

National Parks and Wildlife Service

Conservation Objectives Series

Sheephaven SAC 001190



An Roinn
Ealaíon, Oidhreachta agus Gaeltachta

Department of
Arts, Heritage and the Gaeltacht



**National Parks and Wildlife Service,
Department of Arts, Heritage and the Gaeltacht,
7 Ely Place, Dublin 2, Ireland.
Web: www.npws.ie
E-mail: nature.conservation@ahg.gov.ie**

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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

* indicates a priority habitat under the Habitats Directive

001190	Sheephaven SAC
1140	Mudflats and sandflats not covered by seawater at low tide
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)
1395	Petalwort <i>Petalophyllum ralfsii</i>
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)*
21A0	Machairs (* in Ireland)
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles

Please note that this SAC overlaps with Horn Head to Fanad Head SPA (004194). It is adjacent to Tranarossan and Melmore Lough SAC (000194), Cloghernagore Bog and Glenveagh National Park SAC (002047) and Mulroy Bay SAC (002159). See map 2. The conservation objectives for this site should be used in conjunction with those for overlapping and adjacent sites as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	1996
Title :	Biomar survey of Irish machair sites
Author :	Crawford, I.; Bleasdale, A.; Conaghan, J.
Series :	Irish Wildlife Manual No. 3
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Year :	2008
Title :	National Survey of Native Woodlands 2003-2008
Author :	Perrin, P.M.; Martin, J.; Barron, S.; O'Neill, F.H.; McNutt, K.E.; Delaney, A.
Series :	Unpublished Report to NPWS
<hr/>	
Year :	2009
Title :	Coastal Monitoring Project 2004-2006
Author :	Ryle, T.; Murray, A.; Connolly, K.; Swann, M.
Series :	Unpublished report to NPWS
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Year :	2009
Title :	Saltmarsh monitoring project 2007-2008
Author :	McCorry, M.; Ryle, T.
Series :	Unpublished report to NPWS
<hr/>	
Year :	2010
Title :	A provisional inventory of ancient and long-established woodland in Ireland
Author :	Perrin, P.M.; Daly, O.H.
Series :	Irish Wildlife Manual No. 46
<hr/>	
Year :	2014
Title :	Sheephaven SAC (site code: 1190) Conservation objectives supporting document- coastal habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document
<hr/>	
Year :	2014
Title :	Sheephaven SAC (site code: 1190) Conservation objectives supporting document- marine habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document

Other References

Year :	2002
Title :	Reversing the habitat fragmentation of British woodlands
Author :	Peterken, G.
Series :	WWF-UK, London
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Year :	2008
Title :	The phytosociology and conservation value of Irish sand dunes
Author :	Gaynor, K.
Series :	Unpublished PhD thesis, National University of Ireland, Dublin

Year : 2012
Title : Intertidal benthic survey of Sheephaven SAC
Author : MERC
Series : Unpublished report to the Marine Institute and NPWS

Year : 2013
Title : Conservation of selected legally protected and Red Listed bryophytes in Ireland
Author : Campbell, C.
Series : Unpublished Ph.D. Thesis, Trinity College Dublin

Spatial data sources

Year :	Interpolated 2014
Title :	Intertidal survey 2011
GIS Operations :	Polygon feature classes from marine community types base data sub-divided based on interpolation of marine survey data. Expert opinion used as necessary to resolve any issues arising
Used For :	1140, marine community types (maps 3 and 4)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	High water mark (HWM) and low water mark (LWM) polyline feature classes converted into polygon feature classes and combined; EU Annex I Saltmarsh and Coastal data erased out if present
Used For :	Marine community types base data (map 4)
Year :	Revision 2010
Title :	Saltmarsh Monitoring Project 2007-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary; overlapping regions with Coastal CO data investigated and resolved with expert opinion used
Used For :	1330, 1410 (map 5)
Year :	2009
Title :	Coastal Monitoring Project 2004-2006. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary; overlapping regions with Saltmarsh CO data investigated and resolved with expert opinion used
Used For :	2120, 2130 21A0 (map 6)
Year :	Revision 2010
Title :	National Survey of Native Woodlands 2003-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91A0 (map 7)
Year :	2014
Title :	NPWS rare and threatened species database
GIS Operations :	Dataset created from spatial references in database records. Expert opinion used as necessary to resolve any issues arising
Used For :	1395 (map 7)

Conservation Objectives for : Sheephaven SAC [001190]

1140 Mudflats and sandflats not covered by seawater at low tide

To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 3	Habitat area was estimated using OSi data as 766ha
Community distribution	Hectares	Conserve the following community types in a natural condition: Sand to coarse sediment with <i>Pygospio elegans</i> community complex; Sand with <i>Angulus tenuis</i> community. See map 4	Based on an intertidal survey undertaken in 2011 (MERC, 2012). See marine supporting document for further details

Conservation Objectives for : Sheephaven SAC [001190]

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

To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Creeslough - 19.59ha; Rosapenna - 9.13ha. See map 5	Based on data from Saltmarsh monitoring Project (SMP) (McCorry and Ryle, 2009). Two sub-sites that supports Atlantic Salt Meadows were mapped (28.72ha) and additional areas of potential ASM habitat (20.34ha) were identified from an examination of aerial photographs, giving a total estimated area of 49.06ha. NB further unsurveyed areas maybe present within the SAC. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 5 for known distribution	Based on data from McCorry and Ryle (2009). At Rosapenna the saltmarsh has developed on sandflats and is associated with the sand dune system. At Creeslough, the extensive saltmarsh has developed in sheltered positions along an intricate shoreline. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). At Creeslough, a sea wall was built in the 19th century. Overall, there is an accretional trend at Creeslough and a quantifiable increase in both the ASM and MSM. At Rosapenna, there are no indications of any loss of ASM or MSM due to erosion or land use changes. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). At Creeslough, the ASM has a well developed topography with salt pans and creeks present. At Rosapenna, the ASM topography is relatively consistent with few creeks or pans present. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). At Creeslough, there are examples of zonation on a landward gradient from pioneer to upper marsh. There are also further transitions to both MSM and Salicornia flats at the upper and lower ASM boundaries. At Rosapenna, there is some zonation in the ASM habitat with several vegetation communities present. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry and Ryle (2009). At Creeslough, some areas are damaged by excessive grazing pressure. At Rosapenna grazing by sheep and cattle occurs. The intensity of grazing is greatest in the fenced marsh. Poaching was noted by the SMP here. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated	See coastal habitats supporting document for further details.
Vegetation structure: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009)	See coastal habitats supporting document for further details

Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	There is no record of common cordgrass (<i>Spartina anglica</i>) in the SAC and its establishment should be prevented	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
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1410 Mediterranean salt meadows (*Juncetalia maritimi*)

To maintain the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Creeslough - 5.75ha; Rosapenna - 3.92ha. See map 5	Based on data from the Saltmarsh Monitoring Project (SMP) (McCorry and Ryle, 2009). Two sub-sites that supports Mediterranean Salt Meadows were mapped (9.67ha) and additional areas of potential habitat (7.58ha) were identified from an examination of aerial photographs, giving a total estimated area of 17.25ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 5 for known distribution	Based on data from McCorry and Ryle (2009). At Rosapenna, the saltmarsh has developed on sandflats and is associated with the sand dune system. At Creeslough, the extensive saltmarsh has developed in sheltered positions along an intricate shoreline. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). At Creeslough a sea wall was built in the 19th century. Overall there is an accretional trend at Creeslough and a quantifiable increase in both the ASM and MSM. At Rosapenna, there are no indications of any loss of ASM or MSM due to erosion or land use changes. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Mediterranean salt meadows is found high up in the saltmarsh but requires occasional tidal inundation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). At Creeslough, there are examples of zonation on a landward gradient from pioneer to upper marsh. There are also further transitions to both MSM and <i>Salicornia</i> flats at the upper and lower ASM boundaries. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward	Based on data from McCorry and Ryle (2009). At Creeslough, some areas are damaged by excessive grazing pressure. At Rosapenna, grazing by sheep and cattle occurs. The intensity of grazing is greatest in the fenced marsh. Poaching was noted by the SMP here. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from McCorry and Ryle (2009). Poaching and trails from livestock is evident in the MSM at Rosapenna as well as in some areas of Creeslough. See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with characteristic species listed in SMP (McCorry and Ryle, 2009)	See coastal habitats supporting document for further details

Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	There is no record of common cordgrass (<i>Spartina anglica</i>) in the SAC and its establishment should be prevented	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
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Conservation Objectives for : Sheephaven SAC [001190]

2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Ards - 0.48ha; Marble Hill - 1.01ha; Rosapenna - 3.98ha. See map 6	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al. 2009). Habitat mapped at three sub-sites to give a total estimated area of 5.47ha. Habitat is very difficult to measure in view of its dynamic nature. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram grass (<i>Ammophila arenaria</i>) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. Rock armour has been installed at the seaward edge of the dunes at Ards. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Gaynor (2008) and Ryle et al. (2009). At Rosapenna, the sand dune habitats grade into saltmarsh. At Ards, heath vegetation occurs adjacent to the fixed dunes. See coastal habitats supporting document for further details
Vegetation composition: plant health of dune grasses	Percentage cover	More than 95% of marram grass (<i>Ammophila arenaria</i>) and/or lyme grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species; species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (<i>Hippophae rhamnoides</i>) should be absent or effectively controlled. At Marble Hill both Sea-buckthorn (<i>Hippophae rhamnoides</i>) and bracken (<i>Pteridium aquilinum</i>) occur. Bracken was also recorded at Rosapenna. See coastal habitats supporting document for further details

Conservation Objectives for : Sheephaven SAC [001190]

2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Ards - 11.14ha; Marble Hill - 31.02ha; Rosapenna - 215.74ha. See map 6	Based on data from Coastal Monitoring Project (CMP) (Ryle et al. 2009). Habitat mapped at three sub-sites to give a total estimated area of 257.90ha. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. Rock armour has been installed at the seaward edge of the dunes at Ards. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Gaynor (2008) and Ryle et al. (2009). At Rosapenna, the sand dune habitats grade into saltmarsh. At Ards, heath vegetation occurs adjacent to the fixed dunes. See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Based on data from Gaynor (2008) and Ryle et al. (2009). Petalwort (<i>Petalophyllum ralfsii</i>), a species that requires compacted sandy ground occurs at Rosapenna. See coastal habitats supporting document for further details as well as the conservation objective for petalwort (1395)
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Gaynor (2008) and Ryle et al. (2009). At Marble Hill, parts of the fixed dunes were undergrazed. At Ards, there is no grazing by livestock. At Rosapenna, grazing by livestock is impacting positively on the dune grassland. See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Ryle et al. (2009)	Based on data from Gaynor (2008) and Ryle et al. (2009). At Rosapenna bryophyte cover is high and frog orchid (<i>Coeloglossum viride</i>) and fragrant orchid (<i>Gymnadenia conopsea</i>) were recorded at the fixed dune/ fen boundary by the CMP. See coastal habitats supporting document for further details.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (<i>Hippophae rhamnoides</i>) should be absent or effectively controlled. At Marble Hill both Sea-buckthorn (<i>Hippophae rhamnoides</i>) and bracken (<i>Pteridium aquilinum</i>) occur. Bracken was also recorded at Rosapenna. See coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009). At the Ards site, scrub and trees are encroaching the dunes. See coastal habitats supporting document for further details

21A0 Machairs (* in Ireland)

To maintain the favourable conservation condition of Machairs in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession	Current extent is unknown. Machair was not mapped during the Coastal Monitoring Project (CMP) (Ryle et al., 2009). See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes	See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	See coastal habitats supporting document for further details
Physical structure: hydrological and flooding regime	Presence/ absence of water abstraction or drainage works	Maintain natural hydrological regime	Based on data from Ryle et al. (2009), Crawford et al. (1996) and Gaynor (2006). See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of machair habitat, subject to natural processes	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation structure: sward height	Centimeters	Maintain structural variation within sward	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Ryle et al. (2009)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. See coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: bryophytes	Percentage cover	Should always be at least an occasional component of the vegetation	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details

Conservation Objectives for : Sheephaven SAC [001190]

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

To maintain the favourable conservation condition of Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 4.1ha for sub-sites surveyed. See map 7	Minimum area, based on two sub-sites surveyed by Perrin et al. (2008)- Ards Forest Park (1439), Duntally Wood (1421). The latter did not contain 91A0. NB further unsurveyed areas maybe present within the SAC
Habitat distribution	Occurrence	No decline. Surveyed location shown on map 7	Distribution based on Perrin et al. (2008). N.B. Further unsurveyed areas may be present within this SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	Large woodlands reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). Topographical and land ownership constraints may restrict expansion
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer	Described in Perrin et al (2008)
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	Based on data from Perrin et al. (2008)
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	Oak (<i>Quercus petraea</i>) regenerates poorly. In suitable sites ash (<i>Fraxinus excelsior</i>) can regenerate in large numbers although few seedlings reach pole size
Woodland structure: dead wood	m ³ per hectare; number per hectare	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Woodland structure: veteran trees	Number per hectare	No decline	Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	Includes ancient or long-established woodlands, archaeological and geological features as well as red-data and other rare or localised species. Perrin and Daly (2010) list woodlands in Ards Forest Park as long established
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	Species reported in Perrin et al. (2008)
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including oak (<i>Quercus petraea</i>) and birch (<i>Betula pubescens</i>)	Species reported in Perrin et al. (2008)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	Beech (<i>Fagus sylvatica</i>), sycamore (<i>Acer pseudoplatanus</i>) and rhododendron (<i>Rhododendron ponticum</i>) have been recorded in semi-natural woodland in Ards Forest Park (internal NPWS files)

Conservation Objectives for : Sheephaven SAC [001190]

1395 Petalwort *Petalophyllum ralfsii*

To maintain the favourable conservation condition of Petalwort in Sheephaven SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution of populations	Number and geographical spread of populations	No decline. See map 7 for recorded location in SAC	The known population occurs at Rosepenna on the edge of the R248 road, in sparse low vegetation on pathway in area grazed by rabbits (<i>Oryctolagus cuniculus</i>) where short vegetation is also maintained by mowing. Data from NPWS surveys and Campbell (2013)
Population size	Number of individuals	No decline. The population is estimated to be a maximum of 712 thalli. Actual population is more likely to be 50% of this, or c.356 thalli	Counts of thalli are based on the mean of number of thalli in one 1x1m plot, averaged for three counts from early April 2009 to April 2011: 0.33 thalli per m ² (Campbell, 2013). Maximum estimated population at Rosepenna is therefore 0.33 x 2159.5m ² = 712.6 thalli. As not all the habitat within the area of occupancy is suitable habitat, the actual number of thalli is likely to be much less, 50% of this figure, i.e. 356.3 (or c.356 thalli)
Area of suitable habitat	Hectares	No decline. Area of suitable habitat at Rosepenna is estimated at c.0.1080ha	The area of occupancy is 2159.5m ² . Not all of the area is actually suitable habitat for <i>Petalophyllum ralfsii</i> . Some sections are too dry and some sections too overgrown with coarse vegetation. Therefore the area of suitable habitat is estimated at 50% of the total, i.e. 1079.8 m ² (= 0.1080ha)
Hydrological conditions: soil moisture	Occurrence of damp soil conditions	Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter	<i>Petalophyllum ralfsii</i> grows in damp sand. Based on Campbell (2013)
Vegetation: open structure	Height and percentage cover of vegetation	Maintain open, low vegetation, with a high percentage cover of bryophytes (small acrocarps and liverwort turf) and bare ground	<i>Petalophyllum ralfsii</i> grows in compacted, sandy ground, maintained by rabbit (<i>Oryctolagus cuniculus</i>) grazing, trampling (by walkers and horses) and some mowing. Campbell (2013) recorded a mean height of vegetation of 3.0cm, with bryophyte cover c.26-33% and bare ground c. 11-25% (based on one 1x1m plot from 2009 and 2011). See also the conservation objective for fixed coastal dunes with herbaceous vegetation (2130)