NPWS

Hovland Mound Province SAC

(site code: 002328)

Conservation objectives supporting document -

Marine Habitats

Version 1

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Contents

Please note that this document should be read in conjunction with the following report: NPWS (2022) Conservation Objectives: Hovland Mound Province SAC 002328. Version 1.0. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Introduction

The Hovland Mound Province is located at the northern edge of the Porcupine Seabight, approximately 130km west of the Blasket Islands off the County Kerry coastline. Hovland Mound Province SAC is designated for the marine Annex I qualifying interest of Reefs (1170) (Figure 1).

The national seabed mapping programme INFOMAR (Dorschel *et al*., 2010) and the Irish National Seabed Survey (GSI, 2002) provided the offshore bathymetry data to identify likely carbonate mounds, which are used as indicators of reef habitat in this SAC (Figure 2). Specific surveys of the Hovland Mound Province provided information on the geology of some of the mounds (Rüggeberg *et al*., 2005; Dorschel *et al*., 2005) while other surveys provided biological data associated with the geological formations (La Bianca *et al*., 2019). A synthesis report commissioned by NPWS in 2017 (Forde *et al*., in prep.) outlines the ecological setting, distribution and structure of reef habitat and associated communities in Irish offshore waters.

In the Irish offshore environment (i.e. waters greater than 200m in depth), reef communities are associated with geological features such as sea mounds, canyons, escarpments, flat and sloping bedrock, and boulder, cobble and/or drop-stone pavements. Some of these features are the result of erosion or glacial depositional events. The reef communities can be broadly divided into geogenic and biogenic reef. Geogenic reef is defined as rock substrate on which marine species attach and grow; biogenic reef is defined as hard substrate formed by the growth of animals which can accumulate over successive generations.

Geogenic reef in deeper water tends to be found on the continental slope, particularly in submarine canyons and on the flanks of seamounts. The communities that occur here commonly form multispecies assemblages of octocorals and antipatharians (or coral gardens), which in turn create structural habitat for other fauna.

In Irish offshore waters, biogenic reef is largely the result of the scleractinian coral *Desmophyllum pertusum* (syn. *Lophelia pertusa*), which is common and widespread here (Forde *et al*., in prep.). The secondary scleractinian reef-forming species *Madrepora occulata* and *Solenosmilia variabilis* also occur, the latter occurring at water depths greater than 1,000m. Coral carbonate mounds are distinct features that are formed over timescales of 1 to 2 million years by successive periods of growth, erosion and sedimentation of reef-forming corals. Morphological variation between mounds is attributed to the local environmental conditions under which the mounds are initiated and grow. These mounds can comprise a variety of community types, including coral reef, coral rubble, stabilised and mobile sediments, and cobble grounds, each supporting distinct macrofaunal communities.

In the offshore environment where reef occurs, regardless of whether it is geogenic or biogenic, biodiversity is greatly increased and therefore these communities are considered to be keystone communities. Reefs can be considered an oasis of biodiversity above what is found in surrounding waters.

Aspects of the ecology of the Annex I Reefs habitat are provided in Section 1. The corresponding site-specific conservation objective will facilitate Ireland delivering on its surveillance and reporting obligations under the EU Habitats Directive (92/43/EC), and the preservation or restoration of the integrity of the Natura 2000 site.

Ireland also has an obligation to ensure that consent decisions concerning operations/activities planned for Natura 2000 sites (also known as European sites) are informed by an appropriate assessment of the likelihood that such operations or activities are having a significant effect on the site, or adversely affecting site integrity. Further ancillary information concerning the practical application of the site-specific conservation objective and its associated targets in the completion of such assessments is provided in Section 2.

Section 1

Principal Benthic Communities

Marine habitats are frequently composed of a number of different biological communities. The development of a community complex target arises when an area possesses similar abiotic features but records a number of biological communities that are not regarded as being sufficiently stable and/or distinct, temporally or spatially, to become the focus of conservation efforts. The biological communities recorded within Hovland Mound Province SAC exhibit this pattern and have been grouped together into a suitable ecological unit (i.e. community complex) upon which to develop conservation targets. The components of this complex may have certain species in common, albeit at varying prevalences, as well as physical parameters that may or may not overlap; this is recognised by identifying the relevant Marine Habitat Classification of Britain and Ireland (MHCBI) communities (Parry *et al*., 2015) that occur within this complex.

Hovland Mound Province Reef Community Complex

Carbonate mounds are significant features of the Hovland Mound Province SAC (Figure 2); here, some 25–40 mounds are located at depths of between 400m and 1,000m. In the central and eastern part of the SAC, the seafloor is cut by depressions generally running in a north-south direction. They are between 10km and 17km long and 70m to 150m deep, compared to the surrounding seafloor, and are caused by scouring by a northerly directed current (Wheeler *et al*., 2007). Most of the Hovland mounds, including the largest one, the Propeller Mound, are associated with these channels and are located along their flanks or at their heads. Several mounds have an elongated shape, with lengths varying from 1,700m to 3,200m or even 5,000m, and widths of 450m to 1,200m. It should be noted that the Irish National Seabed Survey (INSS) data shows topography consistent with mound-like structures, albeit smaller, in the north-west of the SAC.

On the sea mounds at depths of between 570m and 660m, an Atlantic upper bathyal cold water coral reef (biogenic structure) community[1] composed of the scleractinian corals *Desmophyllum pertusum* (syn. *Lophelia pertusa*) and *Madrepora oculata* is present. In some places, very extensive areas of living reef occur, while in others it is in the form of coral rubble. On living reef, the associated species include the echinoid *Cidaris cidaris* and the squat lobster *Munida sarsi*. The stalked crinoid *Koehlermetra porrecta* and the solitary corals *Caryophyllia* sp. and *Desmophyllum* sp. also occur here. A variant of

[1] M.AtUB.Bi.CorRee

this community occurs where Zoanthidae aggregations occur on *D. pertusum* reef rubble[2]. This variant community is quite extensive in places and the Zoanthidae represents a new species for Irish waters.

Where the seafloor consists of cobbles and boulders, an Atlantic upper bathyal rock and other hard substrata community[3] occurs; here, cerianthid anemones are prevalent.

In deeper areas, i.e. below approximately 660m, coral rubble occurs on the steep slopes of mounds; in some of these areas, up to 50% of the reef is living. This Atlantic mid bathyal cold water coral reef (biogenic structure)[4] is composed of *Desmophyllum pertusum* (syn. *Lophelia pertusa*) and *Madrepora oculata*. It also hosts a variety of black corals, including *Antipathes dichotoma, Stichopathes* cf. *gravieri* and *Leiopathes* sp. The occasional solitary coral *Caryophyllia* sp., the anemone *Ceriantharia* sp. and a number of echinoid species, including *Araeosoma fenestratum*, also occur here.

Areas of dense living *Desmophyllum pertusum* (syn. *Lophelia pertusa*) and *Madrepora oculata* reef occur. This mixed coral assemblage on Atlantic mid bathyal *D. pertusum* reef framework (biogenic structure)[5] community is particularly well-established on mound summits. The echinoid *Cidaris cidaris* and the black coral *Stichopathes* cf. *gravieri* are present here, along with the anemone *Phelliactis* sp. and the spider crab *Paramola cuvieri*. The Atlantic boreo-arctic deep sea sponge *Strhyphus fortis* is also recorded here; this is the only record of *S. fortis* in the Porcupine Bank (La Bianca *et al*., 2019).

In areas where the substrate is that of cobbles and pebbles, the sparse encrusting community on Atlantic mid bathyal rock and other hard substrata[6] community occurs. Here, the fauna consists of the holothurian cf. *Psolus* sp., encrusting sponges, a variety of anemones, including *Pachycerianthus multiplacatus*, and the echinoid *Cidaris cidaris*. Fish species observed at this SAC include angler fish *Lophius piscatorius* and the shark species *Galeus melastomus*.

Species associated with the Hovland Mound Province Community Complex	
Desmophyllum pertusum (syn. *Lophelia pertusa*)	*Madrepora oculata*
Leiopathes sp.*	*Stichopathes* cf. *gravieri**
Psolus sp.*	*Lophius piscatorius*
Galeus melastomus	Echinoids
Encrusting sponges	Zoanthidae**
Koehlermetra porrecta	*Desmophyllum* sp.*
Caryophyllia sp.*	*Ceriantharia* sp.*

[2] See La Bianca *et al.* (2019)
[3] M.AtUB.Ro
[4] M.AtMB.Bi.CorRee
[5] M.AtMB.Bi.CorRee.LopFra
[6] M.AtMB.Ro.SpaEnc
*As per Howell & Davies (2010)
** See La Bianca *et al.* (2019)

Section 2

Appropriate Assessment Notes

Many plans and projects of a particular nature and/or size require the preparation of an environmental impact assessment of the likely effects of their planned development. While smaller operations/activities (i.e. sub threshold developments) may not require to the undertaking of such an assessment, an appropriate assessment and Natura Impact Statement is required of any project that may significantly affect the integrity of a Natura or European site. The assessment is to be used as part of the decision-making process, as to whether or not the project proceeds or not. The assessment should be recorded in a transparent manner, and should assess, in a reasoned manner, the likely effects on a Natura 2000 site of a proposed plan or project. General guidance on the completion of such assessments has been prepared and is available at www.npws.ie and at https://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm.

Annex I Habitats

It is worth considering at the outset that the extent and quality of all habitats varies considerably in space and time, and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e. biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e. habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) and their low resilience should be afforded the highest degree of protection; any significant anthropogenic disturbance should be avoided.
2. In relation to the remaining constituent communities that are structurally important (e.g. broad sedimentary communities) within an Annex I marine habitat, the following must be considered:
    2.1. Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g. effluent discharge within a given area). Drawing from the principle outlined in the European

Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that the cumulative area of continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any consent being granted for any project or activities that would result in more than 15% of any Annexed marine habitat community type within a Natura site being disturbed on a cumulative basis, an inter-Departmental management review (considering *inter alia* robustness of available scientific knowledge, future site requirements, etc.) of the site is recommended.

2.2. Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex I habitat Reefs in order to facilitate the analysis required for the appropriate assessment process:

Objective **To maintain the favourable conservation condition of Reefs in Hovland Mound Province SAC which is defined by the following list of attributes and targets:**

Target 1	The permanent habitat area is stable or increasing, subject to natural processes

- In the deep water environment, reef habitat is associated with geological features such as canyons, sea mounds, terraces and escarpments. In the Hovland Mound Province Bank SAC, sea mound features have been used as indicators of the likely distribution of reef habitat in this SAC (Figure 2). However, it should be noted that the area and distribution of Reefs within this SAC is an approximation. The full extent of the aforementioned geological features and certain topographies, such as rock outcrops and cobble or boulder fields, may not have been mapped.

- Reefs may further encompass topographic features including vertical rock wall, ledges, overhangs, sloping or flat bedrock and boulder and cobbles fields. A reference area for the habitat is therefore likely to be a gross underestimate of the actual area present due to the three-dimensional nature of this habitat.
- This target refers to the permanent amount of habitat area within the site. It needs to be considered particularly when assessing the effects of projects, plans, activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area within it. It does not incorporate the consideration of long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of a formal application to a consenting authority is advisable for such proposals.

Target 2	The distribution of reefs is stable or increasing, subject to natural processes

- The mapping of the seafloor with sophisticated acoustic systems, followed by surveying of identified features with camera systems attached to Remotely Operated Vehicles (ROV), has allowed the distribution of certain geological features to be used as indicators of the likely distribution of reef habitat. In the case of the Hovland Mound Province SAC, sea mounds are the indicators of reef in this SAC (Figure 2).
- Both biogenic and geogenic reef communities are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of their physical complexity, any significant anthropogenic disturbance to the distribution of these features within the site should be avoided.
- This target is relevant to activities or operations that propose to permanently remove reef habitat, thus reducing the range over which this habitat occurs within the SAC. Reef habitat refers to any hard substrate, including coral rubble. It does not refer to long or short term disturbance of the biology of reef habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 3	Maintain the structural integrity of the Hovland Mound Province reef community complex

- For biogenic reef, this target requires that the three-dimensional structure of the reef remains intact and the proportion of living to dead reef remains within the range expected through natural processes.

- For geogenic reef, this requires the continuing occurrence of large erect epifaunal species.
- It also requires that no evidence of increased siltation over the reef feature is present.
- Any significant anthropogenic disturbance to the structural integrity of these features within the SAC should be avoided.

Target 4	Conserve the Hovland Mound Province reef community complex in a natural condition

- Biodiversity on both biogenic and geogenic reefs is dependent on the presence of habitat-forming coral species. In the Irish waters, three species of scleractinian corals form this biogenic reef. *Desmophyllum pertusum* (syn. *Lophelia pertusa*) occurs at shallower depth than *Solenosmilia variabilis* with the change of species occurring between 1,000m to 1,200m. The third species *Madrepora oculata* is usually found in association with *D. pertusum* reef. On geogenic reef, a number of species of Alcyonacean and Antipatharian corals, as well as large sponge species that have the potential to be habitat-forming, are found in Irish waters.
- A semi-quantitative description of the Hovland Mound Province reef community complex at this site has been provided in Section 1.
- An interpolation of their likely distribution is provided in Figure 2.
- Within the Hovland Mound Province SAC, the estimated area of known and likely features are:

  Sea mounds 1,850ha
- This target relates to the structure and function of the reef and therefore it is of relevance to those activities that may cause disturbance to the ecology of the habitat.
- Any significant anthropogenic disturbance to the faunal assemblages of reef habitat within the SAC should be avoided.

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Figure 1. Mapped Annex I Reef habitat in Hovland Mound Province SAC

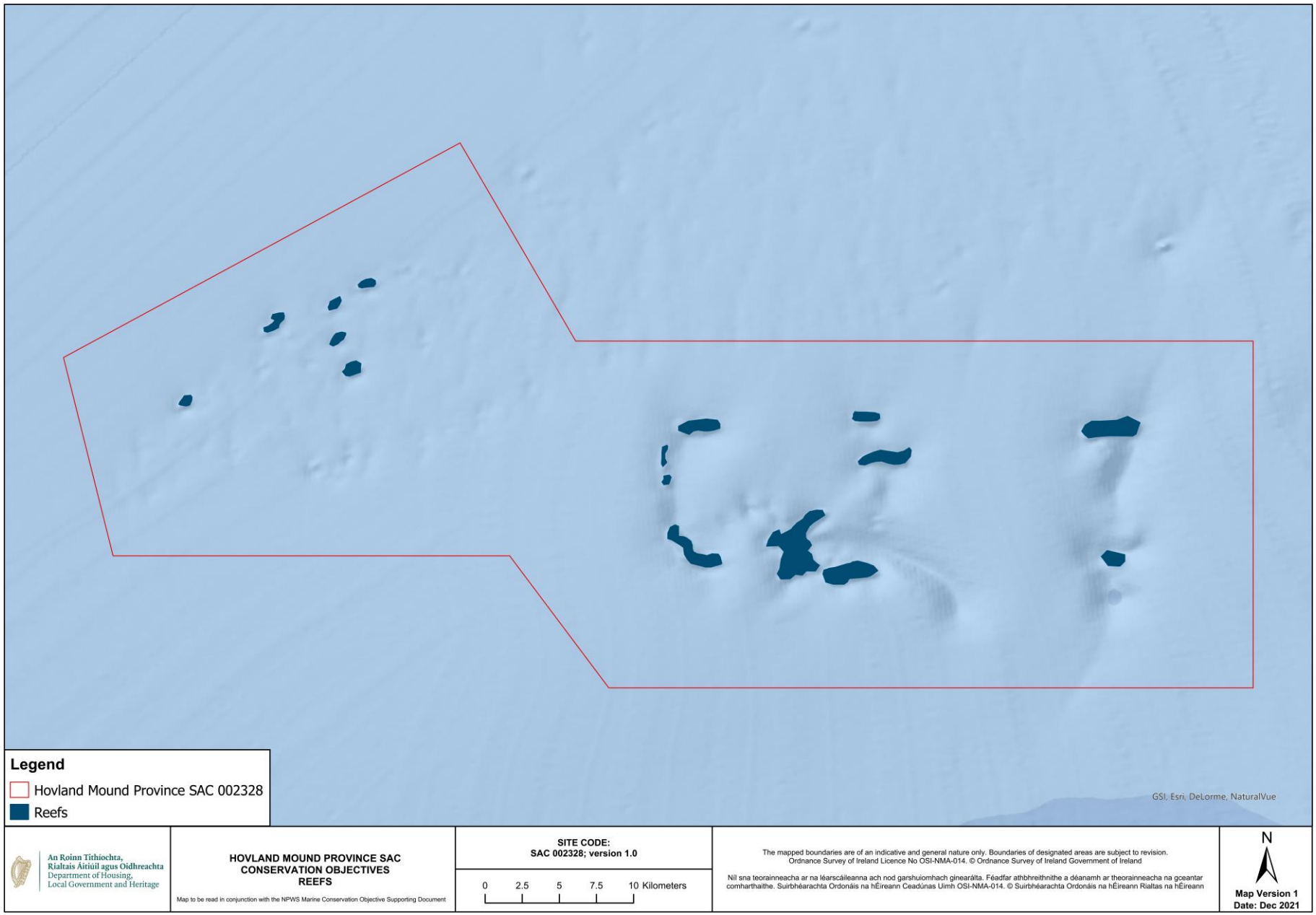

Figure 2. Mapped geological features which are used as indicators of the reef community complex in Hovland Mound Province SAC