Blasket Islands SAC (site code 2172)
Conservation objectives supporting document -coastal habitats

NPWS

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Please note that this document should be read in conjunction with the following report: NPWS (2014). Conservation Objectives: Blasket Islands SAC 002172. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

1 Introduction

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

The Blasket Islands are situated at the end of the Dingle peninsula in Co.Kerry. The site includes all of the islands in the group as well as a substantial area of the surrounding seas. A section of the north-eastern site boundary runs along the mainland coastline, from Clogher Head to Slea Head. There are six main islands, with some associated rocky islets and sea stacks. Great Blasket Island is separated from the mainland by Blasket Sound and is by far the largest of the islands (459ha) and rises to 292m above sea level. Inishtooskeart (99ha, 162m), Inishnabro (51ha, (175m), Inishvickillane (81ha, 138m) and Tearaght Island (27ha, 184m) are located between approximately 7km and 12km from the mainland and, like Great Blasket, rise steeply from the sea. In contrast Beginish is a small low lying island (15ha, 14m) that lies within 2km of the mainland. The bedrock is principally Old Red Sandstone, with some outcrops of volcanic and Silurian rocks on Inishvickillane and Beginish. The islands have a very maritime climate, being exposed to the prevailing Atlantic wind and swells. There are no permanent habitations, though Great Blasket was inhabited until 1953.

Blasket Islands SAC (site code: 2172) is designated for the following single coastal habitat:

- Vegetated sea cliffs of the Atlantic and Baltic coasts (1230).

Vegetated sea cliffs is the dominant coastal habitat of the islands. Much of the vegetation of the islands consists of species typical of cliffs or cliff-tops. Sea caves occur at the base of the cliffs on several of the islands. This is also a qualifying habitat for the site.

The Blasket Islands represent one of the most important sites in the country for seabird colonies, with at least 11 species breeding regularly. It is an internationally important site for Storm Petrel (*Hydrobates pelagicus*) and Manx Shearwater (*Puffinus puffinus*). Consequently the islands have also been designated as a Special Protection Area for birds (site code: 4008).

This backing document sets out the conservation objectives for Vegetated Sea Cliffs on Blasket Islands SAC, which is defined by a list of parameters, attributes and targets. The main parameters are (a) Range (b) Area and (c) Structure and Functions, the latter of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The targets set for **vegetated sea cliffs** is based primarily on the findings of the Irish Sea Cliff Survey (ISCS) (Barron *et al.,* 2011) and this document should be read in conjunction with that report.

The cliffs on the Great Blasket Island were surveyed in the field during the ISCS. The ISCS identified and carried out a detailed assessment as per the methodology outlined in Barron *et al*. (2011). This included dividing the cliff length into a series of sections to reflect the variation within the site and to give a more accurate measurement for area.

The known distribution of vegetated sea cliffs within Blasket Islands SAC as mapped by Barron *et al* (2010) is presented in Appendix I. However, it is thought that the distribution of the sea cliff habitat extends to other islands within the SAC.

The conservation objective for the vegetated sea cliff habitat within the entire SAC is extrapolated from Barron *et al*, (2011) and the sea cliff database, which was produced as part of that project. The targets are somewhat generic and may be subject to revision in the light of further survey work. However, it is estimated that the sub-site surveyed by the ISCS (Great Blasket) represents at least 70% of the total length of vegetated sea cliffs within Blasket Island SAC.

2 Conservation Objectives

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

3 Vegetated sea cliffs

Sea cliffs can be broadly divided into two categories: hard (or rocky) cliffs and soft (or sedimentary) cliffs, both of which are covered by Annex I habitat 'vegetated sea cliffs of the Atlantic and Baltic coasts'. Hard cliffs are composed of rocks such as limestone, sandstone, granite or quartzite which are hard and relatively resistant to erosion. Soft cliffs are composed of softer rock such as shale or unconsolidated material such as glacial till. Vegetation of hard sea cliffs in exposed situations exhibits a strong maritime influence and is relatively stable. Soft cliff habitats are more prone to slope failure which results in the presence of fast-colonising pioneer species.

Defining the limits of what constitutes a sea cliff is problematic and a number of different interpretations have been used in the past (Fossitt, 2000; Commission of the European Communities, 2003; JNCC, 2004; Browne, 2005). In order to address any inconsistencies, the following definition for sea cliffs was developed and used during the Irish Sea Cliff Survey (Barron *et al*., 2011):

"A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal (littoral) or subtidal (sublittoral) zone. The cliff may be composed of hard rock such as basalt, or of softer substrate such as shale or boulder clay. Hard cliffs are at least 5m high, while soft cliffs are at

least 3m high. The cliff top is generally defined by a change to an obvious less steep gradient. In some cases the cliff may grade into the slopes of a hillside located close to the coast. In these cases the cliff is defined as that part of the slope which was formed by processes of coastal erosion, while the cliff top is where there is the distinct break in slope. Both the cliff and the cliff top may be subject to maritime influence in the form of salt spray and exposure to coastal winds. A cliff can ascend in steps with ledges, and the top of the cliff is taken to occur where erosion from wave action is no longer considered to have been a factor in the development of the landform. The cliff base may be marked by a change in gradient at the bottom of the cliff. Where the base is exposed it can be characterised by scree, boulders, a wave-cut platform or sand, among other substrates. During this survey where cliffs occur within the subtidal zone the base was considered to be the high water mark. A cliff is considered to have reached its end point where it is no longer over 5m high (hard cliffs) of 3m high (soft cliffs), or no longer has a steep slope. To be considered in this study, a cliff had to be a minimum of 100m in length. Sea cliffs may support a range of plant communities such as grassland, heath, scrub and bare rock communities, among others."

Cliffs are thought to occur throughout the Blasket Islands, except for low-lying Beginish which is located near the mainland. The habitat also occurs along the mainland coastline. Hard cliffs are the dominant cliff type noted in this SAC (Browne, 2005; Barron *et al.,* 2011).

3.1 Overall Objective

The overall objective for 'vegetated sea cliffs of the Atlantic and Baltic coasts' in Blasket Islands SAC is to 'restore the favourable conservation condition'

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

3.2 Area

3.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is 'no decrease in extent from the established baseline'. Bearing in mind that coastal systems are naturally dynamic and subject to change even within a season, this target is assessed subject to natural processes, including erosion and succession.

The distribution of vegetated sea cliffs as identified during the Irish Sea Cliff Survey (ISCS) (Barron *et al*., 2011) is shown on a map in Appendix 1.

Sea cliffs are well distributed throughout the Blasket Islands SAC and are a main feature of the islands, except for low-lying Beginish. There are numerous islets, stacks and rocks associated with the islands. All of the main islands rise steeply to substantial heights: Great Blasket (292m), Inishtooskert (162m), Inishnabro (175m), Inishvickillaun (138m) and Tearaght (184m).

As cliffs are linear features on maps, their extent is measured in kilometres rather than hectares, as you would with other habitats. During the ISCS (Barron *et al*., 2011), each cliff was divided in to sections based on physical characteristics and vegetation cover. Breaks (i.e. non-cliff areas) of between 80m and 500m along a length of cliff were discounted from the calculations. The total length of the cliff sections within the sub-sites in Blasket Islands SAC is presented in the following table. The area of each cliff that is located within the SAC boundary is also presented.

Site name	**Total area/length (km) of sea cliff sections assessed by ISCS**	**Total area/length (km) of sea cliff within SAC boundary**
Great Blasket	17.87	17.87
Clogher Head to Slea Head	11.93	7.50
Totals	**17.87**	**25.37**

There are a number of differences in the sets of figures above. Most of the differences are explained by the fact that the ISCS mapped the total sea cliff resource at the site and not all the sea cliff mapped is contained within the SAC boundary. In addition, the County boundary line was used to draw the line for the ISCS, while a different mapping dataset than was used to draw the SAC boundary. As a result the length of cliff inside the SAC boundary may be underestimated. The total length of cliff sections for the ISCS site was 17.87km. However when, this dataset was clipped to the SAC boundary 18.41km was included in the boundary. However in reality this figure is likely to be higher as a result of these mapping anomalies.

The target is that the area should be stable, subject to natural processes, including erosion.

3.3 Range

3.3.1 Habitat Distribution

The distribution of sea cliffs in the Blasket Islands SAC as identified and mapped during the Irish Sea Cliff Survey is presented in Appendix I.

However, sea cliffs are thought to be more widely distributed throughout the islands of the Blasket Islands SAC. Hard cliff types are present within the site (Browne, 2005; Barron *et al*., 2011). These hard cliffs are unlikely to be redistributed through natural processes, unlike more dynamic coastal systems such as sand dunes and saltmarshes.

3.4 Structure and Functions

A fundamental aim of sea cliff conservation is to facilitate some degree of natural mobility through slumping. Sea cliffs can be of geomorphological interest as well as ecological interest, while erosion can also expose geological features of interest.

3.4.1 Functionality and hydrological regime

Coastal protection works can disrupt the natural integrity of a sea cliff. The health and ongoing development of vegetated sea cliffs relies on natural processes such as erosion continuing without any impingement. This is generally a bigger issue for soft cliffs which require a degree of slumping and erosion to expose bare soil for pioneer species to colonise; otherwise the vegetation is replaced by hardy grasses and scrub of little conservation value can develop. In addition, cliff erosion provides an important sediment source to sites further along the coast (e.g. sand dunes). Preventing erosion at a cliff site can lead to beach starvation at another site.

The target is to maintain, or where necessary restore, the natural geomorphological processes without any physical obstructions, and the local hydrological regime including groundwater quality.

3.4.2 Vegetation structure: zonation

Ecological variation in this habitat type depends on a number of physical and biological factors, in particular climate, degree of exposure to sea-spray, geology and soil type, as well as the level of grazing and sea bird activity. The rocky cliff flora often grades naturally into coastal heath vegetation and maritime grassland. The Annex I habitat Dry Heath occurs adjacent to the sea cliff vegetation. At the sea cliff sub-site at Great Blasket Island, the zones recorded include: splash, crevice ledge and heath.

The target is to maintain the sea cliff habitat zonations, including transitional zones, subject to natural processes, including erosion and succession.

3.4.3 Vegetation structure: vegetation height

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing increases the species diversity and is particularly important for maritime grasslands and coastal heath, which are often associated with sea cliffs. At Great Blasket, the ISCS noted some non-intensive sheep grazing.

The target is to maintain the structural variation within the sward.

3.4.4 Vegetation composition: typical species & sub-communities

Different sea cliff communities develop in a number of habitat zones related to the degree of maritime influence (exposure to wind and sea spray), geology and soil type. In general, Irish sea cliffs display a range of zones running in a series of horizontal bands up the cliff face, each of which has its own distinct sub-communities including:

- Splash zone
- Pioneer zone
- Rock crevice/cliff ledge zone
- Maritime grassland zone
- Maritime heath zone
- Maritime slope flush zone

There is considerable variation but the general pattern would be that the maritime influence is strongest near the base of the cliff and becomes gradually less dominant towards the cliff top. At the cliff base, vegetation is naturally very open and the species present have a high tolerance to salinity. The splash zone generally has a well-developed lichen flora dominated by species such as *Verrucaria maura*, *Ramalina* spp. and *Xanthoria* spp. These plant communities are dependent on rock crevices for rooting. Moving up the cliff, between the splash zone and the cliff top, vegetation on the cliff ledges is less open and can support some species which are not exclusively associated with coastal conditions. Closer to the cliff top maritime grasslands can occur. The plant communities and physical characteristics of maritime grasslands vary depending on the degree of exposure and whether or not grazing is a factor. Plant communities typical of sea birds and maritime therophyte communities are exceptions to this horizontal zonation and can occur as a mosaic with the other plant communities. The following tables presents lists of species that are considered typical of the different zones associated with soft cliffs and hard cliffs by Barron *et al*. (2011), such as those found in Blasket Islands SAC.

Typical splash zone species on hard cliffs		
Ramalina spp	*Verrucaria maura*	*Xanthoria spp*
Typical crevice and ledge species on hard cliffs		
Anthyllis vulneraria	*Asplenium marinum*	*Armeria maritima*
Aster tripolium *Catapodium marinum* *Festuca rubra* *Ligusticum scoticum* *Plantago maritima* *Silene uniflora*	*Atriplex prostrata* *Cerastium diffusum* *Inula crithmoides* *Limonium sp* *Sedum anglicum* *Spergularia rupicola*	*Beta vulgaris ssp. maritima* *Crithmum maritimum* *Lavatera arborea* *Plantago coronopus* *Sedum rosea*
Typical coastal heath species		
Calluna vulgaris *Erica cinerea* *Ulex gallii*	*Daboecia cantabrica* *Erica tetralix* *Vaccinium myrtillus*	*Empetrum nigrum* *Scilla verna*

Typical maritime grassland species on hard cliffs		
Anthyllis vulneraria	*Armeria maritima*	*Crithmum maritimum*
Daucus carota	*Festuca rubra*	*Hyacinthoides non-scripta*
Plantago coronopus	*Plantago maritima*	*Scilla verna*
Sedum anglicum	*Silene uniflora*	*Spergularia rupicola*

At the hard cliffs at Great Blasket Island, crevice ledge, coastal heath and splash zone vegetation was recorded. A wide range of typical cliff plants were recorded by the ISCS. The dominant crevice ledge species include fescues (*Festuca rubra/ovina),* thrift *(Armeria maritima),* buck's-horn plantain *(Plantago coronopus),* sea mayweed *(Tripleurospermum maritimum)* and *Verrucaria* species*.* While dominant coastal heath species include, common bent (*Agrostis capillaris),* bog pimpernel *(Anagallis tenella),* ling heather *(Calluna vulgaris),* bell heather *(Erica cinerea),* fescues *(Festuca ovina/rubra),* wild thyme *(Thymus polytrichus)*. In the splash zone, *Verrucaria* species and Ochrolechia parella were dominant.

The target for this attribute is to ensure that the typical flora of vegetated sea cliffs is maintained, as is the range of sub-communities within the different zones.

3.4.5 Vegetation composition: negative indicator species

Negative indicator species can include non-native species (e.g. *Hebe* sp.,*Carpobrotus edulis, Gunnera tinctoria*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered to be typical of the habitat (e.g. *Pteridium aquilinum*).

During the ISCS, the invasive, non-native species, *Hebe* sp. and the negative indicator species bracken (*Pteridium aquilinum*) were noted from the cliffs at Great Blasket Island (Barron *et al*., 2011).

The target for this attribute is that negative indicator species (including non-native species) should make up less than 5% of the vegetation cover.

3.4.6 Vegetation composition: bracken and woody species

Encroachment of bracken (*Pteridium aquilinum*) and woody/scrub species on cliffs, particularly the maritime grasslands and coastal heath leads to a reduction in species diversity.

Bracken (*Pteridium aquilinum*) was recorded from the cliffs on Great Blasket Island by the ISCS (Barron *et al.,* 2011).

The target for this attribute is that in the case of maritime grassland and/or heath, bracken should make up less than 10% of the vegetation cover, while woody species should make up no more than 20% of the vegetation cover.

4 References

Barron, S., Delaney, A., Perrin, P., Martin, J. and O'Neill, F. (2011). National survey and assessment of the conservation status of Irish sea cliffs. *Irish Wildlife Manual*s, No. 53. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Browne, A. (2005). *National inventory of sea cliffs and coastal heaths.* Unpublished report to the National Parks and Wildlife Service, Dublin.

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

Fossitt, J.A. (2000). *A guide to habitats in Ireland.* The Heritage Council, Kilkenny.

JNCC (2004). *Common standards and monitoring guidance for maritime cliff and slope habitats*. Joint Nature Conservation Committee, Peterborough, UK.

Appendix I– Known distribution map of sea cliff habitats within Blasket Islands SAC