazing is probably beneficial for the presence of Turf fucoids that are found in this habitat. Much of the ASM also has some cover of bare substrate related to overgrazing or to natural erosion due to the thin substrate. The sward height is generally quite short, between >1-2 cm high.

ASM has also developed on top of the black bog face-back in places. This ASM is generally quite grassy and dominated by Red Fescue with Buck's-horn Plantain, Creeping Bent, Sea Plantain with a low sward height but little poaching damage.

The saltmarsh topography is generally poorly developed, which is typical of small sites with narrow bands of habitat. There are small salt pans present in this habitat in the largest sections where it is best developed. There are scattered pebbles and cobbles frequently present on the saltmarsh. Some of the salt pans contain frequent cobbles. There are occasional larger exposed boulders in this habitat.

3.3 Mediterranean salt meadows (H1410)

The MSM at this site is poorly developed compared to other sites. The vegetation is generally dominated by abundant Sea Rush. Other species that form a prominent part of the vegetation include Sea Pink, Red Fescue and Creeping Bent but the cover of these species varies. Other species found in this habitat include Sea Plantain, Sea Arrowgrass, Turf fucoids, Sea Aster, Common Scurvy-grass, Long-bracted Sedge (*Carex extensa*) and Common Saltmarsh-grass. The MSM has also developed mainly on a thin layer of muddy or peaty substrate. However there are some sections where Sea Rush is vegetated mixed loose stony substrate and there is frequent bare substrate cover in this habitat type. There are also some locations where Sea Rush is colonising on bare peat where some cutover blanket bog is at a low enough level to be flooded by spring tides.

The MSM habitat forms mosaics with the ASM at various locations along the shoreline. Zonation between the MSM and ASM has also developed in parts of the saltmarsh with a narrow band of Sea Rush dominated vegetation along the upper saltmarsh boundary. The saltmarsh topography is poorly developed in this habitat but this is typically small fragments of habitat where the saltmarsh has developed as a narrow band of vegetation. There are no significant or good quality examples of transitional vegetation at the upper boundary of the MSM. There is usually an abrupt transition between the saltmarsh and the adjacent terrestrial vegetation due to the relatively steep shoreline topography.

4 IMPACTS AND ACTIVITIES

There are few impacts and activities affecting this site as it is quite small and inaccessible (Table 4.1). The most significant impact is grazing (140) and there are frequent signs of overgrazing and poaching damage by sheep (142). There are few other activities directly affecting this site. Some of the shoreline is used as a track (501) in places and this has eroded the saltmarsh vegetation and substrate in places.

There are some signs of Erosion (900) at this site. However, this is probably related to the topography and the development of the saltmarsh on a generally thin layer of substrate. This substrate is eroded in places and exposing the underlying glacial material creating saltmarsh/rocky mosaics. The outer part of the inlet is quite exposed so there may be some marine erosion. The head of the inlet is more sheltered and is dominated by Wrack-covered rocks in the intertidal zone. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. A comparison of the OSI 2nd edition 6 inch map to the OSI 2005 series aerial photos shows that there have been no significant changes to the saltmarsh during this period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

Impacts and activities adjacent to the site include dispersed habitation (403), grazing (140), turf-cutting (310) and a minor road (502). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at North Achill Sound.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	142	B	-1	1.272	Inside
1330	501	C	-1	0.005	Inside
1330	900	C	0	0.06	Inside
1410	142	B	-1	0.394	Inside
1410	501	C	-1	0.002	Inside
1410	900	C	0	0.02	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. There is no baseline information available in the NHA survey files as this site was never designated or surveyed.

North Achill Sound is a relatively small saltmarsh with few features of conservation interest. The saltmarsh is poorly developed and is a poor example of a fringe type saltmarsh. While the saltmarsh is relatively inaccessible and there are few impacts and activities in the site, the saltmarsh is in poor condition due to over-grazing by sheep. This site is not designated for any nature conservation interest.

Table 5.1. Conservation status of Annex I saltmarsh habitats at North Achill Sound.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion along much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Four monitoring stops were carried out in this habitat and all failed. The main reason for the failed stops was overgrazing and some poaching damage of most of the habitat. Negative indicators such as a green algal mat were prominent in places. The heavy grazing levels has also negatively affected zonation and diversity in places. Other attributes required for the structure and functions of this habitat reached their targets. Species diversity was typical of the ASM. Several typical ASM communities were recorded on this site and some zonation was evident with lower and mid marsh communities present in the largest sections. However much of the ASM had poorly zoned communities as it was quite narrow (< 5 m wide).

There are some natural successional communities to terrestrial vegetation present but these are generally poorly developed due to the relatively steep shoreline topography. The saltmarsh topography is relatively poorly developed but this is typical of these relatively small fragments of ASM. Some of the largest sections of ASM do have frequent small salt pans scattered over the saltmarsh. Turf fucoids were recorded in this habitat but these are fairly typical of fringe type saltmarshes along the west coast of Ireland.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting the ASM at

this site. This site is not part of any nature conservation designation so there are few prospects for managing grazing on this site.

The site does show some signs of erosion on the saltmarsh habitat. This site is relatively exposed so there may be further prospects for saltmarsh erosion in the future. There are few prospects for extensive saltmarsh development at this site. There are few other impacts or activities significantly affecting this habitat. The site is relatively inaccessible so it is unlikely to be damaged by other activities related to development or amenity uses.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion along much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Three monitoring stops were carried out in this habitat and all of the stops passed. All of the attributes required for the structure and functions of this habitat reached their targets. The species composition and diversity of this habitat was typical of this habitat. However zonation is poorly developed, although this is typical of relatively small fragments of habitat. There are also mosaics present with ASM. There are some patches of MSM habitat where Sea Rush seems to be re-vegetating mixed rocky substrate on the shoreline, although this re-vegetation is minor. The topography was poorly developed, but this is typical of a small patch of habitat. The grazing intensity is quite variable in this habitat and the MSM shows much fewer signs of grazing damage compared to ASM. Turf fucoids were recorded in this habitat but these are fairly typical of fringe type saltmarshes along the west coast of Ireland.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting this site but does not affect the MSM to the same extent as the ASM. The site is relatively inaccessible so it is unlikely to be damaged by other activities related to development or amenity uses.

The site does show some signs of erosion on the saltmarsh habitat. This site is relatively exposed so there may be further prospects for saltmarsh erosion in the future. However the MSM is less vulnerable to erosion compared to ASM due to the denser structure of the habitat.

6 MANAGEMENT RECOMMENDATIONS

There are no management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	1.152		1.152			
4	1410 Mediterranean salt meadow	0.388			0.388		
5	ASM/MSM mosaic (50/50)	0.013		0.007	0.006		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.009					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic	0.226		0.113			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	1.788		1.272	0.394		



Legend

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/rocky shore mosaic
- other
- 1330 monitoring stops
- 1410 monitoring stops

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Owenduff, Corraun

1 SITE DETAILS

SMP site name: Owenduff, Corraun	SMP site code: SMP0109
Date of site visit: 24/04/2008	CMP site code: N/A
SM inventory site name: Owenduff, Corraun	SM inventory site code: 62
NPWS Site Name: Lough Gall Bog cSAC	
NPWS designation cSAC: 522	MPSU Plan: N/A
pNHA: 522	SPA: N/A
County: Mayo	Discovery Map: 30 Grid Ref: 079845, 301320
Aerial photos (2000 series): O 1714-D; O 1715-C	6 inch Map No: Ma 056
Saltmarsh type: Bay	Substrate type: Mud, Sand

2 SITE DESCRIPTION

Owenduff saltmarsh is located in south-west Co. Mayo on Corraun Peninsula and 6.5 km east of Achill Island. The surrounding landscape is dominated by blanket bog in low-lying areas and adjacent upland habitats on the nearby hills. Blanket Bog extends down from adjacent hills close to Corraun Mountain to the shoreline. This area is sparsely populated with scattered habitation along the main road accessing Achill Island which is located close to the site. There is some improved land along the main road containing wet grasslands and improved grasslands.

The saltmarsh is mainly found around the edge of a small sheltered inlet or bay in Owenduff Townland. The terrain slopes steeply down to the south-western shoreline from the main road and is dominated by scrub, immature woodland and heath. Disturbed bog habitats and wet grassland extend along the fringes of the bay along the north-western boundary. The old railway accessing Achill Island follows the path of the road on the lower slopes. The Carton River flows off Corraun Mountain and into this small inlet or bay. The bay empties at low tide and exposes intertidal mudflats and sandflats. Low-lying blanket bog extends from the eastern shoreline.

The site is located within the Lough Gall Bog cSAC (000522). Lough Gall Bog is a large area of fairly intact blanket bog that is located to the south and east of this saltmarsh site. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). However, these habitats are not listed as qualifying interests for this cSAC.

Most of saltmarsh habitat mapped at this site is located within the cSAC boundary. Some saltmarsh habitat is excluded and this is mainly due to the fact that the lower shoreline on the OSI 6 inch map was used to draw the cSAC boundaries and there are some differences between this map and the current shoreline. The use of the lower shoreline boundary also excludes some saltmarsh habitat that is located above this shoreline boundary. Turf fucoids

are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland.

The site was accessed via a lane that links the main road to the bay. The shoreline around the bay was easily accessible at low tide.

3 SALTMARSH HABITATS

3.1 General description

Both Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM) is present at this site with MSM being the most dominant habitat (Table 3.1). The saltmarsh found at this site is heterogeneous and while the site is described as a bay type saltmarsh (around Carton River), some of the saltmarsh has developed as a fringe type saltmarsh on blanket bog. Saltmarsh habitat is likely to be found outside the survey area in small sheltered areas further along the shoreline.

The saltmarsh found around the shoreline of this bay is quite fragmentary and separated by patches of glacial or shingle beach or peat face-banks. Parts of the shoreline are marked by old stone walls. Much of the saltmarsh along the western shoreline is poorly developed and is present as small narrow bands < 5 m wide. Patches of ASM and MSM alternate along the shoreline on thin patches of eroding substrate or mixed shingle material. Some of this saltmarsh has probably re-vegetated on mixed shingle/glacial material. The most significant patches of saltmarsh have developed on the mouth of the Carton River on deeper peat and mud where it enters the east side of this small bay. There is some typical zonation of saltmarsh as MSM dominates the marsh further upstream on deeper peat while ASM has developed on thinner marine substrate further out in the bay.

There is also a significant patch of saltmarsh in a small sheltered area towards the outside of the bay in a low-lying area along the headland where the bog has been cut in the past and has allowed development of saltmarsh due to tidal inundation. This is a 'fringe type' saltmarsh. This area is significant for the presence of a network of frequent large pine stumps that are scattered along the shoreline. The pine stumps are being exposed by erosion of the blanket bog. Saltmarsh has developed around and over these pine stumps. Most of this saltmarsh is dominated by MSM.

The saltmarsh within the bay generally transitions at its lower boundary to intertidal mixed sediments, gravel beds or sandflats. Much of the saltmarsh within the bay has developed on thin substrate and there is either a low SM cliff or no distinct cliff along the lower SM transition. There are also frequent small isolated tussocks of SM on eroding substrate interspersed with mixed substrate along the lower SM boundary in places. Higher upstream there are higher peat face-banks along the river channel that mark the lower SM boundary. The lower saltmarsh boundary of the large area just outside the bay is irregular and fragmentary with the saltmarsh transitioning to patches of exposed loose rocky glacial material forming a beach along the shore.

Habitats along the upper boundary also vary. There is generally an abrupt upper boundary along the small fragments of saltmarsh along the west side of the bay. The saltmarsh has generally developed on the relatively steep shoreline with transitions to wet grassland, Gorse scrub, exposed peat face-banks or some dry coastal grassland that has developed over the

glacial material found on the shoreline. Some transitional vegetation has developed in the mouth of the Carton River where MSM transitions to wet grassland. This area contains transitional vegetation types with a mixture of Purple Moor-grass and Sea Rush. Transitional Wet grassland has developed along the river channel adjacent to the MSM and is indicated by the dominance of Purple Moor-grass and the presence of terrestrial vegetation indicators such as significant moss cover, Black Bog-rush (*Schoenus nigricans*) and Bog Cotton (*Eriophorum* sp.). Some of this transitional vegetation contains scattered Gorse bushes. The upper boundary of the large area just outside the bay is also complex and quite irregular. This is because the topography is quite irregular due to a combination of saltmarsh developing on cutaway bog at different levels and erosion of some of this bog. Saltmarsh vegetation dominated by Sea Rush extends up channels into this blanket bog and bog vegetation extending into the saltmarsh on uncut peat ridges.

Table 3.1. Area of saltmarsh habitats mapped at Owenduff, Corraun.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.485
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.921
	Total*	1.406

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

The largest sections of ASM on the east side of the bay are dominated by low-mid marsh with Common Saltmarsh-grass (*Puccinellia maritima*) and Sea Pink (*Armeria maritima*) dominant. Other species present include Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Saltmarsh Rush (*Juncus gerardii*) and Common Scurvy-grass. This ASM is badly damaged by overgrazing and there is frequent bare substrate cover on small peat tussocks and green algal mats (a negative indicator). The ASM also contains small patches Sea Rush and MSM type vegetation that were too small to be mapped as MSM. The sward height is quite low (< 1 cm high). Turf fucoids are also frequent on the exposed peat. There are signs of erosion within this ASM, although this may be induced by the heavy grazing. Some small salt pans are present and contain pebbles and shingle. The saltmarsh topography is poorly developed but this is typical of these relatively small patches of saltmarsh.

Some ASM is found on the saltmarsh along the seaward edge just outside the bay. This ASM is in somewhat better condition and the sward cover is intact. The ASM has developed on relatively thin peat cover overlaying glacial material. The vegetation is dominated by a typical mid-marsh vegetation community. One feature of this ASM is the presence of pine tree stumps that protrude through the saltmarsh.

There are some signs of zonation within the small patches of ASM on the western side of the bay. This is mainly characterised by the presence of an upper grassy zone dominated by Red Fescue (*Festuca rubra*) and Creeping Bent (*Agrostis stolonifera*) and a lower mid marsh zone dominated by Sea Pink, Sea Plantain and frequent Turf Furoid cover. However these zones may only cover a band less than 2 m wide. Sea Rush is found in low quantities within the ASM. Buck's-horn Plantain (*Plantago coronopus*) appears quite prominently in the upper ASM zone in places. The heavy grazing has had an impact on diversity within the ASM and the cover of Common Saltmarsh-grass is reduced on the lower saltmarsh. The heavy grazing has also created a homogenous band of saltmarsh vegetation in places with few indicators of

zonation. Other species such as Sea Aster and Sea Pink have been dwarfed by the constant grazing.

3.3 Mediterranean salt meadows (H1410)

The main area of MSM has developed on peat about 0.5 m deep in the mouth of the Carton River. This MSM has a typical species assemblage and is dominated by Sea Rush. Red Fescue is also prominent within this vegetation. Other species present include Creeping Bent, Saltmarsh Rush, Autumn Hawkbit (*Leontodon autumnalis*), Long-bracted Sedge (*Carex extensa*), Sea Milkwort (*Glaux maritima*), Sea Pink and Sea Plantain. The sward height is typical of this habitat (0.5-1 m high).

There are some typical salt pans in this section. Several creeks are present including some old river channels though the MSM. The MSM has a variable micro-topography with frequent small mounds and hollows. This introduces zonation into the MSM with typical low marsh species found in some of the hollows and upper saltmarsh or even terrestrial species found on the mounds and on some of the tussocks in the upper marsh.

The MSM located just outside the bay has a somewhat different structure. Old peat face-banks are present in the MSM. Sea Rush-dominated vegetation extends up channels into the blanket bog. This MSM has an irregular micro-topography. The upper saltmarsh boundary is also quite irregular and is mainly a mosaic of patchy MSM and cutover bog vegetation. The vegetation somewhat different to the MSM described above. The lower zone MSM has developed in places where Sea Rush has colonised patches of typical mid marsh ASM so there are patches of Sea Pink dominated vegetation within the MSM towards the seaward end. Turf Fucioids and bare peat substrate are also occasionally present. MSM towards the landward side is more typical of this habitat and the vegetation is dominated by Sea Rush with small amounts of Sea Plantain, Red Fescue, Sea Pink, Creeping bent and Autumn Hawkbit.

4 IMPACTS AND ACTIVITIES

There are several impacts and activities noted at this site (Table 4.1). The most significant impact is grazing (140) and all of the saltmarsh shows signs of sheep grazing. The intensity of grazing varies across the site and much of the ASM shows signs of significant overgrazing and poaching damage by sheep (142). There are frequent negative indicators such as a green algal mat, exposed peat tussocks and a homogenous low closely cropped sward height. The largest ASM sections within the bay are very badly damaged. The MSM displays fewer signs of overgrazing and is generally in better condition.

There are some signs of natural erosion (900) at this site. The saltmarsh substrate is eroded in places and exposing the underlying glacial material creating saltmarsh/rocky mosaics. This is especially evident towards the outside of the bay, which is more exposed. There are signs that the blanket bog vegetated by saltmarsh is being eroded in places by tidal inundation with exposed and isolated peat hags scattered along the lower boundary. Some of the erosion around the site is likely to be poaching-induced and related to the heavy grazing intensity. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. A comparison of the OSI 2nd edition 6 inch map to the OSI 2005 series aerial photos shows that there have been some changes to the shoreline during this period and this is mainly indicated

by erosion of the blanket bog just outside the small bay. However the loss of any saltmarsh is not assessed as it mainly occurred outside the current monitoring period. Erosion is assessed as having a low negative impact on a small portion of the saltmarsh. There is some capacity for retreat of saltmarsh at this location.

There are several tracks along the shoreline (501) but have minor impact on the saltmarsh. There are also several tracks across the MSM. There are also signs of old land-use on the saltmarsh habitats. Some of the saltmarsh has developed on old cutover blanket bog. However there has not been any peat cutting for some time (230). The old Achill railway follows a path along part of the western shoreline on an embankment and there is some stonework and an old bridge along the shoreline (503). These activities are not assessed as they occurred outside the assessment period.

Impacts and activities adjacent to the site include dispersed habitation (403), grazing (140), turf-cutting (310), a road (502) and an old railway (503). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Owenduff, Corraun.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	142	A	-1	0.485	Inside
1330	501	C	-1	0.005	Inside
1330	900	C	-1	0.025	Inside
1410	140	C	0	0.921	Inside
1410	501	C	-1	0.001	Inside
1410	900	B	-1	0.05	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Owenduff, Corraun is a relatively small saltmarsh, although it is one of the largest sites surveyed in the Achill Island area. The saltmarsh is relatively poorly developed. The saltmarsh is heavily grazed by sheep and this has had a significant negative impact on the diversity and vegetation cover of the ASM within the saltmarsh. Negative indicators such as green algae cover and eroded peat tussocks are prominent. However, overgrazing seems to

promote the cover of turf fucoids in places. One significant feature of local distinctiveness is the presence of old pine stumps in the saltmarsh located on the headland outside the bay.

This site is located within Lough Gall cSAC. A NPWS Conservation management plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Owenduff, Corraun.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion over much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Four monitoring stops were carried out in this habitat and all failed. The main reason for the failed stops was the impacts of overgrazing by sheep. Heavy levels of grazing have damaged the vegetation cover of the saltmarsh, and negative indicators such as green algae cover and bare substrate cover is frequent on most of the damaged sections. The heavy grazing has also noticeably affected diversity, zonation and also dwarfed the saltmarsh plants in places. The NHA survey notes indicate that the main area of ASM within the bay was also subject to heavy grazing pressure during this survey (1993).

There are some natural successional communities to terrestrial vegetation present but these are generally poorly developed due to the relatively steep shoreline topography. The saltmarsh topography is relatively poorly developed but this is typical of these relatively small fragments of ASM. Turf fucoids were recorded in this habitat but these are fairly typical of heavily grazed fringe type saltmarshes along the west coast of Ireland.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts such as grazing

continue in the near future. Overgrazing by sheep is the main activity affecting the ASM at this site. Most of the ASM is located within a cSAC so there are some prospects for grazing management in the future. However, the ASM is likely to be vulnerable to over-grazing as the area of habitat is so small compared to the surrounding blanket bog and is preferred by sheep.

The site does show some signs of erosion on the ASM habitat that is related to the heavy grazing pressure and poaching induced erosion. The ASM is likely to be vulnerable to further erosion in the future if the grazing intensity is not reduced. The ASM that has developed along the headland outside the bay is being affected by natural erosion from tidal inundation. There are few other impacts or activities significantly affecting this habitat. The site is relatively inaccessible so it is unlikely to be damaged by other activities related to development or amenity uses.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. There are signs of erosion in the MSM on the headland outside the bay but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion. Some of the blanket bog is likely to have been eroded in the past 100 years but this erosion has not been assessed.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Five monitoring stops were carried out in this habitat and all of the attributes required for the structure and functions of this habitat reached their targets. Most of the MSM is in relatively good condition and are much less intensively grazed compared to the ASM. The species composition and diversity of this habitat were typical of this habitat. The sward structure was also in good condition. However zonation is poorly developed, although this is typical of relatively small fragments of habitat. There is some development of transitional vegetation to terrestrial bog communities, particularly in the area where the MSM has developed on cutover bog.

There are also mosaics present with ASM. The topography of the largest main section in the mouth of the Carton River is moderately developed with some typical features. However the structure of the other main section on the headland has been modified by old peat cutting. Turf fucoids were recorded in this habitat but these are fairly typical of fringe type saltmarshes along the west coast of Ireland. One other feature of local distinctiveness is the pine stumps found on one level in the blanket bog that are being exposed in the saltmarsh. The appearance of pine stumps in the saltmarsh is quite rare.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting this site but does not affect the MSM to the same extent as the ASM. The site does show some signs of erosion on the saltmarsh habitat but this is mainly poaching induced within the ASM. The MSM is less vulnerable to erosion compared to ASM due to the denser structure of the habitat. The MSM

located along the headland is vulnerable to natural erosion from tidal inundation but this is likely to occur at a slow rate.

6 MANAGEMENT RECOMMENDATIONS

There are no management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

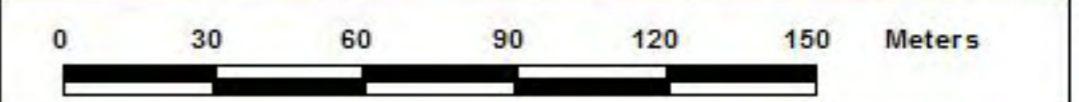
8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	0.407		0.407			
4	1410 Mediterranean salt meadow	0.921			0.921		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.081					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic	0.156		0.078			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	1.565		0.485	0.921		

Legend

- SAC Boundary
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/rocky shore mosaic
- other
- 1330 monitoring stops
- ▲ 1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Rockfleet

1 SITE DETAILS

SMP site name: Rockfleet	SMP site code: SMP0015	
Site name (Curtis list): Rockfleet Castle	CMP site code:	
	Site No: (Curtis list): 73	
NPWS Site Name: Clew Bay complex	Dates of site visit: 13/07/2006	
NPWS designation	cSAC: 1482	MPSU Plan: none for coastal areas
	pNHA: 1482	
County: Mayo	Discovery Map: 31	Grid Ref: 093130, 295270
6 inch Map No: Ma067	Aerial photos (2000 series): 01840-c, 01900-a	
Annex I habitats currently designated for Clew Bay complex cSAC:		
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)		
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)		
Other SMP sites within this cSAC/pNHA:		
Mallaranny, Tooreen, Rosmurrevagh, Teirna Roshanagh East, Caraholly South, Kiladangan, Annagh Island, Bartraw		
Saltmarsh type: Fringe	Substrate type: Mud/peat	

2 SITE DESCRIPTION

Rockfleet saltmarsh is located around the edges of Rockfleet Bay, along the northern side of Clew Bay in County Mayo. Rockfleet Bay is located 5.5 km west of Newport. The survey area encompasses the whole of the bay. The bay mainly contains a rocky shoreline. However, fringe type saltmarsh has developed in sheltered areas on patches of relic peat/mud along the shoreline. The patches of saltmarsh are discontinuous and isolated from each other. The landscape at this location is undulating with frequent small drumlin hills and islands typical of Clew Bay developing. Rockfleet Castle is located at the east of the bay and some saltmarsh that overlays a rock ledge is situated adjacent to it. This site is 3 km west of Tierna (SMP site 0014).

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are present at this site. Only Atlantic salt meadow is listed as a qualifying interest for this cSAC. About 50% of the saltmarsh habitat is situated within the Clew Bay Complex cSAC. Sections of the shoreline are situated outside the boundary

because the old shoreline boundary from the 6 inch map was used to mark the cSAC boundary. The position of the shoreline as indicated by the 6 inch map is slightly inaccurate when overlain by the 2000 aerial photo. This is most likely to be due to rectification errors but the shoreline may have also changed slightly in this period as well. The shoreline errors are exacerbated due to the narrowness of the saltmarsh fringe, which means even small differences may be significant.

The site can be accessed easily via a minor road leading from the Newport-Mallaranny Road to Rockfleet Castle and a small pier to the west.

3 HABITATS

3.1 General description

The saltmarsh habitats are generally confined to Rockfleet Bay. There are several very small eroded patches of saltmarsh south of the pier on the west side. Annual Sea-blite (*Suaeda maritima*) also colonises the strandline on shingle/pebbles in this area. On the eastern side the saltmarsh eventually tapers out and the shoreline becomes rocky. The Mediterranean salt meadow (MSM) is confined to two patches on the western side of the bay. Patches of Atlantic salt meadow (ASM) are scattered around the remaining sides, and dominates the saltmarsh habitats (Table 3.1). The saltmarsh has developed on varying depths of peat/mud, which is sometimes quite thin and eroded in places. The peat/mud overlays bedrock or rocky deposits in places.

In general, an eroded saltmarsh cliff is present at the seaward side of the saltmarsh. The habitats at the seaward side of the saltmarsh vary between rocky deposits, gravel and mud in the intertidal area. The landward boundaries vary and there are very little transitional habitats present along the bay shoreline. The saltmarsh situated adjacent to the minor road that follows the northern shoreline. A track across the strandline is also located along a wall north of the castle and accesses some fields. Several patches of Yellow Flag (*Iris pseudacorus*) are situated above the strandline along the wall. The eastern ASM section does have a small transition into wet grassland. The MSM at the west side of the bay has developed along a rock embankment/wall towards the west and there is no transitional habitats. Further east there is a longer gradient and the saltmarsh transitions to rank grassland dominated by Twitch (*Elytrigia repens*).

Table 3.1. Area of EU Annex I habitats listed at Rockfleet.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.71
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.09
	Total	0.80

3.2 Atlantic salt meadows (H1330)

The largest area of ASM is located in the eastern part of the bay. This area is badly disturbed by cattle poaching. Saltmarsh has developed on peat/mud. A drain crosses the saltmarsh and divides it. Part of the saltmarsh is fenced off. There is some zonation of vegetation. Common Saltmarsh-grass (*Puccinellia maritima*) and Sea Milkwort (*Glaux maritima*) dominate the seaward boundary. The saltmarsh is dominated by Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*) and Sea Pink (*Armeria maritima*), with frequent Sea Arrowgrass (*Triglochin maritimum*), Common Scurvygrass (*Cochlearia officinalis*) and Saltmarsh Rush (*Juncus gerardii*). Other species in upper saltmarsh zone with Red Fescue (*Festuca rubra*) and Creeping Bentgrass (*Agrostis stolonifera*) include Autumn Hawkbit (*Leontodon autumnalis*) and Long-Bracted Sedge (*Carex extensa*). There are frequent rocks on this saltmarsh. Some eroded patches/salt pans contain stones and pebbles. There is a transition to wet grassland at scrub at landward side that contains Creeping Bentgrass, Yellow Flag, Soft Rush (*Juncus effusus*), Silverweed (*Potentilla anserina*) and Dock sp. (*Rumex* sp.). The saltmarsh structure is generally quite poor and is typical of fringe saltmarsh with few pans.

There are several eroded isolated patches of ASM situated on thin bands of sediment overlaying rock and rocky deposits. These patches have similar vegetation. This area has an eroded saltmarsh cliff at edge of some patches up to 0.5-1 m high. A patch of ASM north of Rockfleet Castle has developed on a thin band of mud and overlays bedrock. This area is dominated by Red Fescue and Saltmarsh Rush higher up the shoreline, while patches of Sea Pink and Sea Plantain dominated vegetation appear lower on the shoreline.

3.3 Mediterranean salt meadows (H1410)

This habitat is located at the western side of the bay close to Raigh Pier. Several narrow strips of saltmarsh dominated by Sea Rush (*Juncus maritimus*) are situated

along the shoreline. There are patches of ASM vegetation amongst the Sea Rush-dominated areas. Other species amongst the Sea Rush and in ASM patches include Saltmarsh Rush, Sea Aster, Common Saltmarsh-grass, Sea Arrow-grass, Common Scurvygrass, Sea Plantain, Lax-flowered Sea Lavender (*Limonium humile*), Long-Bracted Sedge (*Carex extensa*) and Red Fescue. Species such as Creeping Bentgrass, Twitch and Frosted Orache (*Atriplex lacinata*) appear on the strandline.

The saltmarsh has developed on peat/mud on a generally narrow strip, although it widens to 25 m at the telegraph pole. There is a low saltmarsh cliff (20-30 cm high) along the edge of part of this habitat. Further along the MSM, some Sea Rush is colonising along the edge of the saltmarsh in gravel/mud. There is very little development of saltmarsh topography with several small pans being present. There were no creeks although there are several drains crossing the saltmarsh.

4 IMPACTS AND ACTIVITIES

There is a relatively large range of activities affecting this saltmarsh compared to other sites (Table 4.1). The activity codes used in Table 4.1 are given in brackets in the following text. This is related to the relative proximity of the site to dwellings and the minor road along the shoreline, meaning access is easier. The main activity is cattle grazing and poaching (143) as this affects the largest area. Some of the saltmarsh was fenced off and was badly poached inside the enclosure as were the transitional habitats (wet grassland). The eastern side was grazed and badly poached. The shoreline is also used for moving cattle from one pasture to another, so saltmarsh outside the fence was also poached. A track crosses the back of the saltmarsh (501) and is used for accessing adjacent pasture.

Tourists use the shoreline verge including the saltmarsh close to Rockfleet Castle for car parking. There has been some disturbance south of the castle from dumping or temporary placement of building aggregates, that have since been removed (422). This area has several eroded patches of saltmarsh. There has been some additional disturbance of this area from old slipway across the intertidal area into the bay (501). Some rubble has been dumped on the shoreline on the rank grassland above the strandline and also on the MSM (422). This area of MSM also has telegraph poles

(511). Part of the shoreline in the west part of the bay has been infilled and landscaped (802).

Activities adjacent to the saltmarsh habitats include farming (120, 140), dwellings (403), roads (502) and outdoor leisure activities (620).

Table 4.1. Intensity of various activities on saltmarsh habitats at Rockfleet.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	143	A	-1	0.71	Inside
1330	422	C	-2	0.01	Inside
1330	501	C	-1	< 0.1	Inside
1410	511	C	-1	0.01	Inside
1410	802	C	-2	< 0.1	Inside
13s	120	C	0	0.8	Outside
13s	140	C	0	0.8	Outside
13s	403	C	0	0.8	Outside
13s	502	C	0	0.8	Outside
13s	620	C	0	0.8	Outside

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

Both habitats are assessed together (Table 5.1). No monitoring stops were carried out at this site because the site was in such a poor condition with many signs of disturbance, and the habitat extent was relatively small. This is a relatively poor example of Annex I saltmarsh habitat. There is no MPSU Conservation plan for the terrestrial habitats in this cSAC.

The medium-term prospects for saltmarsh migration at this site are poor. Much of the saltmarsh is situated close to 'hard' landward boundaries (embankments and shoreline road) and there are only small amounts of transitional habitats.

5.1 Overall Conservation Status

5.1.1 Extent

Overall, the extent of both habitats is assessed as *favourable* (Table 5.1). There is no previous information on the extent of saltmarsh at this location. A small patch of

shoreline has been infilled and landscaped but this is only a minor area. There is no information to suggest that more significant areas of saltmarsh have been lost in the recent past.

5.1.2 Habitat structure and functions

Overall the structure and functions of the ASM habitat is assessed as *unfavourable-bad*. No monitoring stops were carried out but a visual assessment was made of the overall ASM habitat according to required attributes. The main area of the ASM in the eastern part of the bay is badly disturbed by poaching. Some of the other patches of ASM saltmarsh are also disturbed by dumping and tracks. The ASM habitat has a typical species diversity with one notable absentee being Glasswort (*Salicornia* sp.). Some zonation is present. However the salt pan and creek topography is poor and this is typical of fringe saltmarshes.

The structure and functions of the ASM habitat is assessed as *unfavourable-inadequate*. The small area of this habitat has typical species diversity. However, it is somewhat disturbed by the presence of a telegraph pole and some dumping of rubble.

No Cordgrass (*Spartina anglica*) was recorded at this site.

5.1.3 Future prospects

The future prospects of both these habitats are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts continue in the near future. This site is vulnerable to a range of activities due to its proximity to a shoreline road. Cattle poaching is severe in the largest section of ASM and is likely to continue.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Rockfleet.

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

6 MANAGEMENT RECOMMENDATIONS

No recommendations as the site is quite small.



Legend

- SAC boundary

Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- other



**Saltmarsh
Monitoring Project**

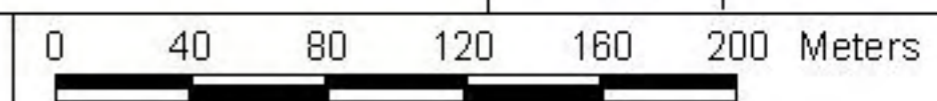
Rockfleet Castle

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)

Mí na leathneacha ar an t-earscail seo ach níl garthuimhach ginearálta. Féidir aibhriúil na h-áiteanna arís arís arís na gceantar comharthaí. Mochas an t-ábhar na cúl leathneacha. Ordánáil le déad ón Rialtas. (Ceolúnar Uimh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0015**
Map produced by: **SMP 2006**
Map Version: **1**



Scale: 1:2943



Rosharnagh East

1 SITE DETAILS

SMP site name: Rosharnagh East	SMP site code: SMP0016
Site name (Curtis list): Rosharnagh East	CMP site code: not surveyed
	Site No: (Curtis list): 77
NPWS Site Name: Clew Bay complex	Dates of site visit: 08/09/2006
NPWS designation cSAC: 1482	MPSU Plan: no plan for terrestrial habitats
pNHA: 1482	
County: Mayo	Discovery Map: 31 Grid Ref: 097500, 291770
6 inch Map No: Ma076	Aerial photos (2000 series): 01960-a, 01960-b
Annex I habitats currently designated for Clew Bay complex cSAC:	
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)	
Other SMP sites within this cSAC/pNHA:	
Mallaranny, Tooreen, Rosmrrevagh, Tierna, Rockfleet Castle, Caraholly South, Kiladangan, Annagh Island, Bartraw	
Saltmarsh type: Bay	Substrate type: Mud/sand

2 SITE DESCRIPTION

Rosharnagh East saltmarsh is located on the eastern side of Clew Bay, midway between Westport and Newport in County Mayo. The saltmarsh occurs at the head of the Rossow Channel and only covers a small area. The Rossow Channel contains intertidal mudflats that are stony in places. This channel is one of the narrow long inlets that occur at the eastern end of Clew Bay. There are two peninsulas on either side of the channel that are dominated by wet and dry grassland within fields. The saltmarsh is separated from brackish marsh higher up the valley by a minor road and bridge. A sluice allows flow from the brackish marsh via a drain into the channel at low tide. There is a second small drain flowing into the north side of the saltmarsh. Part of the saltmarsh has been infilled recently.

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Only the ASM habitat is listed as a qualifying interest for the Clew Bay Complex cSAC. Most of this saltmarsh is outside the cSAC

boundary. Only a small strip of saltmarsh along the seaward edge occurs within the cSAC. This is an unintentional boundary error, as the 1929 shoreline boundary (usually the lower edge of the saltmarsh) was used as the cSAC boundary in this small inlet. Using this boundary has excluded the intertidal saltmarsh habitats (situated landward of this boundary). Using the high water boundary would have included most of the saltmarsh habitat.

The site is easily accessed by following the shoreline where a minor road crosses a bridge.

3 HABITATS

3.1 General description

The saltmarsh contains both Atlantic salt meadows (ASM) (1330) and Mediterranean salt meadows (MSM) (1410) in a mosaic. These habitats are described together as the site is so small and the habitats occur in a mosaic. The MSM is dominant (Table 3.1). The saltmarsh only covers a small area (Table 3.1). The main section is dominated by clumps of Sea Rush (*Juncus maritimus*). These vary in size and intermix with grassy vegetation dominated by Saltmarsh Rush (*Juncus gerardii*), Creeping Bentgrass (*Agrostis stolonifera*) and Red Fescue (*Festuca rubra*) towards the landward side, with occasional Autumn Hawkbit (*Leontodon autumnalis*) and White Clover (*Trifolium repens*). Further down the saltmarsh the ASM patches are dominated by Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Pink (*Armeria maritima*), Sea Milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*) and Common Scurvygrass (*Cochlearia officinalis*). The saltmarsh continues along the shoreline south towards the bridge crossing the embankment. This narrow band has strandline vegetation with Creeping Bentgrass and Spear-leaved Orache (*Atriplex prostrata*). There are several small salt pans on the saltmarsh but there has been no creek development. A fence-line/stone wall crosses the saltmarsh. The landward side is grazed while grazing is absent on the seaward side.

A narrow band of saltmarsh (1-5 m) is also present along parts of the northern side of the Rossow Channel, but was not mapped due to survey time constraints (Table 3.1).

Table 3.1. Area of EU Annex I habitats listed at Rosharnagh East.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.20
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.30
	Total	0.5*

*note that saltmarsh habitat continues outside the surveyed site.

4 IMPACTS

Part of the saltmarsh has been infilled in the past few years. This is the main impact on saltmarsh at this site (Table 4.1). Infilling with construction waste has occurred in the field adjacent to the minor road. This was mainly over wet and dry grassland at the landward side and probably extended down onto the saltmarsh.

Part of the site is also grazed, probably by cattle (140). A section of the saltmarsh has been fenced off and is ungrazed.

The saltmarsh has probably been affected in the past by drainage works and the modification of channels to the north and south of the saltmarsh that drain shallow valleys. This old drainage was probably part of attempts at land improvement in the past. Saltmarsh along the northern side of the Rossow Channel has been improved in the past to create agricultural land. There are no signs of erosion in this part of Clew Bay.

Table 4.1. Intensity of various activities on saltmarsh habitats at Rosharnagh East.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
13s	140	C	0	0.25	Inside
13s	802	A	-2	0.1	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 = repairable 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

The overall conservation status of the saltmarsh habitats at this site is *unfavourable-bad* (Table 5.1). No monitoring stops were carried out on this site as it was so small. The conservation status is *unfavourable-bad* because of the loss of extent due to infilling. The structure and functions of the remaining saltmarsh are typical of a saltmarsh this size. Plant diversity is typical and the sward height is adequate due to the lack of grazing on part of the site. There are some signs of disturbance, probably connected to the recent infilling and to older activities such as drainage. This site is a poor quality example of both saltmarsh habitats.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Rosharnagh East.

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

6 MANAGEMENT RECOMMENDATIONS

There are no management recommendations for this site as it is too small. The cSAC boundary should be modified to include the saltmarsh habitat at this site.



Legend

- SAC boundary
- Habitats**
- 1330/1410 mosaic



**Saltmarsh
Monitoring Project**

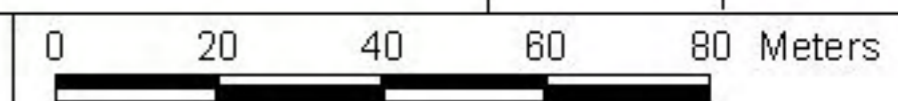
Rosharnagh East

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)

Míreanna leoraíneacha ar an t-earscail seo a bhfuil garbhúilíochad ginearálta. Féadfaid sibhréif na h-áiteanna arís arís arís na gceolair comharthaí. Mochas an t-áirí na cúlú bhéaracha. Ordainis le dteall ón Rialtas. (Ceolair: Ulmh, 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0016** Map produced by: **SMP 2006**
Map Version: **1**



Scale: 1:1227



Rosmurrevagh

1 SITE DETAILS

SMP site name: Rosmurrevagh	SMP site code: SMP0013
Site name (Curtis list): Rosmurrevagh	CMP site code: 112
NPWS Site Name: Clew Bay complex	Site No: (Curtis list): not on list
NPWS designation cSAC: 1482	Dates of site visit: 07/09/2006
pNHA: 1482	MPSU Plan: none for coastal areas
County: Mayo	Discovery Map: 45 Grid Ref: 085470, 295340
6 inch Map No: Ma066	Aerial photos (2000 series): 01838-c
Annex I habitats currently designated for Clew Bay complex cSAC:	
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)	
Other SMP sites within this cSAC/pNHA:	
Mallaranny, Tooreen, Tierna, Rockfleet Castle, Roshanagh East, Caraholly South, Kiladangan, Annagh Island, Bartraw	
Saltmarsh type: Sandflats	Substrate type: Sand/mud

2 SITE DESCRIPTION

Rosmurrevagh saltmarsh occurs along the north-western side of Clew Bay, about 2.5 km east of Mallaranny, in County Mayo. This saltmarsh is part of a coastal system including machair, a large beach and sand hills. The machair and other sand dune habitats were surveyed by the Coastal Monitoring Project (2006). The saltmarsh has developed in low-lying land between two hills, Gannivbaun and Rosmurrevagh. The machair transitions to saltmarsh on its western side (Gannivbaun) and continues up the slope of the hill. There are intertidal sand and mudflats at the northern seaward side of the saltmarsh. One large creek drains the saltmarsh and flows north towards the sandflats. A beach and some coastal grassland occur on a ridge at the back of the saltmarsh (the southern side) and separate the site from Clew Bay. There have been some recent blow-outs on the southern side and a channel is now present connecting the saltmarsh and flowing south. A narrow band of saltmarsh develops at the northern end and continues around the shoreline. This part of the shoreline was surveyed as part of Tooreen. The machair used to have a golf course, but this is now abandoned and the area is now grazed. Some of the old greens are still present and several greens

were situated in the area now covered by saltmarsh. There are enclosures to the north-west and to the east of the saltmarsh on the hills. Some of these contain dry grassland and some have been abandoned and now contain rank grassland, Bramble thickets and scrub.

The entire saltmarsh habitat is included within Clew Bay complex cSAC. This site is easily accessed via a track through Mallaranny Golf Course and is a path used by local people to visit Rosmurrevagh Beach.

3 HABITATS

3.1 General description

The whole of the saltmarsh is classified as Atlantic salt meadows (ASM) and it is a relatively small site (Table 3.1). It is mainly orientated north-south with zonation from the east to west. Towards the south zonation of plant communities occurs around both sides of the large creek. A transition to machair occurs around the landward side of the saltmarsh, higher on the slope. A low ridge occurs along the seaward edge. No Sea Rush (*Juncus maritimus*) was recorded on this site.

Table 3.1. Area of EU Annex I habitats listed at Rosmurrevagh.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	6.40
	Total	6.40

3.2 Atlantic salt meadows (H1330)

The vegetation of the saltmarsh is distinctly zoned as the saltmarsh has developed on a shallow slope. The vegetation is similar to Mallaranny saltmarsh. The dominant zone is the mid-marsh Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*) -dominated zone. Other species present include Sea Milkwort (*Glaux maritima*), Common Saltmarsh-grass (*Puccinellia maritima*) and Red Fescue (*Festuca rubra*). This zone does not have much of the distinctive saltmarsh topography with salt pans etc but these develop lower on the slope with the transition to lower marsh vegetation.

There is a raised band of saltmarsh (containing mid zone saltmarsh vegetation) on a low ridge at the seaward side adjacent to the sandflats. A low-marsh zone occurs to the landward side of this zone and is dominated by Common Saltmarsh-grass. Other species present at low densities include Glasswort (*Salicornia* sp.) and Sea Plantain. Bare ground cover is significant in this zone as it is badly poached and disturbed by grazing. Salt pans have also developed in this zone. There is only minor creek development over most of the saltmarsh. A relatively large creek drains the southern section of the saltmarsh.

The upper salt marsh zone is dominated by a low well grazed sward dominated by Saltmarsh Rush (*Juncus gerardii*) and Red Fescue. Other species appearing in this zone include Creeping Bentgrass (*Agrostis stolonifera*) Buck's-horn Plantain (*Plantago coronopus*) and White Clover (*Trifolium repens*), in addition to some of the lower saltmarsh species such as Sea Plantain, Sea Pink and Sea Milkwort. This zone is quite flat with very little micro-topography. There are no salt pans or creeks in this zone.

The transition from saltmarsh to machair is not distinctive on the ground, although there are bands of vegetation appearing on the aerial photo. The transition zone contains saltmarsh species such as Sea Pink and Buck's Horn Plantain but moss species become occasionally frequent, along with species such as Birdsfoot (*Lotus corniculatus*).

4 IMPACTS AND ACTIVITIES

Overall, this site is moderately to heavily grazed, with livestock able to move from the machair and other grassland habitats present on the hill down onto the saltmarsh (Table 4.1). Sheep, cattle and donkeys are present on the site. Overall, the saltmarsh shows the effects of heavy poaching (142/143) over a significant area of the saltmarsh (about 30%). The most heavily poached area occurs in the lower saltmarsh zone orientated north-south at the landward side of the low ridge. The saltmarsh topography including the edges of the salt pans is being affected by the poaching. Further back up the slope, the ground is drier (less inundation) and grazing has created a generally smooth sward surface. There are some small patches in the mid-

upper zone near the southern end that show the effects of overgrazing and increased bare ground cover.

The seaward edge of the saltmarsh shows signs of erosion (900). There are also signs of overall erosion of the saltmarsh from a comparison of the 2000 aerial photos and 1929 6 inch map. This shows that significant areas of saltmarsh indicated on the 1929 6 inch map (0.98 ha) have been eroded. There are no indications that this erosion has been initiated or exacerbated by construction or coastal protection works in the local area. The erosion of this site could be balanced somewhat by saltmarsh growth at Tooreen (north of this site on the other side of the inlet).

There are some wheel ruts on the surface of the saltmarsh with tractors accessing the adjacent land at Rosmurrevagh. A track across the saltmarsh is located at the northern side of the saltmarsh (501). This track accesses the machair and adjacent enclosures from the shoreline.

Table 4.1. Intensity of various activities on saltmarsh habitats at Rosmurrevagh.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	140	C	-1	6.4	Inside
1330	142/143	A	-1	2	Inside
1330	501	C	-1	< 0.001	Inside
1330	900	A	-2	1	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 saltmarsh at Rosmurrevagh is in poor condition (Table 5.1). There are few activities on the saltmarsh, apart from grazing and associated poaching, but this is having a relatively significant impact. The saltmarsh is part of a larger coastal system at Rosmurrevagh which is of significant conservation value.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are low-moderate. There is some potential for migration of

the saltmarsh up the slope, but the incline becomes steeper quite quickly, so the area of potential saltmarsh development is relatively small compared to the existing area. Erosion at the seaward edge would probably be more dominant compared to the creation of new saltmarsh.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Rosmurrevagh.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of saltmarsh at Rosmurrevagh is assessed as *favourable*, even though there has been some loss of habitat (1 ha or about 15%) in the past 80 years. However, there is no information to indicate that there has been significant erosion since the NHA survey or in the past 15 years. There are also no indications that the erosion has been initiated by any coastal construction. Any erosion is likely to be related to natural geomorphological cycles in the intertidal area of this part of Clew Bay.

5.2.2 Habitat structure and functions

Four monitoring stops were carried out in the ASM and three out of four failed. The three stops failed as they did not reach targets for levels of bare ground, erosion and levels of poaching. The area badly affected by poaching is about 30% of the saltmarsh. The ASM generally has a very low sward due to moderate-high sheep and cattle grazing. The species diversity is typical of ASM with most of the typical species being present. The conservation value of the site is increased by the presence of a natural transition to machair.

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 and cattle stocking rates

are not reduced. Cattle are probably having the greatest impact on the saltmarsh. There is no current conservation plan for this site to manage the level of grazing.

6 MANAGEMENT RECOMMENDATIONS

A MPSU Conservation plan is required for the terrestrial parts of the cSAC. Some de-stocking is required to alleviate the impacts of poaching. Poaching and livestock stocking levels could be managed as part of this conservation plan.



Legend

- SAC boundary
- 1330 Monitoring stops

Habitats

- 1330 Atlantic salt meadows



**Saltmarsh
Monitoring Project**

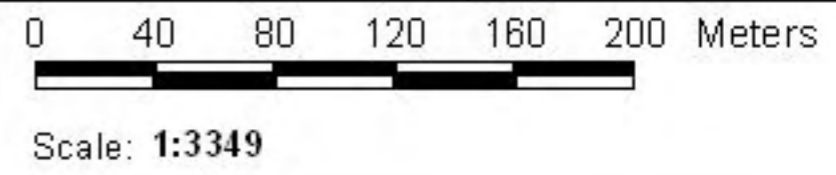
Rosmurrevagh

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)

Mí zina le crainneacha ar an t-earscail seo ach níl garthuilleadh ginearálta. Feidh ar bhíreil fírlín na saideantóirí ar líne crainneacha na goeantair comharthaí fe. Ma chasair na h-ádhair na Gúilleáiracha. Orlonáir le deat ón Rialtas. (Cealtúnar Ulmh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0013** Map produced by: **SMP 2006**
 Map Version: **1**



Ross

1 SITE DETAILS

SMP site name: Ross	SMP site code: SMP0024
Site name (Curtis list): Ross	CMP site code: 130
	Site No: (Curtis list): 42
NPWS Site Name: Killala Bay/Moy Estuary	Dates of site visit 10/09/2006
NPWS designation	MPSU Plan: Draft 2 (old format)
cSAC: 458	
pNHA: 458	
SPA: Killala Bay/Moy Estuary SPA 4036	
County: Mayo	Discovery Map: 24 Grid Ref: 121490, 332250
6 inch Map No: Ma015, Ma022	Aerial photos (2000 series): 01120-b, 01060-c, 01060-d
Annex I habitats currently designated for Killala Bay/Moy Estuary cSAC: <i>Salicornia</i> and other annuals colonizing mud and sand (1310) Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Bartragh Island, Rusheens, Castleconor	
Saltmarsh type: Bay	Substrate type: Sand

2 SITE DESCRIPTION

This site is located 0.5-2.5 km north of Killala Town in the north-eastern part of Killala Bay (Co. Mayo). The main part of the saltmarsh is located in a small inlet or bay enclosed by the Ross Peninsula (Rinnaun Point). The bay is 1 km long and 0.4 km wide and saltmarsh extends around the back of the bay. The bay contains intertidal sandflats. The peninsula contains a sand-dune system surveyed by the Coastal Monitoring Project. Saltmarsh extends along the coastline south into several other small inlets, including Pollnageelar, and around Croghan. Most of these inlets were also surveyed. The overall surveyed area is quite large (2.4 km long) and the saltmarsh habitats are spread out over a large area. The southern point of the area surveyed is 0.5 km from Killala Town. Intertidal mud and sandflats occur along the entire coastline in this area. The terrestrial land on the landward side of the saltmarsh is dominated by improved agricultural land. The topography is one of low-lying undulating land.

Three Annex I habitats, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Mediterranean salt meadow is not listed as a qualifying interest for Killala Bay/Moy Estuary cSAC.

Nearly the entire saltmarsh habitat is included within the Killala Bay/Moy Estuary cSAC/pNHA. Some saltmarsh habitat along the landward boundaries is excluded as the 6 inch map shoreline boundary was used to draw the boundaries and there are small discrepancies between this map and the shoreline as indicated from the 2000 aerial photos. However, the intention was to include all of the intertidal shoreline and this is due to small errors in rectification. Parts of the shoreline may have also changed somewhat since the 6 inch map was drawn.

The intertidal areas in the Moy Estuary are part of Killala Bay/Moy Estuary SPA (Site code 4036). This includes parts of the saltmarsh where the boundaries overlap. The cSAC and SPA are important for wintering waders and wildfowl.

The site is easily accessed by minor roads that are close to the shoreline. Some of the saltmarsh is grazed regularly so care is required not to disturb livestock.

3 HABITATS

3.1 General description

The overall site is dominated by Atlantic salt meadows (ASM) (Table 3.1). This habitat extends along the shoreline of Ross inlet and is between 50-100 m wide on the eastern side. The largest area of saltmarsh is in the northwest corner of the bay. There are three small areas of Mediterranean salt meadows (MSM) in the part of the saltmarsh. A narrow band of ASM continues around the coastline south to Pollnageelar. There is a small inlet at Pollnageelar that widens out and is dominated by MSM.

Atlantic saltmarsh continues south towards Croghan. Here the saltmarsh is dominated by MSM and extends across a small inlet being 0.14 km wide at its widest point to connect to a small island. There are two smaller inlets to the south of this area that contain MSM. There are four small patches of *Salicornia* flats (1310) on the raised sandflats in the Ross inlet.

The landward boundaries of the saltmarsh are varied. There are some natural transitions in places to habitats such as dry or wet grassland. Atlantic saltmarsh grades to dry grassland (with CM2) in the north-east corner of Ross inlet. There are transitions to wet grassland dominated by Soft Rush (*Juncus effusus*) along the eastern side of Ross Inlet, but many of these are heavily poached. Similar transitions occur on the island to the east of Croghan. The saltmarsh at Pollnageelar has interesting transitions to brackish marsh, wet grassland and improved grassland at the back of the marsh. Patches of Sea Club-rush (*Bolboschoenus maritimus*) and Grey Club-rush (*Schoenoplectus tabernaemontani*) indicate brackish conditions with frequent Soft Rush and Black Bog-rush (*Schoenus nigricans*) indicating the transition to wet grassland. This area also contains Saltmarsh Flat-sedge (*Blysmus rufus*). This species is mainly confined saltmarshes in the north of Ireland but has a fragmented distribution. This was the only site it was recorded at during this survey and is an indicator of local distinctiveness. There are transitions to brackish conditions developing Common Reedbeds (*Phragmites australis*) and patches of Sea Club-rush at the southern end of the surveyed area, just north of Killala Town. There are also transitions to fixed-dune vegetation at Rinnaun Point.

A significant portion of the landward saltmarsh boundary, however, is artificial and there is a distinct boundary marked by fence-lines, stone walls or ditches and hedgerows on a higher bank or low slope onto the terrestrial land. About 75% of the landward saltmarsh boundary (including the narrow band of saltmarsh) is constrained by these artificial barriers and will not be able to respond to sea level rise, so they are likely to be eroded. At present there are no indications of any erosion. In fact accretion is occurring along the seaward side saltmarsh in Ross Inlet. A comparison of the 2000 aerial photos to the 1929 6 inch map indicates that the saltmarsh has grown significantly since 1929 in Ross Inlet (by about 4 ha). (Sand-dune habitats on the peninsula at Rinnaun Point have also grown). The saltmarshes at Pollnageelar and at Croghan have remained fairly stable even though there are relatively high saltmarsh cliffs along the seaward edges of these saltmarsh areas.

Table 3.1. Area of EU Annex I habitats listed at Ross.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.25
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	15.82
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	6.26
	Total	22.33

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

There are several small isolated patches of Glasswort sp. (*Salicornia* sp.) on raised sand bars on the sandflats of Ross Inlet. None of these are connected to the main saltmarsh. These are small drier raised areas on the sandflats. There were no other plant species recorded but there are some green algae associated with these areas.

Glasswort is also present quite frequently along the lower Atlantic saltmarsh zone amongst vegetation dominated by Common Saltmarsh-grass (*Puccinellia maritima*). However, these pioneer saltmarsh communities are classified as Atlantic salt meadows for this survey.

3.3 Atlantic salt meadows (H1330)

The habitat is best developed around the edges of Ross Inlet. Saltmarsh community zonation is evident with a Common Saltmarsh-grass and Glasswort dominated zone at the seaward edge; a lower-mid zone dominated by Sea Pink (*Armeria maritima*) and Sea Plantain (*Plantago maritima*); mid-upper saltmarsh zones dominated by Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*); and a Creeping Bentgrass (*Agrostis stolonifera*) dominated zone at the landward edge. Vegetation dominated by Twitch (*Elytrigia repens*) and also containing species such as Silverweed (*Potentilla anserina*), Curled Dock (*Rumex crispus*) and Spear-leaved Orache (*Atriplex prostrata*) is present along the high water mark. The lower saltmarsh zone with Common Saltmarsh-grass is spreading over the sandflats indicating there is accretion with accretion plains fairly frequent. There are occasional small 'islands' of pioneer saltmarsh vegetation along the seaward edge of the saltmarsh.

Other common species across all of the zones include Sea Milkwort (*Glaux maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*), Greater Sea-spurrey (*Spergularia media*) and Common Scurvygrass (*Cochlearia officinalis*). Annual Sea-blite (*Suaeda maritima*) and Lax-flowered Sea Lavender (*Limonium humile*) occasionally occur in the lower and pioneer saltmarsh zones. Long-bracted Sedge (*Carex extensa*), Distant Sedge (*Carex distans*) and Autumn Hawkbit (*Leontodon autumnalis*) is present in the upper saltmarsh zones

The north-western corner of Ross Inlet contains the best developed saltmarsh topography with frequent good-sized pan development (1-4 m in length) and one major creek draining the area. The vegetation of this area is dominated by a flat uniform mid Sea Plantain/Sea Pink dominated zone. There is some internal saltmarsh vegetation zonation along the creek with Common Saltmarsh-grass and Glasswort forming narrow bands. Near the clumps of Sea Rush (*Juncus maritimus*) there are some low-lying mounds containing Red Fescue/Saltmarsh Rush amongst shallower hollows containing the mid zone vegetation dominated by Sea Pink and Sea Plantain. The saltmarsh extends back to a minor road that marks the landward boundary in places.

The best developed saltmarsh vegetation (several communities present) is present in the north-east corner of Ross Inlet where it is ungrazed. The ASM vegetation along the eastern side towards Rinnaun Point is quite badly poached and heavily grazed. There are several enclosures fenced off along this area. The ASM in the northeast corner is also well-developed but there are parts that are moderately-heavily poached. There are small patches of ASM in the Croghan area that are similar to the rest of the site. The micro-topography is less developed as these are small or narrow band areas.

This habitat is also present as a narrow band of saltmarsh 2-5 m wide along several stretches of coastline. The vegetation of these fringes varies but they are commonly dominated by Saltmarsh Rush, with a band of Creeping Bentgrass at the landward side. Occasionally these narrow bands are overhung by overgrown hedgerows and mature trees and the saltmarsh plants are affected by the shade. Some of the saltmarsh has been impacted by tracks along the shoreline and is eroded in places. A low saltmarsh cliff (0.2-0.5 m high) has developed in places along the seaward edge of the saltmarsh. The seaward edge of the saltmarsh usually has a stony zone or

cobble/shingle zone on muddy/sandy sediments. The narrow band at the eastern side of the island at Croghan contains abundant Lax-flowered Sea Lavender (*Limonium humile*).

3.4 Mediterranean salt meadows (H1410)

This habitat is located in several patches the north-west corner of Ross Inlet and is also the dominant habitat in Pollnageeler Inlet and at Croghan. The patches occurring in the north-west corner of the Ross Inlet are quite typical, being dominated by dense Sea Rush generally with a sward height of 0.4 m. Other common species include Saltmarsh Rush, Red Fescue, Sea Pink, Creeping Bentgrass, Sea Plantain and Sea Milkwort. Sea Aster, Autumn Hawkbit, Greater Sea-spurrey, Sea Arrowgrass, Lax-flowered Sea Lavender, Common Saltmarsh-grass, Spear-leaved Orache and Common Scurvygrass occur only occasionally. There are occasional small patches of mid zone and mid-upper zone ASM vegetation dominated by Sea Pink, and Sea Plantain or Red Fescue amongst the Sea Rush. The MSM habitat generally does not display zonation as it is usually quite uniform. However, the seaward side may have patches of low-mid ASM vegetation dominated by Sea Pink and Sea Plantain while at the landward side species such as Creeping Bentgrass and Autumn Hawkbit are more common. There are relatively tall saltmarsh cliffs (0.8-1.5 m) at the seaward edge of the MSM at Croghan and Pollnageeler.

Salt pans also occur in this habitat in the north-west corner of Ross Inlet and at Croghan. This habitat is generally not grazed or only grazed lightly. There are patches of localised moderate-heavy poaching by cattle, but these are minor areas. The plant ground cover is generally quite high (0.5-1 m) with only minor amounts of bare ground.

4 IMPACTS

This site has a wide range of impacts and activities affecting the saltmarsh and this can be related to the fact that the saltmarsh habitats cover a wide area (2.4 km long) (Table 4.1). A significant portion of the saltmarsh is moderately-heavily poached (143), particularly along the eastern side of Ross Bay. Parts of the western side are also badly poached. Pollnageelar saltmarsh is fenced by electric fence but is low-

moderately poached. The saltmarsh at Croghan is generally not significantly poached on the western side, with some moderate poaching on the eastern side. The saltmarsh to the south of the main area of saltmarsh at Croghan is badly poached.

There are several paths (infilled with hardcore) (501) across the saltmarsh to allow access to the sandflats for cattle and tractors. Cattle access grazing fields on either side of Ross Bay via the sandflats. (These paths were constructed to reduce poaching on the saltmarsh). There are several other paths or tracks across the saltmarsh that allow access for vehicles onto the sandflats. Wheel ruts were noted on the sandflats at various places and the shoreline is used for access between adjoining fields.

There has been some old infilling (800) along the northern boundary in Ross Bay. This area has been unfilled about 10 years ago (probably after the NHA survey in 1993) and is vegetated by Twitch. A small area of saltmarsh has been reclaimed in the past on the island at Croghan (MPSU plan) (802). This area now contains wet grassland and some brackish transition habitat. A drain has been excavated or cleaned out in the recent past along the minor road at the northern end of Ross Bay. The spoil from this drain has been deposited as a ridge on the saltmarsh. This ridge is vegetated by Twitch with several Hawthorn (*Crataegus monogyna*) plants developing. There has been some old drainage works across the saltmarsh in Pollnageelar. There are some minor sea protection works (871) around some the buildings situated close to the shoreline and the edge of the saltmarsh.

There is some runoff from a silo (701) situated close to the saltmarsh at Croghan. This is enriching the mud and producing luxuriant saltmarsh vegetation. The saltmarsh is also likely to be affected by potential water pollution (701) from run-off from towns such as Ballina and Killala.

A comparison of the 6 inch map (1929) to the 2000 aerial photos indicates that there has been significant accretion and growth of saltmarsh in the Ross Inlet by 4 ha in this period (910). There are signs of accretion and continuing saltmarsh growth in the inner part of the Ross Inlet with 'accretion ramps' at the seaward edge of the saltmarsh.

Table 4.1. Intensity of various activities on saltmarsh habitats at Ross.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1310	140	C	0	0.25	Inside
1330	140	C	-1	15.82	Inside
1330	143	A	-1	7.00	Inside
1410	143	C	0	6.26	Inside
1330	501	C	-2	< 0.1	Inside
13s	701	C	-1	22.33	Outside
1330	800	C	-2	0.05	Inside
1330	910	B	+1	4	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

In general most of the saltmarsh is in fairly good condition (Table 5.1). However, a significant part has been damaged by poaching from cattle. This mainly affects the Atlantic salt meadows. The Mediterranean salt meadows are generally not as badly damaged by poaching as the quality of grazing is poorer. There are no significant impacts on the *Salicornia* flats (1310). There is a MPSU Conservation plan available for this SAC. Localised damage of saltmarsh habitats is noted. No Common Cordgrass (*Spartina anglica*) was recorded on the site.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor-moderate. Most of the landward saltmarsh boundary (75%) is constrained by sloping banks and man-made ditches with hedgerows, stonewalls and fences marking the terrestrial boundaries. These would have to be eroded to allow landward migration of saltmarsh. However, there are few 'hard', seawalls around the site. These only occur around some houses located adjacent to the shoreline and along the Killala-Ballycastle road at the southern end of the surveyed site. About 25% of the landward saltmarsh boundary features transitional brackish, wet grassland and sand-dune habitats that would allow some landward migration of saltmarsh habitat. These mainly occur along the eastern side of the Ross Inlet and in some of the small inlets at Pollnageelar and Croghan.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Ross.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent, Structure and functions, Future prospects,			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions, Future prospects		Unfavourable - inadequate
Mediterranean salt meadows (1410)	Extent, Structure and functions, Future prospects,			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

The area of this habitat was relatively small and scattered in four small patches on sandflats. There is no data on the historical extent of *Salicornia* flats in Killala Bay and patches of Glasswort on sand were not recorded during the NHA survey. Therefore the extent is assessed as *favourable*. The habitat structure and functions are typical of this habitat with sparse Glasswort plants occurring in a single species stand. There were no other species recorded although green algae were associated with the stands. The habitat structure and functions are assessed as *favourable*. All the attributes reached their targets. The future prospects are also assessed as *favourable* as there are no significant impacts on this habitat. The extent of this habitat is also dependant on erosion/accretion cycles in the intertidal area within the Ross Inlet. The habitat may naturally disappear or increase in size as the sand bar on which it is located moves due to erosion and/or accretion. These cycles may be affected by coastal development along the mainland of pipelines, piers and coastal protection works

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

Overall, the extent of this habitat is assessed as *favourable*. There has been some small loss of habitat due to infilling and tracks across the saltmarsh but the areas are minor (< 0.1% of the total area). Comparison of the 6 inch map (1929) to the 2000 aerial photos indicate that the saltmarsh has grown significantly in this period (by 4 ha). There are signs of accretion and continuing saltmarsh growth in the inner part of the Ross Inlet with 'accretion ramps' at the seaward edge of the saltmarsh.

5.3.2 Habitat structure and functions

Eight monitoring stops were carried out in the ASM and six passed. The two other stops did not reach the target for bare ground cover (< 10%) and were significantly affected by heavy poaching. The two failed stops reflect about 28% of the total ASM area. Therefore the overall structure and functions of this habitat is assessed as *unfavourable-bad*.

The undamaged areas do have adequate habitat structure and functions. Species diversity is typical of this habitat and there are several indicators of local distinctiveness such as Lax-flowered Sea Lavender and Saltmarsh Flat-sedge. Zonation is evident with the typical low/mid and upper saltmarsh plant communities present. The largest areas of saltmarsh in the north-west corner of the Ross Inlet contain well-developed salt pans and show some internal zonation along the large creeks. There are some natural transitional habitats to wet and dry grassland, and fixed dune along the Ross Peninsula.

5.3.3 Future prospects

The future prospects of the main area of saltmarsh are assessed as *unfavourable-inadequate* in the short term, assuming the current grazing regime is continued and cattle poaching persists over a significant area of the ASM.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

Overall, the extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to infilling, tracks or recent land reclamation. Some land

reclamation has been carried out in a small inlet in Croghan that probably contained this habitat. The entrance to the inlet has been partially closed with a stone embankment (NHA survey notes 1993). This area now contains mainly brackish and wet grassland habitats. However, this reclamation predates the NHA survey so the loss of habitat is not considered for this conservation assessment. Natural erosion/accretion cycles have not had a significant impact on the MSM. The seaward side of the MSM at Pollnageelar and Croghan has remained fairly stable when comparing the 6 inch map (1929) to the 2000 aerial photos.

5.4.2 Habitat structure and functions

Six monitoring stops were carried out in the MSM and they all passed. Species diversity was typical of this habitat. Sward height and plant ground cover reached their targets. Only small areas of this habitat at Croghan and Pollnageelar were moderately-heavily poached by cattle. Grazing is actually absent or at a low level but this is typical of Rush-dominated vegetation, which shields the other vegetation somewhat. There were some natural transitions from this habitat to wet grassland and brackish habitats at Pollnageelar and on the island at Croghan. There were no other negative indicators present.

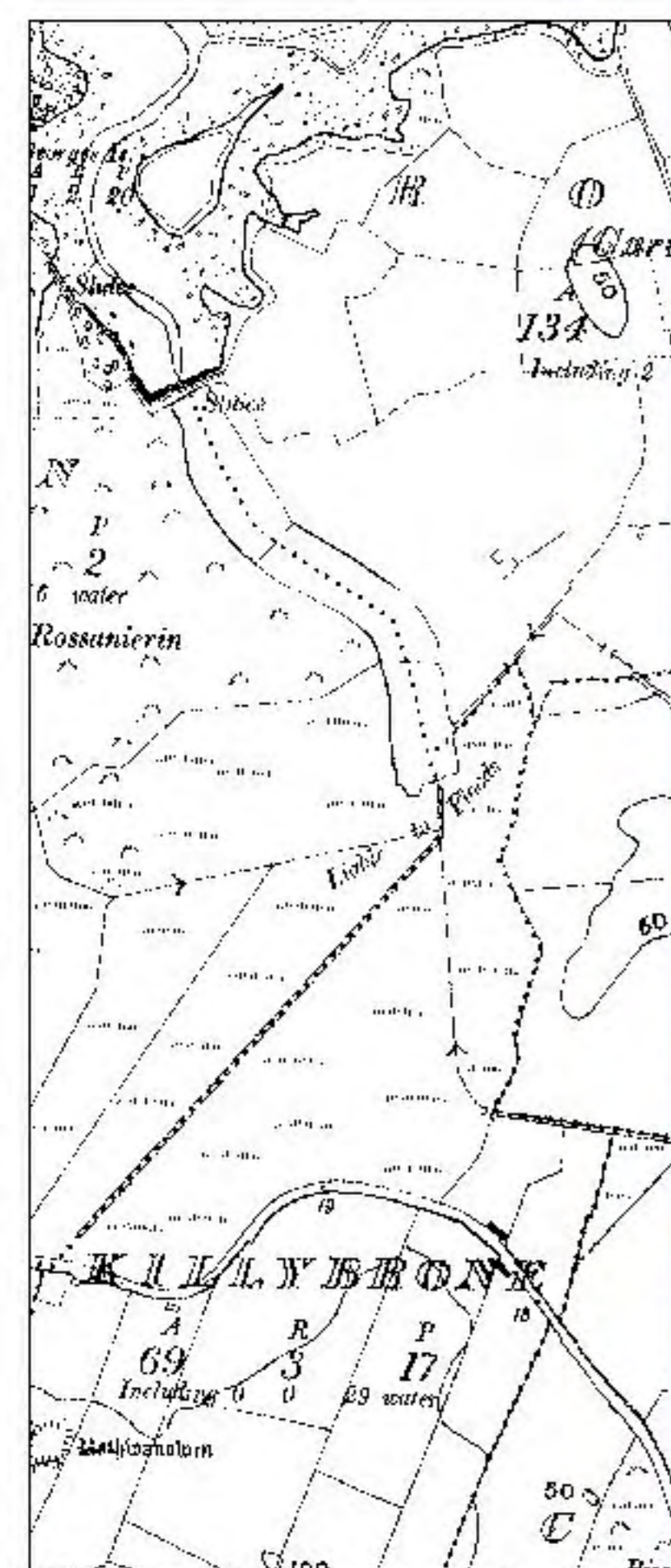
5.4.3 Future prospects

The future prospects of the main area of saltmarsh are assessed as *favourable* in the short term, assuming the current grazing levels are not increased significantly.

6 MANAGEMENT RECOMMENDATIONS

The main impact on the site is cattle grazing. The conservation status of this site could be improved by reducing or preventing cattle-grazing, particularly on the eastern side of the Ross Inlet. Some reduction of cattle grazing would improve the status of the transitional habitats at Pollnageelar, although these occur close to or outside the SAC boundary.

Many of the damaged areas on the Ross Peninsula and at Pollnageelar have the potential to recover quickly if the poaching pressure is reduced.



Legend

- SAC boundary
- 1330 Monitoring stops
- ▲ 1410 Monitoring stops

Habitats

- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- other

**Saltmarsh
Monitoring Project**

Ross

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)

Míre na leathneacha ar an t-áras seo ach níl garthuilleadh ginearálta. Feidir athrú na líne seo ar an am arís nó arís eile. Míre na leathneacha arís eile arís eile. (© Ceartais Uimh. 5953)

**Killala Bay/Moy Estuary
cSAC (000436)**

SMP Code: SMP0024	Map produced by: SMP 2006 Map Version: 1
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0 0.08 0.16 0.24 0.32 0.4 0.48 Kilometers

Scale: 1:7757

Rusheens

1 SITE DETAILS

SMP site name: Rusheens	SMP site code: SMP00025
Site name (Curtis list): Rusheens	CMP site code: not surveyed
	Site No: (Curtis list): 40
NPWS Site Name: Kilalla Bay/Moy Estuary	Dates of site visit: 12/09/2006
NPWS designation cSAC: 458	MPSU Plan: Draft 2 (old format)
pNHA: 458	
SPA: Kilalla Bay/Moy Estuary SPA 4036	
County: Mayo	Discovery Map: 24 Grid Ref: 123920, 327520
6 inch Map No: Ma022	Aerial photos (2000 series): 01120-d, 01121-c, 01181-b, 01182-a
Annex I habitats currently designated for Kilalla Bay/Moy Estuary cSAC:	
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Ross, Bartragh Island, Castleconor	
Saltmarsh type: Sandflats	Substrate type: Sand

2 SITE DESCRIPTION

Rusheens saltmarsh is located on the western side of Killala Bay near the mouth of the Moy River in Co. Mayo. The site is 4 km south-east of Killala Town. The main area of saltmarsh occurs in a small enclosed bay with agricultural grassland and scrub sloping down the saltmarsh. A narrow band of saltmarsh continues along the shoreline to the north and south of the main area. Saltmarsh continues beyond the surveyed area. The site can be accessed via minor roads to the shoreline at the north of the site (Bullockpark)

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Mediterranean salt meadow is not listed as a qualifying interest for Killala Bay/Moy Estuary cSAC. Most of the site is located within the Kilalla Bay/Moy Estuary SAC with the cSAC boundaries corresponding more closely with the actual shoreline, as indicated from the 2000 aerial photos. The main saltmarsh area at Rusheens is outside the Kilalla Bay/Moy Estuary SPA boundary (Site code 4036) that includes much of the adjacent intertidal mudflats. Parts of the

saltmarsh along the shoreline outside Rusheens Bay are included within the SPA. The cSAC and SPA are important for wintering waders and wildfowl.

3 HABITATS

3.1 General description

The main area of saltmarsh at Rusheens is Mediterranean salt meadow (MSM) dominated by Sea Rush (*Juncus maritimus*) and is about 150 m wide and 150-200 m long (Table 3.1). Atlantic salt meadow (ASM) develops at the seaward edge and continues as a narrow band along the shoreline to the south and north of the main area. It should be noted that this narrow band of saltmarsh continues outside the survey site along the shoreline (Table 3.1). There are some additional small patches of Sea Rush along to the north of the main area. Two drains/streams flow into the main area of saltmarsh and continue along channelized drains/creeks to the intertidal area. There is a saltmarsh cliff at the seaward boundary of the main saltmarsh area. Intertidal soft mudflats occur to the seaward side of the main saltmarsh. The saltmarsh is present on a narrow band of mud that overlays a stony layer. This rocky shoreline/cobble beach is exposed at the seaward edge of the saltmarsh and then transitions to mud and sandflats.

The main saltmarsh transitions to wet grassland at the back of the saltmarsh and to dry grassland along the sides. Hedgerows, scrub and fenceline on a bank or slope mark the landward boundary at the back of the saltmarsh that follows the shoreline. There are occasional small seawalls along the shoreline at the back of the saltmarsh.

Table 3.1. Area of EU Annex I habitats listed at Rusheens.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	1.24
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	2.46
	Total	3.7

* note that saltmarsh habitat continues outside the surveyed site.

3.2 Atlantic salt meadows (H1330)

This habitat occurs along the seaward edge of the main saltmarsh in a narrow band on a thick layer of mud/sand substrate, with a saltmarsh cliff down onto the mudflats. It

also occurs along the shoreline, as a narrow band of saltmarsh. The species diversity on the main saltmarsh is typical of this habitat being dominated by Red Fescue (*Festuca rubra*) and also containing other species such as Creeping Bentgrass (*Agrostis stolonifera*), Common Scurvygrass (*Cochlearia officinalis*), Sea Milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*), Sea Arrowgrass (*Triglochin maritima*), Autumn Hawkbit (*Leontodon autumnalis*) and Sea Rush.

The saltmarsh (5-10 m wide) along the northern and southern shorelines is quite typical and is dominated by bands of Common Saltmarsh-grass (*Puccinellia maritima*) and Saltmarsh Rush (*Juncus gerardii*). Other common species include Sea Pink (*Armeria maritima*), Sea Aster (*Aster tripolium*), Greater Sea-spurrey (*Spergularia media*) and Sea Plantain. The creek and pan structure is poorly developed, as the saltmarsh is so narrow. The saltmarsh to the north of the main area is notable for having abundant Flax-flowered Sea Lavender (*Limonium humile*).

3.3 Mediterranean salt meadows (H1410)

This habitat dominates the main saltmarsh area and also occurs in small patches to the north. The vegetation is dominated by Sea Rush with frequent Creeping Bentgrass, Red Fescue, Saltmarsh Rush, Sea Plantain and occasional Sea Arrowgrass, Autumn Hawkbit and Sea Milkwort. Common Reeds (*Phragmites australis*) are expanding from a Reedbed along the southern side into the saltmarsh and along some drains/creeks. Sea Club-rush (*Bolboschoenus maritimus*) occurs in small patches towards the northern side of the main area. The sward height reaches 1 m in places but is generally around 20 cm high. This area is heavily poached with small amounts of bare ground (2-5%). There are several creeks/drains through the saltmarsh that have been canalised or straightened. There are several other straight drains indicated from the aerial photo that may indicate that there were attempts to reclaim or improve this area in the past. Natural creeks and some large pans are still present.

The presence of Reeds and Sea Club-rush on the saltmarsh along with other plant indicators indicate that the main saltmarsh area is mainly upper saltmarsh and is therefore flooded less frequently. There are probably freshwater influences along the edges and along the main canalised creek that are influencing the spread of Reeds.

4 IMPACTS

The main saltmarsh area has been drained in the past (810) and the two main drains/creeks have been canalised in the past (pre-dating 1929). Drains crisscross this area and are visible on the aerial photo, though may have been infilled. This area of saltmarsh may have been the subject of old land improvement. The main area of saltmarsh is fenced off with an electric fence but was heavily poached by cattle (143). This is the main activity on the site (Table 4.1). The level of grazing was moderate. The saltmarsh was not grazed significantly. Erosion is not significant as the current saltmarsh cliff corresponds to the 6 inch map (1929 position), even though there is a relatively high saltmarsh cliff.

Table 4.1. Intensity of various activities on saltmarsh habitats at Rusheens.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1410	143	A	-1	1.90	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

There is no historical information about the saltmarsh on this site. The site was not surveyed in detail during the NHA boundary survey (1993). Overall, the main area of saltmarsh at Rusheens has a poor conservation status at present, being heavily poached by cattle (Table 5.1). Old drainage is still probably having a residual effect on the marsh and has probably influenced the spread of Common Reeds on the marsh. The narrow band of saltmarsh that extends from the main area along the shoreline is in better condition and is typical of this type of marsh.

The main area of saltmarsh can respond to sea level rise due to climate change as there is a small area of transition habitat and wet grassland at the back of the saltmarsh. However, there is limited scope for the natural movement of saltmarsh habitats due to the topographical situation, as the saltmarsh is enclosed by elevated land. No Common Cordgrass (*Spartina anglica*) was recorded on the site.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Rusheens.

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

5.2 Mediterranean salt meadows (H1410)

5.2.1 Extent

The extent is assessed as *favourable* as there has been no loss of habitat to erosion. There has been some transition of saltmarsh habitat to brackish/freshwater habitat along the southern drain, although the area is still quite minor.

5.2.2 Habitat structure and functions

One monitoring stop was carried out in this habitat at a location that was typical of the whole area. The site was too small to do four monitoring stops. The structure and functions is assessed as *unfavourable-bad* due to the high level of poaching by cattle. This was the only target that failed. Grazing is actually at a low-moderate level but this is typical of Rush-dominated vegetation, which shields the other vegetation somewhat. However, stocking cattle on these areas usually creates a high level of poaching. The small patches of this habitat along the saltmarsh north of the main area are not affected by poaching so their structure and function is assessed as *favourable*.

The species diversity and sward height were both typical of this habitat. Zonation was not evident on the main area of saltmarsh as it was quite uniform, but there were transitional wet grassland and brackish Reedbed habitats present, which increase the overall diversity of the site.

5.2.3 Future prospects

The future prospects of the main area of saltmarsh are assessed as *unfavourable-bad* in the short term, assuming the current grazing regime is continued and poaching is continued.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed overall as *favourable* as there has been no loss of habitat in the main area to erosion.

5.3.2 Habitat structure and functions

Overall, the structure and functions of this habitat is assessed as *favourable*. This is because the area of habitat affected by poaching is minor compared to the area of the Atlantic salt meadow extending along the shoreline. One monitoring stop was carried out in the main saltmarsh area but this failed as the target for poaching was not reached. The narrow band of ASM that continues along the shoreline reached all the targets from a visual assessment.

5.3.3 Future prospects

The future prospects of the main area of saltmarsh are assessed as *favourable* as the main impact on the site, grazing, is not affecting a significant part of the narrow saltmarsh along the shoreline.

6 MANAGEMENT RECOMMENDATIONS

The main impact on the site is cattle grazing. The conservation status of this site could be improved by reducing or preventing cattle-grazing on this site.



Legend

- SAC boundary
- 1330 Monitoring stops
- 1310 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- other



**Saltmarsh
Monitoring Project**

Rusheens

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)


Mí na leathneacha ar an t-earcail seo ach níl garthuiscí ginearálta. Féidir aibíreáil na leathneacha ar theorainneacha na goeantar comharthaí le. Machairí na cSAC ar na cSAC le dealán Rialas. (Ceartúnar Uimh. 5953)

**Killala Bay/Moy Estuary
cSAC (000436)**

SMP Code: SMP0025	Map produced by: SMP 2006 Map Version: 1
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0 90 180 270 360 Meters

Scale: 1:4546



Saleen Harbour

1 SITE DETAILS

SMP site name: Saleen Harbour	SMP site code: SMP0116
Date of site visit 24/07/2008	CMP site code: N/A
SM inventory site name: Saleen Harbour	SM inventory site code: 49
NPWS Site Name: Mullet/Blacksod Bay Complex cSAC	
NPWS designation cSAC: 000470	MPSU Plan: none available
pNHA: 000470	SPA: 004037
County: Mayo	Discovery Map: 22 Grid Ref: 066170, 328720
Aerial photos (2000 series): O 1106-C,D	6 inch Map No: Ma 016
Annex I habitats currently listed as qualifying interests for Mullet/Blacksod Bay Complex SAC: H1310 <i>Salicornia</i> and other annuals colonizing mud and sand	
Other SMP sites within this SAC/NHA: Ely Harbou, Bunnahowan, Doolough	
Saltmarsh type: Fringe	Substrate type: Peat

2 SITE DESCRIPTION

Saleen Harbour saltmarsh is located on the Belmullet Peninsula in north-west Co. Mayo. The site is located along the east side of the peninsula, 5 km south-west of Belmullet Town. This site borders the northern part of Blacksod Bay. The landscape of this area is low-lying and is dominated by habitats such as improved grasslands and wet grassland. There is a strong oceanic influence on the Bellmullet Peninsula but this site is somewhat sheltered being on the east side. This area is sparsely populated with scattered dwellings along the main road that accesses the southern end of the peninsula and is situated close to the site.

The saltmarsh is located along the shoreline of a small sheltered half-mooned bay called Saleen Harbour. A small pier and harbour is located at the north-eastern corner of the site bay. The main road is positioned close to the northern shoreline and the saltmarsh is mainly distributed along the narrow strip of land between the road and the shore. A secondary road linking to this main road divides the majority of the saltmarsh habitat from adjacent land further south in the central section. A shingle/cobble beach extends along part of this shoreline. There are intertidal mudflats, patches of mixed sediment and patches of Wrack-cover exposed rocks lower on the shore.

The majority of the site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. This is a large coastal site that includes the northern part of Blacksod Bay, coastal habitats on both sides of the peninsula and coastal habitats along the mainland. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). However a third saltmarsh habitat, *Salicornia* flats (1310) is the only Annex I saltmarsh habitat listed as a qualifying interest for this cSAC and this habitat was not recorded at Saleen Harbour. Saltmarsh is frequently found in many of the sheltered coastal sites around this cSAC. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project

(Elly Harbour on the peninsula, Bunnahowan and Doolough along the mainland). A fourth site listed on the SM inventory, Gweesalia, was not surveyed during the SMP.

Most of saltmarsh habitat mapped at this site is located within the cSAC boundary. However there are several small patches located outside the boundary. This is mainly due to the fact that saltmarsh habitat extends above the upper shoreline boundary on the OSI 6 inch map, which was used to draw the cSAC boundaries. There is one large exclusion of saltmarsh habitat at the north-eastern corner of the site. This patch is located on the landward side of the main road and was probably excluded in error.

Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland. One species of note that has been recorded in this area is Common Cordgrass (*Spartina anglica*) (Preston *et al.* 2002). There is one isolated record in north-west Mayo in a 10 km square positioned over the southern end of the peninsula. However, this species was not recorded on the Bellmullet Peninsula or in north-west Mayo during the SMP.

The site was easily accessed via an adjacent minor road that is positioned close to the shoreline.

3 SALTMARSH HABITATS

3.1 General description

Atlantic salt meadow (ASM) dominates the saltmarsh habitat at this site (Table 3.1). There are only two small patches of Mediterranean salt meadow (MSM) mapped at this site. Clumps of Sea Rush are present within the ASM but generally at low densities or covering very small areas that are too small to be mapped. The largest part of the saltmarsh is located in the central part of the bay. This saltmarsh has developed on a thinner depth of peat compared to other similar sites. This site was classified as a 'fringe type' saltmarsh, although there is no development of blanket bog adjacent to this site. Blanket peat formation is thinner compared to other sites.

A minor road on a raised embankment marks the upper boundary of this part of the saltmarsh. Land on the landward side of this road has been mainly modified and reclaimed in the past, although some of these have now developed wet grassland. However, there are signs of tidal influence in the drain along the road and one low-lying enclosure still contains a large area of saltmarsh. Several small drainage channels or streams flow into this part of the bay. There are stands of Common Reed developed in pools related to one of these drainage channels at the southern end.

Saltmarsh also extends along the northern and the southern sides of the bay, although it is less developed and forms a narrower fringe. Some of the saltmarsh towards the northern end of the central section has developed behind a shingle/cobble spit that shelters the saltmarsh. This small spit extends north along the shoreline and develops into a typical shingle/cobble beach that dominates the shoreline. There are several isolated patches of saltmarsh developed in low-lying areas behind this beach ridge. This largest area is located landward of the main road at the north-east corner of the site. This area is connected to the shoreline via modified drainage channels under the road.

There is similar development of a narrow band of saltmarsh along the southern side of the bay extending from the central section. The saltmarsh is enclosed at the outer end of the bay by a second cobble spit and some rocky beach development.

The upper saltmarsh transition varies across the site. There is generally an abrupt transition to terrestrial grassland as the shoreline has a relatively steep topography around most of the bay, particularly along the narrow sections. Some of this transition is to wet grassland and some to improved grassland where there are several fields being grazed along the shoreline. There is some transitional habitat to wet grassland habitats within both sections of saltmarsh located landward of the main road and the minor road. A minor road on a raised embankment marks the upper boundary of the main part of the saltmarsh. There is also some development of a Twitch (*Elytrigia repens*) -dominated band of vegetation along the upper saltmarsh boundary in places. This vegetation has been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

The main transition at the lower saltmarsh boundary of the main section of saltmarsh is to mixed rocky and muddy intertidal sediment. The main central section of saltmarsh has an eroded saltmarsh cliff < 0.5 m high along the lower boundary. This boundary is irregular with isolated fragmented tussocks of peat along this boundary. The saltmarsh cliff varies and is over 1 m high in some parts.

Table 3.1. Area of saltmarsh habitats mapped at Saleen Harbour.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	8.236
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.011
	Total	8.247

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

This habitat is quite well-developed at this site. The main central section contains a wide generally flat area with a well-developed mid-marsh topography and vegetation. There is a network of frequent small scattered irregularly-shaped salt pans in this area. These salt pans are quite shallow and contain bare mud. This section of saltmarsh also contains some low mounds and shallow hollows. The zonation of vegetation in this area is well-developed as the saltmarsh is relatively wide and quite flat in the central section. There are two main zones present. The lower section contains a typical mid-marsh zone dominated by Sea Plantain and Sea Pink and containing a typical low sward height 95-10 cm high). However the sward cover is intact with some bare substrate related to older poaching damage. This zone extends to the lower saltmarsh boundary and this vegetation covers the top of small tussocks and peat hags.

There is a distinctive grassy mid-upper zone developed on a somewhat higher platform dominated by Red Fescue and Saltmarsh Rush. Other species present within this zone include Sea Plantain, Sea Aster, White Clover, Creeping Bent and Sea Milkwort. This zone has a taller sward height and there are fewer signs of poaching damage within this zone. This zone also contains typical salt pans.

The lower saltmarsh communities are relatively poorly developed at this site. There is some development of a sward dominated by Common Saltmarsh-grass along some of the channels draining the main saltmarsh section and around some of the lower-lying salt pans. Other species present within this zone includes Glasswort (*Salicornia* sp.), Sea Aster, Sea Arrowgrass, Greater Sea-spurrey (*Spergularia media*) and Annual Sea-blite (*Suaeda maritima*).

The smaller patches of saltmarsh located along the northern side of the site generally are dominated by grassy mid-upper saltmarsh communities. The saltmarsh located landward of the road is also dominated by similar mid-upper saltmarsh communities although some lower saltmarsh develops along the channels draining this area.

3.3 Mediterranean salt meadows (H1410)

This habitat is fairly insignificant at this site and there are only several small patches of this habitat present. The vegetation is dominated by Sea Rush and there are only typical species such as Sea Plantain and Red Fescue. As the habitat is quite limited in extent attributes such as zonation and saltmarsh topography are poorly developed. Some of the MSM is located along the lower saltmarsh boundary perched on a saltmarsh cliff.

4 IMPACTS AND ACTIVITIES

The main impact or activity noted at this site is grazing (Table 4.1). The position of this site near the main road and adjacent to a small harbour at the north-east corner of the site means that it has also been disturbed by various different land-uses and improvement of adjacent land in the past. However the site is not affected by amenity use.

The main section of saltmarsh has been grazed in the past (140). There are signs of old poaching damage in the lower part of the main saltmarsh section. However, these areas are now recovering and the grazing intensity was assessed as low or absent during the current survey. This poaching damage probably occurred during grazing in 2007. The two main sections of saltmarsh located on the landward side of the minor road and the main road were grazed by ponies and cattle in 2008 and the grazing intensity was assessed as moderate-high (143). There were some signs of grazing damage and poaching in both these sections. Grazing is absent in some of the smaller narrower sections of saltmarsh scattered around the site.

There are some signs of erosion along the lower saltmarsh boundary of the main section (900). There are exposed peat tussocks and hags along this boundary. This erosion is mainly poaching-induced for most part. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. A comparison of the OSI 2nd edition 6 inch map to the OSI 2005 series aerial photos also shows that there have been no significant changes to the saltmarsh during this period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

There has been some infilling of part of saltmarsh (0.8 ha) located seaward of the road and adjacent to the small harbour at the north-east corner of the site (803). The harbour is used for mooring several boats. This is related to recent coastal protection adjacent to the pier and

harbour and is likely to be disposal of excess material. This infilling has occurred within the past 5 years.

The site has been affected by land improvement, road development and modifications in the 18th and 19th centuries (800). A minor road positioned on an embankment was developed across the main section of saltmarsh and there are also associated drains on both sides of the road. The saltmarsh was likely to have extended higher up the shoreline prior to the construction of this road. Saltmarsh located at the north-east corner of the site was also cut off from the shoreline by the development of the main road. Both sections that have been cut off in the past have also been subject to land reclamation and improvement works such as drainage. While these activities occurred prior to the current monitoring period and are therefore not assessed, they are still likely to be having a residual impact on the site.

The main Impacts and activities adjacent to the site are related to agriculture. Improved grassland is grazed (140) and some is also fertilised (120) and cut (102) for cattle fodder, Other impacts and activities include dispersed habitation (403), a harbour (504) and roads (502). The agricultural activities have little or no measurable impact on the saltmarsh habitats. The impacts of the harbour and the development of road infrastructure have already been considered.

Table 4.1. Intensity of various activities on saltmarsh habitats at Saleen Harbour.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	C	0	5.874	Inside
1330	142	B	-1	2.362	Inside
1330	803	A	-2	0.080	Inside
1330	900	C	0	0.4	Inside
1330	504	B	-1	1.67	Outside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005, OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

The overall conservation status of this site is assessed as *unfavourable-inadequate* (Table 5.1). Saleen Harbour saltmarsh is a moderately well-developed saltmarsh with some features of significant conservation interest. It is one of the larger saltmarshes in the north-west Mayo

areas. Due to its size features such as a typical mid marsh pan and creek saltmarsh topography are well-developed. The majority of the saltmarsh is in good condition. Several sections separated from the main section by roads show some signs of grazing damage. The site has been modified by land improvement and development of the road infrastructure in the past. A small area of saltmarsh habitat has also been infilled in recent years.

The medium-term future prospects of natural landward saltmarsh migration in response to sea level rise are poor. Most of the saltmarsh is confined by an artificial barrier (road) along the upper boundary. There are some prospects for saltmarsh development in adjacent low-lying fields on the landward side of the road but this would be related to drainage issues.

This site is located within the Mullet/Blacksod Bay Complex cSAC and pNHA. A NPWS Conservation management plan is not available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Saleen Harbour.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *unfavourable-inadequate*. There has been a small loss of habitat (0.8 ha) due to infilling within the current monitoring period. This represents a loss of roughly 1% of the habitat at this site. The habitat does display signs of erosion along much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Five monitoring stops were carried out in this habitat and all the stops passed. All of the attributes required for the structure and functions of this habitat reached their targets for each monitoring stop. The majority of this habitat is in good condition. Grazing was assessed as being low or absent and the sward height varied between 1-10 cm high. While there were signs of poaching damage in the past, there were signs that the main section of saltmarsh was recovering from this damage. The diversity of the vegetation was typical of this habitat although one notable species absent from the saltmarsh is Lax-flowered Sea lavender

(*Limonium humile*). The majority of the ASM is in good condition and the sward cover is generally intact. Attributes such as zonation and saltmarsh topography are well-developed.

However, there were two sections of saltmarsh located on the landward side of the roads that did not contain any monitoring stops. Monitoring stops were not recorded due to the presence of grazing animals. A visual assessment indicated there were some localised over-grazed patches with grazing and poaching damage. After taking these sections of ASM into account, the structure and functions area assessed as *unfavourable-inadequate*.

There are some natural successional communities to terrestrial vegetation present but these are generally poorly developed due to the relatively steep shoreline topography. The saltmarsh topography is relatively poorly developed but this is typical of these relatively small saltmarsh sites. Turf fucoids were recorded in this habitat but these are fairly typical of heavily grazed fringe type saltmarshes on peat along the west coast of Ireland.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing is the main activity affecting the ASM at this site. Both sections that were damaged by grazing are located outside the cSAC boundary so there are few prospects for grazing management in the future. The majority of the site was in good condition, although there were signs that the main section of habitat was damaged in the past by over-grazing.

The site does show some signs of erosion on the saltmarsh habitat but this is related to the former heavy-grazing pressure. There are no indications of any significant erosional trends. There are few other impacts or activities significantly affecting this habitat. The saltmarsh is unlikely to be significantly affected by further infilling around the harbour area as most of the habitat is positioned at some distance from this site.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are only several small patches of this habitat present at this site. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. No monitoring stops were carried out in this habitat as its extent is quite limited. However, a visual assessment indicated that this habitat is in good condition. All of the attributes required for the structure and functions of this habitat are likely to reach their targets.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Grazing is the main impact affecting this site but the several small patches of MSM are not grazed. The site does show some signs of erosion on the saltmarsh habitat but

this is mainly poaching-induced and affects the ASM. The MSM is much less vulnerable to erosion compared to ASM due the denser structure of the habitat and its limited extent.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

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

8 APPENDIX I

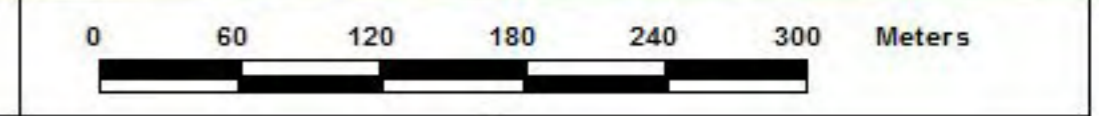
Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	8.236		8.236			
4	1410 Mediterranean salt meadow	0.011			0.011		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	1.421					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	9.668		8.236	0.011		



Legend

- SAC Boundary
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- other
- 1330 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Salia West

1 SITE DETAILS

SMP site name: Salia West	SMP site code: SMP0108
Date of site visit : 24/04/2008	CMP site code: N/A
SM inventory site name: Salia West	SM inventory site code: 64
NPWS Site Name: no designations	
NPWS designation cSAC: N/A	MPSU Plan: N/A
pNHA: N/A	SPA: N/A
County: Mayo	Discovery Map: 30 Grid Ref: 070750, 301960
Aerial photos (2000 series): O 1712-D	6 inch Map No: Ma 055
Saltmarsh type: Fringe	Substrate type: Peat

2 SITE DESCRIPTION

Salia West saltmarsh is located on the east side of Achill Island in Co. Mayo, 3.5 km north-west of Achil Sound Village. The site is found on the west side of a small inlet of Salia Bay known as Bunnahownahigga. A second SM inventory site is located on the east side of this bay (known as Salia). The landscape of the area around the bay is low-lying and is dominated by blanket bog, cutover bog and some wet grassland and improved grassland within fields. A minor road is located along the southern side of the inlet and there is scattered habitation along this road. Much of the improved grassland and wet grassland is also distributed along this road. Blanket bog dominates the northern side of the inlet.

The inlet (Bunnahownahigga) contains intertidal mudflats surrounded by a band of mixed rocky substrate. Saltmarsh has developed around the shoreline of this inlet. A small river flows into the western side of the bay from adjacent uplands that form the lower slopes of Knockmore Mountain. There is very little saltmarsh upstream of the bay where the minor road crosses this river.

This site is not located in any nature conservation designations. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland.

The shoreline was accessed via an adjacent minor road near the west side of the bay.

3 SALTMARSH HABITATS

3.1 General description

Salia West is a typical example of a fringe type marsh. Both Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM) are present at this site with ASM being the most dominant

habitat (Table 3.1). The saltmarsh is generally poorly developed and is represented by a relatively narrow band of habitat. The saltmarsh has developed on a range of substrates. Most of the best developed saltmarsh is developed on relatively deeper peat along the southern side of the bay. Some of these patches of peat are found as small 'islands' with steep SM cliffs (> 1 m high) around their edges. Saltmarsh has also developed on much thinner substrate in places around the shoreline and sometimes forms mosaics with rocky glacial material that is found along the shoreline, where the thin layer of peat/mud has eroded away. These sections contain frequent scattered cobbles and rocks over the saltmarsh. Mosaics of ASM and MSM vegetation are present.

The habitats along the upper saltmarsh transition vary. Some of the saltmarsh has developed on shoreline along the northern side of the bay at the base of a blanket bog face-bank that is quite tall in places (1-2 m high). There are several patches where SM vegetation extends over the blanket bog where the lower height of the peat means that the bog is inundated by some tides. A band of scrub lines this face-bank in places. There are several isolated peat 'islands' along the southern side of the bay are dominated by saltmarsh vegetation, although some mounds on these islands contain terrestrial vegetation (wet grassland). The saltmarsh transitions to a range of habitats along the southern side of the bay including wet grassland. The upper transition is poorly developed due to the relatively steep sloped shoreline topography so there is generally an abrupt change from saltmarsh to terrestrial vegetation.

The lower saltmarsh transition also varies depending on the depth of the substrate. There are some tall SM cliffs around the site on deeper peat. In contrast, other patchy SM does not have a distinct lower boundary and there are small tussocks or mounds along the lower boundary in a mosaic with mixed rocky substrate.

Table 3.1. Area of saltmarsh habitats mapped at Salia West.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.832
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.588
	Total	1.420

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

The status of this habitat varies across the site. The majority of this habitat along the northern side of the bay is in relatively poor condition and a very low close-cropped sward has been created by very heavy grazing pressure. This saltmarsh is also quite fragmented. A low-mid marsh zone dominated by Sea Pink (*Armeria maritima*), Sea Plantain (*Plantago maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*) is most prominent along the northern side of the bay. The heavy grazing pressure has created a homogenous band of vegetation with little or no zonation. There is also dwarfing of saltmarsh vegetation and diversity is also reduced with few other species present. Green algae cover is also prominent on bare eroded peat tussocks created by heavy grazing pressure. Turf fucoids are still prominent on the heavily grazed peat substrate. This saltmarsh has frequent stones and cobbles scattered over it and in some cases the thin layer of peat has been eroded away exposing bare rocky glacial material. Some tree stumps also present along this section of saltmarsh.

The ASM near the bridge is not heavily grazed and is on better condition. This section has some small salt pans present. However the saltmarsh topography is generally poorly developed. The ASM is also dominated by mid marsh vegetation with Red Fescue (*Festuca rubra*), Sea Pink, Saltmarsh Rush (*Juncus gerardii*) and Sea Plantain prominent. Other species present include Sea Aster (*Aster tripolium*), Buck's-horn Plantain (*Plantago coronopus*), Sea Sperry (*Spergularia* sp.), Long-bracted Sedge (*Carex extensa*) and Common Scurvy-grass (*Cochlearia officinalis*). There are several vegetation communities present including some vegetation dominated by Saltmarsh Rush. Small patches of Common Saltmarsh-grass dominated sward are also present around the bases of the peat islands in lying areas. Some Creeping Bent (*Agrostis stolonifera*) dominated vegetation is present along the upper boundary of the better developed sections.

3.3 Mediterranean salt meadows (H1410)

The MSM at this site is poorly developed compared to other sites. The vegetation is generally dominated by abundant Sea Rush. However, this habitat varies from dense patches dominated by Sea Rush to sparser Sea Rush cover growing over more typical ASM vegetation. Both Red Fescue and Creeping Bent are prominent in this vegetation. Other species present include Sea Pink, Sea Plantain, Sea Milkwort (*Glaux maritima*) and Autumn Hawkbit (*Leontodon autumnalis*). The MSM is generally in better condition compared to the ASM and is less heavily grazed. However, Donkeys graze the Sea Rush in places and this is an unusual occurrence.

The MSM has developed on a variety of substrates including deep peat islands and along some of the blanket bog that borders the shoreline. The MSM has also developed mainly on a thin layer of muddy or peaty substrate. However there are some sections where Sea Rush is vegetated mixed loose stony substrate and there is frequent bare substrate cover in this habitat type. The MSM habitat forms mosaics with the ASM at various locations along the shoreline. The saltmarsh topography is poorly developed in this habitat but this is typical small fragments of habitat where the saltmarsh has developed as a narrow band of vegetation. There are no significant or good quality examples of transitional vegetation at the upper boundary of the MSM.

Some of the small peat 'islands' are dominated by Sea Rush. Most of these islands were not examined as they were inaccessible. However they are likely to be in good condition as they are not grazed.

4 IMPACTS AND ACTIVITIES

There are several impacts and activities noted at this site (Table 4.1). The most significant impact is grazing (140) and the intensity of grazing varies across the site. There are frequent signs of overgrazing and poaching damage by sheep (142) along the north side of the bay. Some of the saltmarsh is badly damaged and the heavy grazing pressure has modified diversity and zoning within the ASM. Green algae cover is prominent on places and the heavy grazing pressure has also created small poaching-induced eroded peat tussocks in places. The ASM is much more heavily grazed compared to the MSM. Donkeys also graze parts of this site and were noted as grazing the Sea Rush dominated Mediterranean saltmarsh. Some of the isolated peat islands were not grazed and are in relatively good

condition. The southern and eastern saltmarsh is also in better condition and is not heavily grazed.

There is some hunting on the site (230). Some minor dumping of garden waste into the bay and onto the saltmarsh was noted (421). Some of the saltmarsh near the bridge is used for mooring boats. These sections are modified and disturbed from tracks (501) accessing the boats.

There are some signs of erosion (900) at this site. The saltmarsh substrate is eroded in places and exposing the underlying glacial material creating saltmarsh/rocky mosaics. This erosion is likely to be poaching-induced and related to the heavy grazing intensity. However, a comparison of the 1995, 2000 and 2005 OSI aerial photos series indicates shows that there has been no measurable loss of habitat during the monitoring period. A comparison of the OSI 2nd edition 6 inch map to the OSI 2005 series aerial photos shows that there have been no significant changes to the saltmarsh during this period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

Impacts and activities adjacent to the site include dispersed habitation (403), grazing (140), turf-cutting (310) and a minor road (502). These activities have little or no measurable impact on the saltmarsh habitats.

Table 4.1. Intensity of various activities on saltmarsh habitats at Salia West.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	0.332	Inside
1330	142	A	-1	0.500	Inside
1330	230	C	0	0.832	Inside
1330	421	C	0	0.005	Inside
1330	501	C	-1	0.010	Inside
1330	900	C	0	0.04	Inside
1410	140	C	0	0.300	Inside
1410	142	A	-1	0.288	Inside
1410	501	C	-1	0.010	Inside
1410	900	C	0	0.03	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005,

OSI aerial photo series. There is no baseline information available in the NHA survey files as this site was never designated or surveyed.

Salia West is a relatively small saltmarsh with few features of conservation interest. The saltmarsh is poorly developed and is a poor example of a fringe type saltmarsh. A large section of the saltmarsh is heavily grazed by sheep and this has had a significant negative impact on the diversity and vegetation cover of the saltmarsh. Negative indicators such as green algae cover and eroded peat tussocks are prominent. However, overgrazing seems to promote the cover of turf fucoids in places.

This site is not part of any nature conservation designation so there are few prospects for managing grazing on this site.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Salia West.

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion along much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Three monitoring stops were carried out in this habitat and one failed. The main reason for the failed stop was the impacts of overgrazing. This habitat is also affected to a minor extent by other impacts such as dumping of garden waste and disturbance and modifications caused by using the saltmarsh to moor several boats. Heavy levels of grazing have damaged the vegetation cover of the saltmarsh, and green algae cover and bare substrate cover is frequent on most of the damaged sections. The heavy grazing has also noticeably affected diversity and also dwarfed the saltmarsh plants in places.

The grazing intensity varies over the site and some sections are not heavily grazed and are in good condition with a higher sward height and diversity. Other attributes required for the structure and functions of this habitat reached their targets. Species diversity was typical of

the ASM in the lighter grazed sections. Several typical ASM communities were recorded on this site but zonation was poorly developed overall. Much of the ASM had poorly zoned communities as it was quite narrow (< 5 m wide).

There are some natural successional communities to terrestrial vegetation present but these are generally poorly developed due to the relatively steep shoreline topography. The saltmarsh topography is relatively poorly developed but this is typical of these relatively small fragments of ASM. Some of the largest sections of ASM do have frequent small salt pans scattered over the saltmarsh. Turf fucoids were recorded in this habitat but these are fairly typical of heavily grazed fringe type saltmarshes along the west coast of Ireland.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting the ASM at this site. This site is not part of any nature conservation designation so there are few prospects for managing grazing on this site.

The site does show some signs of erosion on the saltmarsh habitat but this is related to the heavy grazing pressure. There are few prospects for extensive saltmarsh development at this site. There are few other impacts or activities significantly affecting this habitat. The site is relatively inaccessible so it is unlikely to be damaged by other activities related to development or amenity uses.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes within the current monitoring period. The habitat does display signs of erosion along much of the site but there is no evidence that a significant area of habitat has been lost during the current monitoring period due to erosion.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. One monitoring stop was carried out in this habitat and all of the attributes required for the structure and functions of this habitat reached their targets. This stop was fairly representative of the rest of the habitat. Some patches of MSM are in relatively good condition as they are isolated on small islands in the bay and not affected by grazing. The species composition and diversity of this habitat was typical of this habitat. The sward structure was also in good condition. However zonation is poorly developed, although this is typical of relatively small fragments of habitat.

There are also mosaics present with ASM. The topography was poorly developed, but this is typical of these small patches of habitat. The grazing intensity is quite variable in this habitat and the MSM shows much fewer signs of grazing damage compared to ASM. Some of the MSM is grazed by Donkeys, including Sea Rush tussocks, and this is an unusual occurrence. Turf fucoids were recorded in this habitat but these are fairly typical of fringe type saltmarshes along the west coast of Ireland.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing by sheep is the main activity affecting this site but does not affect the MSM to the same extent as the ASM. The site does show some signs of erosion on the saltmarsh habitat but this is mainly poaching induced. However the MSM is less vulnerable to erosion compared to ASM due to the denser structure of the habitat.

6 MANAGEMENT RECOMMENDATIONS

There are no management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

8 APPENDIX I

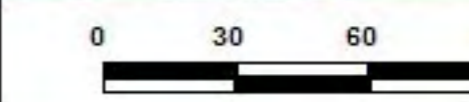
Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	0.705		0.705			
4	1410 Mediterranean salt meadow	0.588			0.588		
5	ASM/MSM mosaic (50/50)	0.012		0.006			
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.610					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)						
19	1330/rocky shore mosaic	0.241		0.121			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	2.156		0.832	0.588		



Legend

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/rocky shore mosaic
- other
- 1330 monitoring stops
- 1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Tierna

1 SITE DETAILS

SMP site name: Tierna		SMP site code: SMP0014	
Site name (Curtis list): Tierna		CMP site code: not surveyed	
NPWS Site Name: Clew Bay complex		Site No: (Curtis list): 71	
NPWS designation cSAC: 1482		Dates of site visit: 13/07/2006	
pNHA: 1482		MPSU Plan: none for coastal areas	
County: Mayo	Discovery Map: 30	Grid Ref: 089380, 295751	
6 inch Map No: Ma067	Aerial photos (2000 series): 01839-c		
Annex I habitats currently designated for Clew Bay complex cSAC:			
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)			
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)			
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)			
Other SMP sites within this cSAC/pNHA: Mallaranny, Tooreen, Rosmurrevagh, Rockfleet Castle, Roshanagh East, Caraholly South, Kiladangan, Annagh Island, Bartraw			
Saltmarsh type: Fringe		Substrate type: Gravel/peat	

2 SITE DESCRIPTION

Tierna saltmarsh is located along the north side of Clew Bay, 6 km east of Mallaranny in Co. Mayo. This is a fringe type saltmarsh. The landscape at this location is undulating with frequent small drumlin hills and islands typical of Clew Bay developing. The saltmarsh habitats extend around the shoreline of a small bay, north of Inishbobunnan Island and Beetle Island North. The bay contains intertidal sand and mudflats divided by small estuarine channels. The intertidal areas are generally quite rocky around the shoreline. There are two small 'islands' of saltmarsh in the bay south of the shellfish processing plant. This site is 3 km west of Rockfleet Castle and 4 km east of Tooreen (SMP sites).

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM) are present at this site. Only ASM is listed as a qualifying interest for this cSAC. About 50% of the saltmarsh habitat is situated within the Clew Bay Complex cSAC. Sections of the fringe shoreline are situated outside the boundary because the old shoreline boundary from the 2nd edition OS 6 inch map was used to mark the cSAC boundary. The position of the shoreline as indicated by the 6 inch map is

slightly inaccurate when overlain by the 2000 aerial photo. This is most likely to be due to rectification errors but the shoreline may have also changed slightly in this period as well. The shoreline errors are exacerbated due to the narrowness of the saltmarsh fringe, which means even small differences may be significant.

The site can be accessed easily via a minor road leading from the Newport-Mallaranny Road to the shoreline. The shoreline can be accessed via tracks onto the intertidal areas used by the shellfish processing plant.

3 HABITATS

3.1 General description

This is a fringe type saltmarsh with narrow bands of vegetation generally between 3-10 m wide following the shoreline. This band of saltmarsh is sometimes discontinuous and breaks up, leaving a rocky or pebbly shoreline. Sometimes the shoreline is eroded and the saltmarsh forms a mosaic with rocky or pebbly habitats. The vegetation is classed as either Atlantic salt meadows (ASM) or Mediterranean salt meadows (MSM) depending on the dominance of Sea Rush (*Juncus maritimus*). MSM is dominant (Table 3.1). Some sections of the shoreline contain a mixture of vegetation with Sea Rush or ASM vegetation equally dominant, so this was mapped as a mosaic. A small area of saltmarsh (CM2) in an inlet towards the west is dominated by Common Reed (*Phragmites australis*), indicating some freshwater influence. This brackish habitat is not classified as ASM.

There are occasionally larger areas of saltmarsh in some of the small sheltered inlets, but due to the size of these bays these areas are still relatively small, compared to other sites. A stream flows into the eastern bay and there is saltmarsh development along the stream transitioning into wet grassland. A similar saltmarsh fringe is also present around the shoreline of the larger islands. There are several small saltmarsh islands within the bay with saltmarsh vegetation having developed on relic patches of peat that overlay rocky outcrops. The dominant habitat in the surveyed area is MSM (Table 3.1).

Land is generally moderate-steeply sloped close to the shoreline so the development of saltmarsh is generally poor and occupies a narrow zone. Improved grassland, wet

grassland and scrub are most common habitats that are situated adjacent to the saltmarsh. Occasionally some coastal grassland develops between the saltmarsh strip and the field boundary. This is indicated by species such as Birdsfoot (*Lotus corniculatus*) and Long-leaved Plantain (*Plantago lanceolata*). The landward boundary is generally marked by overgrown hedges that are sometimes planted on rocky ditches/stone walls or embankments. Some of the saltmarsh boundary is marked by fence lines.

Table 3.1. Area of EU Annex I habitats listed at Tierna.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	0.40*
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.57*
	Total	0.97*

*note that saltmarsh habitat continues outside the surveyed area.

3.2 Atlantic salt meadows (H1330)

The ASM is dominated by Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*) with frequent Sea Pink (*Armeria maritima*), Sea Milkwort (*Glaux maritima*) and Sea Plantain (*Plantago maritima*). The vegetation is generally quite uniform and there is little or no zonation along the narrower strips (< 5 m). The seaward edge generally has Common Saltmarsh-grass (*Puccinellia maritima*) and occasional Lax-flowered Sea Lavender (*Limonium humile*). Other species present include Sea Arrow-grass (*Triglochin maritimum*), Sea Aster (*Aster tripolium*), Sea Milkwort and Glasswort (*Salicornia* sp.). The ASM is rocky in places. A saltmarsh cliff is present along the seaward edge and this looks eroded in places. The wider strips (5-10 m) have some zonation with Saltmarsh Rush and Red Fescue dominating the upper zone and Common Saltmarsh-grass dominated the lower zone. Clumps of Sea Rush are occasionally present in the ASM and where they become frequent the saltmarsh is mapped as a mosaic of 1330/1410 (ASM/MSM).

There are several small saltmarsh 'islands' in the bay. There is a 1-2 m high peat saltmarsh cliff around the eastern side of the small islands within the bay. The islands show some zonation of saltmarsh vegetation. The vegetation is dominated by mid marsh saltmarsh communities with Sea Pink and Sea Plantain. Other species present include Common Saltmarsh-grass, Buck's-horn Plantain (*Plantago coronopus*) and

Sea Aster. A lower saltmarsh cliff or 'step' is present. There is some development of coastal grassland on the small saltmarsh islands within the bay. This has developed on the more elevated areas and is indicated by the presence of Birdsfoot and White Clover (*Trifolium repens*) amongst grassland dominated by Red Fescue and Creeping Bentgrass.

3.3 Mediterranean salt meadows (H1410)

This habitat is generally dominated by dense Sea Rush. Other species also present within the Sea Rush include Autumn Hawkbit (*Leontodon autumnalis*), Creeping Bentgrass, Sea Milkwort, Sea Aster, Red Fescue, Saltmarsh Rush, Sea Plantain and Common Scurvygrass (*Cochlearia officinalis*). There is generally a narrow band of saltmarsh dominated by Saltmarsh Rush and Red Fescue at the landward side of the Sea Rush before the transition to terrestrial vegetation or a rocky embankment.

This habitat has a similar topography to the ASM. There are very few pans along the fringe. A saltmarsh cliff is present along the seaward edge.

4 IMPACTS AND ACTIVITIES

The shoreline in this area is grazed by sheep (140). This is the main activity at this site (Table 4.1). Sheep cross the intertidal flats at low tide and access some of the islands. The saltmarsh is generally lightly grazed and poached by sheep. There are also signs of poaching by cattle, but cattle grazing is probably rarer. Several tracks access the shoreline and the intertidal flats and cross saltmarsh at various locations (502). Some of the tracks are used by an adjacent shellfish processing plant.

Activities adjacent to the saltmarsh habitats include farming (120, 140), dwellings (403), roads (502) and aquaculture (200).

Table 4.1. Intensity of various activities on saltmarsh habitats at Tierna.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
13s	140	C	0	0.97	Inside
13s	501	C	-1	< 0.1	Inside
13s	120	C	0	0.97	Outside
13s	140	C	0	0.97	Outside
13s	200	C	0	0.97	Outside
13s	403	C	0	0.97	Outside
13s	502	C	0	0.97	Outside

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

The two habitats are assessed together as no monitoring stops were carried out at the site. Much of the saltmarsh is a mosaic with the two habitats occurring in conjunction with each other.

5.1.1 Extent

Overall, the extent of both habitats are assessed as *favourable* (Table 5.1). There is no previous information on the extent of saltmarsh at this location. There are no signs of erosion at this location. Two small saltmarsh 'islands' are still present in the bay. These two islands were noted on the 1930 6 inch map. Saltmarsh continues along the shoreline outside the surveyed area.

5.1.2 Habitat structure and functions

Overall, the structure and functions of these habitats are assessed as *favourable*. No monitoring stops were carried out at this site as the saltmarsh was relatively narrow. An overall visual assessment was made for the whole surveyed area. The species diversity at this site was typical of this habitat. Several attributes such as zonation and pan and creek structure are poor, but this is typical of a fringe type saltmarsh.

No Cordgrass (*Spartina anglica*) was recorded at this site.

5.1.3 Future prospects

The future prospects of these habitats are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts continue in the near future.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Tierna.

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

6 MANAGEMENT RECOMMENDATIONS

None



Legend

- SAC boundary

Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM mosaic

Inishbobunnan Island

Beetle Island North



**Saltmarsh
Monitoring Project**

Tierna

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Mí na leathneacha ar an t-earscail seo ach níl garthuilleadh ginearálta. Fearfar athbhreithníocht a déanamh ar na críochneacha na geonair comharthaí le Maheasainní d'ádhair na Súl bhéaracha. Ordainís le dlí ón Rialtas. (© Ceartúnar Ulmh. 5953)

Clew Bay complex cSAC (001482)

SMP Code: **SMP0014** Map produced by: **SMP 2006**
 Map Version: **1**



Scale: 1:2562



Tooreen

1 SITE DETAILS

SMP site name: Tooreen	SMP site code: SMP0012	
Site name (Curtis list): Tooreen	CMP site code: not surveyed	
	Site No: (Curtis list): 69	
NPWS Site Name: Clew Bay complex	Dates of site visit: 07/09/2006	
NPWS designation cSAC: 1482	MPSU Plan: none for coastal areas	
pNHA: 1482		
County: Mayo	Discovery Map: 45	Grid Ref: 085590, 296090
6 inch Map No: Ma015	Aerial photos (2000 series): 01838-c	
Annex I habitats currently designated for Clew Bay complex cSAC:		
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)		
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)		
Other SMP sites within this cSAC/pNHA:		
Mallaranny, Rosmurrevagh, Tierna, Rockfleet Castle, Roshanagh East, Caraholly South, Kiladangan, Annagh Island, Bartraw		
Saltmarsh type: Bay	Substrate type: Mud/Sand	

2 SITE DESCRIPTION

This site occurs along the northern side of Clew Bay, 2.5 km east of Mallaranny, in County Mayo. The main part of the saltmarsh is relatively small (70 m long and 150 m wide) and occurs in a small sheltered inlet where the Bunnahowna River enters Clew Bay. A narrow band of saltmarsh extends along the shoreline of Clew Bay on both sides of the inlet. The narrow saltmarsh breaks up (or is eroded in places) and forms mosaics with rocky shoreline. The band along the shoreline connects this site to Rosmurrevagh to the south. There are intertidal sand and mudflats at the seaward side of the saltmarsh. The landward side of the saltmarsh contains habitats such as dry and wet grassland in grazed fields. There are also patches of semi-natural wet and dry heath and scrub in abandoned fields and unmanaged areas.

Two Annex I habitats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. Only Atlantic salt meadow is listed as a qualifying interest for the Clew Bay Complex cSAC. Most of the saltmarsh habitat is located within the cSAC boundary. There is a small area of saltmarsh extending outside the

cSAC to the west of Bunnahowna River. This is probably an unintentional omission, as the excluded area is quite small.

This site is easily accessed from tracks that lead to the shoreline from minor roads.

3 HABITATS

3.1 General description

The main part of the saltmarsh contains both Mediterranean salt meadow (MSM) and Atlantic salt meadow (ASM) with ASM dominant (Table 3.1). The MSM is mainly confined to a small area adjacent to the river with the seaward side being dominated by ASM. The saltmarsh is dissected by several old river channels. ASM also dominates the saltmarsh that extends around the shoreline.

The upper boundary of the saltmarsh is marked by an old stone wall/embankment in places. This occasionally has a fence or scrub/abandoned hedgerow on top of the bank. The main part of the saltmarsh transitions to wet grassland and Gorse (*Ulex europaeus*) scrub, which develops along the river banks.

Table 3.1. Area of EU Annex I habitats listed at Tooreen.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	1.88*
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	0.34 *
	Total	2.22

*note that saltmarsh habitat continues outside the surveyed site.

3.2 Atlantic salt meadows (H1330)

The narrow band of saltmarsh around the shoreline contains several vegetation types and some zonation in places, evident on the more-steeply sloped saltmarsh. The band is up to 15 m wide in places but also narrows and thins out, leaving rocky shoreline or a mosaic with rocky shoreline. The seaward side is dominated by Common Saltmarsh-grass (*Puccinellia maritima*) and Sea Pink (*Armeria maritima*) with frequent Glasswort (*Salicornia* sp.), Sea Milkwort (*Glaux maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritimum*), Sea Plantain (*Plantago maritima*) and Common Scurvygrass (*Cochlearia officinalis*) in places. There are also places of Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*).

The landward edge contains a band of vegetation dominated by Creeping Bentgrass (*Agrostis stolonifera*) and Autumn Hawkbit (*Leontodon autumnalis*). The saltmarsh has a generally poor structure with no pans or creeks and is heavily poached. Some of the saltmarsh is quite soft and is being affected by freshwater run-off and drainage from the adjoining sloping land. There are occasional signs of freshwater influence in the saltmarsh vegetation with species such as Yellow Flag (*Iris pseudacorus*) encroaching from the landward boundary.

The ASM in the main section of saltmarsh contains similar vegetation. The saltmarsh structure is still poor but there are several salt pans present. Some similar vegetation zonation is present in this area. Clumps of Sea Rush (*Juncus maritimus*) occur scattered through the ASM down to the seaward edge. Parts of this area are also heavily poached.

3.3 Mediterranean salt meadows (H1410)

The habitat is mainly found in the main area of saltmarsh along side both sides of the river channel. The habitat is dominated by Sea Rush (*Juncus maritimus*), although there are patches of ASM within the Sea Rush-dominated area. Other species found amongst the Sea Rush include Creeping Bentgrass, Red Fescue, Sea Milkwort, Saltmarsh Rush, Autumn Hawkbit, Sea Plantain, Sea Aster and White Clover (*Trifolium repens*). There are several small salt pans in the MSM area. The MSM transitions to wet grassland in the north-east corner dominated by Soft Rush (*Juncus effusus*) and also containing species such as Black Bog-rush (*Schoenus nigricans*). Patches of Gorse scrub occur along the river banks and transition directly to Sea Rush-dominated vegetation. This area of MSM is lightly-moderately poached. This habitat also occurs in small patches around the shoreline and forms mosaics with ASM.

4 IMPACTS AND ACTIVITIES

There are few impacts on this site as it is quite small (Table 4.1). The activity codes used in Table 4.1 are given in brackets in the following text. Most of the site shows the effects of poaching (142/143), with the saltmarsh being heavily poached in places. Sheep (and probably cattle) probably move from some unfenced areas such as at

Rosmurrevagh and graze the shoreline. The erosion of the seaward edge of parts of the saltmarsh is being exacerbated by cattle and sheep poaching. The grazing level is generally moderate. The ASM is most affected by grazing (moderate) with the MSM being less affected (low-moderate). There are several access points to the shoreline from adjacent minor roads and these cross the saltmarsh, eroding the mud layer and the vegetation.

There are no signs of any overall erosion of the saltmarsh at Tooreen from a comparison of the 2000 aerial photos and 1929 6 inch map. There are some signs of accretion and the growth of saltmarsh since the 1929 6 inch map was drawn.

Table 4.1. Intensity of various activities on saltmarsh habitats at Tooreen.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	142/143	A	-1	1.88	Inside
1410	142143	B	-1	0.34	Inside
13s	501	C	-1	< 0.001	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

Both habitats are assessed together as the site is quite small. The overall conservation status of this site is unfavourable (Table 5.1). Extent of both habitats is considered to be *favourable*. There are no indications of any loss of habitat from a comparison of the 2000 aerial photo and the 6 inch map. There is evidence of poaching-induced erosion along parts of the seaward edge of the main section and the narrow band of saltmarsh around the bay so there may be some minor losses in extent (< 1% of the saltmarsh area).

Two monitoring stops were carried out on this site, one in both habitats (MSM and ASM). This site was too small to carry out more than one stop in both habitats. The structure and functions of both habitats are assessed as *unfavourable-bad*. Both stops failed structure and functions due to heavy poaching. These stops were considered to

be typical of most of the site. The MSM is in better condition with about 80% being favourable with a low level of poaching. However, the habitat overall fails, as a significant portion (20%) is heavily poached. The other targets for structure and function passed with plant diversity, sward height and plant community zonation all reaching their targets. No Common Cordgrass (*Spartina anglica*) was recorded at this site.

The future prospects of this site is assessed as *unfavourable-bad* in the short term, assuming the current grazing regime is continued and cattle and sheep poaching persists over a significant area of the saltmarsh.

The future prospects of natural landward saltmarsh migration in response to sea level rise are poor. The saltmarsh is quite small and is backed on the landward side by moderately-sloping land. This saltmarsh is likely to be eroded in response to sea level rise.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Tooreen.

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

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for a site this small.



Legend

- SAC boundary
- 1330 Monitoring stops
- ▲ 1410 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- other



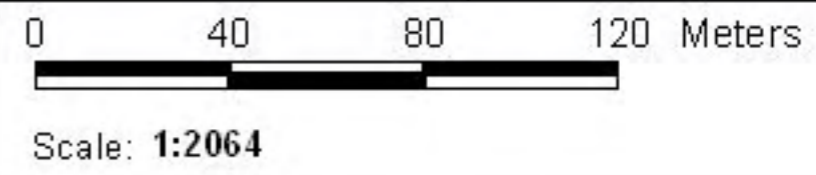
**Saltmarsh
Monitoring Project**

Tooreen

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Mí na leathneacha ar an karscál seo ach níl garthuiscinteach ginearálta. Féadfaidh sibhléir na leathneacha ar leithneacha na goeantar comharthaí fe. Machasairnhal d'áthar na cúlthe arachta. Ordánáil le deaí ón Rialtas. (©Cealtúnar Ulmh, 5953)

Clew Bay complex cSAC (001482)



SMP Code: SMP0012
 Map produced by: SMP 2006
 Map Version: 1

Tullaghan Bay

1 SITE DETAILS

SMP site name: Tullaghan Bay	SMP site code: SMP0112
Date of site visit 30/09 & 01-02/10/2008	CMP site code: N/A
SM inventory site name: Tullaghan Bay	SM inventory site code: 54
NPWS Site Name: Tullaghan Bay and Bog pNHA	
NPWS designation cSAC: N/A	MPSU Plan: none available
pNHA: 1567	SPA: 4037
County: Mayo	Discovery Map: 22 Grid Ref: 078718, 319746
Aerial photos (2000 series): O 1305-C,D; O 1306-A,C; O 1374-A,B,C	6 inch Map No: Ma 025, 026, 034, 035
Other SMP sites within this /NHA: Aughness, Doona	
Saltmarsh type: Fringe	Substrate type: Peat

2 SITE DESCRIPTION

Tullaghan Bay saltmarsh is located in north-west Co. Mayo, 7 km south-west of Banger. Tullaghan Bay is a large quite sheltered bay that extends quite far inland from Blacksod Bay. Several rivers and streams flow into the bay at various locations. The largest river, Owenmore River, flows into the bay at the north-east corner of the site. The main river channel widens to create a large bay and there are several long narrow intertidal inlets connected to this area. Smaller streams flow into the heads of these other inlets. The bay narrows towards its mouth and there is a narrower outflow connected to the sea at Trawboy. Much of the bay drains at low-tide to expose extensive intertidal mudflats. The landscape of this area is low-lying.

The bay is surrounded by blanket bog, some of which has been modified in the past and is now degraded. Access roads in the area are quite far from the shoreline, (1.5 km-2 km in some instances). Some of the blanket bog adjacent to the north-east shoreline has been degraded by regular drainage to harvest peat. There are also several small patches of conifer plantation north of the bay. A small amount of land in one of the narrow inlets has been improved and now contains grassland. The blanket bog extends the shoreline edge around most of the bay. The survey area is very isolated with some dwellings located along access roads in the area but no occupied dwellings along the shoreline. The main population centre close by is Gweesalia, a village located to the north-west of the bay.

The survey site is mainly located in the northern section or the head of the bay. This was one of the largest survey sites examined in Co. Mayo with about 8 km of shoreline mapped during the ground survey. Several large patches of saltmarsh have developed in several of the various narrow inlets and along the main river channel. Depressions have been cut through the bog by the rivers and streams and these contain the intertidal zones, river channels and lower-lying bog vegetated by saltmarsh. A narrow fragmented band of saltmarsh has developed along a lot of the remaining bay shoreline and there are some sections where a tall

blanket bog face-bank falls directly onto intertidal flats. Saltmarsh found in other parts of Tullaghan Bay were surveyed as part of other SMP sites.

The site is located within the Tullaghan Bay and Bog pNHA (1567). This pNHA is a large bay containing extensive intertidal flats and also includes large areas of Atlantic blanket bog that has developed along this shoreline. Two Annex I saltmarsh habitats are present at this site, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Saltmarsh has also developed at several other locations around this bay. Several of these sites are listed on the SM inventory (Curtis and Sheehy-Skeffington 1998) and were also surveyed during the Saltmarsh Monitoring Project. Aughness is located in the south-west corner of the inner part of the bay. Doona is located to the south-west of this site in the outer part of the bay. Sraghnamanragh Bridge SM was not surveyed during the SMP and is also located to the south of this site along a river estuary in the outer part of the bay.

A significant portion of saltmarsh habitat mapped at this site is located outside the pNHA boundary. This is mainly due to the fact that the lower shoreline on the OSI 6 inch map was used to draw the pNHA boundaries and most of the excluded saltmarsh is positioned landward of this shoreline boundary. There are also some notable differences between shoreline boundary on the OSI 6 inch map and the current shoreline.

Turf fucoids are the only species of local distinctiveness recorded at this site and these are typical of saltmarsh found along the western coast of Ireland. This site is also notable for the development of natural transitional vegetation in places between saltmarsh and blanket bog habitat.

Much of the shoreline and saltmarsh around the northern part of Tullaghan Bay is quite inaccessible and extensive areas of blanket bog had to be crossed to access the shoreline. The eastern side of the northern section was accessed by crossing a bridge used by Bord na Mona and the riverbank was followed southwards to the saltmarsh. The western side was accessed via several bog roads and by minor roads in the area, after crossing blanket bog.

3 SALTMARSH HABITATS

3.1 General description

This saltmarsh is described in several different sections. Mediterranean salt meadow (MSM) is the most frequent saltmarsh habitat found at this site (Table 3.1).

Ballina

This section of the saltmarsh is located at the mouth of the Owenmore River at the northern end of the bay. This section contained the most notable saltmarsh with brackish gradients creating a diverse range of vegetation communities. There is a significant brackish influence on this area. The saltmarsh is mainly found where the river channel changes from a south-west to a southern course into Tullaghan Bay. There are brackish indicators in the marginal vegetation further up stream with some small 'islands' containing Sea Club-rush (*Bolboschoenus maritimus*) and other species such as Sea Aster (*Aster tripolium*) and Common Scurvy-grass (*Cochlearia officinalis*), but there is no development of significant saltmarsh. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. The OSI 6 inch map

indicates that tidal influence extends quite far upstream from this bend in the river to the bridge used to access this side of the site.

Most of the saltmarsh is found on the eastern side of the river and is fairly inaccessible apart from crossing a significant length of blanket bog. There is some development of ASM and MSM on peat with brackish indicators in both habitats. This saltmarsh has developed on low lying peat platforms that are positioned at a lower level than the adjacent bog. There is also a significant area of transitional-type grassland with a combination of both wet grassland and saltmarsh species. This vegetation type contains frequent Jointed Rush (*Juncus articulatus*), Glaucous Sedge (*Carex flacca*), Creeping Bent (*Agrostis stolonifera*) and occasional Marsh Ragwort (*Senecio aquaticus*), Autumn Hawkbit (*Leontodon autumnalis*), Spike-rush sp. (*Eleocharis* sp.), Sea Arrowgrass (*Triglochin maritimum*), White Clover (*Trifolium repens*), Red Fescue (*Festuca rubra*), Saltmarsh Rush (*Juncus gerardii*), Knotted Pearlwort (*Sagina nodosa*), Brookweed (*Samolus valerandi*), Perennial Ryegrass (*Lolium perenne*), Common Century (*Centaureum erythraea*) and Buck's-horn Plantain (*Plantago coronopus*). Some of this area is fragmented by natural drainage channel creating a natural creek network. Sea Club-rush forms linear bands in some of these channels. There are also significant patches of non-Annex I saltmarsh vegetation dominated by Common Reed (*Phragmites australis*) and Sea Club Rush. Part of the saltmarsh is located on a small island that is separated in the river channel by a narrow channel.

This area was grazed although there is no grassland found close to this site. Some of the area was modified in the past by land improvement, cultivation and/or peat cutting and some adjacent land was farmed, but it has now reverted back to wet grassland scrub and blanket bog. The modified area contains some patches of mosaic where saltmarsh is found extending along remnant low channels and cutover areas into mainly wet grassland. The saltmarsh extends around the margin of the main river channel and extends up a second smaller river channel flowing through the bog from the east. Transitional brackish communities are also present in this smaller channel.

The saltmarsh is less developed on the west side of the river channel because the adjacent bog is steeper. This topography means less bog is inundated by the tide so only a small narrow band of saltmarsh has developed along the northern shoreline of the bay. There are several larger areas of MSM on lower-lying peat platforms.

Muingnanarnad

This saltmarsh is found in a narrow long inlet at the south-east corner of the survey site. Saltmarsh has developed as a narrow band of habitat along the edge of the bog on both sides of the inlet. Soft intertidal mud extends up the inlet and there are steep peat face-banks along the lower saltmarsh boundary and along the boundary of the blanket bog. Both ASM and MSM have developed on peat platforms and tussocks of various heights at the base of a tall peat face-bank.

More substantial ASM is found at the head of this inlet, which is quite low-lying compared to the higher bog surrounding the inlet. This area is grazed by sheep and a farm is located on the southern side of this inlet. Long-term grazing has created closely cropped sward of wet grassland and saltmarsh habitat adjacent to the river channel on low-lying areas within the inlet. Some of this grass-dominated habitat at the head of the inlet is still inundated by the tide and can be classified as saltmarsh. There is also a significant area of transitional

brackish grassland at the head of this inlet that was difficult to classify as the species assemblage was a mixture of wet grassland and some saltmarsh species.

Gweesalia

This saltmarsh is found at the western side of the survey site along a long narrow inlet. This is one of the larger areas of saltmarsh found in Tullaghan Bay. There is a significant area of MSM developed on both sides of the inlet on low-lying peat still inundated by the tide. Low peat face-banks mark the lower saltmarsh boundary.

Due to gentle slopes on both sides of the inlet there is significant development of transitional vegetation and the distribution of Sea Rush extends beyond the upper MSM boundary. A band of vegetation containing Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), Ragged Robin (*Lychnis flos-cuculi*), Lesser Spearwort (*Ranunculus flamma*), Yellow Flag (*Iris pseudacorus*), Carnation Sedge (*Carex panicea*) and Sea Rush (*Juncus maritimus*) is quite well-developed and covers a zone up to 20 m wide in some places. There is a subtle transition from typical MSM dominated by MSM to this transitional vegetation type. This zone also contains hummocks of typical bog mosses. Some of the hummocks contain terrestrial species whereas saltmarsh species may be found around the base of these hummocks. This vegetation type then transitions to more typical blanket bog vegetation with abundant Heather (*Calluna vulgaris*) cover and other shrubs present. A low face-bank may mark the lower boundary of the typical blanket bog vegetation and the transition to this transitional-type vegetation. Both areas of saltmarsh also contain some small mounds out of the reach of the tide where there is development of terrestrial vegetation and around which there is some well-developed zonation of certain species.

The west side of the inlet is grazed while the east side is not grazed significantly. There is some ASM developed on places along this saltmarsh. There is some brackish vegetation towards the head of the inlet and up stream along the channel. The freshwater influence on the saltmarsh vegetation is indicated by species such as Brookweed and Sea Club-rush. The west side was not examined in detail but was mapped with a visual assessment.

Tristia

This part of the site includes the shoreline between Gweesalia east to Ballina. Saltmarsh along this shoreline is quite fragmented, forming narrow bands and poorly developed. Both ASM and MSM has developed on peat at various levels along the shore. Some of the saltmarsh is perched on quite tall peat mounds while other saltmarsh has developed on mixed substrate at the base of a tall (2-3 m in places) peat face-bank. This saltmarsh is lightly grazed by some sheep and cattle moving along the shoreline and that are grazing the adjacent bog. More extensive saltmarsh has developed in several places on low-lying fairly flat peat platforms where the bog is covered by the tide. This saltmarsh is generally dominated by MSM and there is some development of transitional vegetation and wet grassland along the upper boundary, between the saltmarsh and the adjacent blanket bog. Soft mud dominates the intertidal flats beside the saltmarsh. A narrow zone containing mixed muddy substrate and glacial till and covered with brown algae is also present adjacent to the saltmarsh

Table 3.1. Area of saltmarsh habitats mapped at Tullaghan Bay.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	16.580
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	29.572
	Total*	46.152

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

Several typical ASM communities have developed at this site that are related to the local topography and to the relative height about the shoreline. There are no typical large areas of ASM that display typical ASM saltmarsh zonation. Zones are represented by the development of different communities in different areas depending on the relative height above the intertidal flats. Most of the ASM is made up of mid-upper communities.

A typical mid-marsh sward dominated by closely cropped Saltmarsh Rush and Sea Plantain (*Plantago maritima*) is found on some of the low platforms along the shoreline at Tristia. Some of these platforms are quite fragmented and dissected into small mounds and tussocks. These swards have developed on peat and are closely cropped by moderate-high levels of grazing. They are positioned quite low to the shoreline (0.5 m above the adjacent intertidal flats). Other species present include Sea Milkwort (*Glaux maritima*), Sea Pink (*Armeria maritima*), Common Scurvy-grass, Sea Aster and Red Fescue. These species are dwarfed by heavy grazing pressure. Some lower small patches are dominated by common Saltmarsh-grass (*Puccinellia maritima*). Taller patches contain Buck's-horn Plantain. Turf Fucioids are also present on some of the eroded bare peat around the edges of these tussocks. This type of community is frequently found on saltmarsh positioned on lower peat and thinner substrates. The sward height is generally low.

More typical upper ASM vegetation has developed on the saltmarsh at Ballina on the east side of the river channel. This vegetation type has developed on a low-lying part of the bog about 1 m above the river channel. This vegetation is dominated by Creeping Bent and Saltmarsh Rush and also containing Buck's-horn plantain, Sea Milkwort, Autumn Hawkbit and Sea Arrowgrass. There are also brackish indicators such as Marsh Ragwort present but the cover of these species is generally rare. This saltmarsh community is part of a larger mosaic of habitats that includes MSM and non-Annex I saltmarsh dominated by Sea Club-rush and Common Reed. There are also small patches near the northern extent of the ASM and adjacent to the transitional type wet grassland that are dominated by Spike-rush.

More typical upper ASM is found along the edge of the saltmarsh further south on the edge of tall peat face-banks. This ASM is dominated by Red Fescue and/or Saltmarsh Rush and also contains Buck's-horn Plantain, Sea Milkwort, Creeping Bent and White Clover. Other species such as Distant Sedge (*Carex distans*) were recorded in this community. There is some zonation within this community in places between Saltmarsh Rush (lower) and Red Fescue (higher) dominated vegetation. This type of community is frequently found along the edge of the higher peat face-banks. This community is also found dominated some of the larger ASM areas that have developed on fairly flat peat platforms. The sward height of this community varies depending on grazing levels.

More brackish vegetation is found in the smaller inlet towards the east of Ballina. Low-lying marshy land within the floodplain of the inlet is dominated by grassy ASM similar to the communities described above. Wild Celery was noted in this brackish vegetation.

A closely cropped sward has developed on low-lying peat at the head of the inlet at Muingnanarnad. This area is heavily grazed by sheep. The saltmarsh is typical of upper ASM with the predominance of species such as Red Fescue, Creeping Bent, Sea Milkwort, Bucks-horn Plantain, Autumn Hawkbit and Sea Milkwort. There is a subtle transition to other grassland types within the floodplain of this inlet that were indicated by the appearance of species such as Glaucous Sedge.

3.3 Mediterranean salt meadows (H1410)

This habitat is generally characterised by dense stands of Sea Rush that have developed on low-lying peat. The cover of Sea Rush can vary at some locations and the vegetation is dominated by Red Fescue and or Creeping Bent in some situations. Other typical species present include Autumn Hawkbit, Saltmarsh Rush, Common Scurvy-grass, Buck's-horn Plantain, Sea Milkwort and Sea Plantain. Parsley Water-dropwort was noted at one location near the upper boundary of the MSM.

A typical saltmarsh topography is poorly developed within this habitat although some sections are natural drainage channels created by cracks in the peat. Some depressions that are similar to salt pans are present but these are generally quite rare.

Zonation within the MSM is poorly developed and there is no significant development of different MSM communities. However some zonation of several saltmarsh species was noted particularly where the saltmarsh micro-topography is somewhat variable. Some sections are quite flat whereas some sections have small mounds, hummocks and low depressions. The MSM also contains small patches of ASM, particularly at Gweeslaia. This MSM is grazed by cattle and the MSM is in good condition but the small patches of ASM are badly poached in places.

4 IMPACTS AND ACTIVITIES

The main impact on this site is grazing (Table 4.1). Few other impacts and activities affect this site, particularly as the saltmarsh is quite isolated and difficult to reach. The saltmarsh at this site is unlikely to be affected by activities related to development or amenity uses.

Several sections of the site are grazed including the saltmarsh at Ballina, the west side of Gweesalia and Muingnanarnad. Some parts of these areas are damaged by overgrazing from sheep (143) and cattle (142) and there is some localised poaching damage. Dwarfing of saltmarsh plants (a negative indicator) was also noted from the ASM in several places along the shoreline. Some of the other saltmarsh is grazed lightly or not at all (140). Overall the grazing intensity is moderate and there is significant damage in places from overgrazing. The MSM is generally less affected by overgrazing compared to the ASM but tracks are frequently trampled through the rushes and there are localised poaching and damage to the sward surface.

There are some signs of old modifications to the saltmarsh around the site, particularly at Ballina. This area has been modified by land improvement, cultivation or peat-cutting in the

past, although these activities have long since ceased. Saltmarsh vegetation has re-colonised some low-lying areas of bog near the shoreline that have been cutover or cultivated in the past. The impacts of these activities are not assessed.

There are indicators of erosion (900) around the survey site with cliff toppling, mud and peat mounds and tussocks present along the lower saltmarsh boundary. However, much of the survey site is quite sheltered so there has been no significant loss of any saltmarsh habitat, particularly in the long narrow inlets connected to the main bay. These are mainly natural features that are typically found where blanket bog is found on the shoreline. A comparison of the OSI 6 inch map to the current extent of saltmarsh shows that there has been very little measurable loss of saltmarsh due to erosion. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh.

The main reason for some erosion is natural channel scouring along the main Owenmore river channel. There has actually been some growth during this period of saltmarsh in places along the main river channel due to accretion of sediment that is colonised by stands of Sea Club-rush and Common Reed, and which then naturally succeeds to ASM or MSM saltmarsh. There has also been some undercutting of the face-bank along the smaller inlet at Gweesalia. There has been no measurable growth of saltmarsh during the current monitoring period so the impacts of both accretion and erosion are assessed as neutral.

Impacts and activities adjacent to the site include grazing (140) (of bog and wet grassland), forestry (160), dispersed habitation (403) and minor roads (502). These activities have little or no measurable impact on the saltmarsh habitats.

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

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	11.080	Inside
1330	142	B	-1	5.0	Inside
1330	143	B	-1	0.5	Inside
1330	900	C	0	0.8	Inside
1410	140	C	0	24.572	Inside
1410	143	B	-1	5.00	Inside
1410	900	C	0	1.5	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the 1995, 2000 and 2005,

OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There are no specific notes in the NHA survey for this site.

The overall conservation status of this site is assessed as *unfavourable-bad* (Table 5.1). Tullaghan Bay saltmarsh is a relatively large saltmarsh scattered over a large area. The development of brackish saltmarsh communities is a notable feature of this site. There is also significant development of transitional vegetation in places along the upper saltmarsh boundary with a combination of saltmarsh and wet grassland/blanket bog species. Most of the saltmarsh is in satisfactory condition with some patches of localised damage due to overgrazing.

This site is part of Tullaghan Bay and Bog pNHA. A NPWS Conservation management plan is not available for this pNHA.

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

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

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period. There are indications of an accretional trend at the northern end of the survey site (Ballina) with some saltmarsh growth during the past 100 years, but there has been no measurable growth within the current monitoring period.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-bad*. Nine monitoring stops were carried out in this habitat and two stops failed. Most attributes required for favourable conservation status reached their targets. The two stops failed due to damage from overgrazing. A significant area of the ASM found around the site is somewhat damaged by over-grazing and poaching by sheep and cattle. Negative indicators such as high bare mud cover and a disturbed sward cover are locally frequent. However, grazing levels overall are not high and the damage level overall is not high. The sward height of some sections was also quite uniform, although when considering the whole site, the sward height is variable.

The species diversity in this habitat is typical of ASM and several different vegetation communities were recorded at this site. Some notable ASM communities with brackish influence are also present. There are several inlets where the development of brackish communities is present, which is related to the influence of the freshwater flow from the streams and rivers. These ASM communities form a mosaic with other wet grassland communities and brackish communities such as Sea Club-rush and Common Reed stands to form a diverse area with complex zonation related to the under-lying topography.

The saltmarsh topography is generally poorly developed and related to the under-lying former topography of the blanket bog. Overall, the sward structure is also quite heterogeneous due to variable grazing levels around the site and some of the ASM is not grazed.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-bad*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Overgrazing is the main activity affecting the ASM at this site and this activity affects a large part of the site at the northern end. The rest of the site is in good condition and there are few damaging activities. This site is very inaccessible so it is not vulnerable to development or amenity use.

There is no NPWS conservation management plan available for this site so there are few prospects for grazing management to improve the conservation status of this habitat. The overall grazing intensity on the blanket bog around the site is likely to be low and the saltmarsh habitats are likely to be preferentially grazed by cattle and sheep due to the relative abundance of fodder.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes or erosion within the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Seven monitoring stops were carried out in this habitat and they all passed. All of the attributes required for the structure and functions of this habitat reached their targets. However, some of the MSM is damaged by overgrazing.

The species assemblage of the MSM is typical of this vegetation type. The saltmarsh topography within this habitat is poorly developed and related to the under-lying bog topography. Zonation in this habitat is related transitions to other habitat that are well-developed. There is also significant development of transitional MSM vegetation with the appearance of species such as Purple Moor-grass and Ragged Robin with Sea Rush appearing in a zone along the upper saltmarsh boundary.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as

grazing continue in the near future. There are few impacts significantly affecting this habitat apart from localised overgrazing.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

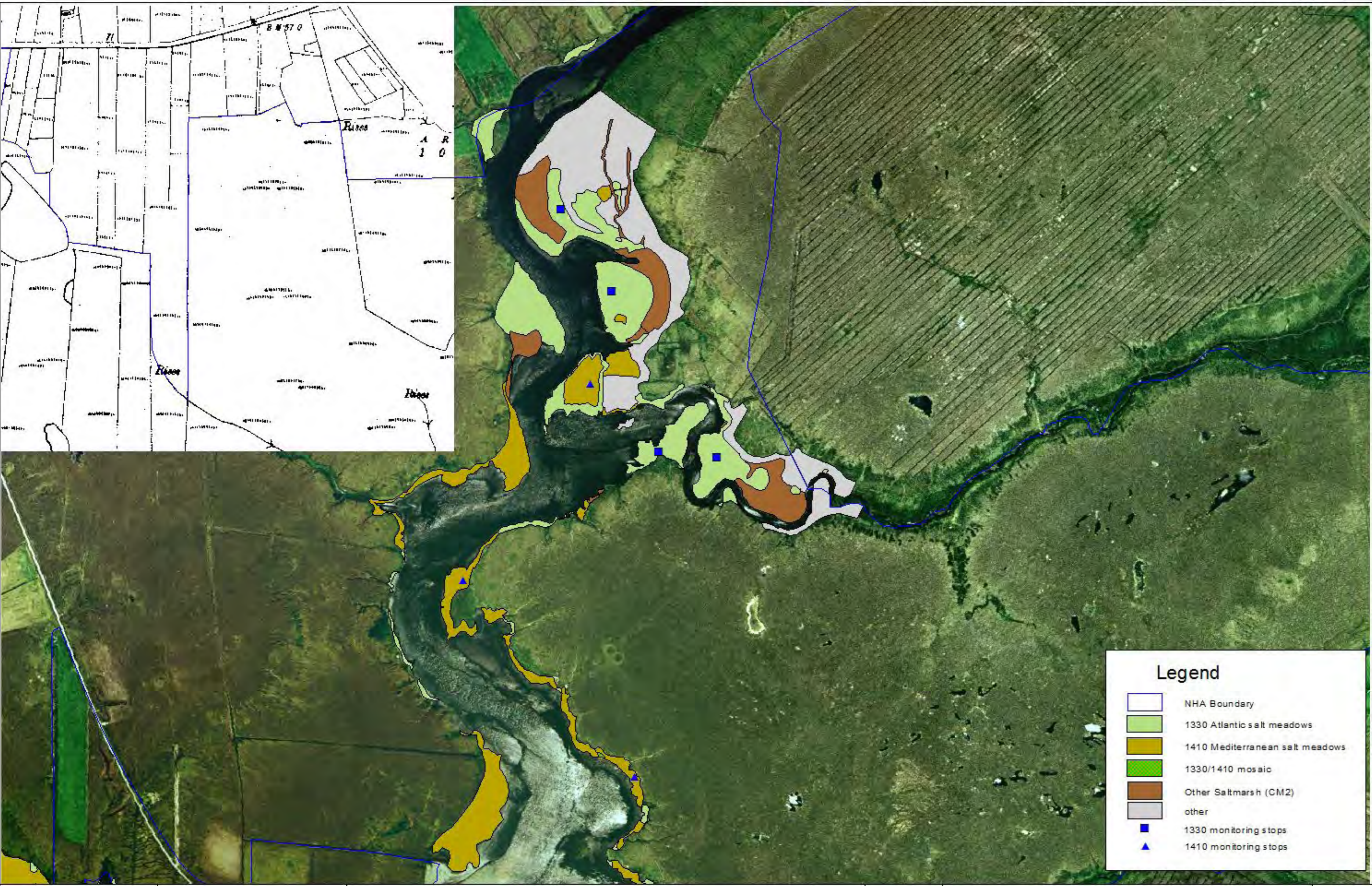
7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.






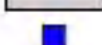


8 APPENDIX I

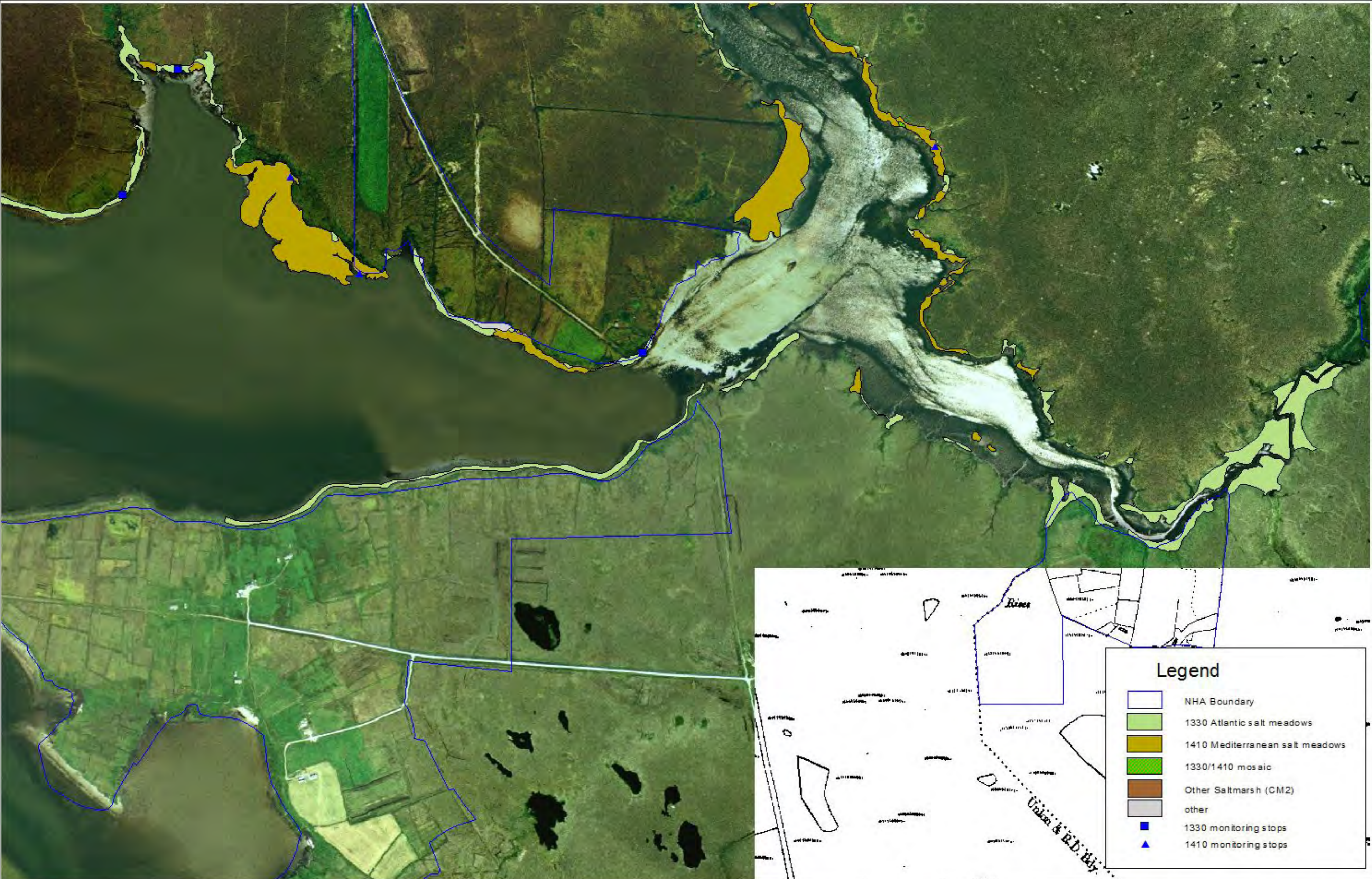
Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats						
2	Spartina swards						
3	1330 Atlantic salt meadow	16.574		16.574			
4	1410 Mediterranean salt meadow	29.566			29.566		
5	ASM/MSM mosaic (50/50)	0.011		0.006	0.006		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	7.843					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	3.197					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	57.191		16.580	29.572		


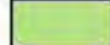


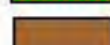
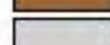




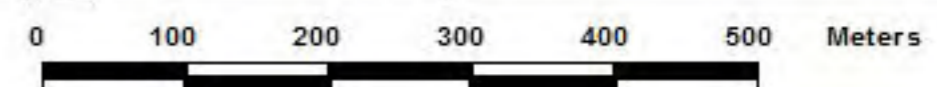
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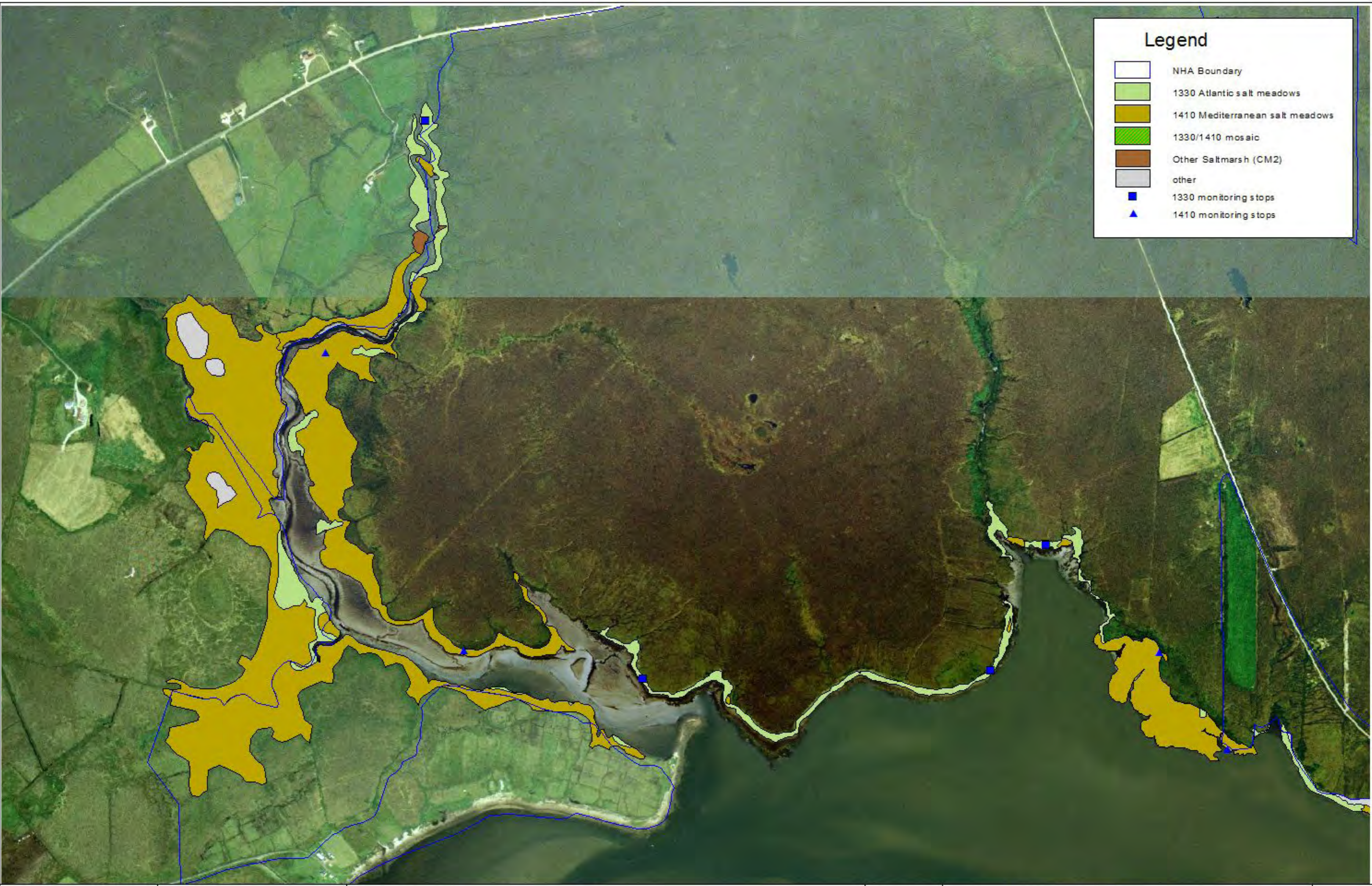
-  NHA Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1330/1410 mosaic
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops
-  1410 monitoring stops



Legend

-  NHA Boundary
-  1330 Atlantic salt meadows
-  1410 Mediterranean salt meadows
-  1330/1410 mosaic
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops
-  1410 monitoring stops





Legend

- NHA Boundary
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops

Mornington

1 SITE DETAILS

SMP site name: Mornington	SMP site code: 0034
Dates of site visit: 21 & 22/08/2007	CMP site code: 003
SM inventory site name: Boyne-Mornington	SM inventory site code: 235
NPWS Site Name: Boyne Coast and Estuary	
NPWS designation cSAC: 1957	MPSU Plan: New format – Draft 2: 2005-1010
pNHA: 1957	SPA: 4080
County: Meath	Discovery Map: 43 Grid Ref: 314300, 276800
Aerial photos (2000 series): O 2256-D; O 2319-B,D; O 2320-A,B,C	6 inch Map No: Me 020, 021
Annex I habitats currently listed as qualifying interests for Boyne Coast and Estuary cSAC:	
H1310	<i>Salicornia</i> and other annuals colonizing mud and sand
H1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)
H1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
Other SMP sites within this SAC/NHA: Baltray	
Saltmarsh type: Estuary	Substrate type: Mud/Sand

2 SITE DESCRIPTION

Mornington saltmarsh is located in Co. Meath along the southern side of the Boyne Estuary. The survey site is located east of Drogheda Town and extends from the mouth of the estuary for about 2.5 km west inland to Stagrennan Polder. The northern side of the estuary is listed as a separate site (Baltray) on the saltmarsh inventory prepared by Curtis and Sheehy-Skeffington (1998).

A sand and shingle spit is found at the mouth of the estuary that extends to Durrow Spit. This area was surveyed by the Coastal Monitoring Project (Ryle *et al.* 2009) and contains a small sand dune complex. Saltmarsh has mainly developed in the low-lying sheltered area behind this spit. There are extensive intertidal mudflats adjacent to the saltmarsh. This intertidal zone is sheltered by navigation walls that have been built along the main river channel. The Boyne Estuary has been significantly modified during the past due to navigation to Drogheda Port. Old navigation walls were built in the intertidal zone along the main channel to maintain a navigable channel. These walls extend from the port to the mouth of the estuary and breached in many places, which allows tidal inundation into this intertidal zone. The construction of these walls has affected the development of saltmarsh in the estuary. Fragmented saltmarsh of various sizes has developed further west in the sheltered intertidal zone and associated with these walls.

A range of habitats is found adjacent to this shoreline including improved grassland and tillage. A regional road is found along the western section of the site and forms the upper shoreline boundary on an embankment. There is some scattered habitation along this road adjacent to the shoreline at Mornington. There are also some dwellings and associated gardens adjacent to the saltmarsh at the east end of the site. Several streams flow into this section of shoreline.

Mornington saltmarsh is part of Boyne Coast and Estuary candidate Special Area of Conservation (cSAC) (1957). This large cSAC contains a large part of the estuary as far as Drogheda Town and extends along the coast of Cos. Meath and Louth to include extensive coastal habitats including the sand dune systems at Baltray and Mornington. Two Annex I saltmarsh habitats are found in at this site, *Salicornia* flats and Atlantic salt meadows (ASM). There is also extensive development of *Spartina* swards, which is not now considered to qualify as an Annex I habitat. A third Annex I habitat, Mediterranean salt meadows (MSM), is also listed as a qualifying interest for this cSAC but was not recorded at this site.

Most of the saltmarsh habitat is found within the digital cSAC boundary. There is some habitat excluded from the cSAC. The upper shoreline boundary as mapped by the old OSI 2nd edition 6 inch map is taken as the boundary of the cSAC along much of the estuary. Small rectification differences between the OSI 6 inch map and the OSI aerial photos means that some minor saltmarsh habitat extends behind this boundary in places. This is particularly seen along the stream channel flowing into saltmarsh at the east side of the site.

Access to the marsh is possible from a number of locations along a public road and the sand spit at Mornington although caution is advised as the lower reaches of the saltmarsh are very muddy and soft.

3 SALTMARSH HABITATS

3.1 General description

The main saltmarsh development is found at the east end of the site and is associated with the sheltered area behind the sand spit at Durrow Point. The saltmarsh is divided into two main sections by a stream that flows into this area. Saltmarsh has developed on low-lying land, mainly on the west side of the stream and this develops into a narrow band of habitat that extends upstream along a narrow low-lying channel. This saltmarsh may have been more extensive in the past and a large area has been reclaimed and low-lying land containing improved grassland is found behind low berms. This saltmarsh is dominated by Atlantic salt meadows (ASM) (Table 4.1). Extensive *Spartina* sward has also developed seaward of this more established saltmarsh on the mudflats. A large and notable area of *Salicornia* flats is also found on these mudflats in the north-east corner. The upper boundary of this saltmarsh

is generally marked by man-made earth berms on the west side and along the narrow channel, and this boundary is marked by development of Twitch-dominated vegetation. This vegetation has been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. The north-east section has a natural unmodified transition from saltmarsh to a Twitch-dominated zone along a natural embankment and there are further transitions to disturbed coastal grassland and some fixed dune vegetation.

There is some minor saltmarsh development on the east side of the sand spit along the edge of the main channel. This is dominated by ASM and there is no development of *Spartina* sward in this area. There is some transition to embryonic dunes where there are some raised sandy mounds.

Further west there is fragmented saltmarsh development along the shoreline in the intertidal area behind the navigation walls. This saltmarsh is mainly dominated by ASM and there is much less *Spartina* sward development in this section. A narrow band of ASM has developed along the back of the navigation walls at the west side of the site. Saltmarsh is also found in a small low-lying inlet in this section. This area has been partially infilled in the past. A stream flows through this inlet and some freshwater influence can be seen on the vegetation with the development of stands of Sea Club-rush (*Bolboschoenus maritimus*) and Common Reed (*Phragmites australis*). The impact of its spread on species composition is assessed as neutral, mainly due to the lack of accurate baseline data.

Table 3.1. Area of saltmarsh habitats mapped at Mornington.

EU Code	Habitat	Area (ha)
H1310	<i>Salicornia</i> and other annuals colonizing mud and sand	1.327
H1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	11.242
non-Annex	<i>Spartina</i> swards	4.322
	Total	16.891

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A notable area of this habitat is found at this site, mainly as one large area on mudflats at the north-east corner of the site. The *Salicornia* flats have developed on mudflats along the back of the navigation wall and in isolation of the other saltmarsh habitats. This habitat is characterised by scattered aggregations of Glasswort (*Salicornia* spp.) of various densities on mud. Some of the Glasswort is quite sparse in places. This vegetation is characterised by high cover of algal mats. There are small areas within this large area of *Salicornia* flats habitat with scattered clumps of Common Cordgrass (*Spartina anglica*). However, this species does not form a significant part of the overall cover of this habitat. Other species such as Sea Aster (*Aster tripolium*), Common Saltmarsh-grass (*Puccinellia maritima*) and Lax-

flowered Sea Lavender (*Limonium humile*) are found in the upper section of this habitat, but they are rare.

Smaller patches of this habitat are also found around the site in association with the unconsolidated *Spartina* sward at the east side of the river channel.

3.3 Atlantic salt meadows (H1330)

This habitat is well-developed at this site and is the most extensive saltmarsh habitat found at this site. Much of the ASM saltmarsh is dominated by low-mid communities, particularly at the east end of the site, which is one indication that much of this saltmarsh is relatively young and newly established. This community is dominated by Sea Purslane, which sometimes forms dense stands with low diversity. Other species present include Common Saltmarsh-grass, Sea Aster, Lax-flowered Sea Lavender, Greater Sea-spurrey (*Spergularia media*) Sea Plantain (*Plantago maritima*), Sea Milkwort (*Glaux maritima*) and Glasswort and these species form a mixed community with Sea Purslane in places. Common Cordgrass is also present and is occasionally frequent in this lower community. Salt pans are present in this zone. There is some zonation from this zone to a band dominated by Sea Beet (*Beta maritima*) along the upper boundary adjacent to the back of the sand spit.

This community also extends along the low-lying stream channel to the south of the main saltmarsh. Some pans have been infilled by Common Cordgrass but overall its cover is rare. There is minor zonation to Red Fescue-dominated vegetation around the upper boundaries adjacent to the berms.

Further landward in the main section there is some more-established saltmarsh with mid marsh and mid upper communities predominant. This mid marsh zone is dominated by Sea Pink and Sea Plantain and there are low mounds with increased cover of Red Fescue (*Festuca rubra*). Other species present include Lax-flowered Sea Lavender, Sea Arrowgrass (*Triglochin maritimum*), Common Scurvy-grass (*Cochlearia officinalis*) and small clumps of Sea Purslane. The cover of Red Fescue increases towards the landward boundary of the berm.

Some pioneer ASM was also found in this area on the east side of the river channel. This community is represented by patches of Common Saltmarsh-grass and scattered Sea Purslane bushes and also contains clumps of Common Cordgrass and Glasswort. There is frequent cover of bare mud and green algal mats in this community.

There is some development of rank low-marsh vegetation dominated by a dense sward of Common Saltmarsh-grass in the small inlet towards the west side of the site at Mornington. This community is low in diversity being dominated by one species, although there are small amounts of Sea Plantain and Spear-leaved Orache (*Atriplex prostrata*). This may be an indication of some localised eutrophication from a stream flowing through this area. Common

Cordgrass is rare in this area. A significant area further upstream is also contains vegetation dominated by Creeping Bent (*Agrostis stolonifera*) and Twitch has colonised some ridges along drains in this area. Mid-marsh vegetation dominated by Sea Plantain is also represented. Further upstream there is some indication of increased freshwater influence with the development of Common Reed stands.

3.4 *Spartina* swards

This habitat is well-established at this site. A large area of dense *Spartina* sward is established on the mudflats seaward of ASM at the east side of the site and west of the stream flowing into this area. This sward has developed on bare mud and does not seem to have colonised former ASM. There is a fairly distinctive boundary between the ASM and the *Spartina* sward. The sward is characterised by dense cover of Common Cordgrass. This area contains some areas of bare mud where the sward has not consolidated and there are aggregations of large clumps of Common Cordgrass. There are indications of significant colonisation between 2000 and 2005 when the two aerial photo series are compared. Several patches of *Salicornia* flats were noted within this *Spartina* sward on unvegetated patches of bare mud near the seaward boundary. There is also some development of pioneer ASM along the seaward boundary of the *Spartina* sward with Common Saltmarsh-grass and Sea Purslane appearing. This is an indication of accretion and expansion of the saltmarsh.

There is some development of *Spartina* sward and ASM/*Spartina* sward mosaic on the east side of the stream channel at the east side of the site. There are indications of significant growth of saltmarsh in this area, including the spread of *Spartina* sward into pioneer ASM. The mosaic is characterised by clumps dominated by Common Saltmarsh-grass and also contains frequent Sea Purslane bushes and clumps of Common Cordgrass of various sizes. This vegetation is relatively undeveloped and the sward has not consolidated, leaving patches of bare mud and green algal mats within the mosaic.

4 IMPACTS AND ACTIVITIES

This saltmarsh is affected by some impacts and activities (Table 4.1). The remaining saltmarsh is in relatively good condition and it is not grazed by livestock. The sward height is quite variable and the surface of the saltmarsh is not damaged by excessive poaching. There is some build up of litter in places, which is brought down by the river channel. There is some access to the saltmarsh along the narrow channel, which is used by walkers (622) and for amenity activities by children. The saltmarsh is also used for mooring boats in the area behind the sand spit. However, these activities have very little impact. The small area of saltmarsh at the east side of the sand spit is damaged by wheel ruts in places (623), as there is access to the shoreline by vehicles. A track (501) marks the upper boundary of this part of

saltmarsh. Some drains (810) have been dug across the saltmarsh in the past, prior to the current monitoring period.

A comparison of the OSI 2nd edition 6 inch map to the current extent of saltmarsh shows that the saltmarsh has expanded significantly since this map was drawn, especially at the east end of the site. This is likely to be related to accretion (910) in the sheltered intertidal zones between the navigation walls and the shoreline. Similar trends were seen along the northern side of the estuary. Intermittent dredging of the main channel in the past has also probably had some impact on the development of the saltmarsh and some mud may have been dumped in these zones in the past. These impacts are not assessed as they occurred outside the current monitoring period. There is no measurable growth of saltmarsh during the current monitoring period so its impact is assessed as neutral. However, accretion is likely to be continuing, but at a low rate. This will have a positive influence on the saltmarsh and the extent of ASM and *Salicornia* flats. The impact of accretion is assessed as a positive impact on the *Salicornia* flats and a portion of the ASM.

There is no indication of any significant erosion at this site (900). The saltmarsh is largely sheltered within the navigation walls. Tidal scour has created some typical erosion features such as saltmarsh cliffs in places. However, there has been no measurable loss of habitat due to erosion during the current monitoring period.

There has been some reclamation of saltmarsh habitat at this site in the past (802). This is seen in the saltmarsh located at the east side of the site. Land adjacent to the saltmarsh is low-lying and is found behind low berms. Some of this land was probably saltmarsh in the past. Saltmarsh in an inlet located at Mornington has also been partially infilled prior to the current monitoring period (803). These impacts are not assessed as they occurred outside the current monitoring period.

Common Cordgrass is present at this site and is an invasive species of saltmarsh and mudflats (954). This species has colonised significant areas of mudflats seaward of the established saltmarsh to establish dense *Spartina* swards. It is not known when this species was planted in, or colonised this estuary. However, it has been known in the estuary since 1960 (Nairn 1986) and its presence probably pre-dates this period. Accretion at this site has also probably promoted the spread of this species. There are also small areas on the intertidal flats with sparser cover of isolated clumps of Common Cordgrass of various sizes. An examination of the 2000 and 2005 series aerial photos shows that the *Spartina* sward has consolidated and expanded in this period, mainly at the seaward side. Scattered clumps are found in some of the patches of *Salicornia* flats and this habitat is vulnerable to colonisation by Common Cordgrass in the future.

There are also several patches of ASM/*Spartina* sward mosaic around the site. Common Cordgrass may have spread into the newly developing ASM at this site. The impact of its

presence is assessed as moderately negative in these mosaic areas. However, it is difficult to establish the extent of this colonisation, particularly as the extent of established saltmarsh was never mapped prior to colonisation by Common Cordgrass. This species has not spread significantly into any of the relic saltmarsh that was previously established prior to the construction of the navigation walls. There are some indications of natural succession of *Spartina* sward to ASM at this site (990) or that the establishment of *Spartina* sward lead to development of ASM. This is seen in places where saltmarsh was not previously mapped on the OSI 2nd edition 6 inch map.

Impacts and activities around the site are mainly related to farming (100, 102, 120, 140), urbanisation (402, 403) and to industry in Drogheda Port. Other information in NPWS files related to this cSAC refers to water pollution from runoff related to this industry (700). Extensive green algae mats were noted on the mudflats adjacent to the saltmarsh and these may be an indication of eutrophication. There are also some indications of eutrophication to the saltmarsh found in the inlet at the western end of the site (700). There is ongoing development in the port with the possible threat of infilling to create new land. A driving range (601) is located in some of the reclaimed land adjacent to the saltmarsh. There have been some recent modifications to these berms and a small breach has lead to the creation of a small patch of new saltmarsh in one part. These activities have no measurable impact on the saltmarsh habitat other than those already assessed.

Dredging of the main channel has occurred during the monitoring period (850, 860). However, no direct impact to the saltmarsh from this dredging was noted. Stagrennan Polder is located to the west of the survey site and has been used as part of a capital project by Drogheda Port Company to improve navigation in the channel. Material dredged from the channel was dumped in Stagrennan Polder. This area is currently being restored and the restoration project involves creating new intertidal flats and saltmarsh. No established saltmarsh had developed by the time of the survey but there was some colonisation of saltmarsh plants in the polder and around the edge of the embankments. The impacts on Stagrennan Polder were not considered as part of this assessment as it was outside the survey site.

Table 4.1. Intensity of various activities on saltmarsh habitats at Mornington.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
H1310	910	C	+1	1.327	Inside
H1310	954	C	-1	1.327	Inside
H1330	421	C	0	0.01	Inside
H1330	501	C	0	0.03	Inside
H1330	622	C	0	0.5	Inside
H1330	623	C	-1	0.1	Inside
H1330	910	C	+1	8.0	Inside
H1330	954	B	-1	1.0	Inside
H1310	850	C	0	1.327	Outside
H1330	700	C	-1	0.9	Outside
H1330	850	C	0	11.242	Outside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Mornington saltmarsh contains some notable features of conservation interest. Some of the saltmarsh has only developed in the past 100 years and is at a relatively young stage of development. The construction of the navigation walls and dredging of the main channel have both probably had a large part to play in the development of this site. Much of the saltmarsh is dominated by low-mid communities, which is somewhat unusual. Pioneer saltmarsh zone is present and there is a notable extent of *Salicornia* flats at the site. Further accretion at this site may lead to continued expansion of the saltmarsh. The saltmarsh is part of a larger coastal system with a sand-spit at the east side of the site but this spit has been significantly modified.

The overall conservation status of this site is assessed as *unfavourable-inadequate* (Table 5.1). The saltmarsh is in relatively good condition and there are few damaging impacts at present. The main reason for this assessment is the presence of Common Cordgrass, which has already developed extensive swards. The pioneer and lower marsh ASM, and more particularly the *Salicornia* flats, are vulnerable to further colonisation by this species in the future. This species is still spreading on the mudflats and is likely to increase its extent in the future. The site has been modified in the past by reclamation, infilling and creation of drainage channels.

It should be noted that Mediterranean salt meadows (1410) is listed as a qualifying habitat for this cSAC. However, this habitat was not recorded at Mornington or along the southern side of the estuary at Baltray. Sea Rush was not recorded along the southern side of the estuary. Sea Rush is present on the saltmarsh at Baltray but is quite rare and not extensive enough to be classified as this habitat.

This site is located within the Boyne Coast and Estuary cSAC. A NPWS management plan is available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Mornington.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable – Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (H1310)	Extent Structure and functions	Future prospects		Unfavourable - Inadequate
Atlantic salt meadows (H1330)	Extent Structure and functions	Future prospects		Unfavourable - Inadequate

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

The extent of the habitat is assessed as *favourable*. There is no detailed information about the previous extent of this habitat. There is a notable area of this habitat present at the site. There are no indications that there has been any significant loss of habitat due to natural erosion or the spread of Common Cordgrass during the current monitoring period.

It could be reasonable to assume that this habitat was more extensive in the past, particularly in the areas where Common Cordgrass has developed dense swards. However, this was never documented.

5.2.2 Habitat structure and functions

The habitat structure and functions of this habitat are assessed as *favourable*. Four monitoring stops were carried out in this habitat and they all passed. Attributes required for favourable conservation status reached their targets. This habitat is in generally good condition. Much of the *Salicornia* flats are found on the unvegetated flats in patches isolated from the rest of the saltmarsh. Common Cordgrass is present within this habitat but does not form a significant part of the vegetation (< 1% cover). The impact of its spread on species composition is assessed as neutral, mainly due to the lack of accurate baseline data.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as the spread of Common Cordgrass continue in the near future. Common Cordgrass is found within this habitat and there are several small patches of *Salicornia* flats within the *Spartina* sward. *Salicornia* flats may be vulnerable to further colonisation by Common Cordgrass in the future and this may limit their extent.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any significant loss of ASM due to land-use changes, erosion or the spread of Common Cordgrass within the current monitoring period. There are indications that the saltmarsh is expanding in places and pioneer SM is present, indicating active accretion and growth. This is a positive indicator for the extent of ASM.

There is also some development of ASM/*Spartina* sward mosaic. It is not known if Common Cordgrass has spread into pioneer ASM to develop this community due to the lack of accurate baseline data. This is likely to be the case. However, this impact on species composition is not assessed as it may have largely occurred prior to the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Fourteen monitoring stops were recorded in this habitat and they all passed. All the attributes required for favourable conservation status reached their targets. This saltmarsh is in generally good condition. There are few damaging activities affecting this habitat. Common Cordgrass is present and has created some areas of ASM/*Spartina* sward mosaic but there are no indications that it has spread significantly within the ASM during the current monitoring period. The impact of its spread on species composition is assessed as neutral, mainly due to the lack of accurate baseline data.

Several typical ASM communities were recorded at this site. Zonation was evident in places between these communities and the saltmarsh structure is well-developed in some sections. This structure has been modified in places by drainage channels. The sward height is quite variable in places as the site is not grazed. There is a small area with increased freshwater influence that increases the diversity and structure of the saltmarsh overall.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and levels of impacts continue in the near future. There are few negative impacts directly affecting the saltmarsh at present. There has been some damage in the past from disturbance, infilling and drainage channels. However these activities are likely to be restricted in future. Common Cordgrass probably is the most significant threat to the saltmarsh. It is well-established at this site. The fact that so much of this saltmarsh is dominated by low-mid communities may mean that it is vulnerable to further colonisation by this species in the future. Common Cordgrass has the potential to spread into this zone. This is the main reason for assessment as *unfavourable-inadequate*.

However, much of the saltmarsh is at relatively young stage of development. Further accretion could influence further natural succession of this ASM, the development of larger mid and mid-upper zones and the expansion of ASM.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Nairn, R.G.W. (1986). *Spartina anglica* in Ireland and its potential impact on wildfowl and waders – a review. *Irish Birds*. **3**, 215-258.

Ryle, T, Connolly, K., Murray, A. & Swann, M. (2009). *Coastal Monitoring Project. 2004-2006*. Report to the National Parks & Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.

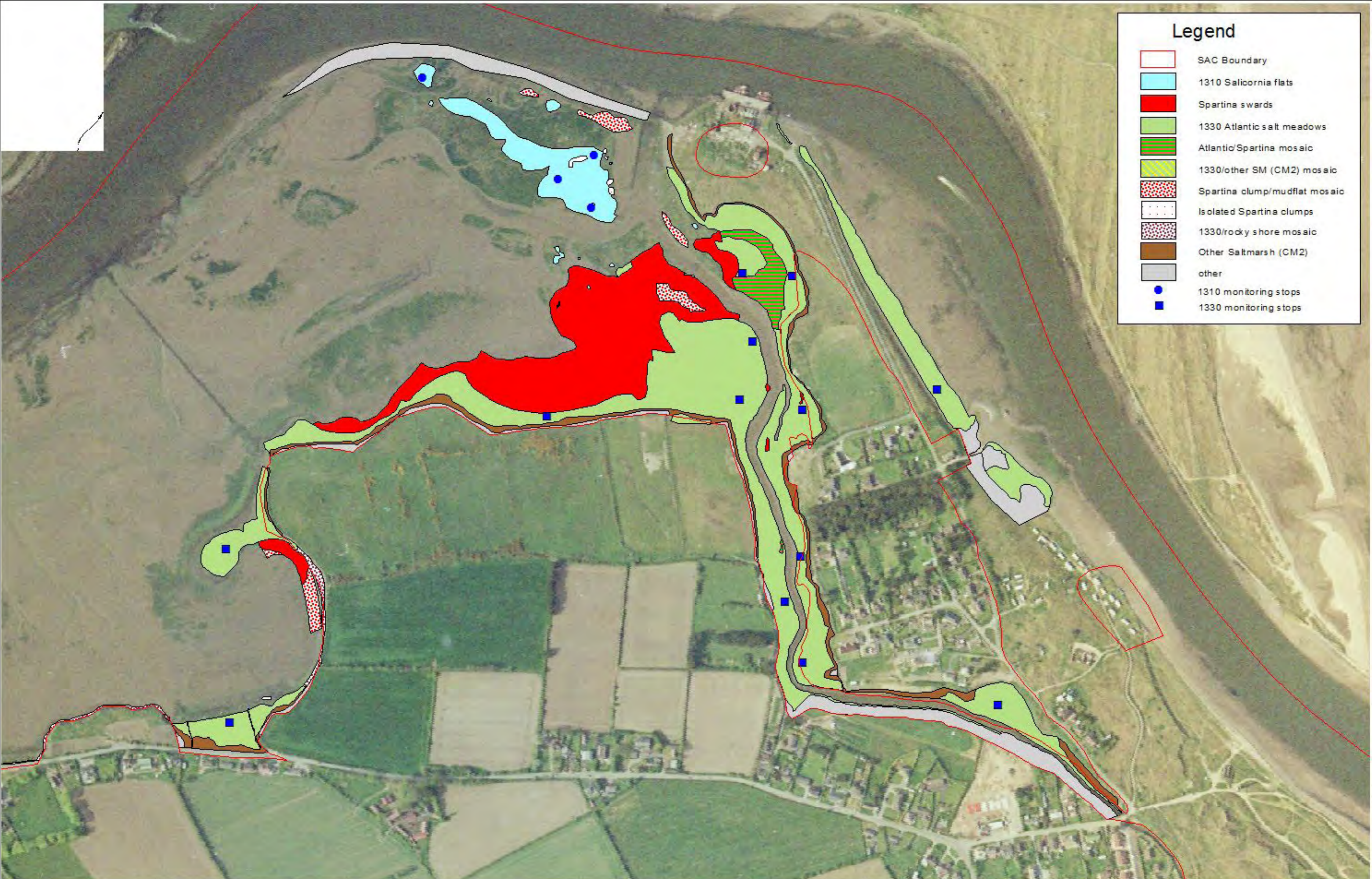
8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			H1310	H1330	H1410	H1420	<i>Spartina</i> swards
1	1310 <i>Salicornia</i> flats	1.136	1.136				
2	<i>Spartina</i> swards	3.914					3.914
3	1330 Atlantic salt meadow	10.548		10.548			
4	1410 Mediterranean salt meadow						
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic	0.431		0.2155			0.2155
7	1330/other SM (CM2) mosaic	0.787		0.3935			
8	1330/coastal grassland mosaic						
9	Other (non saltmarsh)	6.467					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)	0.381	0.1905				0.1905
11	Isolated <i>Spartina</i> clumps on mud (5%)	0.036					0.0018
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	1.069					
19	1330/rocky shore mosaic	0.171		0.0855			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	24.94	1.33	11.24			4.32

Legend

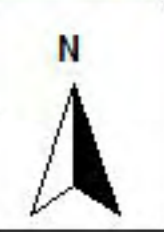
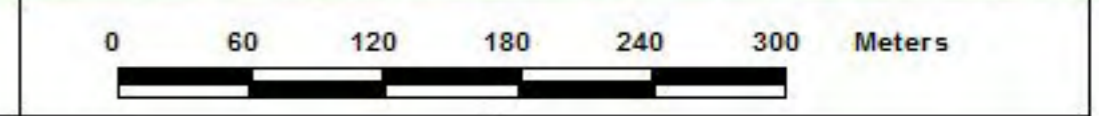
-  SAC Boundary
-  1310 Salicornia flats
-  Spartina swards
-  1330 Atlantic salt meadows
-  Atlantic/Spartina mosaic
-  1330/other SM (CM2) mosaic
-  Spartina clump/mudflat mosaic
-  Isolated Spartina clumps
-  1330/rocky shore mosaic
-  Other Saltmarsh (CM2)
-  other
-  1310 monitoring stops
-  1330 monitoring stops





Legend

- SAC Boundary
- 1310 Salicornia flats
- Spartina swards
- 1330 Atlantic salt meadows
- Atlantic/Spartina mosaic
- 1330/other SM (CM2) mosaic
- Spartina clump/mudflat mosaic
- Isolated Spartina clumps
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1310 monitoring stops
- 1330 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Legend

-  SAC Boundary
-  1310 Salicornia flats
-  Spartina swards
-  1330 Atlantic salt meadows
-  Atlantic/Spartina mosaic
-  1330/other SM (CM2) mosaic
-  Spartina clump/mudflat mosaic
-  Isolated Spartina clumps
-  1330/rocky shore mosaic
-  Other Saltmarsh (CM2)
-  other
-  1310 monitoring stops
-  1330 monitoring stops



Ballysadare Bay

1 SITE DETAILS

SMP site name: Ballysadare Bay	SMP site code: SMP0117
Dates of site visit 21-24/07/2008	CMP site code: N/A
SM inventory site name: Ballysadare Bay	SM inventory site code: 38
NPWS Site Name: Ballysadare Bay	
NPWS designation cSAC: 622	MPSU Plan: old format plan available
pNHA: 622	SPA: 4129
County: Sligo	Discovery Map: 25 Grid Ref: 165110, 330130
Aerial photos (2000 series): O 1009-C,D; O 1068-A,B,C,D; O 1069-B,C,D; O 1070-C; O 1129-B; O 1130-A,B,C,D; O 1131-A,B	6 inch Map No: SI 020
Annex I habitats currently listed as qualifying interests for Ballysadare Bay cSAC: None listed	
Other SMP sites within this SAC/NHA: Strandhill	
Saltmarsh type: Estuary	Substrate type: Mud/sand

2 SITE DESCRIPTION

Ballysadare Bay is located in Co. Sligo. It is the southern-most of the three inlets that make up Sligo Bay. Ballysadare Bay is a large shallow bay with extensive intertidal flats and sub-tidal areas. Parts of the site are also estuarine and the Ballysadare River flows into the head of the bay at Ballysadare Bay and an estuarine channel undulates through the bay. Other small river and streams flow into the bay at various points around the shoreline. The landscape around the bay varies considerably as this is such a large site. Most of the surrounding land is quite rural. Knockarea Hill overlooks the north-east part of the bay and there are steeper slopes adjacent to the shoreline. The north-west section is more low-lying than the rest of the bay and some adjacent land has been reclaimed in the past. There is scattered habitation all around the site, with frequent access points to the shoreline. Ballysadare Town is the main urban centre close to the bay. Some of the marsh at the head of the bay has been modified in the past with the construction of the Dublin-Sligo Railway embankment and Dublin-Sligo dual-carriageway, which crosses marshland at Ballydrehid.

This site was one of the largest sites surveyed during the SMP survey. The bay is about 10 km long from the mouth to the head. The survey site took in most of the shoreline on both sides of the bay and extended from Portavaud Point at the mouth of the bay around to Lisheenacorvanen Townland. Not all of the shoreline was surveyed during fieldwork. All of the main saltmarshes within the bay were surveyed. Some narrow bands of saltmarsh vegetation that had developed along steeper shorelines and adjacent to higher ground were not surveyed.

Saltmarsh is particularly well-developed in this site and several large and some smaller distinct marshes are found in the site. One notable feature of Ballysadare Bay is that it

contains a range of different types of saltmarsh that have developed in different environmental conditions and on different substrates. Conditions at the head of the bay are much more estuarine compared to the outer section. Saltmarsh has also developed around an intertidal pool at Poravaud that has been classified as a lagoon (Oliver 2005, NPWS 2007). The diversity of the saltmarsh has also been enhanced by a range of different management regimes, including different grazing levels, around the bay.

One of the main saltmarshes was found at a peninsula at Brughmore and Inishmore Townlands along the north of the site. Extensive saltmarsh is also found at the head of the bay. This marsh has developed on low-lying ground on both sides of a hill at Kilmacowen. A small river flows into the bay north of this hill and saltmarsh and brackish marsh is found in the basin of this river valley. This marsh is typical of an 'estuarine type' saltmarsh (Curtis and Sheehy-Skeffington 1998). Some saltmarsh is also developing on disturbed sediments overlooked by the large quarry at this location.

Less extensive saltmarsh is also found along the south-west shoreline from Streamstown west to Portavaud Point in many of the low-lying inlets and sheltered sections along this shoreline. Some of this shoreline has been modified in the past by the creation of seawalls at Tanrego Intake. The geo-morphology of this shoreline and saltmarsh differs significantly to the larger saltmarshes located further east in the bay. The topography is related to the underlying limestone bedrock and glacial till and there are frequent small hollows and mounds (moraines) along the shoreline that influence the development and distribution of saltmarsh. This saltmarsh geo-morphology is quite similar to those found in Galway Bay.

This site is part of Ballysadare Bay cSAC. This large coastal cSAC includes this entire bay and is dominated by intertidal and sub-tidal habitats. The intertidal flats provide important habitat for wintering waders and wildfowl that visit this area. The bay is also important for Annex I species like Common Seal, which haul out on sand banks south of this site and all through the bay. The cSAC also includes some coastal habitats like the sand dune complex at Strandhill, which is dominated by the Annex I habitat, fixed dunes. Three Annex I saltmarsh habitats are found at this site, *Salicornia* flats, Mediterranean salt meadows (MSM) and Atlantic salt meadows (ASM). No saltmarsh habitats are listed as qualifying interests for this site. A small part of the bay at Culleenamore Strand was classified as a separate site by Curtis and Sheehy-Skeffington (1998) and called Strandhill. This saltmarsh was also surveyed during the SMP survey.

One species of local distinctiveness, Saltmarsh Flat-rush (*Blasmus rufus*), was found at this site and was recorded in saltmarsh at the head of the bay. Turf fucoids were also noted in several locations.

The majority of the saltmarsh habitat is found within the digital cSAC boundary. There are only minor amounts of habitat excluded from the cSAC. The upper shoreline boundary as mapped by the old OSI 2nd edition 6 inch map is taken as the boundary of the cSAC along much of the estuary. Small rectification differences between the OSI 6 inch map and the OSI aerial photos means that some minor saltmarsh habitat extends beyond this boundary in places along the southern side of the site.

The various saltmarshes around the site were accessed by minor road close to the shoreline and by crossing adjacent farmland in places.

3 SALTMARSH HABITATS

3.1 General description

The overall site is divided into several sub-sites for ease of description

Lisheenacooravan

This part of the shoreline includes some less extensive saltmarsh development in several small inlets and along the shoreline. The geo-morphology is similar to the opposite side of the bay and there are several low-lying hollows in the glacial material connected to the main shoreline by narrow channels that contain saltmarsh. Saltmarsh is also found in some of the small sheltered inlets. The main habitat is ASM. It forms a mosaic with rocky shoreline along the more exposed mainland shore. Some of this saltmarsh is grazed by sheep, cattle and horses.

Brughmore and Inishmore

This saltmarsh is the best example of saltmarsh development in Ballysadare Bay. Extensive stands of MSM have developed between the mainland and a three low-lying glacial 'islands' further seaward to form a small peninsula. The mounds contain dry grassland and are grazed. The main saltmarsh is surrounded by tall saltmarsh cliffs adjacent to soft intertidal mud with extensive Eelgrass (*Zostera* sp.) beds. The MSM is surrounded by a fringe of ASM, and this habitat is more extensive around the narrow shorelines of the two low mounds of Inishmore. There are several low mounds within the saltmarsh where there is some development of brackish wet grassland. Species like Purple Moor-grass (*Molinia caerulea*) are prominent in these patches. There are also several small low mounds within the ASM and MSM near the mainland boundary that are vegetated by Twitch (*Elytrigia repens*) (not mapped as ASM) and also containing Spear-leaved Orache (*Atriplex prostrata*), False-Fox Sedge (*Carex otrubae*), Parsley Water-dropwort (*Oenanthe lachenalii*), Lesser Spearwort (*Ranunculus flammula*) and Sea Mayweed (*Tripleurospermum maritimum*). The southern side of the saltmarsh contains narrow bands of ASM saltmarsh that developed on thinner substrate and transition to a band of Twitch-dominated vegetation along the upper boundary. This vegetation has been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

This area has been modified in the past by the construction of deep drains and an embankment with some scrub and Bramble (*Rubus fruticosus*) that bisect the saltmarsh. This saltmarsh is grazed by cattle.

Kilmacowen-Ballydrehid

This marshland is one of the largest marshes found at the site. It includes two separate marshes divided by a low hill and connected at the mouth of a small river draining Ballydrehid. The northern section is found in the flat basin of a small river valley. Marsh is found on both sides of an undulating river channel back to the railway bridge at Ballydrehid. There is a general transition along this marsh from MSM around the outer section to increased amounts of brackish marsh dominated by Sea Club-rush (*Bolboschoenus maritimus*) and Common Reed (*Phragmites australis*) and to brackish wet grassland along both sides of the valley and further east. The southern section of the marsh is dominated by stands of Common Reed and diverse wet grassland and is much more brackish, due to the estuarine influence of Ballysadare River. Brackish channels extend high into the wet grassland. Stands of brackish

Common Reed are spreading into the adjacent intertidal mud. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. MSM and ASM are both found at the east side around a small hill. Most of this saltmarsh is grazed by cattle.

Abbeytown

This saltmarsh is found along the southern shoreline, near the head of the bay. A diverse area of brackish marsh including stands of Sea Club-rush, Grey Club-rush (*Schoenoplectus lacustris* spp. *tabernaemontani*) and Common Reed (CM2), wet grassland and scrub has formed at the mouth of Ballysadare River with a saltmarsh fringe. Saltmarsh is developing at the base of a large quarry. There is some pioneer vegetation developing on quarry waste at this location. Further west a narrow band of patchy saltmarsh is found at the base of a low cliff or higher land in a mosaic with rocky or boulder beach shoreline. This area is not being grazed.

Streamstown-Tanrego

This area contains some less extensive saltmarsh. The main saltmarsh is found at Streamstown along the eastern side of a large inlet that extends towards Lisduff. Most of this saltmarsh is not grazed. The saltmarsh is mainly dominated by a large area of MSM and there is also some less extensive ASM along the shoreline to the mouth of the inlet. Some of this saltmarsh has been modified by attempted reclamation in the past. The southern and western shorelines have been modified by the construction of a long seawall and embankment in the 19th century. Extensive low-lying land behind these embankments in Lisduff and Tanrego Intake has been reclaimed. Low-lying ground at Lisduff now contains conifer plantation and wet grassland. A large area of intertidal flats was formerly present between Derinch Island and the mainland (in the Tanrego Intake) but this area now contains wet and improved grassland. Extensive former saltmarsh at Lisduff and further west at Beltra was reclaimed by this reclamation. There are some brackish channels along the inside of the embankment at Tanrego Intake but there is very little saltmarsh development. One large pool in this intake is classified as an artificial lagoon (Oliver 2005) and has been included in a conservation assessment of Coastal Lagoons in Ireland (NPWS 2007). This pool is filled with Tasselweed (*Ruppia* sp.) and has small patches of Sea Club-rush and Grey Club-rush around its margins. Some land along drainage outflows is still influenced by the tide.

Further north-west a former intertidal channel between Tanrego and Derinch Island now contains extensive marginal brackish vegetation and pools of standing water. This area is now located behind a seawall and was used for growing oysters in the past. Much of the reclaimed land has developed into wet woodland and scrub. This area supports a large deer population, some of which were noted grazing on the saltmarsh along the shoreline.

Carrownacreevy-Ballinlig

This part of the bay includes the south-west shoreline between these two townlands. There is variable saltmarsh development in many of the small inlets and sheltered areas along this shoreline. The geo-morphology is heavily influenced by the glacial deposits and reworked beach deposits along this shoreline. The shoreline is a heterogeneous mosaic of hollows, flat platforms and mounds with ASM development in the low-lying areas covered by the tide. The larger sections of saltmarsh have developed around small intertidal pools and channels that extend into the shoreline, creating a complicated topography. A large part of this shoreline is

grazed by sheep. Further north-west there is some saltmarsh development along the edges of a larger inlet at Ballinlig. There is minor development of embryonic and fixed dunes at the mouth of this inlet. This area is grazed by cattle. Several minor patches of *Salicornia* flats were recorded along this shoreline, adjacent to the ASM saltmarsh.

Portavaud

This area includes a small inlet located at the mouth of Ballysadare Bay. The inlet is shallow and contains extensive intertidal mud and sand flats. This area has similar shoreline topography to the Carrownacreevy-Ballinlig shoreline and is heavily influenced by the underlying glacial till. ASM is mainly found around the inner shoreline of this inlet and secondary inlets with the outer section mainly having a rocky beach/shingle shoreline. Saltmarsh has developed around the fringe of one large pool and is connected to the main inlet by narrow channels. This pool and an adjacent pool have been classified as a 'saltmarsh' lagoon by Oliver (2005). Much of this saltmarsh is grazed by cattle.

Table 3.1. Area of saltmarsh habitats mapped at Ballysadare Bay.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.012
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	37.114
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	34.911
	Total	72.037

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

This habitat is poorly represented at this site. Several small patches dominated by Glasswort (*Salicornia* sp.) were noted along the seaward edge of the ASM on mixed sediment at Carrownacreevy. These patches did not contain any other saltmarsh species.

Small pans at Ballindrig and one large shallow pan at Portavaud contain a sward of Annual Sea-blite. There were few other species found within these pans. The pans were poached in places and this poaching damage probably influences the development of this pioneer vegetation.

3.3 Atlantic salt meadows (H1330)

The ASM is well-developed at this site. ASM has developed in several different topographies and on different substrates and this increases the overall diversity of the habitat.

Lisheenacooravan

Much of the ASM saltmarsh found in this area is dominated by either a Sea Plantain (*Plantago maritima*) or Red Fescue (*Festuca rubra*)-rich sward. There are eroded patches where the saltmarsh vegetation forms mosaics with rocky substrate. The saltmarsh has developed on thin substrate on moderately sloped shoreline with landward transitions to a Twitch-dominated zone. This zone also contains Sea Mayweed, Silverweed (*Potentilla anserina*), Bladder Campion (*Silene vulgaris*), Spear-leaved Orache (*Atriplex prostrata*) and Perennial Sow-thistle (*Sonchus arvensis*).

More extensive saltmarsh is found in a sheltered inlet at Claddaghnacloch that is grazed by horses. Attempts have been made to reclaim this area in the past with the creation of an embankment across the front of the inlet. This area contains an unusual pioneer ASM community that is dominated by Spear-leaved Orache and also contains frequent Greater Sea-spurrey (*Spergularia media*) and Sea Milkwort (*Glaux maritima*), with bare ground prominent. This community has been created by long-term grazing and poaching by horses. More typical mid and mid-upper zone ASM saltmarsh is found in adjacent enclosures that are not grazed so intensely.

Brughmore

Much of the ASM found at the north end of Brughmore is upper saltmarsh. Some of the ASM is also somewhat transitional. This ASM is located near the upper saltmarsh boundary at the north-western end of the saltmarsh and is dominated by typical grasses such as Red Fescue, Saltmarsh Rush (*Juncus gerardii*) and Creeping Bent (*Agrostis stolonifera*). Other saltmarsh species include Parsley Water-dropwort, Sea Arrowgrass (*Triglochin maritimum*), White Clover (*Trifolium repens*), Common Scurvy-grass (*Cochlearia officinalis*) and Spear-leaved Orache. Sea Rush (*Juncus maritimus*) is also present but at low cover values. It also contains transitional species such as Long-leaved Plantain (*Plantago lanceolata*), Tall Fescue (*Festuca arundinacea*), False Fox Sedge (*Carex otrubae*) and Curled Dock (*Rumex crispus*). There are some transitions along a landward boundary to wet grassland with Floating Sweet-grass (*Glyceria fluitans*), Brackish Water-Crowfoot (*Ranunculus baudotii*) and Yellow Flag (*Iris pseudacorus*). The western section is not grazed and has a tall rank sward. There are natural transitions to MSM in this area.

Further east the saltmarsh is grazed by cattle and has a much lower sward. This saltmarsh also contains frequent transitional indicators that appear on low mounds such as Glaucous Sedge (*Carex flacca*), indicating transition to wet grassland. More typical ASM is found in the channels and low-lying depressions. This habitat is also found along many of the natural creeks and artificial drainage channels that dissect the MSM in this saltmarsh. Most of this ASM is an upper marsh type.

ASM found in the south-east corner of this saltmarsh is notable for the extent of mid-upper-marsh vegetation that has developed. This community is dominated by Saltmarsh Rush and also contains frequent Sea Plantain and Red Fescue and small amounts of Sea Milkwort, Sea Pink (*Armeria maritima*) and Sea Aster (*Aster tripolium*).

The ASM found along the glacial islands of Inishmore is different in topography and vegetation type. This narrow band of saltmarsh contains a low-mid zone with a typical vegetation type dominated by Sea Plantain and also containing Greater Sea-spurrey (*Spergularia media*) and Annual Sea-blite (*Suaeda maritima*). There were landward transitions to vegetation dominated by Saltmarsh Rush. Lax-flowered Sea Lavender (*Limonium humile*) was found rarely in this saltmarsh. This ASM shows signs of exposure and some erosion with bare patches of glacial material being exposed within the saltmarsh.

Streamstown-Tanrego

Ungrazed ASM is found at Streamstown. Most of this saltmarsh is similar to other typical saltmarsh round the site and is dominated by mid and mid-upper zones. A small partial seawall was built along one part of the marsh and there has been some development of pioneer and low marsh ASM in the sheltered intertidal area inside of this seawall. This zone

is dominated by a sward of Common Saltmarsh-grass on an accretion ramp. Other species present in this zone include Glasswort, Annual Sea-blite, Sea Aster, Sea Plantain and Sea Milkwort.

There are patches of ASM saltmarsh on relic saltmarsh hags along the southern side of this inlet. There are indicators of erosion along this seawall. Brackish marsh and small patches of ASM appear on the landward side of the seawall along some of the main drainage channels where there is still some brackish influence.

Carrownacreevy-Ballinlig

ASM dominates the saltmarsh habitat along this shoreline. The topography is well-developed due to the underlying glacial till and this introduces complex zonation into the habitat. There are occasional large rocks scattered over this marsh. Much of this saltmarsh is dominated by a mid-high zone sward dominated by Red Fescue. The mid marsh sections contain more frequent Sea Plantain and Sea Pink. Some lower-lying channels connected to salt pans are vegetated by a sward of Common Saltmarsh-grass (*Puccinellia maritima*) and also containing Glasswort. The upper zone was dominated by a band of Creeping Bent adjacent to drier coastal grassland on higher ground and mounds dominated by Red Fescue. Some species noted occasionally in the upper zone included Saltmarsh Flat-rush (*Blysmus rufus*) and Hard grass (*Parapholis strigosa*).

The lower saltmarsh boundary in the more sheltered zone is marked by a low cliff adjacent to intertidal mud. Exposed cobbles appear along the lower boundary in the more exposed shoreline and saltmarsh has developed on thinner substrate in places. One section has a low closely cropped sward that is grazed by sheep. Some of this area is damaged by the moderate-heavy grazing and is quite tussocky. Turf fucoids were noted on some of the tussocks. There is some poaching-induced erosion along the seaward edge of the area grazed by sheep. One noticeable feature was the saltmarsh sward was being selectively grazed by sheep and there was greater foliage available on adjacent dry terrestrial grassland along the shoreline.

ASM found in the larger inlet at Ballinlig was quite poached and damaged by cattle grazing in places. Some of the saltmarsh is waterlogged and quite boggy in places. Some of this ASM is characterised by a low-mid zone with tussocks of Sea Pink, Sea Plantain and Common Saltmarsh-grass. A small stream flows into the head of this inlet introducing some freshwater influence to the saltmarsh at the head of the inlet.

Abbeytown

The ASM recorded at this sub-site is poorly developed. Some of the vegetation is pioneer and is only developing. There is abundant evidence of sewage effluent along the seaward boundary of this marsh. Species such as Common Saltmarsh-grass, Sea Aster, Sea Plantain Saltmarsh Rush, Common Scurvy-grass, Brookweed (*Samolus valerandi*) and Creeping Bent are all colonising the bare sediment and creating small accretion mounds. Some of these mounds are also somewhat eroded, indicating this area is quite dynamic. There is no typical structure to the saltmarsh in this area. This may be related to ongoing pollution and eutrophication. It may also be related to the relatively young age of this section, where rapid siltation and shifting sediment has not allowed typical saltmarsh communities to develop yet.

3.4 Mediterranean salt meadows (H1410)

Brughmore

This habitat is extensively developed at Brughmore. Much of this saltmarsh is dominated by dense upper marsh MSM. This has a typical species assemblage with Sea Rush and Red Fescue dominating. Other species present included Sea Arrowgrass, Sea Plantain, Common Scurvy-grass, Brookweed, Distant Sedge (*Carex distans*) and Creeping Bent. Spike-rush (*Eleocharis uniglumis*) was also noted in one location. Some of this MSM is some transitional and there are other transitional indicators such as Purple Moor-grass, Compact Rush (*Juncus conglomeratus*), Red Clover (*Trifolium pratense*), Ragged Robin (*Lychnis flos-cuculi*), Perennial Sow-thistle, False Oat-grass (*Arrhenatherum elatius*), Yellow Flag, Creeping Buttercup (*Ranunculus repens*), Curled Duck, Yorkshire Fog (*Holcus lanatus*), Marsh Bedstraw (*Galium palustre*), Marsh Thistle (*Cirsium palustre*) and Soft Rush (*Juncus effusus*). There are subtle transitions to low mounds on the marsh that are dominated by these more typical wet grassland species and the cover of Sea Rush diminishes. This saltmarsh is divided by a series of artificial drainage channels although much of the natural drainage structure is still intact. The natural topography of this section is well-developed and the transitions to wet grassland on mounds increase the diversity of the vegetation. Natural saltmarsh features such as salt pans are also frequently present.

Pioneer MSM is developing along the seaward edges of this saltmarsh on lower platforms and clumps were spreading into the adjacent intertidal flats and the adjacent Eelgrass beds. Some of this MSM was quite low in diversity and dominated by a dense sward of Sea Rush. It also contains small amounts of low marsh species such as Common Saltmarsh-grass, Greater Sea-spurrey and Glasswort.

Streamstown

Ungrazed MSM is found at Streamstown. This saltmarsh contains a well-developed natural topography that has not been significantly modified by drainage in the past.

Kilmacowen-Ballydrehid

The MSM found at Kilmacowen is quite similar to MSM present at other sites such as Brughmore. The MSM is dominated by a typical sward of dense Sea Rush sward. Other species present in the lower lying MSM adjacent to the river channel included Creeping Bent, Parsley Water-dropwort, Sea Arrowgrass, Common Scurvy-grass, White Clover, Autumn Hawkbit (*Leontodon autumnalis*), Distant Sedge, Saltmarsh Rush, Red Fescue and Brookweed. Much of the MSM found higher in the small estuary contains small amounts of transitional species such as Creeping Buttercup, Jointed Rush (*Juncus articulatus*), Sow-thistle, Yorkshire Fog, Sweet Vernal-grass (*Anthoxanthum odoratum*), Curled Dock and False Fox Sedge. There is some transition to wet grassland dominated by Soft Rush and containing Purple Moor-grass, Glaucous Sedge and Marsh Thistle along the landward boundary of the MSM. This community also contains small amounts of Sea Rush. The structure of this area is well-developed and there have been no modifications related to drainage. This area was grazed by sheep.

The south side of the river is grazed while the north side was quite rank and ungrazed. Stands of Sea Club-rush are more extensive on the north side of the river.

Further south in the marsh located north of the mouth of Ballysadare River there is some transitional MSM that also contains a significant amount of Common Reed. This transitional vegetation also contains species such as Parsley Water-dropwort, Sea Arrow-grass, Sea Milkwort, White Clover, Ragged Robin, Jointed Rush and Perennial Sow-thistle. The structure of this marsh is quite well-developed. There are gradual transitions from Sea Rush-dominated vegetation to stands dominated by Common Reed. This zonation is related to the underlying topography of the marsh with frequent low mounds and channels present.

4 IMPACTS AND ACTIVITIES

This large site is affected by a wide range of impacts and activities, some of which only affect a relatively small area of the bay. Grazing (140) is the most widespread impact and most of the saltmarsh is grazed by cattle, with smaller amounts being grazed by sheep and horses. A significant area is not grazed at all. The grazing regime varies across the site and there is some localised damage from heavy grazing levels (142, 143). Negative indicators such as bare substrate, poaching and a tussocky surface are evident. The ASM was more frequently damaged compared to the MSM, which was generally in good condition. Signs of localised grazing damage were noted at Lisheenacooravan, Brughmore, Ballydrehid, Carrownacreevy and Portavaud. One enclosure at Lisheenacooravan was badly damaged and trampled by horses, with development of pioneer vegetation across much of the marsh due to very heavy grazing. Recent damage at Brughmore and Ballydrehid was more localised but there were also signs of long-term damage with tussocky vegetation in places. Some of the ASM saltmarsh at Carrownacreevy was heavily grazed by sheep. However sheep were selectively grazing the saltmarsh and creating a very low sward compared to adjacent taller foliage on dry grassland along the shoreline. Some saltmarsh in several different enclosures at Portavaud is badly damaged by cattle poaching.

The saltmarsh at this site is mainly privately owned and is not used for amenity uses. There are some tracks (501) across the saltmarsh at various locations that have been created by grazing livestock or for access by farmers.

There are obvious signs of eutrophication (701) at the mouth of the bay at Ballysadare. There has been an ongoing problem with the treatment of sewage from Ballysadare and the upgrading of a sewage treatment plant. Common Reed has spread extensively on the intertidal mud adjacent to the mouth of the river at Ballydrehid. This is one sign of the impact of eutrophication on the marsh. Sewage was also noted in the stand of Sea Club-rush at Abbeystown and this nutrient enrichment is likely to be having a significant negative impact on the development of the saltmarsh vegetation at this site.

Some of the shoreline has been modified by reclamation in the past. This is mainly seen at Lisduff, Tarego Intake and around Derinch Island, where there are long embankments to exclude the sea and reclaim low-lying land (801). Extensive former saltmarsh has been reclaimed by this reclamation. There are smaller examples of reclamation around the site where small seawalls and embankments have been used to exclude tidal waters. Other saltmarsh around the site has been modified by drainage in the past (810). These impacts are not assessed as they occurred outside the current monitoring period.

Some recent infilling and reclamation was noted around the site. Part of a brackish pool at Lisheenacooravan has been infilled between 2000-2005 (803). Some minor saltmarsh would

have been present around the edges of this brackish pool. Infilling was also noted on the saltmarsh and adjacent to the saltmarsh along the regional road adjacent to the shoreline.

There has been some recent coastal protection works to exclude tidal waters from a large hollow at Ballinlig Point (871). Spoil has been placed along a channel connection to the outer inlet. This hollow was reclaimed in the past but may have breached with the re-introduction of tidal water. It contained some brackish vegetation including Sea Club-rush and Sea Rush. However, there were signs of recent habitat change due to the exclusion of saline water. Minor dumping of spoil was also noted around the site including on saltmarsh at Streamstown.

A large quarry is located at Abbeytown (301). Saltmarsh is developing on quarry waste at the mouth of Ballysadare Bay and further west adjacent to the quarry. This quarry is located in the site of former lead and zinc mine works. There is only a very narrow strip of intact land dividing the quarry site from the coastal habitats. Tall piles of spoil and quarried material overhang the adjacent saltmarsh and other habitats. While there is no current direct discharge of waste into the bay from this site, this may have occurred in the past. The NPWS management plan for the site mentions that spoil from the quarry was dumped in this area. This area is mapped as part of the intertidal flats on the OSI 2nd edition 6 inch map. The dumping of the spoil has allowed saltmarsh and brackish marsh to expand in this area and this is likely to continue, so it is assessed as a positive impact. The brackish marsh (stands of Sea Club-rush) has increased measurably in size during the current monitoring period (0.2-0.4 ha). However, some of the sediment may have naturally high levels of heavy metals from mining spoil and the NPWS management plan noted some discharges of oil from holding tanks in the quarry. No discharges were noted during the current survey.

There are some indicators of natural erosion (900) around the site. These include old high saltmarsh cliffs (0.5-1 m high) around the saltmarsh at Brughmore. Lower saltmarsh cliffs can be seen (0.2-0.5 m high) along some of the other saltmarsh. However, no significant retreat of saltmarsh was observed when the current extent of saltmarsh is compared to the extent of saltmarsh mapped by the OSI 2nd edition 6 inch map. There has been no measurable loss of saltmarsh during the current monitoring period. The impact of erosion is rated as neutral.

There are also some signs of accretion around the site (910). These has already been noted as Abbeytown and related to spoil from the quarry. Natural accretion ramps were also noted along the seaward edge of the saltmarsh at Portavaud. Sea Rush is also spreading onto the adjacent intertidal flats at Brughmore, at the base of an old saltmarsh cliff. There has been no measurable accretion and expansion of saltmarsh (other than at Abbeytown) during the current monitoring period so the impact of accretion is assessed as neutral.

Impacts and activities around the site are mainly related to farming (102, 120, 140). There is a significant amount of improved grassland and smaller amounts of wet grassland and dry-calcareous grassland adjacent to the site. Other less common land-uses include forestry (160). There is also scattered habitation (403) and minor roads (501) around the site. Ballysadare is one urban centre (401) adjacent to the site. These activities have no measurable impact on the saltmarsh at this site other than those already assessed.

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

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1310	140	C	0	0.012	Inside
1330	140	C	0	25.0	Inside
1330	142	B	-1	2.5	Inside
1330	143	B	-1	5.0	Inside
1330	501	C	-1	0.5	Inside
1330	803	A	-2	0.005	Inside
1330	871	C	-1	0.005	Inside
1330	900	C	0	1.5	Inside
1330	910	C	+1	0.5	Inside
1410	140	C	0	20.0	Inside
1410	143	B	-1	0.5	Inside
1410	501	C	-1	0.1	Inside
1410	900	C	0	1.5	Inside
1330	910	C	+1	0.1	Inside
1330	301	C	+1	0.1	Outside
1330	701	C	-1	1.0	Outside
1410	701	C	-1	0.5	Outside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There is some more detailed descriptions of the saltmarsh in the old format NPWS management plan prepared in 1999.

Ballysadare Bay contains good examples of both ASM and MSM habitat. Both these saltmarsh habitats are relatively diverse due to the range of environmental conditions found in the bay. Estuarine conditions are prevalent at the head of the bay due to the impact of freshwater from Ballysadare River and other sources, and this has influenced the development of extensive brackish vegetation. Conditions around the outer part of the bay are more typical of saltmarsh exposed to tides with normal salinity. The underlying geomorphology has also influenced saltmarsh development around the bay. The south-west

shoreline is influenced by glacial drift, which has created a complicated mosaic of mounds, hollows and intertidal channels along the shoreline. Some saltmarsh has also developed around Coastal Lagoons (Oliver 2005) that are also related to this underlying geomorphology. Saltmarsh at Brughmore has developed in conditions more typical of 'Fringe type' marsh and there is likely to be some peat development at this location.

Some of the shoreline has been modified in the past and large areas along the south-west area were reclaimed behind seawalls. There are also old modifications to some of the other main saltmarshes where drainage channels were dug. However, much of the saltmarsh remains unmodified. Saltmarsh is developing on quarry waste at Abbeytown.

The overall conservation status of Ballysadare Bay is *unfavourable-inadequate* (Table 5.1). This assessment is mainly due to impacts of agricultural management. Some of the saltmarsh around the bay is being damaged by heavy grazing levels. Some saltmarsh is also being affected by eutrophication related to sewage outflow at Ballysadare Bay. There are several other impacts around the site that affect small portions of habitat. While disposal of this waste in the intertidal area could be considered a negative impact, it is providing substrate for the development of saltmarsh. (It should be remembered that this is at the expense of intertidal mud and Eelgrass beds, which are extensive in this area). The NPWS management plan noted some other discharges of oil from this quarry in the past.

The majority of the saltmarsh habitats found at this site is located within Ballysadare Bay cSAC. An old format NPWS management plan is available for this cSAC but is now out of date.

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

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions, Future prospects		Unfavourable – Inadequate
Mediterranean salt meadows (1410)	Extent	Structure and functions, Future prospects		Unfavourable – Inadequate

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. Several small patches of habitat were noted around the site that forms an overall very small area. There is no information available on the previous extent of this habitat at this site. There are no indications of any habitat loss

at this site due to erosion or any other factors. The relatively small extent of this habitat is notable and it could have been expected that this habitat would have been somewhat more extensive, especially as this is a very large site and there is extensive suitable intertidal habitat available.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. No monitoring stops were carried out in this habitat due to its relatively small extent. However, a visual assessment indicates that it is in good condition. There are no significantly damaging activities affecting this habitat. Disturbance to some salt pans by grazing livestock around the site is creating some suitable habitat for this pioneer vegetation type.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. This is a quite dynamic saltmarsh with indicators of erosion and accretion both present. These processes mean that small amounts of *Salicornia* flats are likely to persist.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any significant habitat loss at this site due to erosion or any other factors during the current monitoring period. A small area has been infilled at Lisheenacooravan. However, this only accounts for about 0.01-0.02% of the overall ASM habitat found in Ballysadare Bay.

ASM is developing on quarry spoil at Abbeytown. This is a positive indicator for extent at this site.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Thirty-three monitoring stops were carried out around the site and seven stops failed (21%). Most of the attributes required for favourable conservation status reached their targets. Most of the ASM saltmarsh is in good condition (80%). Some sections around the site are damaged, mainly by heavy cattle, horse and sheep grazing levels. Variable management in different enclosures means that some ASM at Portavaud was very heavily damaged by cattle poaching. Horse trampling has damaged saltmarsh at Lisheenacooravan. Heavy sheep grazing has created localised damage at Carrownacreevy. There is localised poaching damage from cattle grazing at Ballindrd, Brughmore and Ballydrehid. There is also some minor damage from other activities such as coastal protection, infilling and tracks across the marsh. Eutrophication from sewage outflow at Ballysadare is likely to influence the vegetation assemblage at Abbeytown and Ballydrehid, possibly by increasing the extent of Sea Club-rush at the expense of ASM vegetation.

The ASM found at this site is quite diverse, particularly as this is such a large site. This means it has developed in different environmental conditions, such as the more estuarine conditions of Ballydrehid, on deep mud and peat at Brughmore and on variable substrate

influenced by under-lying glacial deposits from Carrownacreevy to Portavaud. The saltmarsh topography was also quite variable due to the wide range of conditions. All of the main ASM vegetation zones are represented at this site. The sward height varied across the site due to different management conditions. There is also some development of transitional communities at Brughmore and Ballydrehid which increase the overall diversity of the habitat. The ASM is also just one habitat of several habitats that make up the coastal zone around the site and there are natural unmodified transitions between these habitats, which include MSM and dry coastal grassland. ASM is also found around the lagoons at Portavaud.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Current heavy grazing levels are currently damaging some selected areas of habitat and this is likely to continue in the future. Not all the grazing is damaging however and a significant amount of habitat that is grazing is not significantly damaged. Eutrophication is likely to continue to have some influence of the vegetation assemblage at Abbeytown. The saltmarsh at this site is developing on quarry spoil. This saltmarsh may increase in extent in the future but sewage discharges will continue to have a negative impact of the development of this saltmarsh. There is a proposal to upgrade the sewage treatment plant at Ballysadare and this will have a positive impact on the conservation status of the saltmarsh when it goes online.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any significant habitat loss at this site due to erosion or any other factors during the current monitoring period.

5.4.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Twenty-one monitoring stops were carried out around the site and one stop failed. Most of the attributes required for favourable conservation status reached their targets. Most of the MSM saltmarsh is in good condition. This habitat is less vulnerable to damage from heavy grazing levels. There are some localised damage to MSM at Potavaud and Ballindrd. The MSM at Brughmore showed signs of long-term heavy grazing by cattle in the past and was quite tussocky in places, but it was currently in good condition.

The MSM at this site is quite diverse. There are good examples of well-developed MSM at Brughmore and Ballydrehid. Both these marshes contain extensive transitional vegetation with zonation to low mounds with wet grassland and frequent development of brackish vegetation mosaics. Zonation within the MSM is well-developed due to the underlying topography of both these sites. The structure of both these marshes is well developed although there have been some modifications to Brughmore from drainage channels. These are all positive features. Eutrophication from sewage outflow at Ballysadare may be having some negative influence to the MSM at Ballydrehid by promoting the spread of Common Reed into the MSM. This is a negative feature.

5.4.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Current heavy grazing levels are currently damaging some small parts of the MSM and this is likely to continue in the future. Not all the grazing is damaging however and a significant amount of habitat that is grazed is not significantly damaged. There are few other damaging activities affecting this site.

Eutrophication is likely to continue to have some influence of the development of MSM and Common Reed mosaics at Ballydrehid. Sewage discharges at Ballysadare will continue to have a negative impact of the development of this saltmarsh. There is a proposal to upgrade the sewage treatment plant at Ballysadare and this will have a positive impact on the conservation status of the saltmarsh when it goes online.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

NPWS (2007). Conservation Assessment of Coastal lagoons in Ireland. NPWS. www.npws.ie.

Oliver, G. A. (2005). Seasonal changes and biological classification of Irish coastal lagoons. Ph. D Thesis. University College Dublin. www.irishlagoons.ie

8 APPENDIX I

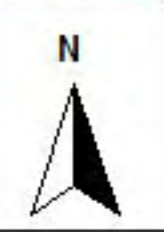
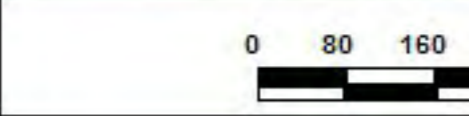
Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.012	0.012				
2	Spartina swards						
3	1330 Atlantic salt meadow	36.473		36.473			
4	1410 Mediterranean salt meadow	34.869			34.869		
5	ASM/MSM mosaic (50/50)	0.083		0.041	0.041		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic	1.186		0.593			
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	39.916					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	19.702					
19	1330/rocky shore mosaic	0.250		0.06			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	132.479	0.012	37.114	34.911		



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM (CM2) mosaic
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)



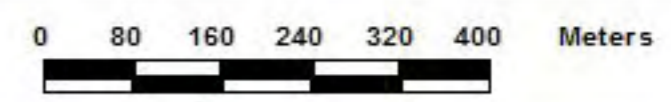
Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM (CM2) mosaic
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops

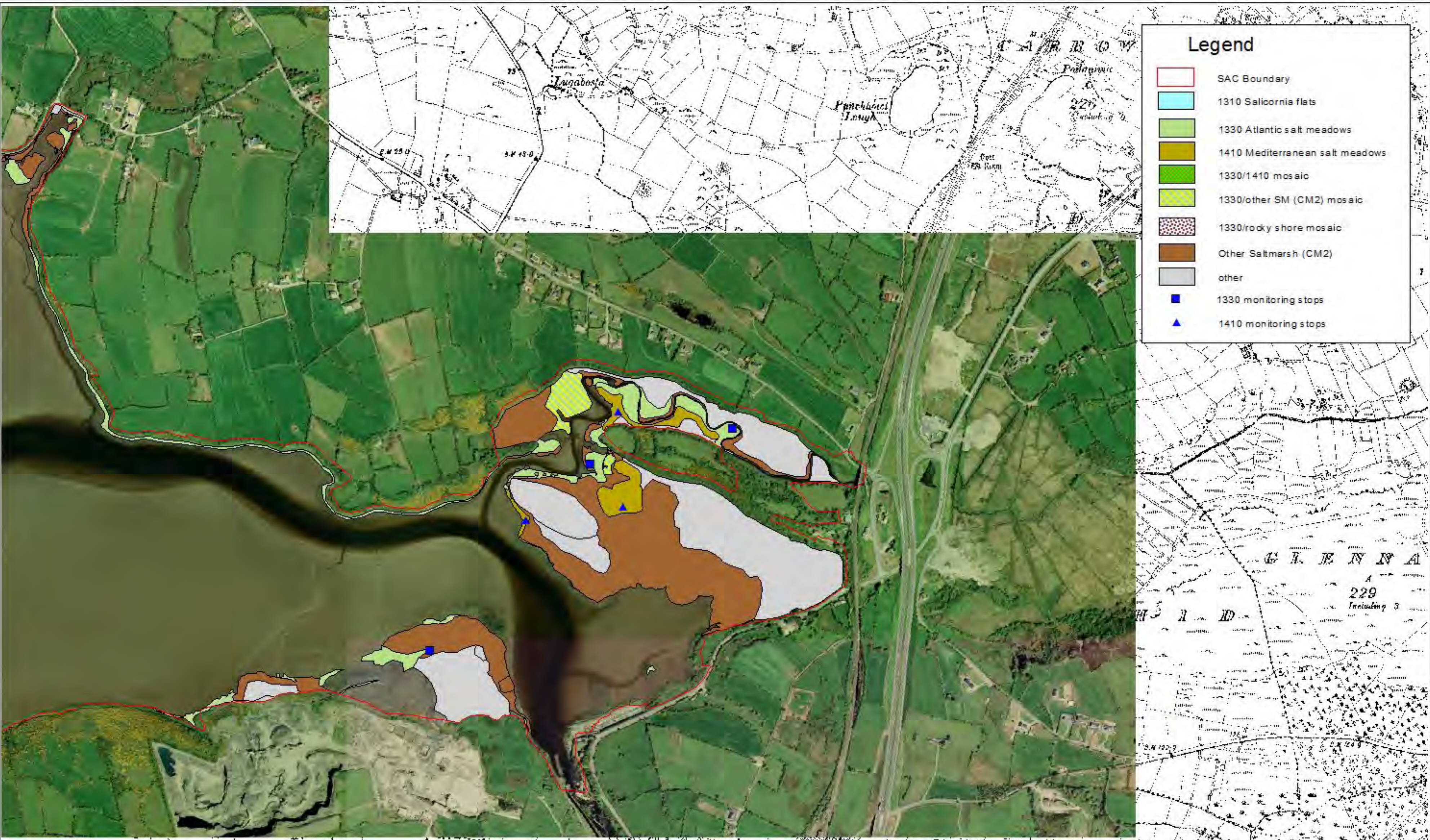


Legend

	SAC Boundary
	1310 Salicornia flats
	1330 Atlantic salt meadows
	1410 Mediterranean salt meadows
	1330/1410 mosaic
	1330/other SM (CM2) mosaic
	1330/rocky shore mosaic
	Other Saltmarsh (CM2)
	other
	1330 monitoring stops
	1410 monitoring stops



This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM (CM2) mosaic
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM (CM2) mosaic
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- 1330/other SM (CM2) mosaic
- 1330/rocky shore mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Castleconor

1 SITE DETAILS

SMP site name: Castleconor	SMP site code: SMP0026
Site name (Curtis list): Castleconor	CMP site code: not surveyed
	Site No: (Curtis list): 39
NPWS Site Name: Kilalla Bay/Moy Estuary	Dates of site visit: 12/09/2006
NPWS designation cSAC: 458	MPSU Plan: Draft 2 (old format)
pNHA: 458	
SPA: Kilalla Bay/Moy Estuary SPA 4036	
County: Sligo	Discovery Map: 24 Grid Ref: 126020, 324320
6 inch Map No: Ma022, Si022	Aerial photos (2000 series): 01248-a, 01248-b
Annex I habitats currently designated for Kilalla Bay/Moy Estuary	
cSAC:	
<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)	
Other SMP sites within this cSAC/pNHA: Ross, Rusheens, Bartragh Island	
Saltmarsh type: Bay/Fringe	Substrate type: Sand/Gravel

2 SITE DESCRIPTION

Castleconor saltmarsh is located on the eastern side of the Moy River Estuary on the Sligo/Mayo border. It is a relatively small site. The surveyed area included two small coves/bays connected by a narrow band of saltmarsh, at Castleconor and at Killanly Rectory. A narrow band of saltmarsh continues to the north and south of this site along the shoreline.

One Annex I habitat, Atlantic salt meadows (ASM), is found at this site. This habitat is listed as a qualifying interest for Killalla Bay/Moy Estuary cSAC. Most of the saltmarsh habitat is included within the Kilalla Bay/Moy Estuary cSAC/pNHA. Parts of the habitat are outside the cSAC boundaries due to the use of the old 6 inch maps to draw boundaries, and there are small errors in rectification between the 6 inch maps and the 2000 aerial photos. The intertidal areas in the Moy Estuary are part of Kilalla Bay/Moy Estuary SPA (Site code 4036). This includes parts of the saltmarsh where the boundaries overlap. The cSAC and SPA are important for wintering waders and wildfowl.

3 HABITATS

3.1 General description

Curtis and Sheehy-Skeffington (1998) classified this site as a bay type saltmarsh. However, most of the saltmarsh along the shoreline is found in a narrow band (10-20 m wide). There is some widening of the saltmarsh in Castleconor Bay with up to 50 m between the seaward and the landward edge at the widest part and this is a typical bay-type saltmarsh. However, this is still a relatively small saltmarsh (Table 3.1). Small streams enter both the bays. The saltmarsh occurs adjacent to improved agricultural grassland with a hedgerow/rocky ditch/fence line marking the beginning of the terrestrial land along the bank.

Table 3.1. Area of EU Annex I habitats listed at Castleconor.

EU Code	Habitat	Area (ha)
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	1.67*
	Total	1.67

*note that saltmarsh habitat continues outside the surveyed site.

3.2 Atlantic salt meadows (H1330)

This is the only Annex I saltmarsh habitat recorded along this part of the shoreline. The vegetation is typically dominated by Common Saltmarsh-grass (*Puccinellia maritima*) with frequent Sea Aster (*Aster tripolium*), Sea Milkwort (*Glaux maritima*), Sea Arrowgrass (*Triglochin maritima*), Greater Sea-spurrey (*Spergularia media*), Sea Pink (*Armeria maritima*), Red Fescue (*Festuca rubra*), and Sea Plantain (*Plantago maritima*). Occasional species include Flax-flowered Sea Lavender (*Limonium humile*) and Common Scurvygrass (*Cochlearia officinalis*). There is some zonation of vegetation. A zone dominated by Saltmarsh Rush (*Juncus gerardii*) occurs at the landward side of the other vegetation in places but this may also continue to the seaward edge. Finally, Creeping Bentgrass (*Agrostis stolonifera*) and Twitch (*Elytriga repens*) occurs along the upper saltmarsh boundary. A line of tidal litter marks the upper boundary from the high spring tides.

Much of the lower seaward edge of the saltmarsh is rocky in places and a low saltmarsh cliff is present. The creek and pan structure is generally poor as the

saltmarsh is relatively narrow. No Sea Rush (*Juncus maritimus*) was recorded along this part of the shoreline. Occasionally hedgerow, scrub and mature trees overhang the saltmarsh. The back of the northern cove/bay contains brackish/freshwater marsh.

4 IMPACTS

Overall, the level of grazing is low with no grazing on most of the site (140) (Table 4.1). Part of the northern cove/bay may be grazed at times as it was badly poached by cattle (143). Some rubble was dumped on saltmarsh (422) at the landward side of the southern bay at Castleconor (probably outside the cSAC boundary). This may be used for construction foundations.

Table 4.1. Intensity of various activities on saltmarsh habitats at Castleconor.

EU Habitat Code ¹	Activity code ²	Intensity ³	Impact ⁴	Area affected (ha)	Location of activity ⁵
1330	140	C	0	1.67	Inside
1330	143	A	-1	< 0.01	Inside
1330	422	A	-2	< 0.01	Inside

¹ EU codes as per Interpretation Manual.

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 Atlantic salt meadows (H1330)

There is no historical information about the saltmarsh habitat at this site. The extent is not likely to have changed significantly in the recent past. A small area of saltmarsh has been lost, as rubble has been dumped on it. However, this is < 1% of the total saltmarsh area so the overall extent is assessed as *favourable* (Table 5.1).

The habitat structure and functions is assessed overall as *favourable* (Table 5.1). One monitoring stop was recorded in an area that was representative of the whole site. The species diversity is typical of this type of saltmarsh with most of the typical species present. The creek and pan structure is poor but this is to be expected on a relatively narrow saltmarsh. The absence of grazing on most of the site means that sward structure is varied and the plant ground cover is okay. Overall there were no

major negative indicators. A small area of saltmarsh was badly poached and would fail the targets for Atlantic saltmarsh but this is a minor area (< 1% of the site area).

The future prospects of this site are assessed as *favourable*. Small parts of the saltmarsh are excluded from the cSAC and are therefore more vulnerable to dumping, development etc. Some redrawing to the cSAC boundaries is required to reflect changes in the shoreline and discrepancies between the 6 inch map and the 2000 aerial photos.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Castleconor.

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



Legend

- SAC boundary
- 1330 Monitoring stops

Habitats

- 1330 Atlantic salt meadows
- other



**Saltmarsh
Monitoring Project**

Castleconnor

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)

Míre na leathneacha ar an karscál seo ach níl garshuímhach ginearálta. Féidir athrú na míre seo arís arís arís na geonair comharthaí. Maicsearthaí d'áthar na cúlthearachtaí. Ordainís le deat ón Rialtas. (Cealtuar: Ulmh, 5953)

**Killala Bay/Moy Estuary
cSAC (000436)**

SMP Code:	Map produced by: SMP 2006
SMP0026	Map Version: 1



Scale: 1:3359



Cummeen Strand

1 SITE DETAILS

SMP site name: Cummeen Strand	SMP site code: SMP0119
Dates of site visit 15-16/07/2008	CMP site code: N/A
SM inventory site name: Cummeen Strand	SM inventory site code: 36
NPWS Site Name: Cummeen Strand/Drumcliff Bay (Sligo Bay)	
NPWS designation cSAC: 627	MPSU Plan: old format plan available
pNHA: 627	SPA: 4035
County: Sligo	Discovery Map: 16 Grid Ref: 163890, 336583
Aerial photos (2000 series O 0951-C,D; O 0952-C; O 1010-A,B; O 1011-A)	6 inch Map No: SI 014
Annex I habitats currently listed as qualifying interests for Cummeen Strand/Drumcliff Bay (Sligo Bay) cSAC:	
None listed	
Other SMP sites within this SAC/NHA: Drumcliff Bay	
Saltmarsh type: Sandflats	Substrate type: Sand

2 SITE DESCRIPTION

Cummeen Strand is located along the southern side of Sligo Harbour in Co. Sligo. The west part of site is located adjacent to Sligo Airport and 0.7 km north of Strandhill. The survey site stretches east along the shoreline for 3 km. Sligo Harbour is quite shallow and extensive mud and sand flats are exposed at low tide. The sand flats found adjacent to Cummeen Strand saltmarsh are called Dorrins Strand and Cummeen Strand. There is a causeway across these flats to Coney Island from one access point along this survey site. The adjacent landscape is generally quite steep, with moderate-steep slopes from adjacent farmland and woodland down to the shoreline, particularly towards the west of the site. These slopes form the lower slopes of Knocknarea Hill, which overlooks the site. There is some more lower-lying land towards the west side near Strandhill. There is scattered habitation along this shoreline including several farm houses. A private road to Dooagleragh Lodge passes along the upper boundary of the saltmarsh at the west side of the site and crosses the end of the airport runway.

Saltmarsh has formed generally as a band of habitat of varying width along the shoreline. The site is divided into two main sections by a rocky outcrop at Rinn. This outcrop has increased shelter to both sides to allow saltmarsh to develop on sandy substrates. This saltmarsh has developed adjacent to intertidal sandflats.

Cummeen Stand saltmarsh is located in Cummeen Strand/Drumcliff Bay (Sligo Bay) candidate Special Area of Conservation (cSAC). This coastal cSAC includes the two northern inlets of Sligo Bay, Sligo Harbour and Drumcliff Bay (Ballysadare Bay being the other inlet, which is designated as an individual cSAC). Sligo Harbour is a large estuary of the Garavoge River, which flows through Sligo Town. The cSAC is important for the large areas of intertidal

flats found in both these inlets. These flats also support Eelgrass beds and large wintering wader and wildfowl populations that visit this area. The cSAC also includes coastal habitats such as several sand dune complexes on Coney Island at Killasprug Point and Rosses Point. Three Annex I saltmarsh habitats are found at Cummeen Strand, *Salicornia* flats, Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM). While the saltmarsh at both Cummeen Strand and Drumcliff Bay is well-developed, none of these habitats are listed as qualifying interests for this cSAC. Drumcliff Bay is an additional saltmarsh listed on the saltmarsh inventory (Curtis & Sheehy-Skeffington 1998) found in this cSAC which was also surveyed as part of the SMP. A second saltmarsh is located at the southern side of Strandhill, but is part of Ballysadare Bay cSAC.

One species of local distinctiveness, Saltmarsh Flat-rush (*Blysmus rufus*) was found at this site and forms a distinctive community in the upper marsh in places.

Most of the saltmarsh habitat is found within the digital cSAC boundary. There is some habitat excluded from the cSAC. The upper shoreline boundary as mapped by the old OSI 2nd edition 6 inch map is taken as the boundary of the cSAC along much of the estuary. Small rectification differences between the OSI 6 inch map and the OSI aerial photos means that some minor saltmarsh habitat extends beyond this boundary in places.

The site can be accessed at several points including at the causeway to Coney Island and the private road adjacent to the airport.

3 SALTMARSH HABITATS

3.1 General description

The saltmarsh can be divided into two main sections. The majority of this saltmarsh is Atlantic salt meadows (ASM) (Table 3.1). The largest section is found in the east of the site and extends from a small rocky headland at Rinn to Cummeen Strand to the east. Saltmarsh has developed along the shoreline in a low-lying zone between 50-100 m wide and extending for 2 km in a continuous band. Most of the saltmarsh is grazed and is divided into several different enclosures by wire fences.

The saltmarsh eventually pinches out towards the east side where the shoreline becomes quite steep, and rocky shore continues along the shoreline. Most of the saltmarsh is perched on a mud platform with a relatively tall saltmarsh cliff on places along the seaward side, adjacent to the sandflats. Some of the saltmarsh at the east side of the site displays reverse zonation and there is a low ridge along the front of the marsh with lower zone communities behind this ridge. This cliff is up to 1 m high in places but is generally less than 0.5 m high and there are frequent signs of erosion along this boundary. The western section is more fragmented and raised mud platforms are divided by intertidal channels. Some of these channels extend around the back of the platforms to create small 'islands' of saltmarsh habitat.

There is some diverse zonation at this site with the development of a band of other saltmarsh vegetation dominated mainly by Common Reed (*Phragmites australis*) in the transitional zone between the Annex I saltmarsh habitats and the grasslands on the adjacent hillside. This vegetation type is mapped as Non-Annex I vegetation (CM2) in correspondence with SMP project classification and is indicative of brackish conditions. It is likely to be due to

freshwater runoff and seepage from the adjacent hillside. The Common Reed stands have spread into the some of the mudflat channels that bisect some of the raised platforms. These stands also contain Sea Aster (*Aster tripolium*), Sea Plantain (*Plantago maritima*), Common Scurvy-grass (*Cochlearia officinalis*), Common Saltmarsh-grass and Sea Milkwort (*Glaux maritima*), particularly at the lower seaward side of these stands. Higher up, denser stands of Common Reed have developed that are low in diversity. There is also some development of Sea-Club-rush (*Bolboschoenus maritimus*) stands in places and Grey Club-rush (*Schoenoplectus lacustris* spp. *tabernaemontani*) is also present, but is less frequent. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. Both these species have vegetated some of the pans and drainage channels in the upper marsh near the access to the causeway. The stands of Sea Club-rush also contain Parsley Water-dropwort (*Oenanthe lachenalii*), Autumn Hawkbit (*Leontodon autumnalis*), Sea Arrowgrass (*Triglochin maritimum*) and Creeping Bent (*Agrostis stolonifera*). The boundary between these vegetation types and the adjacent saltmarsh is indistinct in places and there may be a gradual increase in cover of Common Reed or Sea Club-rush along a landward boundary from fairly sparse cover in the upper saltmarsh.

There is also some development of transitional brackish grassland in places with diverse vegetation and a range of saltmarsh and terrestrial species. Species such as False-fox Sedge (*Carex otrubae*), Common Sedge (*Carex nigra*), Long-leaved Plantain (*Plantago lanceolata*), Floating Sweet-grass (*Glyceria fluitans*), False Oat-grass (*Arrhenatherum elatius*), Curled Dock (*Rumex crispus*) and Common Sow-thistle (*Sonchus arvensis*) all appear in this zone in association with saltmarsh species like Saltmarsh Rush (*Juncus gerardii*). Stands of Yellow Flag (*Iris pseudacorus*) are found along the upper boundary in places. Further east the shoreline is quite steep and there is a much narrower zone of transitional habitat between the saltmarsh and the adjacent scrub.

The saltmarsh develops into a narrow band around the rocky headland at Rinn. There is some development of rocky shore/ASM mosaic along this headland. Further west there is more extensive saltmarsh development adjacent to the airport. This saltmarsh has also developed as a narrow band of habitats with gentle slopes from the landward to seaward edge. A private road and track marks the upper boundary of much of the saltmarsh and there is also some transition to wet grassland. Sandflats are also found adjacent to the seaward boundary of the saltmarsh. The landscape adjacent to this area is lower lying and there was some development of sand hills adjacent to this saltmarsh at Killasprugbrone prior to the development of the site as an airport. Some of this saltmarsh is located in a field and is grazed by horses, but the majority of the habitat is not grazed.

Table 3.1. Area of saltmarsh habitats mapped at Cummeen Strand.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.050
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	10.512
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	2.309
	Total	12.871

* note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A small amount of this habitat is found at this site. It is found in several different fragments across the site. It has mainly developed in narrow bands within the intertidal channels that extend into the saltmarsh. These narrow bands and patches are 1-5 m wide and are characterised by sparse cover of Glasswort (*Salicornia* sp.) on mud. Several patches also contain rare Common Saltmarsh-grass and this is one indication of accretion and development of pioneer saltmarsh at some locations. The *Salicornia* flats habitat forms a narrow seaward fringe in front of the saltmarsh at the western end of the site.

3.3 Atlantic salt meadows (H1330)

The ASM at this site is well-developed. Several typical ASM communities have developed on the saltmarsh. As this saltmarsh has developed a relatively uniform band along the shoreline with a gentle seaward gradient, zonation is well developed at this site. Several distinctive zones can be seen in the saltmarsh and the zonation is more complex in places due to natural topological features in the surface of the saltmarsh with low mounds, creeks and depressions present. The saltmarsh structure is also well-developed and there is an intricate network of creeks draining some of the saltmarsh. Some of these creeks seem to have been eroded and widened to form wider channels between saltmarsh platforms. Salt pans are also well developed in parts. The sward height is variable across the saltmarsh due to different grazing levels and some of the saltmarsh surface is badly damaged in places and is quite tussocky.

Much of the saltmarsh in the eastern section of the site is dominated by mid marsh and mid-upper marsh communities. The lower marsh community is poorly developed along the seaward edge of the marsh and only occupies a narrow zone along the saltmarsh boundary. There is some better development of this zone towards the eastern side where some reverse zonation has developed behind a ridge. This low-lying community is dominated by a sward of Common Saltmarsh-grass and also contains Sea Pink (*Armeria maritima*), Sea Aster, Glasswort and Lax-flowered Sea Lavender (*Limonium humile*). The ridge is vegetated by Red Fescue (*Festuca rubra*), Sea Plantain and Sea Pink.

The mid marsh community is dominated by Sea Plantain with varying amounts of Sea Pink, Red Fescue and Sea Arrowgrass. Other species present includes small amounts of Sea Aster, Sea Milkwort, Common Scurvy-grass and Lax-flowered Sea Lavender. There are landward transitions to mid-upper saltmarsh with increased cover of Saltmarsh Rush and Red Fescue with Sea Plantain. The upper marsh is dominated by Red Fescue. Other species that are found in this zone include Creeping Bent, White Clover (*Trifolium repens*), Long-bracted Sedge (*Carex extensa*), Distant Sedge (*Carex distans*), Parsley Water-dropwort, Buck's-horn Plantain (*Plantago coronopus*) and Autumn Hawkbit are found in this zone. Further west some Common Reed is spreading into upper ASM in places, although it is low in cover.

A second upper marsh community appears close to the landward transition with the appearance of Saltmarsh Flat-rush. This species is found with Red Fescue, Sea Club-rush and Spike-rush species (*Eleocharis uniglumis*). Further west Sea Club-rush extends down into the marsh along some creeks.

Some pioneer vegetation has also developed along the seaward edge of the saltmarsh. Small patches dominated by Common Saltmarsh-grass and containing Sea Plantain are forming on accretion mounds in places.

There are some minor patches of saltmarsh with increased freshwater input. These patches contain several other species such as Wild Celery (*Apium graveolens*) and Marsh Arrowgrass (*Triglochin palustris*) and there are some transitions to freshwater flushes with Fools Watercress (*Apium nodiflorum*).

The ASM also extends along the landward side of some of the stands of Common Reed, in what is an unusual example of zonation. This is best represented by a narrow band dominated by Saltmarsh Rush.

The ASM found at the west side of the site displays a similar structure and zonation, although it is somewhat narrower, is less fragmented and has fewer creeks. Salt pans are well developed. The zones are prominent in this section and the upper zone contains vegetation dominated by Saltmarsh-Flat-rush. Hard Grass (*Parapholis strigosa*) was also noted in the upper zone.

3.4 Mediterranean salt meadows (H1410)

This habitat is found in some scattered patches across the saltmarsh. It is mainly found in the upper saltmarsh in a typical example of zonation with ASM adjacent to its lower boundary. There are some sections as well where the MSM extends to the seaward boundary. The saltmarsh structure is well-developed in some of the larger sections of MSM and the saltmarsh is drained by intricate creeks.

Some zonation was noted within the larger sections of MSM. The lower zone MSM is characterised by scattered tussocks of Sea Rush and contains frequent Sea Plantain and smaller amounts of other typical mid marsh species like Saltmarsh Rush, Lax-flowered Sea Lavender, Sea Aster and Greater Sea-spurrey. There is some development of lower marsh dominated by Common Saltmarsh-grass along small creeks within the MSM. The cover of Sea Rush varies within this habitat and some of the MSM is quite dense. The upper zone MSM is dominated by a mixture of Sea Rush and Red Fescue. Other species present in this community includes Creeping Bent, Autumn Hawkbit, White Clover and Distant Sedge. A community with Saltmarsh Flat-rush appearing with Sea Rush is also present.

Some of the MSM vegetation along the upper boundary is quite species rich in places and species such as Black Bog-rush (*Schoenus nigricans*) and Common Sedge (*Carex nigra*) also appear in the vegetation along the upper boundary where the cover of Sea Rush is patchy in places. Species like False-fox Sedge also appear in the upper transitional zone in places. Ambiguous Rush (*Juncus ambiguous*) was also noted at one location along the upper boundary.

Further west, Common Reed is spreading into the upper MSM creating a mixed sward with Sea Rush and sparse Common Reed. Sea Rush is also colonising the bare mud in intertidal channels between the saltmarsh platforms in the fragmented section toward the west side.

4 IMPACTS AND ACTIVITIES

This site is affected by several impacts and activities (Table 4.1). Most of the saltmarsh is grazed, although it is divided up into different management units with varying grazing intensities (140). The saltmarsh is fenced off from the adjacent sandflats to prevent livestock wandering along the shoreline. Some sections are overgrazed and there are frequent

negative indicators caused by poaching and high grazing intensities (143). Some sections of the saltmarsh are badly damaged and are quite tussocky from sustained heavy grazing levels. Some of the saltmarsh is not grazed at all.

There has been some dumping of old machinery in the past along the seaward edge of the saltmarsh for coastal protection. Tracks (501) are also present along the upper saltmarsh boundary along one section and a track bisects the saltmarsh at the Coney Island causeway. There has also been some dumping and infilling of spoil on the saltmarsh in the past (803) at several access points onto the saltmarsh. Some of this infilling at the causeway to Coney Island has occurred during this monitoring period.

There are frequent indicators of erosion along the seaward side of the saltmarsh, particularly the eastern section (900). Mud mounds, mud terraces and tall saltmarsh cliffs are found along the seaward boundary. Excessive poaching in the past may have exacerbated the erosion in places. There has been measurable retreat of saltmarsh in places when the current extent of the saltmarsh is compared to the extent as mapped by the 2nd edition OSI 6 inch map. The saltmarsh has retreated by up to 20 m in places but generally between 10-15 m during this period. However, there has been no measurable erosion during the current monitoring period, as indicated from a comparison of the 1995, 2000 and 2005 aerial photos. Erosion is assessed as having a low negative impact on a small portion of the saltmarsh. There is a moderate potential for saltmarsh retreat at this site. Erosion is also being balanced to some extent by some accretion.

There are also some indications of recent accretion (910) in places with the development of accretion mounds in places. However, this is very minor. There are signs that the erosion along this site is not persistent and may be cyclical, with periods of saltmarsh growth at times creating lower terraces in front of the main sections.

Some former saltmarsh at the west side of the site has been reclaimed in the past due to the construction of the airport runway. A seawall has been built along the shoreline adjacent to the runway and former saltmarsh behind this area was infilled. A low ridge is present along some of the saltmarsh at the eastern side of the site. There are indications that this ridge was a former embankment related to attempted reclamation of this saltmarsh and it is marked on the 2nd edition OSI 6 inch map. Some drains have been dug across the marsh to aid drainage from adjacent land. These impacts are not assessed as they occurred outside the current monitoring period.

Impacts and activities around the site are mainly related to farmland (102, 120, 140). There is scattered habitation (403) along the shoreline. An airport (505) is located adjacent to the saltmarsh at the west side of the site. Some aquaculture is carried out on Cummeen Strand. These activities have no measurable impact on the saltmarsh, other than those already assessed.

Table 4.1. Intensity of various activities on saltmarsh habitats at Cummeen Strand.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	C	0	2.0	Inside
1330	143	B	-1	3.0	Inside
1330	501	C	-2	0.002	Inside
1330	803	C	-1	0.005	Inside
1330	900	C	-1	1.0	Inside
1330	910	C	+1	0.005	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Cummeen Strand saltmarsh is a moderately sized saltmarsh with several features of notable conservation interest. The vegetation at the saltmarsh is particularly diverse due to the presence of variable transitional vegetation. Some species of local distinctiveness such as Saltmarsh Flat-rush are present at the site. Zonation of saltmarsh communities at this site is particularly well-developed. The structure of much of the marsh is intact but some sections have been damaged by infilling, development and drainage in the past.

The overall conservation assessment of the site is *unfavourable-inadequate*, mainly due to long-term heavy grazing, which has damaged some of the saltmarsh. Not all the site is subject to heavy grazing and most of the habitats are in generally good condition. There are signs of a long-term erosional trend at this site and the saltmarsh has retreated by 20 m in places in the past 100 years. A proposal to upgrade Sligo Airport and extend the runway into the intertidal area at Dorrins Strand will probably not have any direct impact on the saltmarsh. However, this proposal has significant potential to affect tidal currents and accretion/erosion dynamics around the saltmarsh, with unknown impacts on the saltmarsh.

The majority of the saltmarsh habitats found at this site is located within Cummeen Strand/Drumcliff Bay (Sligo Bay) cSAC. An old format NPWS management plan is available for this cSAC but is now out of date.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Cummeen Strand.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions, Future prospects		Unfavourable - Inadequate
Mediterranean salt meadows (1410)	Extent Structure and functions, Future prospects			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

The extent of the habitat is assessed as *favourable*. There is no detailed information about the previous extent of this habitat. There are no indications that there has been any significant loss of habitat due to natural erosion during the current monitoring period.

5.2.1 Habitat structure and functions

The habitat structure and functions of this habitat are assessed as *favourable*. Three monitoring stops were carried out in this habitat and they all passed. Attributes required for favourable conservation status reached their targets. This habitat is in generally good condition. It is found in small patches around the site in pioneer zones and is an indication of dynamic processes such as accretion and erosion acting on the site. Grazing does not affect this habitat due to its position at the lower end of the marsh, which is generally fenced off.

5.2.2 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as erosion and accretion continue in the near future. This habitat is not being affected by any significant negative impacts at present.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of the habitat is assessed as *favourable*. There are no indications that there has been any significant loss of habitat due to natural erosion or land-use changes during the current monitoring period. There has been some dumping on the saltmarsh at several access

points to the site but most of this dumping occurred outside the monitoring period or only affected the transitional or brackish habitats at the landward side of the saltmarsh.

5.3.2 Habitat structure and functions

The habitat structure and functions of this habitat are assessed as *unfavourable-inadequate*. Fifteen monitoring stops were carried out in this habitat and three stops failed. There is some damage to this habitat from long-term heavy grazing that has created areas with heavy poaching or tussocky damaged sward surface.

Several different saltmarsh communities were noted at this site and it also displays excellent zonation between these communities. The saltmarsh structure is also well-developed. The sward height is variable across the site the saltmarsh is divided into several management units and not all the saltmarsh is grazed. There are natural transitions between ASM and other habitats such as MSM and brackish Reed beds at the upper boundary.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. This site is currently being negatively affected by heavy grazing levels in parts of the site, and this is likely to continue in the future. There is also a long-term erosional trend affecting this site. While erosion is quite slow, a long-term trend is likely to reduce the extent of habitat at this site. There are some prospects for saltmarsh retreat in places due to a significant transitional zone along the upper saltmarsh boundary.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The extent of the habitat is assessed as *favourable*. There are no indications that there has been any significant loss of habitat due to natural erosion or land-use changes during the current monitoring period. The MSM is not affected by any of the infilling at this site in the past.

5.4.2 Habitat structure and functions

The habitat structure and functions of this habitat are assessed as *favourable*. Seven monitoring stops were carried out in this habitat and they all passed. The MSM is in generally good condition and is not affected to the same extent by the heavy grazing compared to the ASM. There is some localised damage in places. The species assemblage is typical of this habitat and there is some diverse MSM vegetation present at the site, especially along the upper boundary where terrestrial species appear in the saltmarsh vegetation. There are natural transitions from this habitat to brackish Reed beds. Some of the MSM could be considered a mosaic of MSM and Common Reed or Sea Club-rush in places

5.4.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Current grazing levels are not having a significant impact on this habitat. There are no other damaging activities affecting this habitat significantly

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* 98B, 87-104.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.05	0.05				
2	Spartina swards						
3	1330 Atlantic salt meadow	10.462		10.462			
4	1410 Mediterranean salt meadow	2.309			2.309		
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	4.239					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	2.425					
19	1330/rocky shore mosaic	0.099		0.05			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	20.163	0.05	10.512	2.309		



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/dune mosaic
- Other Saltmarsh (CM2)
- other
- 1310 monitoring stops
- 1330 monitoring stops
- 1410 monitoring stops

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

Drumcliff Bay

1 SITE DETAILS

SMP site name: Drumcliff Bay	SMP site code: SMP0120
Dates of site visit 16-17/07/2008	CMP site code: N/A
SM inventory site name: Drumcliff Bay	SM inventory site code: 35
NPWS Site Name: Cummeen Strand/Drumcliff Bay (Sligo Bay)	
NPWS designation cSAC: 627	MPSU Plan: old format plan available
pNHA: 627	SPA: 4103
County: Sligo	Discovery Map: 16 Grid Ref: 167332, 341260
Aerial photos (2000 series: O 0895-B,D; O 0896-A,B,C,D)	6 inch Map No: SI 008
Annex I habitats currently listed as qualifying interests for Cummeen Strand/Drumcliff Bay (Sligo Bay) cSAC:	
None listed	
Other SMP sites within this SAC/NHA: Cummeen Strand	
Saltmarsh type: Estuary	Substrate type: Mud

2 SITE DESCRIPTION

Drumcliff Bay is located in Co. Sligo, 5 km north of Sligo Town. It is the most northern inlet of the three main inlets that make up Sligo Bay. This inlet is quite shallow and drains at low tide to expose extensive intertidal mud and sandflats. The bay is quite sheltered and is protected at its mouth by a low sand spit that mainly supports embryonic dunes, some fixed dunes and some saltmarsh. The bay is an estuarine site and Drumcliff River flows into the northern side of the bay and an estuarine channel crosses the intertidal flats towards the outer part of Sligo Bay. Farmland surrounds the bay and is mainly made up of improved grassland. There is scattered habitation around the site on both the northern and southern sides but very few dwellings close to the shoreline or the survey site.

Drumcliff Bay is located in a natural valley with higher ground on both the northern and southern sides and the mouth facing west. The bay has an unusual topography in that the main saltmarsh development is on low-lying ground the head of the bay and lying in the basin of the valley. However, the Drumcliff River does not flow through this saltmarsh but links to the bay along the northern side. A much smaller stream flows through this saltmarsh.

The saltmarsh is notable due to its relative height perched on a platform quite high above the adjacent mudflats. The seaward face of the marsh is between 1-2 m above the adjacent flats and some sections are over 2 m higher. This means much of the marsh is a mosaic of upper saltmarsh, transitional brackish habitats and some wet grassland and scrub where mounds are positioned above the influence of the site. There is less actual saltmarsh habitat present at this site compared to the extent as indicated by the Natura 2000 SAC maps. However, the overall site is quite diverse due the range of different vegetation types that has developed at

this site. Much of the marsh has been modified by deep drains that divide it into regular sections.

Drumcliff Bay saltmarsh is located in Cummeen Strand/Drumcliff Bay (Sligo Bay) candidate Special Area of Conservation (cSAC). This coastal cSAC includes the two northern inlets of Sligo Bay, Sligo Harbour and Drumcliff Bay (Ballysadare Bay being the other inlet, which is designated as an individual cSAC). The cSAC is important for the large areas of intertidal flats found in both these inlets. These flats also support Eelgrass beds and large wintering wader and wildfowl populations that visit this area. The cSAC also includes coastal habitats such as several sand dune complexes on Coney Island, at Killasprug Point and Rosses Point. Three Annex I saltmarsh habitats are found at Drumcliff Bay, *Salicornia* flats, Atlantic salt meadow (ASM) and Mediterranean salt meadow (MSM). While the saltmarsh at both Cummeen Strand and Drumcliff Bay is well-developed, none of these habitats are listed as qualifying interests for this cSAC. Cummeen Strand is an additional saltmarsh listed on the saltmarsh inventory (Curtis & Sheehy-Skeffington 1998) found in this cSAC which was also surveyed as part of the SMP.

One species of local distinctiveness, Saltmarsh Flat-rush (*Blysmus rufus*), was found at this site and forms a distinctive community in the upper marsh in places.

The majority of the saltmarsh habitat is found within the digital cSAC boundary. There are only minor amounts of habitat excluded from the cSAC. The upper shoreline boundary as mapped by the old OSI 2nd edition 6 inch map is taken as the boundary of the cSAC along much of the estuary. Small rectification differences between the OSI 6 inch map and the OSI aerial photos means that some minor saltmarsh habitat extends beyond this boundary in places along the southern side of the site.

The site was accessed from both the north and southern sides. The main river channel could not be crossed and the two sides are managed as different units. This access to the southern side from a right of way and the northern side was accessed by crossing farmland, after permission was granted.

3 SALTMARSH HABITATS

3.1 General description

The saltmarsh is mainly found in one large area at the head of the bay. Much of the saltmarsh has developed on peaty mud. This area is divided into two main sections (north and south) by a central river channel that has been canalised in the past. Both sections contain a mosaic of Atlantic salt meadows (ASM and Mediterranean salt meadows (MSM) that have developed in mosaic, the MSM being the more extensive of the two habitats. A very small patch of *Salicornia* flats was found along the seaward side of the marsh on the adjacent intertidal flats. The various habitats were difficult to map as they form a complicated mosaic with each other and also with brackish habitats such as stands of Common Reed (*Phragmites australis*). These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. There is also a significant amount of transitional wet grassland that has developed on low mounds in the marsh and is dominated by Purple Moor-grass (*Molinia caerulea*), but also contains typical MSM species such as Sea Rush (*Juncus maritimus*), Parsley Water-dropwort (*Oenanthe lachenalii*), Autumn Hawkbit (*Leontodon autumnalis*) and Common Scurvy-grass

(*Cochlearia officinalis*). These mounds undoubtedly get some tidal inundation but it is likely to be quite infrequent compared to typical MSM. Some of the higher mounds also contain some scrub and some more typical wet grassland, dominated by Purple Moor-grass and also containing Purple Loosestrife (*Lythrum salicaria*), Soft Rush (*Juncus effusus*) and Compact Rush (*J. conglomeratus*). Sea Rush is still present in this vegetation type adjacent to the Gorse. Around the site there is an extensive amount of transitional or ambiguous vegetation that is difficult to classify as one habitat (saltmarsh or wet grassland) due to the suite of species present.

The natural structure of the saltmarsh has been significantly modified by deep drainage channels that divide the site into several sections. The construction of the drainage channels predates the drawing of the 2nd edition OSI 6 inch map but they have definitely been deepened and cleaned out since then. Much of the ASM is distributed along the front of the marsh but it is also found along the main drainage channels through the marsh and at the landward side of the MSM in places. Its distribution along the drains is probably due to disturbance caused by the drainage. Most of the saltmarsh is distributed along the main river channel and further east there is transition to higher ground and development of Reed Beds, diverse wet grassland and Gorse scrub. There are frequent indications of some peat development in places and in the vegetation. Natural and man-made brackish channels containing Sea Club-rush (*Bolboschoenus maritimus*) and other saltmarsh species still extend into these areas to create a complicated mosaic of habitats. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

A low ridge is also present close to the front of part of the marsh. This ridge is vegetated by Twitch (*Elytrigia repens*)-dominated vegetation and contains some other terrestrial species. This vegetation has been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. MSM vegetation is also found on a lower terrace compared to the rest of the marsh along the seaward side of this ridge and this may be an indication of an accretional event in the past.

A narrow band of saltmarsh extends along both the northern and southern shorelines to the mouth of the bay. The saltmarsh habitat extends up the Drumcliff River channel and also forms narrow bands (< 5 m wide). This saltmarsh is a mosaic of ASM and MSM with some sections being dominated by either habitat. Saltmarsh extends as a narrow fringe around the edge of bay.

Table 3.1. Area of saltmarsh habitats mapped at Drumcliff Bay.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.037
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	7.015
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	13.739
	Total*	20.792

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A small patch of this vegetation type is found on a sandy bank at the mouth of the main river channel on the sandflats adjacent the ASM. This vegetation is dominated by patches of

Glasswort on muddy sand. There are also some patches with frequent Sea Aster present and small amounts of Lax-flowered Sea Lavender (*Limonium humile*), Greater Sea-spurrey (*Spergularia media*) and Common Saltmarsh-grass (*Puccinellia maritima*). There are indicators of pioneer ASM and some of this vegetation could be classed as this vegetation type, although it is not dominant. The presence of this vegetation is some indication of active accretion near the mouth of the river.

3.3 Atlantic salt meadows (H1330)

The ASM on the main part of the saltmarsh is dominated by grassy upper marsh communities. Like the MSM there are more frequent transitional indicators found in this ASM compared to other site, due to the position of the marsh at a somewhat higher level above the Mean Tide Level. Some diverse transitional ASM vegetation has developed in places, particularly towards the more brackish areas along the upper saltmarsh boundary. The structure of the site with old drainage channels, land-made ridges and old tracks has also modified the structure of the ASM in places and affected the zonation and development of ASM communities. The overall ASM is still quite diverse and there are examples of other typical ASM communities around the site including lower and mid marsh vegetation along the narrow fringe of saltmarsh that extends along the shore.

Much of the ASM is quite grassy and is dominated by Red Fescue and Saltmarsh Rush with smaller amounts of Creeping Bent, although this latter species may dominate some sections. White Clover is occasionally frequent. Other species present in low amounts include Sea Plantain, Common Scurvy-grass, Sea Milkwort, Autumn Hawkbit, Parsley Water-dropwort, Sea Pink and Sea Arrowgrass. This ASM also contains occasional transitional indicators that are nonetheless widely scattered through the ASM, including False Fox Sedge, Brookweed and Marsh Ragwort. Distant Sedge (*Carex distans*), Long-bracted Sedge (*Carex extensa*) and Saltmarsh-flat Sedge (*Blysmus rufus*) are all found within the ASM at the northern side of the site close to the upper boundary where there is transition to stands dominated by Sea Club-rush. Fleabane (*Pulicaria dysenterica*) was also noted along the upper boundary.

There is a subtle change from some of the low-sward ASM found along the back of the marsh and extending along the drains to wet grassland with more prominent Glaucous Sedge (*Carex flacca*), Lesser Spearwort (*Ranunculus flammula*), Marsh Pennywort (*Hydrocotyle vulgaris*), and Bog Pimpernel (*Anagallis tenella*). This grassland is also closely cropped so it is difficult to map the upper boundary of the ASM in places. Transitional type vegetation where these species appear with typical saltmarsh species is also present. Ditches (earth-banks) along these drains also complicate the zonation with Gorse growing on the ditches.

More typical mid-marsh vegetation dominated Sea Plantain, Red Fescue and Sea Pink is found on the lower terrace along the seaward side of the marsh and along the narrow fringe at the north side of the bay. This community also contains occasionally dominant Sea Milkwort, Sea Arrowgrass, Lax-flowered Sea Lavender and Sea Aster. This narrow fringe contains typical narrow zones along a moderate slope. Mid marsh vegetation transitions to mid upper marsh vegetation dominated by Saltmarsh Rush and Red Fescue and also containing White Clover, Sea Plantain, and small amounts of Sea Arrowgrass, Long-bracted Sedge, Parsley Water-dropwort and Autumn Hawkbit. Saltmarsh Flat Rush is also occasionally present in this zone and may be frequent in cover. These areas are not grazed and the sward cover is quite variable depending on the community present but is dominated by a low sward.

Small patches of Spike-rush (*Eleocharis uniglumis*)-dominated vegetation are also found in the ASM towards the north-east corner of the site. This species is found in association with Saltmarsh Rush, Sea Plantain and Brookweed. This type of vegetation occurs in low depressions surrounded by more typical wet grassland type vegetation.

3.4 Mediterranean salt meadows (H1410)

The MSM at this site is notable as it is somewhat more diverse than other more typical MSM found at other sites. This is due to the frequent transitional species also found in the MSM. This is because much of the MSM has developed on a relatively high platform above the adjacent intertidal flats. Much of this ground seems to get less tidal influence compared to more typical MSM. The variable topography of the marsh also introduces zonation to the MSM vegetation, with landward transitions along mounds to more typical wet grassland-type vegetation. Sea Rush may appear in areas mapped as wet grassland, but Sea Rush-dominated vegetation was generally classified as MSM at this site. The mapped MSM will also include some amounts of more typical wet grassland due to the complex topography and mosaic of habitats that has developed.

While the overall structure of the site has been modified by the creation of the drainage channels, the MSM still contains sections with natural structure including pans, creeks vegetated, depressions and mounds.

The MSM is quite tussocky in places and is characterised by Sea Rush amongst frequent Red Fescue, Saltmarsh Rush and Creeping Bent. MSM dominated by dense Sea Rush is also present and dominates some large areas. There is some typical MSM found on a lower terrace along the front of the marsh and in depressions through the marsh that contains sward dominated by dense Sea Rush. Other species found in the MSM include Sea Plantain, Sea Milkwort, Sea Aster, Common Scurvy-grass, Autumn Hawkbit, Parsley Water-dropwort, Sea Arrowgrass, Spear-leaved Orache, White Clover and Sea Pink. More typical MSM also extends back into the marsh along the drains and along low-lying depressions.

Much of the MSM found at this site contains more frequent transitional indicators not usually found frequently in MSM. These species are found on low mounds and higher platforms surrounded by more typical MSM vegetation and some species are widely distributed in the MSM. These include Purple Moor-grass, Marsh Ragwort (*Senecio aquaticus*), False-Fox Sedge (*Carex otrubae*), Curled Dock (*Rumex crispus*), Creeping Buttercup (*Ranunculus repens*), Jointed Rush (*Juncus articulatus*), Long-leaved Plantain (*Plantago lanceolata*), Ragged Robin (*Lychnis flos-cuculi*), Marsh Thistle (*Cirsium palustre*), Marsh Arrowgrass (*Triglochin palustre*), Birdsfoot (*Lotus corniculatus*), Sea Mayweed (*Tripleurospermum maritimum*), Yorkshire Fog (*Holcus lanatus*), Sweet-vernal Grass (*Anthoxanthum odoratum*), Bush Vetch (*Vicia sepium*), Marsh Bedstraw (*Galium palustre*), Red Clover (*Trifolium pratense*), Silverweed (*Potentilla anserina*), Twitch, Tall Fescue and Sea Club-rush. Hummocks in the transitional marsh also contain frequent moss cover with *Rhytidiadelphus squarrosus* prominent. All these species can be found in association with Sea Rush, which may be lower in density (20-30%) compared to the denser sward found in more typical marsh. Upper saltmarsh species such as Creeping Bent, Red Fescue and White Clover are also prominent in much the vegetation. Other species such as Sea Milkwort, Sea Plantain, Brookweed (*Samolus valerandi*), Autumn Hawkbit and Parsley Water-dropwort are also occasional in much of the vegetation. Sea Club-rush has infilled some drains and creeks. Grey Club-rush (*Schoenoplectus lacustris* spp. *tabernaemontani*) is also present on the site in some stands within pans towards the back of the marsh.

The southern section of the marsh contains several large areas of MSM that are divided by bands of ASM and the large drainage channels. There is a general gentle landward gradient from the lower drainage channels to the centre of these larger patches of MSM. This gradient also affects the zonation of the MSM and transitional species like Purple Moor-grass appear along this gradient and gradually become more abundant towards raised areas within this MSM.

There is also some Sea Rush colonising in the mud at the base of the higher saltmarsh cliff. This is an example of a pioneer saltmarsh community and the Sea Rush has created a monoculture with a dense sward in these patches with few other saltmarsh species present.

4 IMPACTS AND ACTIVITIES

Several impacts and activities have affecting this site. The main impact is grazing (140). The saltmarsh is divided into several management units with no access between the northern and southern halves. Much of the southern half of the marsh was being grazed by cattle. There was some localised damaged from poaching in places.

Attempts have been made in the past to improve and drain this marsh, with little success. The structure of the marsh has been significantly modified by the construction and deep drainage channels that divide the site into several sections. The northern side has a series of deep drains that cut across a series of older drainage channels that have been infilled. One grassy ridge along one of these old drains may have been the result of an attempt to create a causeway across the site in the past. The drainage has significantly modified the structure of the marsh, with the distribution of ASM along the edges of the internal channels mainly as a result of this drainage and disturbance along the edges of the drains. Some of the larger drains have been modified and cleaned in the past 5 years. One land-owner indicated that regional NPWS staff stopped drainage works to the channels on the site in the past few years (810).

There are some indications of erosion (900) in the past along the seaward side of the site. A tall saltmarsh cliff is present and there are isolated peat hags and eroded peat and mud platforms along the seaward edge. A comparison of the current extent of saltmarsh to that mapped by the OSI 2nd edition 6 inch map shows that the saltmarsh has retreated somewhat during this period. Small parts of the seaward edge have retreated by about 10 m, but not all the boundary has retreated. However, there was no measurable erosion during the current monitoring period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh and is being balanced by some accretion.

There are also more recent indications of accretion (910) along the seaward side of the marsh some saltmarsh has developed on a lower terrace at the base of the older saltmarsh cliff. Some pioneer saltmarsh vegetation is present and Sea Rush is spreading onto the adjacent mudflats. There are also minor patches of *Salicornia* flats present along this zone, which is indicative of accretion.

Common Cordgrass (*Spartina anglica*) has been recorded from the outer part of Drumcliff Bay in the past. Several clumps developed into a sward 10 x 10 in size on intertidal flats adjacent to the area used for aquaculture. However, these were successfully removed during the 1980's (Don Cotton pers. comm. 2009). This is one of the only examples of successful eradication of this species in Ireland.

Impacts and activities around the site are mainly related to farming (102, 120, 140). There is also scattered habitation around the site (403) and some tracks (501). Aquaculture is carried out at the head of the bay. These activities have no measurable impact on the saltmarsh at this site.

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

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1310	910	C	+1	0.037	Inside
1330	140	C	0	5.0	Inside
1330	810	B	-1	4.0	Inside
1330	900	C	0	0.5	Inside
1330	910	C	0	0.5	Inside
1410	140	C	0	10.0	Inside
1410	810	B	-1	7.0	Inside
1410	900	C	0	0.5	Inside
1410	910	C	0	0.5	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Drumcliff saltmarsh is a moderately sized saltmarsh with several features of notable conservation interest. This marsh contains a wide range of different vegetation communities. The diversity of this site has been enhanced by its relative position above seal level, which means that much of the marsh contains more transitional upper saltmarsh vegetation than seen at other sites. Both the ASM and MSM contain frequent transitional indicators. The varied topography also increases the diversity and zonation on the site. There are transitions to wet grassland and scrub within the marsh and there is also extensive development of brackish stands of Common Reed and Sea Club-rush.

The overall conservation status of this site is assessed as *favourable* (Table 5.1). Much of the site is grazed but the grazing intensity is not having a significant damaging impact on the site. Some localised poaching was noted. The structure of the site has been significantly

modified by drainage in the past. Deep drainage channels divide the marsh into several sections. These drains have also been cleaned and modified over the intervening period. This drainage is still having a residual impact on the saltmarsh but is not assessed as they were constructed prior to the current monitoring period.

The majority of the saltmarsh habitats found at this site is located within Cummeen Strand/Drumcliff Bay (Sligo Bay) cSAC. An old format NPWS management plan is available for this cSAC but is now out of date.

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

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent, Structure and functions Future prospects			Favourable
Mediterranean salt meadows (1410)	Extent Structure and functions, Future prospects			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

The extent of this habitat is assessed as *favourable*. Only a small area of habitat is present. There is no information available on the previous extent of this habitat at this site. There are no indications of any habitat loss at this site due to erosion or any other factors.

5.2.1 *Habitat structure and functions*

The structure and functions of this habitat are assessed as *favourable*. One monitoring stop was carried out in this habitat and is passed. This habitat is not being affected by any damaging activities and is in good condition. It has developed along an accreting zone at the mouth of the main river channel.

5.2.2 *Future prospects*

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as erosion and accretion continue in the near future. These processes mean that small amounts of *Salicornia* flats are

likely to persist in the future, particularly at the mouth of the river flowing through the main saltmarsh.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any habitat loss at this site due to erosion or any other factors during the current monitoring period. There are some indicators of accretion present at this site. However, there has been no measurable growth of saltmarsh during the current monitoring period. Some of the ASM that has developed along the internal drainage channels is likely to have been related to disturbance and possible spreading spoil taken from the drains in these zones, which has revegetated with ASM vegetation.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Eight monitoring stops were carried out in this habitat and they all passed. All the attributes required for favourable conservation status reached their targets. The saltmarsh is in good condition. A significant portion of the site is grazed but there is only localised poaching damage in places. The grazing intensity is not a significant damaging impact. The ASM is quite diverse and several typical ASM communities were present on the site. The ASM is also notable for the transitional indicators found in much of the vegetation, which increase the diversity. The presence of large areas with transitional species is notable. The structure of the ASM has been significantly modified over the years from drainage works, which have created uniform zones of grassy ASM vegetation along the internal drains. However these are not assessed as significantly affecting the ASM vegetation, as they were created outside the current monitoring period. More recent drainage works have not had a significant impact to the ASM, mainly because it still hasn't recovered from the previous works.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are no significantly damaging activities affecting the saltmarsh at this site at present. There has been some erosion and retreat of saltmarsh at this site in the past but there has also been some accretion and development of pioneer saltmarsh since then. Further drainage works have the capacity to continue to damage the structure of the site and of the ASM. However, these works should be controlled by NPWS as the site is within a cSAC. This marsh may be vulnerable to erosion from winter storms in the bay in the future as the seaward edge is somewhat exposed.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any habitat loss at this site due to erosion or any other factors during the current monitoring period. There are some indicators of accretion present at this site. However, there has been no measurable growth of saltmarsh during the current monitoring period.

5.4.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Ten monitoring stops were carried out in this habitat and they all passed. All the attributes required for favourable conservation status reached their targets. The saltmarsh is in good condition. A significant portion of the site is grazed this is not having a significant impact on the MSM at present. The MSM is quite diverse and is notable for the extent of transitional vegetation found at the site, which has developed as a result of the marsh being at a relatively higher position above the MTL compared to other saltmarshes.

The structure of the MSM has been significantly modified over the years from drainage works, which has totally altered the natural creek and drainage network at this site. However these are not assessed as significantly affecting the MSM vegetation, as they were created outside the current monitoring period. More recent drainage works have not had a significant impact to the ASM, mainly because it still hasn't recovered from the previous works.

5.4.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. There are no significantly damaging activities affecting the saltmarsh at this site at present. There has been some erosion and retreat of saltmarsh at this site in the past but there has also been some accretion and development of pioneer saltmarsh since then. Further drainage works have the capacity to continue to damage the structure of the site and of the MSM. However, these works should be controlled by NPWS as the site is within an SAC. This marsh may be vulnerable to erosion from winter storms in the bay in the future as the seaward edge is somewhat exposed.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.037	0.037				
2	Spartina swards						
3	1330 Atlantic salt meadow	6.255		6.255			
4	1410 Mediterranean salt meadow	12.979			12.979		
5	ASM/MSM mosaic (50/50)	1.519		0.760	0.760		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	16.983					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	1.838					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	39.611	0.037	7.015	13.739		



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- Other Saltmarsh (CM2)
- other
- 1310 monitoring stop
- 1330 monitoring stops
- 1410 monitoring stops

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number: 5953)

Strandhill

1 SITE DETAILS

SMP site name: Strandhill	SMP site code: SMP0118
Dates of site visit 15/07/2008	CMP site code: 133
SM inventory site name: Strandhill	SM inventory site code: 37
NPWS Site Name: Ballysadare Bay	MPSU Plan: old format plan available
NPWS designation cSAC: 622	SPA: 4129
pNHA: 622	
County: Sligo	Discovery Map: 25 Grid Ref: 160880, 334470
Aerial photos (2000 series): O 1010-C; O 1069-A	6 inch Map No: SI 013, 014
Annex I habitats currently listed as qualifying interests for Ballysadare Bay cSAC: None listed	
Other SMP sites within this SAC/NHA: Ballysadare Bay	
Saltmarsh type: Sandflats	Substrate type: Sand

2 SITE DESCRIPTION

Strandhill saltmarsh is located at the mouth of Ballysadare Bay in Co. Sligo. The site is located 1 km south of Strandhill Village. It is associated with a sand dune system that has developed in this area. This sand dune complex has been surveyed by Ryle *et al.* (2009). The sand dunes form a sand spit that shelters Culleenamore Strand, a large area of intertidal sand flats and sandy beach, which has a southern aspect. Part of the sand spit has been developed into a golf course, which is located adjacent to part of the shoreline. This site is an important amenity area and Sligo County Council has provided a small car park for access to the beach. The surrounding landscape is dominated by steep slopes leading to Knocknarea Hill, which overlooks the site. This is quite a rural area. The lower slopes contain various habitats including improved grassland. There is dispersed habitation along minor roads and regional roads that pass through this area.

The saltmarsh is found along the edges of Culleenamore Strand. It is quite fragmented and is mainly found round some rocky outcrops at the south-east corner of the site and in one main area towards the northern side of the site.

Strandhill saltmarsh is part of Ballysadare Bay cSAC. This large coastal cSAC includes this entire bay and is dominated by intertidal and sub-tidal habitats. The intertidal flats provide important habitat for wintering waders and wildfowl that visit this area. The bay is also important for Annex I species like Common Seal, which haul out on sand banks south of this site and all through the bay. The cSAC also includes some coastal habitats like the sand dune complex at Strandhill, which is dominated by the Annex I habitat, fixed dunes. Two Annex I saltmarsh habitats are found at this site, *Salicornia* flats and Atlantic salt meadows (ASM). No saltmarsh habitats are listed as qualifying interests for this site. There is much more extensive saltmarsh habitat found elsewhere in Ballysadare Bay and most of this

saltmarsh was surveyed during the SMP survey. This saltmarsh is listed as one major site, Ballysadare Bay, on the saltmarsh inventory prepared by Curtis and Sheehy-Skeffington (1998).

The entire saltmarsh habitat is located within the digital boundary of the cSAC at this site.

3 SALTMARSH HABITATS

3.1 General description

The saltmarsh habitat at this site is poorly developed and is dominated by Atlantic salt meadows (ASM) (Table 3.1). It is split into two main sections. The largest section is located along the north side of Culleenamore Strand. Saltmarsh has also developed around a rocky knoll at the south-east corner of the site. Fragmented saltmarsh vegetation is also found along the eastern side of the strand that has developed on low-lying rocky outcrops.

The saltmarsh found at the northern end of the site has developed on sand. There is a bare sand zone along the landward side of the saltmarsh, separating the saltmarsh from the adjacent dune vegetation, which is dominated by Marram (*Ammophila arenaria*) along a steep ridge. A narrow strip of this area along the landward side is dominated by embryonic dune vegetation. There are small isolated patches of pioneer saltmarsh vegetation on accreting mounds along the seaward side of this section, indicating it is expanding at present. Pioneer vegetation also extends west and develops into a narrower band.

Some ASM saltmarsh has also developed around rocky knolls located at the south-east corner of the site. This saltmarsh has developed on fairly thin substrate and there are patches with scattered loose rock amongst the saltmarsh vegetation. These knolls are vegetated with coastal grassland including some Marram.

Table 3.1. Area of saltmarsh habitats mapped at Strandhill.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.001
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	1.478
	Total*	1.479

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A very small patch of this habitat type has developed at the south-east corner of the site. This habitat has developed in the channel between the more established saltmarsh platforms. Other a very small patch vegetated by Glasswort (*Salicornia* sp.) on bare sand along the edge of the established saltmarsh was present. This patch is only 2 m wide and several metres long.

3.3 Atlantic salt meadows (H1330)

The ASM is poorly developed at this site. However, there are several zones present. The sward is in good condition and is not grazed. A lower marsh zone dominated by Common Saltmarsh-grass is present. Other species present include Sea Milkwort (*Glaux maritima*),

Sea Aster (*Aster tripolium*), Greater Sea-spurrey (*Spergularia media*), Sea Plantain (*Plantago maritima*) and Sea Pink (*Armeria maritima*). No Lax-flowered Sea Lavender was noted. There is transition from this zone to a mid marsh community dominated by Sea Plantain. This zone has a lower sward height. Further landward there are some mounds with increased cover of Saltmarsh Rush (*Juncus gerardii*) and Red Fescue (*Festuca rubra*). The upper saltmarsh has developed on muddier sand. Mound or small hummocks in the surface topography also increase zonation into the site and creates a mosaic of zones in places. Other species present in the mid-upper zone include Long-bracted Sedge (*Carex extensa*) and Spear-leaved Orache (*Atriplex prostrata*).

Pioneer vegetation is also found at this site. Accretion mounds vegetated by Common Saltmarsh-grass are scattered along the seaward side of the more established saltmarsh and are sometimes some distance seaward (20 m) on the sand flats. Other species present in these mounds include Annual Sea-blite (*Suaeda maritima*).

The saltmarsh structure is poorly developed in both main sections of saltmarsh, which would be expected from such a small site. There are some hollows present that may develop into salt pans. Some of these hollows are filling with sand and are re-vegetating with Saltmarsh Rush and Sea Milkwort (*Glaux maritima*). There is no drainage network but one short creek has developed.

There is patchy ASM developing on low-lying rocky outcrops along the east side of the strand. These patches are on thin substrate and contain Common Saltmarsh-grass, Sea Pink, Sea Plantain, Annual Sea-blite and Sea Couch (*Elytrigia juncea*).

Some of the saltmarsh located at the low-east corner of the site has developed on low-lying platforms that are surrounded by cobbles. There are signs of erosion along the west (seaward side) with erosion mounds present. Several zones are present including mounds containing Common Saltmarsh-grass and more typical mid marsh vegetation dominated by Sea Plantain. Lax-flowered Sea Lavender is present in this section. Towards the centre of these platforms there is some development of Red Fescue-dominated vegetation. The channel between the saltmarsh platforms contains some sand being vegetated by Sea Conch. Similar zones are seen around the higher rocky knolls. The upper transition contained more frequent Spear-leaved Orache. There is also some transition to low-lying mounds containing Sea Campion (*Silene vulgaris* subsp. *maritimus*) and Twitch (*Elytrigia repens*).

4 IMPACTS AND ACTIVITIES

This site is not affected by many significant impacts or activities (Table 4.1). The saltmarsh is not grazed. One of the most significant impacts is horse-riding (622). This activity occurs along the edge of Culleenamore Strand and horses are ridden in the sandy zone between the saltmarsh and the adjacent dune habitats located at the northern end of the strand.

There are some indicators of erosion at this site (900), especially at the south-east corner where former saltmarsh on thin substrates that overlaid rocky outcrops has eroded away. However, it is difficult to quantify this erosion as no saltmarsh habitat was mapped in Culleenamore Strand by the OSI 2nd edition 6 inch map. There has been no measurable erosion at this site during the current monitoring period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh and is being balanced by some accretion.

There are also some indications of accretion (910) at the site. There are indications of saltmarsh growth due to the presence of pioneer habitat along the seaward section. The main section of saltmarsh at the northern boundary of the site has grown somewhat during the current monitoring period, as indicated from a comparison of the OSI 1995, 2000 and 2005 series aerial photos. Growth is about 0.1 ha. This is a positive influence on the extent of this site.

Impacts and activities around the site are mainly related to farming (102, 120, 140). There is also scattered habitation around the site (403). A golf course (601) is located at the northern end of the site adjacent to the saltmarsh. These activities have no measurable impact on the saltmarsh at this site.

Table 4.1. Intensity of various activities on saltmarsh habitats at Strandhill.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	501	C	0	0.01	Inside
1330	622	B	0	0.1	Inside
1330	900	C	0	0.15	Inside
1330	910	C	+1	0.15	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Strandhill saltmarsh is a relatively small site and is poorly developed. It contains few features of conservation interest. Saltmarsh is much better developed in other parts of Ballysadare Bay. The overall conservation status of this site is assessed as *favourable*. The saltmarsh is in good condition and is not grazed by livestock. There are few impacts actively damaging the site. Horse riding is causing some erosion along the upper boundary of one section of the saltmarsh and may be hindering the development of transitional vegetation.

The majority of the saltmarsh habitats found at this site is located within Ballysadare Bay cSAC. An old format NPWS management plan is available for this cSAC but is now out of date.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Strandhill.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent Structure and functions Future prospects			Favourable

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. Only a very small patch of habitat is present. There is no information available on the previous extent of this habitat at this site. There are no indications of any habitat loss at this site due to erosion or any other factors.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. No monitoring stops were carried out in this habitat due to its relatively small extent. However, a visual assessment indicates that it is in good condition. It has developed along an accreting zone adjacent to the established saltmarsh. There are no significantly damaging activities affecting this habitat.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as erosion and accretion continue in the near future. This is a quite dynamic saltmarsh with indicators of erosion and accretion both present. These processes mean that small amounts of *Salicornia* flats are likely to persist.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any habitat loss at this site due to erosion or any other factors. There are indicators of accretion present at this site, particularly at the northern end where there is an accretion ramp and mounds along the seaward edge of the saltmarsh. There is no measurable growth of saltmarsh during the current monitoring period.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Four monitoring stops were carried out in this habitat and they all passed. All the attributes required for favourable conservation status reached their targets. The saltmarsh is in good condition. There is no grazing by livestock at this site. Several saltmarsh zones are present. The saltmarsh structure is poorly developed, but this is typical of a relatively small saltmarsh. Pioneer saltmarsh is present, which is a positive indicator. Horse riding is causing some erosion along the upper boundary of one section of the saltmarsh and may be hindering the development of transitional vegetation. Natural transitions to coastal grassland are present at the rocky knolls in the south-east corner.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as erosion and accretion continue in the near future. There are no significantly damaging activities affecting the saltmarsh at this site at present. There are indications of erosion and accretion, which indicates that the saltmarsh is quite dynamic at this site. The extent of saltmarsh may vary naturally in the future due to these processes.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Ryle, T., Connolly, K., Murray, A. & Swann, M. (2009). *Coastal Monitoring Project. 2004-2006*. Report to the National Parks and Wildlife Service, Dublin.


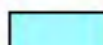


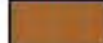
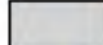

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.001	0.001				
2	Spartina swards						
3	1330 Atlantic salt meadow	1.465		1.465			
4	1410 Mediterranean salt meadow						
5	ASM/MSM mosaic (50/50)						
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	0.120					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	0.091					
19	1330/rocky shore mosaic	0.026		0.013			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	1.703	0.001	1.478			



Legend

-  SAC Boundary
-  1310 Salicornia flats
-  1330 Atlantic salt meadows
-  1330/rocky shore mosaic
-  Other Saltmarsh (CM2)
-  other
-  1330 monitoring stops

Streedagh Point

1 SITE DETAILS

SMP site name: Streedagh Point	SMP site code: SMP0121
Dates of site visit 17-18/07/2008	CMP site code: 137
SM inventory site name: Streedagh Point	SM inventory site code: 33
NPWS Site Name: Streedagh Point Dunes	
NPWS designation cSAC: 1680	MPSU Plan: new format plan available 2006
pNHA: 1680	SPA: N/A
County: Sligo	Discovery Map: 16 Grid Ref: 164465, 350370
Aerial photos (2000 series O 0735-A,C,D; O 0769-B,D; O 0770-A,B,C)	6 inch Map No: SI 002, 005
Annex I habitats currently listed as qualifying interests for Streedagh Point Dunes cSAC.	
H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	
H1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	
Other SMP sites within this SAC/NHA: N/A	
Saltmarsh type: Sandflats	Substrate type: Sand

2 SITE DESCRIPTION

Streedagh Point is located in north Co. Sligo near the village of Grange and 14 km north of Sligo Town. Streedagh Point is a tombolo, a long shingle spit overlain with sand dunes running parallel to the coast that has partially enclosed a large area of intertidal flats. The spit connects higher rocky outcrops at Conor's Island to Streedagh Point. The sand dune complex at this site was surveyed by the Coastal Monitoring Project in 2006. The area behind the sand dune system is the estuary of Grange River, which flows into the site at the south-east corner. The tidal channel flows northwards and enters the sea eventually at Dernish Island. The sand dune system is an important amenity area and a long beach on the seaward side of the spit attracts surfers and bathers. A car park near the southern end of the beach has been provided by Sligo County Council. The beach is also a blue flag beach.

The adjacent mainland is dominated by farmland and there are gentle-moderate slopes to the shoreline from higher ground. The mainland mainly supports improved grassland and wet grassland. The shoreline can be accessed by several lanes and tracks along this area. There is scattered habitation around the site on the mainland shore and along Streedagh Point. Sand Hills develop on Streedagh Point and are also found along the long spit.

The survey site was taken as the shoreline of the entire inner estuary and north to Mount Temple. Saltmarsh has developed in patches along the back of the sand spit. This saltmarsh has developed adjacent to extensive intertidal sand flats. Saltmarsh habitat is also found around the southern shoreline adjacent to Streedagh Townland and continues along a narrower channel to Rinroe. The Grange River enters the intertidal area at Rinroe and there is some more substantial saltmarsh development in a sheltered low-lying area along the north

side of the river channel. Mudflats are found in this narrower channel. The mainland side of the site has a generally quite narrow band of saltmarsh vegetation along the shore.

This site is part of Streedagh Point Dunes candidate Special Area of Conservation (cSAC 1680). This smaller coastal cSAC contains the sand dune complex along the spit and the extensive sandflats within the estuary. The sand dune complex was mapped by the CMP project in 2006 (Ryle *et al.* 2009). The sand flats attract moderate numbers of wintering waders and wildfowl in winter. Three Annex I saltmarsh habitats were recorded at this site, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). Only the latter two habitats are listed as qualifying interests for this cSAC.

One species of local distinctiveness, Saltmarsh Flat-rush (*Blysmus rufus*), was found at this site and forms a distinctive community in the upper marsh in places. Turf fucoids were also noted at this site.

The majority of the saltmarsh habitat is found within the digital cSAC boundary. Some small patches of saltmarsh habitat are excluded from the cSAC. These are found in low-lying fields that were excluded from the cSAC in Streedagh and Rinroe. The upper shoreline boundary as mapped by the old OSI 2nd edition 6 inch map is taken as the boundary of the cSAC along much of the estuary. Small rectification differences between the OSI 6 inch map and the OSI aerial photos means that some minor saltmarsh habitat extends beyond this boundary in places along the mainland shore

The western part of the site was accessed from the car park at Streedagh Point. The mainland shore was accessed at several of the lanes and tracks that extend down to the shoreline.

3 SALTMARSH HABITATS

3.1 General description

The saltmarsh found at this site is quite widely distributed around the site. The main habitat found was Atlantic salt meadows (ASM) (Table 3.1). This habitat was the only habitat found along the back of the sand spit. This saltmarsh is a typical 'sandflats' type saltmarsh and there are natural unmodified transitions at the upper boundary to fixed dune vegetation. The topography of the saltmarsh follows that of the sand-dunes and the saltmarsh habitat extends into low-lying undulations in the sand dune system. This saltmarsh has developed on a gentle gradient and zonation is distinctive and well-developed. Bare sand also marks the upper boundary between the saltmarsh and the sand dunes. Further north-west the underlying shingle and cobble banks are more prominent and saltmarsh has developed along the seaward edge of some banks of cobble with sparse vegetation.

Mediterranean salt meadow (MSM) vegetation develops along the southern shoreline adjacent to Streedagh. It is mainly found on the landward side of the ASM but it also forms a mosaic at times with ASM and extends down to the seaward boundary. The shoreline here slopes are somewhat steeper so saltmarsh development is less extensive. Diverse transitional vegetation is present at the landward boundary where there is some unmodified transition to species-rich wet grassland/ dune slack vegetation on the sand hills. Freshwater seepage from the adjacent moderately sloped land has created a zone of transitional saltmarsh vegetation with freshwater indicators along the landward boundary. There is also

some development of brackish vegetation including stands dominated by Sea Club-rush (*Bolboschoenus maritimus*) and Common Reed (*Phragmites australis*) along the landward boundary of the ASM and MSM. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

Further east towards the mouth of Grange River the extent and dominance of MSM increases. Brackish stands of Sea Club-rush and Common Reed also increase in extent. Grey Club-rush (*Schoenoplectus lacustris* spp. *tabernaemontani*) also appears along the upper saltmarsh boundary in this area. Both these habitats appear in low-lying areas behind some higher ridges or rocky outcrops closer to the shoreline and the saltmarsh structure and zonation is quite complex. The saltmarsh at Rinroe is dominated by MSM with some brackish stands of Common Reed and Sea Club-rush. Some of this saltmarsh is more typical of "Fringe type" saltmarsh, which has developed on peaty mud. Saltmarsh has developed along the shoreline and along low-lying areas that may extend inland. This area has a complex topography and saltmarsh extends inland between higher mounds and forms mosaics with wet grassland and scrub. There is also some transition to freshwater marsh.

A narrow band of saltmarsh extends along most of the mainland shoreline to Mount Temple. This saltmarsh is fragmented and patchy in places and broken up by sections of cobble beach. It is generally between 5-10 m wide on a moderate-steep shoreline. Some of this saltmarsh has developed on thin substrate and there is frequent scattered cobble and rock over the saltmarsh strip in places. Both ASM and MSM vegetation develops along this shoreline and also forms some mixed sections of mosaic. There is some more extensive ASM saltmarsh developed around the shoreline of Inishnagor, a small rocky outcrop in the estuary along the mainland.

Table 3.1. Area of saltmarsh habitats mapped at Streedagh Point.

EU Code	Habitat	Area (ha)
1310	<i>Salicornia</i> and other annuals colonizing mud and sand (1310)	0.001
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	13.138
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	7.717
	Total	20.856

note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

Only a very small patch of this habitat was mapped at this site. It developed along the seaward edge of the ASM along the sand spit. A small narrow patch of vegetation dominated by Glasswort (*Salicornia* sp.) was present on the sandflats adjacent to the more-established ASM vegetation. Several small patches of this habitat were also noted within some of the salt pans found in the ASM along the spit.

3.3 Atlantic salt meadows (H1330)

The ASM at this site is well-developed and is quite diverse, due to being found on several different substrates and in different parts of the shoreline where conditions differ. The ASM along the back of the sand spit is particularly well-developed in places. Several zones are represented and there is significant development of mid-marsh vegetation with typical small-moderate salt pans. Well-developed zonation along a gentle seaward gradient is evident. This saltmarsh has developed on muddy sand. The vegetation is dominated by a typically

low sward dominated by Sea Plantain (*Plantago maritima*) and contained less frequent Sea Pink (*Armeria maritima*), Sea Milkwort (*Glaux maritima*) and Red Fescue (*Festuca rubra*). Other species present include Greater Sea-spurrey (*Spergularia media*), Sea Arrowgrass (*Triglochin maritimum*), Common Scurvy-grass (*Cochlearia officinalis*) and Sea Aster (*Aster tripolium*). Common Saltmarsh-grass (*Puccinellia maritima*) and Lax-flowered Sea Lavender (*Limonium humile*) appear around some depressions and the edges of creeks and pans within this zone. The lower and pioneer zones are particularly well-represented along the edge of the saltmarsh near the car-park. Low-lying mounds that have developed on very sandy substrate are dominated by Common Saltmarsh-grass and also contain frequent Sea Milkwort and occasional Sea Aster, Lax-flowered Sea Lavender, Glasswort and Annual Sea-blite (*Suaeda maritima*). A large area of lower saltmarsh contains frequent bare sand cover and this is indicative of a dynamic system and the fact that the saltmarsh has expanded recently in this area. This area has not vegetated completely yet and there are some larger mounds present with embryonic dune vegetation present dominated by Sand Couch (*Elytigia juncea*) along with some Sea Sandwort (*Honckenya peploides*).

Further north-east along the spit the extent of pioneer and lower marsh vegetation is reduced and the seaward edge of the saltmarsh is largely dominated by mid marsh. There is some secondary growth of low marsh vegetation along a low saltmarsh cliff in places. Turf fucoids were noted in the lower zone vegetation in places. Some areas contain scattered cobbles from the storm beach along the seaward side of the site. The mid upper zone is characterised by a taller sward with more frequent Red Fescue and large areas dominated by Saltmarsh Rush (*Juncus gerardii*). This zone also contains small amounts of Creeping Bent (*Agrostis stolonifera*), Sea Arrowgrass, Sea Plantain and some Long-bracted Sedge (*Carex extensa*). The upper boundary is characterised by the appearance of species such as Sea Sandwort and Knotted Pearlwort (*Sagina nodosa*) and there is some development of pioneer or disturbed vegetation due to sand accretion. Some of the vegetation along the upper boundary is dominated by Greater Sea-spurrey.

The ASM found along the inner side of Streedagh Point contains similar vegetation communities. Much of this ASM is characterised by very heavy grazing levels and the surface of the saltmarsh is quite poached and tussocky. The upper ASM contains more frequent Creeping Bent and White Clover (*Trifolium repens*) in places and also contains some Autumn Hawkbit (*Leontodon autumnalis*).

Much of the ASM found on the mainland shoreline is found on relatively thin substrate and forms a mosaic with exposed cobble in places. There are transitions along the lower boundary to a band of cobble and shingle on the lower shore before the extensive development of intertidal sandflats. There is some zonation along this shoreline on a moderate-steep slope. The mid-upper zone is characterised by frequent Saltmarsh Rush and some further zonation to Red Fescue where the saltmarsh is somewhat more extensive. There are occasional patches with frequent Saltmarsh Flat-rush in this zone. Other species recorded include Common Sea Century (*Centaurium erythraea*) (rare). The low-mid zone is dominated by Sea Plantain and there is also some development of patches of Common Saltmarsh-grass, Lax-flowered Sea Lavender and Greater Sea-spurrey. The ASM transitions to field boundaries along the upper shoreline and there is also some transition to Twitch (*Elytigia repens*)-dominated vegetation on this shoreline.

3.4 Mediterranean salt meadows (H1410)

The MSM are also relatively diverse at this site. This vegetation is characterised by the presence of frequent Sea Rush (*Juncus maritimus*), which may dominate the vegetation. The narrow band of vegetation along the north-east side of Streedagh Point has developed on a moderate-steep slope. There is some zonation evident within the MSM. The upper zone is quite grassy and contains frequent Red Fescue and smaller amounts of Creeping Bent and Saltmarsh Rush. Other species present in small amounts include Sea Pink, Sea Aster, Sea Milkwort, Sea Arrowgrass and Common Scurvy-grass. Species rarely found include Autumn Hawkbit and Parsley-leaved Water-dropwort (*Oenanthe lachenalii*). One section also contained some Spike-rush (*Eleocharis uniglumis*). The lower zone contains frequent Sea Plantain in a low sward amongst the tussocks of Sea Rush. This zone also contains Sea Pink, Sea Aster and Lax-flowered Sea Lavender.

Further south along Streedagh Point (mid section), the MSM has developed along side some diverse wet grassland with elements of dune slack on a relatively steep slope. The transitional zone along the upper boundary of the MSM contains a mixed sward with Sea Rush, Long-bracted Sedge, Parsley Water-dropwort, Saltmarsh Flat-rush and Sea Club-rush, and also contains Yellow Flag (*Iris pseudacorus*), Ragged Robin (*Lychnis flos-cuculi*), Red Clover (*Trifolium pratense*), Wild Celery (*Apium graveolens*), Brookweed (*Samolus valerandi*), Marsh Arrowgrass (*Triglochin palustris*), Marsh Pennywort (*Hydrocotyle vulgaris*), False Fox Sedge (*Carex otrubae*), Glaucous Sedge (*Carex flacca*), Mint (*Mentha aquatica*), Silverweed (*Potentilla anserina*), White Clover (*Trifolium repens*), Seal Heal (*Prunella vulgaris*) and Creeping Buttercup (*Ranunculus repens*). Jointed Rush (*Juncus articulatus*) becomes dominant at the upper side of this transitional zone. This area is badly poached by cattle.

Further south the MSM forms mosaics in places with Sea Club-rush. Some of this vegetation is not grazed and the lack of grazing seems to encourage the spread of Sea Club-rush at the expense of Sea Rush-dominated vegetation. Some wet grassland with Purple Moor-grass and Black-bog Rush has developed along the upper saltmarsh boundary in places where there is greater peat influence. Both these species can also appear with Sea Rush in the upper MSM. Common Sea-century was also found in the upper saltmarsh but was rare.

MSM found at Rinroe is characterised by dense cover of Sea Rush in places. The MSM forms a complicated mosaic with low-lying grassland and mounds with scrub in places. Species such as Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), Bog Pimpernel (*Anagallis arvensis*) and Glaucous Sedge are found in the upper saltmarsh zone. Some transitional brackish vegetation occurs along the lower shoreline where there are stands Sea Club-rush in places.

MSM is also found on the mainland shoreline where Sea Rush predominates. The MSM also forms mosaics with ASM in places where Sea Rush is sparsely distributed along the shoreline. Other typical species include Red Fescue, Sea Plantain and Saltmarsh Rush. Other species present in low amounts includes Lax-flowered Sea Lavender, Sea Pink, and Sea Aster. Saltmarsh-flat rush is frequently found in low amounts along the shoreline within the MSM.

4 IMPACTS AND ACTIVITIES

This site is affected by several impacts and activities (Table 4.1). This saltmarsh is divided into many different management units as it is so widely distributed around the estuary. Much

of the saltmarsh is grazed by cattle, particularly around Streedagh and at Rinroe (140). There is also some grazing by sheep at Streedagh. The grazing intensity varies across the site. Saltmarsh along the sand spit was ungrazed or only very lightly grazed. This area is managed as commonage. Some sections of saltmarsh on the shoreline along Streedagh are fenced off and are left ungrazed. Some fields are not grazed at all and have been abandoned so this saltmarsh is not grazed. Saltmarsh adjacent to the sand hills at Streedagh is heavily grazed as part of the commonage and there is some particularly severe damage to the saltmarsh from poaching (143). The shoreline is generally fenced off to prevent livestock wandering through the estuary. The saltmarsh along the mainland shoreline is not grazed as there is shoreline access to cattle and sheep in adjacent fields.

There are several riding schools in the area and the sand flats are used to exercise horses and for pony-trekking. Some poaching of the saltmarsh by horse riders was also noted around the site (622). The saltmarsh along the spit is also used by walkers, but there is little obvious damage.

The NPWS management plan for the site noted that the back of the beach is heavily used by campers and caravans during the summer (608). No facilities are present and these activities are unlicensed. These activities were causing some damage to the saltmarsh, as well as ATV use (623). No campers were noted during the site visit.

Several tracks (501) were noted on the saltmarsh around the site. These include on the sand spit and in sections along the mainland shoreline. Tracks extend along the mainland shore in places to allow access to other fields along the shore in places. Wheel ruts were also noted on the saltmarsh along the spit where there is access to vehicles (623). There are also frequent access tracks across the shoreline and saltmarsh from adjacent lanes and tracks to allow access to the shoreline. Some of these are used by horse-riders (622). Long-term use by vehicles and horse-riders has worn away the saltmarsh vegetation in places.

There has been some drainage (810) or cleaning of drains along the Streedagh shoreline during the current assessment period.

There are some signs of accretion (910) of saltmarsh along the sand spit, particularly near the car park. An accretion ramp and isolated mounds are present along the seaward edge of the saltmarsh and extending onto the sand flats. There is some pioneer saltmarsh vegetation on this ramp. A comparison of the habitat map drawn by the CMP in 2006 and this SMP habitat map shows that the saltmarsh has measurably grown at this location during this period (0.3 ha). This is also shown by a comparison of the extent of saltmarsh in the OSI 2000 and 2005 series aerial photos.

The saltmarsh shoreline along the spit is likely to be quite dynamic and significant differences can be seen between the profile of the shore as mapped by the OSI 2nd edition 6 inch map and the current profile. Signs of recent erosion (900) were also noted further north-east along the spit where a low saltmarsh cliff has developed in places along the lower saltmarsh boundary, particularly along the edge of the semi-circular bands that extend further out onto the sandflats. Accretion can be seen in the sheltered 'inlets' between these more exposed eroding 'heads'. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh and any erosion is being balanced by accretion.

There has been some measurable growth of saltmarsh in places, particularly along the inner side of Streedagh Point, where the saltmarsh has expanded by 20-30 m when the current extent of saltmarsh is compared to the OSI 2nd edition 6 inch map.

Impacts and activities around the site are mainly related to farming (102, 120, 140) and amenity use of the spit (608, 622). There is also scattered habitation around the site (403) and some lanes and tracks (501). Aquaculture is carried out at the head of the bay. These activities have no measurable impact on the saltmarsh at this site other than those already mentioned.

Table 4.1. Intensity of various activities on saltmarsh habitats at Streedagh Point

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1330	140	B	0	2.0	Inside
1330	143	A	-1	0.4	Inside
1330	501	C	-2	0.01	Inside
1330	622	C	-1	1.0	Inside
1330	623	C	-1	1.0	Inside
1330	900	C	0	0.5	Inside
1330	910	C	+1	1.0	Inside
1410	140	C	0	4.5	Inside
1410	143	A	-1	0.4	Inside
1410	501	C	-2	0.01	Inside
1410	622	C	-1	0.5	Inside
1410	900	C	0	0.5	Inside

¹ EU codes as per Interpretation Manual.

² Description of activity codes are found in Appendix III, Summary Report 2007-2008.

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

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site.

Streedagh Point saltmarsh is a moderately-sized site with several features of notable conservation interest. The saltmarsh vegetation is widely distributed over the site. The development of the saltmarsh has varied with some of the saltmarsh developing on sand and some of the saltmarsh more typical of 'fringe type' saltmarsh and has developed on peaty

mud. A large area of ASM saltmarsh found on the spit is unmodified and is in relatively good condition. There is a substantial area of pioneer saltmarsh associated with this ASM. Some diverse transitional vegetation has developed along the upper saltmarsh boundary in places. Species of local distinctiveness such as Saltmarsh Flat-rush and Turf fucoids were recorded at the site.

The overall conservation status of this site is assessed as *unfavourable-inadequate* (Table 5.1). Heavy grazing levels are badly damaging one section of the site. Some of the other saltmarsh is being damaged by a range of amenity uses including horse-riding and vehicle use. However, most of the saltmarsh is in good condition.

The majority of the saltmarsh habitats found at this site is located within Streedagh Point Dunes cSAC. A NPWS management plan is available for this cSAC.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Streedagh Point.

Habitat	EU Conservation Status Assessment			Overall EU conservation status assessment
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad	
<i>Salicornia</i> flats (1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (1330)	Extent	Structure and functions Future prospects		Unfavourable - Inadequate
Mediterranean salt meadows (1410)	Extent	Structure and functions Future prospects		Unfavourable - Inadequate

5.1.1 Extent

The extent of this habitat is assessed as *favourable*. Only a very small patch of habitat is present. There is no information available on the previous extent of this habitat at this site. There are no indications of any habitat loss at this site due to erosion or any other factors.

5.1.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. No monitoring stops were carried out in this habitat due to its relatively small extent. However, a visual assessment indicates that it is in good condition. It has developed along an accreting zone adjacent to the established saltmarsh. There are no significantly damaging activities affecting this habitat.

5.1.3 Future prospects

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that the current management activities and level of impacts such as erosion and accretion continue in the near future. This is a quite dynamic saltmarsh with indicators of erosion and accretion both present. These processes mean that small amounts of *Salicornia* flats are likely to persist.

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any habitat loss at this site due to erosion or land-use changes during the current monitoring period. There are some indicators of accretion present at this site with an accretion ramp present along the lower boundary of a significant portion of the ASM. The saltmarsh has grown by at least 0.3 ha during the current monitoring period. This is a positive indicator for the extent of ASM at this site.

5.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Eighteen monitoring stops were carried out in this habitat and four stops failed. Most the attributes required for favourable conservation status reached their targets. Some of the saltmarsh is badly damaged from heavy grazing levels and poaching. The grazing intensity varies across the site and most of the ASM is in good condition with a variable sward cover. The ASM is quite diverse and several typical ASM communities were present on the site. ASM has developed in a range of situations including on sand flats adjacent to the sand spit and on peaty mud towards the mouth of the Grange River. The ASM is part of a larger coastal ecosystem along the spit and this is a quite dynamic system in places due to accretion and erosion. This ASM is largely intact and unmodified which is a positive indicator. There is a significant area of low marsh and pioneer marsh vegetation present, which is a positive indicator. ASM is also found at other locations around the shoreline and some of this saltmarsh has been modified by the creation of tracks, embankments and drainage channels in the past.

5.2.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Some of the saltmarsh is currently being badly damaged by heavy grazing levels and this is likely to continue in the near future. Damaging activities to the saltmarsh on the spit from amenity use by horses and vehicles are also likely to continue. Sligo County Council is attempted to reduce the intensity of these impacts by banning camping on the site. This is likely to have a positive impact on the site. Recent accretion near the car-park has increased the area of saltmarsh but this is a dynamic site and the profile of the saltmarsh may change naturally in the future with reductions in the extent of saltmarsh.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any habitat loss at this site due to erosion or land-use changes during the current monitoring period. This habitat is not affected to the same extent as ASM by accretion at the site.

5.3.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Thirteen monitoring stops were carried out in this habitat and one stop failed. Most the attributes required for favourable conservation status reached their targets. Most of the MSM is in adequate condition. Some of the saltmarsh is badly damaged from heavy grazing levels and poaching. Other MSM is grazed but is not damaged to the same extent as ASM. The MSM is not affected by the amenity activities on the site but is being damaged by the use of the shoreline as a track by horse-riders in places.

The MSM is quite diverse at this site. Some diverse transitional vegetation has developed along the upper MSM boundary in places, which increases the overall diversity and value of the site as a whole. Species of local distinctiveness such as Saltmarsh Flat-rush are present in this habitat type. There is also some development of transitions with and zonation to stands of Sea Club-rush and Common Reed.

5.3.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts such as grazing continue in the near future. Some of the MSM is currently being badly damaged by heavy grazing levels and this is likely to continue in the near future. Pony-trekking along the shoreline and over the MSM is likely to continue, with some negative impacts. There are few other significantly damaging activities affecting this site.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

7 REFERENCES

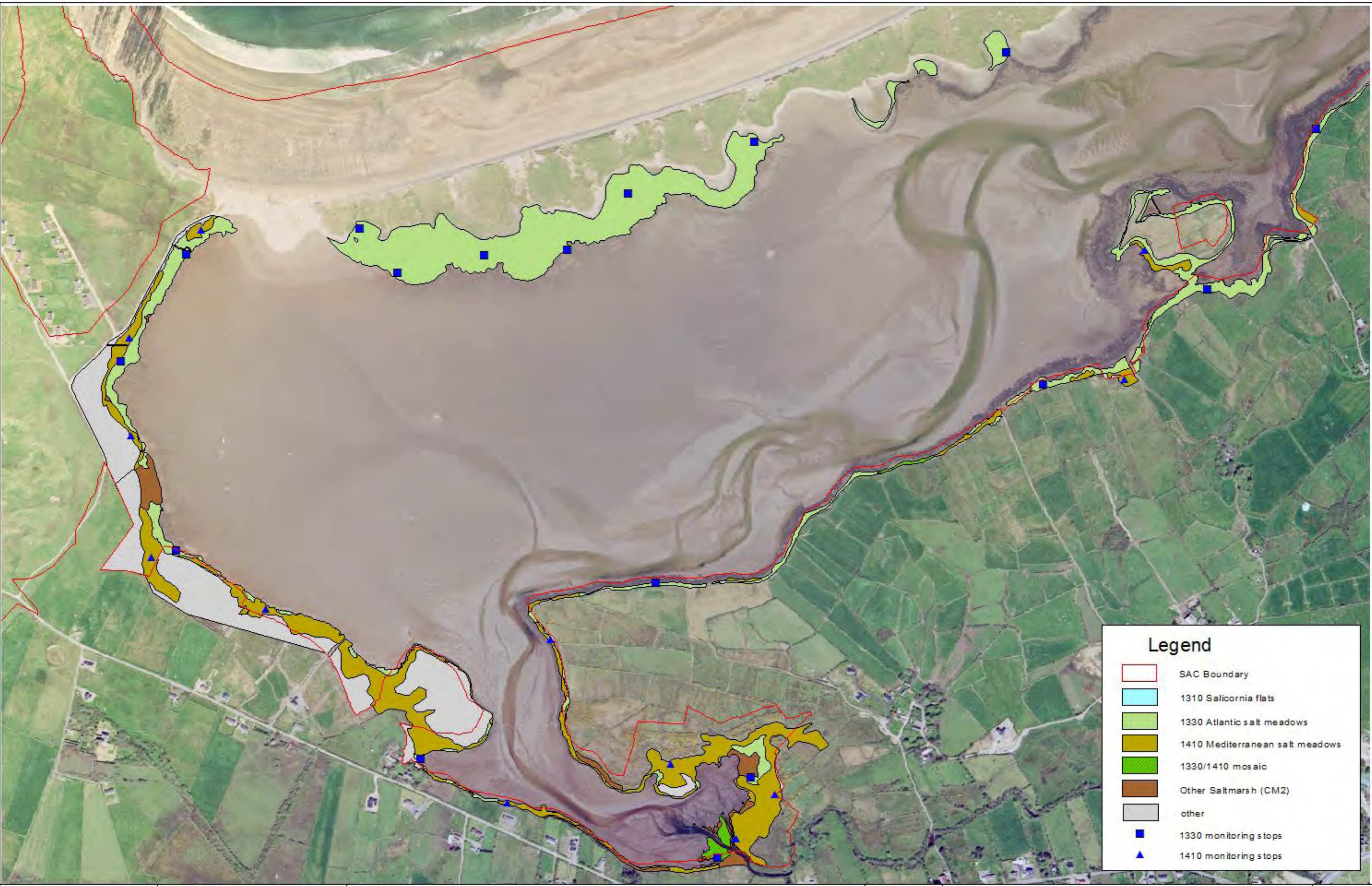
Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Ryle, T., Connolly, K., Murray, A. & Swann, M. (2009). *Coastal Monitoring Project. 2004-2006*. Report to the National Parks and Wildlife Service, Dublin.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 <i>Salicornia</i> flats	0.001	0.001				
2	Spartina swards						
3	1330 Atlantic salt meadow	12.981		12.981			
4	1410 Mediterranean salt meadow	7.56			7.56		
5	ASM/MSM mosaic (50/50)	0.313		0.157	0.157		
6	ASM/ <i>Spartina</i> mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	7.23					
10	<i>Spartina</i> clump/mudflat mosaic (50/50)						
11	Isolated <i>Spartina</i> clumps on mud (5%)						
12	pioneer 1330/1310/ <i>Spartina</i> mosaic						
13	1410/other SM (CM2) mosaic						
14	<i>Spartina</i> sward dominated, with some ASM						
15	1310/ <i>Spartina</i> mosaic						
16	ASM dominated with some <i>Spartina</i>						
17	1330/sand dune mosaic						
18	Other SM (CM2)	1.066					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	29.150	0.001	13.138	7.717		



Legend

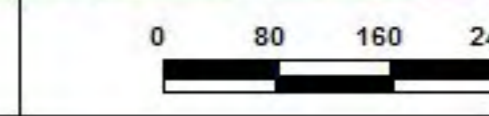
- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)



Legend

- SAC Boundary
- 1310 Salicornia flats
- 1330 Atlantic salt meadows
- 1410 Mediterranean salt meadows
- 1330/1410 mosaic
- Other Saltmarsh (CM2)
- other
- 1330 monitoring stops
- 1410 monitoring stops



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