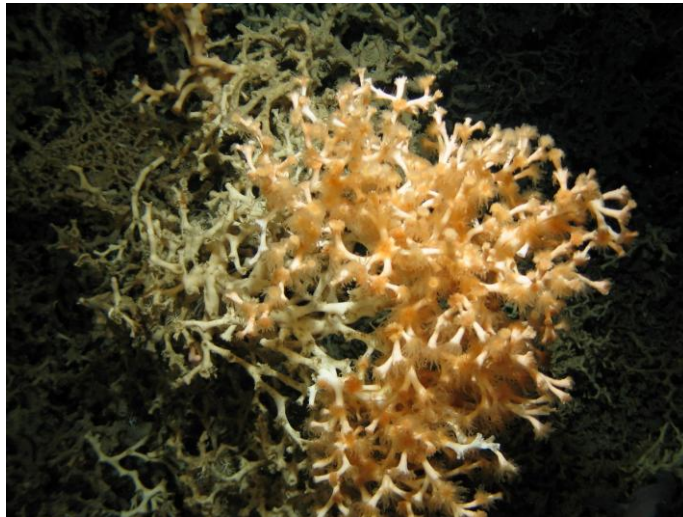




## **Offshore Special Area of Conservation: Hatton Bank**

### **Draft Conservation Objectives and Advice on Operations**



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Version 2.0 (12<sup>th</sup> December 2011)

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\* Cover photo illustrates live *Lophelia pertusa* coral on dead biogenic reef framework at the Hatton Bank site

## Document version control

Version and date	Amendments made	Issued to and date
Draft Hatton Bank Conservation Objectives and Advice on Operations v.2.0	Revised format and text. Addition of risk assessment amendments	Scottish Government, December, 2011
Draft Hatton Bank Conservation Objectives and Advice on Operations v.1.1	Revised vulnerability	March, 2010
Draft Hatton Bank Conservation Objectives and Advice on Operations v.1.0		Defra, February, 2009

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## Summary of Draft Advice on Operations for Hatton Bank Special Area of Conservation (SAC)

This advice is based on information on the SAC presented in JNCC's 'Hatton Bank SAC Selection Assessment' (Version 2.0 December 2011) and the boundary version therein. JNCC's Advice on Operations is site- and feature-specific, and has been developed using best available scientific information and expert interpretation as at December 2011. The Advice is generated using a grading of sensitivity and exposure of site interest features to physical, chemical and biological pressures associated with human activity. Sensitivity and exposure have been combined to give a measure of the vulnerability of an interest feature to operations which may cause damage or deterioration, and which therefore require management.

The Conservation Objective for Hatton Bank is to restore the reef to favourable condition.

The exact impact of any operation will be dependent upon the nature, scale, location and timing of events. This Advice on Operations for the Hatton Bank site will be kept under review and will be periodically updated to reflect changes in either sensitivity or exposure.

Management actions should ensure the reef of Hatton Bank SAC does not deteriorate from Favourable Condition. This will require assessment and management of human activities likely to affect the feature adversely, and of activities likely to impact natural environmental quality and environmental processes upon which the features are dependent

The **Hatton Bank** reefs and associated biological communities are not currently considered vulnerable to physical loss, physical damage or biological disturbance associated with mobile demersal fishing (despite their sensitivity to these pressures). The reef area on the Hatton Bank has always been regarded as an area to avoid by fishermen due to risk of loss of gear. This is supported by an assessment of fishing effort over the site which indicates no demersal fishing is taking place within the site.

The Hatton Bank lies within the North Atlantic ocean area regulated by the North East Atlantic Fisheries Commission (NEAFC). In order to protect the deep water corals at this site, NEAFC, following advice from ICES, restrict demersal fisheries activities at Hatton Bank such that they do not result directly or indirectly in the deterioration or disturbance of the *Lophelia pertusa* reefs from fishing activity.

Since 2006, there has been a NEAFC ban on deep-sea gill-netting at depths over 20m in depth in ICES areas VI and XII east of 27°W including Hatton Bank (NEAFC Record 03: Gill Nets 2006, enacted for the EU fleet through EC Regulation No 41/2007). With successively more information on deepwater coral distribution, progressively larger areas of the bank were closed to demersal gear between 2007 and 2009 (Durán Muñoz *et al*, 2007a,b; ICES, 2007a,b; NEAFC, 2007, Durán Muñoz *et al*, 2008c, 2009, NEAFC, 2007, 2008, 2010)

Since January 2007, it has been prohibited to conduct bottom trawling and fishing with static gear, including bottom set gill-nets and longlines within the Hatton Bank closed area (NEAFC Recommendation IX-2007, enacted for EU fleet by EC Regulation No. 41/2006). The boundary of this closed area was extended southwards and south-eastwards in 2008 (NEAFC Recommendation IX-2008, EC Regulation No 40/2008). A further extension, to include the western slope of the bank, was agreed in 2009 (NEAFC Recommendation VIII-2010; EC Regulation 1288/2009). As the biogenic reefs are found in close proximity to stony reefs and bedrock reefs in this area, the fisheries closure serves to protect the three sub-types of Annex I reefs from these pressures.

An analysis of the Vessel Monitoring System (VMS) information indicates that fishing vessels are adhering to these closures and not fishing within the site.

The fishing closures noted above are reviewed annually and could technically cease at some point in the future (following the NEAFC meeting in November 2011, the closures lasted until 31 December 2012). Competent Authorities should therefore reflect on an appropriate course of action to ensure that the Conservation Objectives for the Hatton Bank SAC interest features are fulfilled beyond 2012.

The reef is sensitive to, but not currently exposed to, the following pressures. Therefore to fulfil the conservation objectives for Annex I Reef, the Competent Authorities for this area are advised to manage human activities within their remit such that they do not result in exposure to these pressures, which may result in deterioration or disturbance of this feature:

- **Physical loss;**
- **Physical damage;**
- **Toxic and Non-toxic contamination;** and
- **Biological disturbance.**

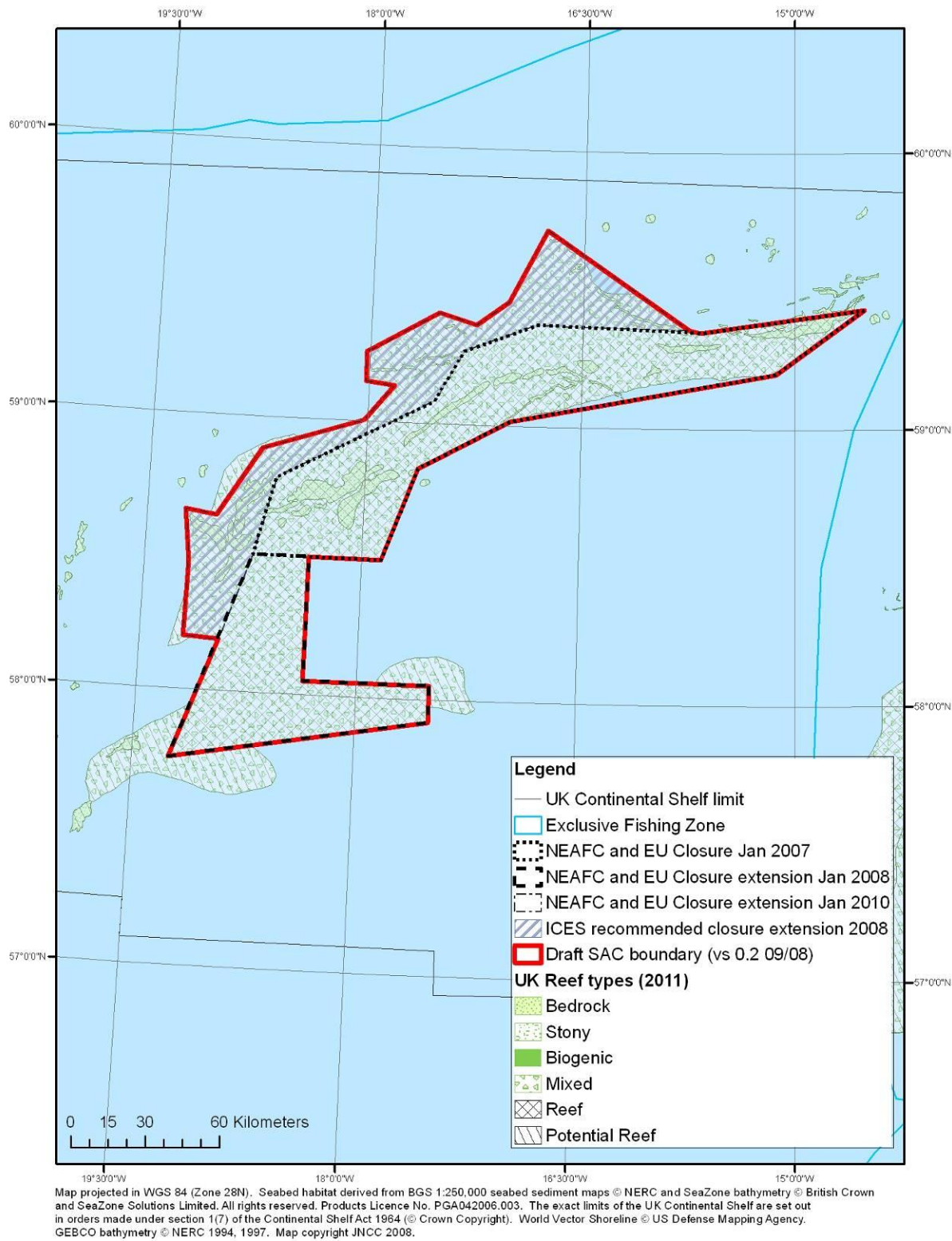
#### Risk of damage to Hatton Bank SAC

Within the Hatton Bank SAC there is no evidence to show that any offshore activity is currently occurring which may result in damage to the interest feature. This is based on the assumption that the Competent Authority is effectively enforcing the demersal fishing ban so that no illegal, unregulated or unreported (IUU) fishing is occurring.

This advice is indicative and does not remove the need for formal consultation on individual plans and projects.

There is a lack of detailed information on levels of exposure to human activities and their ecological impact on the feature at this site. Further information will be required to assess and monitor favourable condition of Annex 1 reef at this offshore SAC.

**Map 1. Hatton Bank SAC boundary and NEAFC/EU fisheries closure**



# 1 Hatton Bank SAC: Draft Conservation Objectives and Advice on Operations

## 1.1 JNCC's role

The Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended) transpose the Habitats Directive into law for UK offshore waters (from 12-200 nm from the coast or the UK Continental Shelf). These Regulations give JNCC a statutory responsibility to i) establish conservation objectives for SACs, ii) inform Competent Authorities of these conservation objectives and iii) advise Competent Authorities of any operations which may adversely affect the integrity of the site. This draft document for Hatton Bank SAC is therefore prepared by JNCC in fulfilment of requirements under Regulation 18 of the Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended).

This advice is based on information on the SAC presented in JNCC's "Hatton Bank: SAC Selection Assessment" (version 2.0 December 2011) and the boundary version therein. JNCC's Conservation Objectives and Advice on Operations are site- and feature-specific, and have been developed using best available scientific information and expert interpretation as at December 2011. The advice is generated through a coarse grading of sensitivity and exposure of site interest features to physical, chemical and biological pressures associated with human activity. Sensitivity and exposure have been combined to give a measure of the vulnerability of an interest feature to operations which may cause damage or deterioration, and which therefore may require management.

Although not relevant to the Hatton Bank, this advice is also required under the Offshore Petroleum Activities (Conservation of Habitats) Regulations (as amended); and the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

For offshore SACs, JNCC are required to provide conservation objectives and advice on operations once a site has been submitted by Government to the European Commission (i.e. becomes a candidate SAC).

## 1.2 The role of competent authorities

Regulations 22 and 23 of the Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended) require competent authorities to ensure compliance with the Habitats Directive. Competent authorities must, within their jurisdiction, have regard to both direct and indirect effects on interest features of the site. This may include consideration of issues outside the boundary of the SAC that have the potential to affect the SAC.

## 1.3 Role of conservation objectives

The conservation objectives set out what is needed to ensure Favourable Condition of the Annex I feature. The UK conservation agencies use the term "favourable condition" to represent the concept of Favourable Conservation Status for the interest features of an individual SAC (Davies *et al*, 2001). For an Annex I habitat, Favourable Conservation Status under the Habitats Directive occurs when: i) its natural range and area it covers within that range are stable or increasing; and ii) 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 iii) the conservation status of its typical species is favourable<sup>1</sup> (Article 1e).

Conservation objectives are the starting point from which management measures and monitoring programmes may be developed as they provide the basis for determining what

currently, or may in the future, impact the site. The SAC Conservation Objectives will also inform appropriate assessment under the Habitats Regulations.

## 1.4 Role of advice on operations

Under the Habitats Directive, Member States are required to take appropriate steps to avoid the deterioration or disturbance of interest features within SACs (Article 6.2). The advice on operations set out in Section 2 provides the basis for discussion about the nature and extent of the operations taking place within, or close to, the site and which may have an impact on its interest features. The advice should also be used to identify the extent to which existing measures of control, management and forms of use are, or can be made, consistent with the conservation objectives, and thereby focus the attention of competent authorities on areas that may need management measures. This advice on operations may need to be supplemented through further discussions with the relevant Competent Authorities.

This document will also inform the scope and nature of any appropriate assessment which the Directive requires to be undertaken for a plan or project (Regulation 25 of the Offshore Regulations) that:

- either alone or in combination with other plans or projects would be likely to have a *significant effect* on a European Site; and
- is not directly connected with the management of the site for nature conservation.

Where a project is likely to undermine the site's conservation objectives, it is likely to have a significant effect on the site and therefore require an appropriate assessment. The scope and content of any appropriate assessment will depend upon the location, size and significance of the proposed project and JNCC will advise on a case-by-case basis.

Through an appropriate assessment, Competent Authorities are required to ascertain the effect on the integrity of the site in view of the site's conservation objectives (Article 6.3). The integrity of the site is defined as 'the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified'.<sup>2</sup>

Although closely linked, the judgement of effect upon site integrity is subtly different to determination of favourable condition of a specific feature. An assessment of favourable condition determines the current status of a feature. Any evaluation of effects on site integrity needs to consider whether the plan or project in question is compatible with the long-term maintenance of the site's features. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon site integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon long-term site integrity even though the features remain in favourable condition in the short term.

<sup>1</sup> The term Favourable Conservation Status relates to the individual habitats and species over their natural range within the European Union. However, because the selection of the European network of SACs is seen as fundamental to achieving Favourable Conservation Status, the European Commission considers that the concept should also be applied at the site level.

<sup>2</sup> Institute of Ecology and Environmental Management (2010). Guidelines for Ecological Impact Assessment in Britain and Ireland.

## 1.5 Hatton Bank SAC conservation objectives

The conservation objectives for the Hatton Bank SAC interest features are provided below. These are high-level objectives for the site features, and JNCC may refine them in future as our understanding of the features improves. They should be read in the context of (and in conjunction with) other advice given, particularly the Site Selection Assessment document which provides more detailed information about the site and evaluates its interest features according to the Habitats Directive selection criteria.

Within the objectives below superscript letters refer to explanatory text provided in section 1.6.

The following Conservation Objectives set out what needs to be achieved at the site in order to fulfil the aims of the Habitats Directive. They are a starting point from which management of activities and monitoring of the conservation features of the site may be developed. Only qualifying interest features are considered in this section. Superscript characters a-h refer to definitions given in section 1.6.

### The Conservation Objectives for the Annex I reef at Hatton Bank are:

Subject to natural change, restore<sup>a</sup> the reef to favourable condition, such that:

- The natural environmental quality<sup>b</sup> is maintained
- The natural environmental processes<sup>c</sup> are maintained.
- The extent<sup>d</sup>, physical structure<sup>e</sup>, diversity<sup>f</sup>, community structure<sup>g</sup> and typical species<sup>h</sup> representative of **bedrock, biogenic and stony reef** in the *Atlantic North-West Approaches* are restored.

The Conservation Objectives for the Hatton Bank site set out to restore the reef to favourable condition. There is some evidence that due to damage caused by bottom trawling prior to the EU fishing closure (Howell *et al*, 2007), the Annex I feature may not be in favourable condition and is likely to require restoration. The conservation objective for the site may be revised at a later date should new information become available.

There are currently measures imposed by NEAFC and the EU to protect the cold water coral, *Lophelia pertusa* on Hatton Bank. These measures prohibit all forms of bottom gears (towed and fixed) operating in the area, with the intention of allowing the feature to achieve favourable condition with time by removing pressures to which the feature is sensitive.

The feature's vulnerability to human pressure is further documented in section 2.5. However there is a lack of detailed information on previous levels of exposure to human activities and their ecological impact on the feature at this site. As such, it is not possible to ascertain precisely the degree to which the feature has been damaged, and the extent to which restoration might be required. Further information will be required to assess and monitor favourable condition of the reef at this offshore SAC.

## 1.6 Explanation of terms used in the Conservation Objectives

### a) Maintain or Restore

**Maintain** implies that, based on our existing understanding, the feature is regarded as being in **favourable condition** and will, subject to natural change, remain at its condition at designation.

**Restore** implies that the feature is likely to have been degraded to some degree or, in the absence of evidence, that activities generating pressures to which the feature is sensitive affect the feature and that activities may have to be managed to reduce or eliminate potential negative impact(s). The first step for a 'restore' objective may be to seek new information on the current condition of the site feature. Restoration in the marine environment generally refers to natural recovery to favourable condition through the reduction or removal of impacts.

JNCC consider that maintenance or restoration of the following parameters (b - h) will take account of the maintenance or restoration of natural structures and functions and ecological processes.

- b) Natural environmental quality** e.g. chemical quality parameters of water, suspended sediment levels, radionuclide levels etc. should not deviate from baseline at designation (if available) or reference conditions
- c) Natural environmental processes** e.g. circulation, sediment deposition and erosion etc. should not deviate from baseline at designation (if available) or reference conditions
- d) Extent** - the area covered by the habitat and communities
- e) Physical structure** - the shape, form and composition of the habitat and its substrata.
- f) Diversity** - the number of different biological communities or number of species within a given community.
- g) Community structure** e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility.
- h) Typical species** – see Appendix IV for criteria for identifying typical species.

## 1.7 Favourable condition

Conservation objectives for inshore SACs have been provided in association with a "favourable condition" table, which outlines how to recognise favourable condition for the interest features in question. However, understanding the functioning and condition of complex and dynamic offshore marine sites, which experience a variety of pressures resulting from historical and current activities, is difficult. For offshore sites, there is generally insufficiently detailed information on i) the existing condition of qualifying interest features and ii) the preferred or target condition of interest features. This currently limits the identification of measures and associated targets for condition monitoring. It is anticipated that further information on the condition of interest features will be obtained through baseline surveys and monitoring.

## 2 Advice on operations

### 2.1 Purpose of advice

The aim of this advice is to enable all competent authorities to prioritise management of activities that currently pose a threat to the interest features of the Hatton Bank site and to

inform them which activities may cause deterioration of the site's features in the future. The advice is linked to the conservation objectives outlined in the section above, and will help provide the basis for detailed discussions on management of activities that may affect the features of the site.

## 2.2 Methods for assessment of vulnerability to pressures

Six broad Pressure Categories which may cause i) deterioration of natural habitats or the habitats of species, or ii) disturbance of species, (either alone or in combination), are considered in JNCC's Advice on Operations:

- Physical loss
- Physical damage
- Non-physical disturbance
- Toxic contamination
- Non-toxic contamination
- Biological disturbance

Example sources of pressures are provided (See Table 1), although these examples are not inclusive of all potentially detrimental activities.

A three-step process is used to assess the vulnerability of the site's features (**reef**) to the above pressures (see flow diagram in Appendix I):

1. An assessment of the **sensitivity** of the interest feature to the listed pressures (2.3);
2. An assessment of the current **exposure** of the interest feature to the pressures (2.4); and
3. An assessment of the **vulnerability** of the interest feature to the pressures. Vulnerability occurs where sensitivity to a given pressure is combined with exposure to that pressure.

This approach is sufficiently robust to take into account the effects of new activities or changes in patterns of usage. By assessing sensitivity, exposure and vulnerability independently, the reasoning behind current (and any future) advice is made clear. If an interest feature is known or thought to be sensitive to a particular pressure category, new activities or changes in patterns of activities which result in that pressure are likely to cause deterioration or disturbance.

All the scores of relative **sensitivity**, **exposure** and **vulnerability** are derived using best available scientific data and expert judgement. This method uses a coarse categorisation system, reflecting the current state of our understanding of the marine environment. It should be recognised that data for offshore habitats are sparse and assessments are likely to need revision in light of new research.

## 2.3 Sensitivity Assessment

This assessment evaluates the relative sensitivity of the features of the Hatton Bank SAC to the effects of physical, chemical and biological pressures. Sensitivity is defined here as 'intolerance of a habitat, community or individual (or individual colony) of a species to damage, or death, from an external factor and the time taken for its subsequent recovery' (MarLIN, 2006). For example, a very sensitive species or habitat is one that is very adversely affected by an external factor arising from human activities or natural events

(killed/destroyed, high intolerance) and is expected to recover over a very long period of time, i.e. >10 or up to 25 years ('low' recoverability) (MarLIN, 2006). The sensitivity of interest features (and scientific understanding of sensitivity) may change over time. Hence, an operation which is not currently deemed to have a negative effect may do so in the future.

Table 1 (column 3) shows the sensitivity assessments for the features of the Hatton Bank SAC. They are drawn principally from MarLIN's (2005) evaluation of the sensitivity of the following biotope (which is not identical, but is comparable in terms of functionality to that present within the SAC):

- ***Lophelia* reefs (COR.Lop)**

The applicability of the MarLIN assessments of sensitivity is dependent on the quality of available scientific information on these biotopes and their characterising species. In addition, both the biotope classification system and the MarLIN sensitivity assessments primarily rely on inshore biological data, so although the biotope sensitivity assessments are applicable to habitats in offshore waters, confidence in these assessments in an offshore context is necessarily lower. JNCC has in some cases, therefore, adjusted the assessments of sensitivity to be more precautionary, in order that the feature's sensitivity is not underestimated. Further detail on our approach to evaluating sensitivity can be provided on request.

Three sub-types of Annex I reefs are found at the Hatton Bank site (bedrock, biogenic and stony); however the biogenic reef (*Lophelia pertusa*) is the most sensitive of these three sub-types. Therefore, in support of the precautionary principle, the sensitivity assessment is based on the *Lophelia pertusa* biotope.

The interest features and associated biological communities of the Hatton Bank site are sensitive to: **physical loss, physical damage, non-toxic contamination, and biological disturbance**. Further detail on sensitivities of Annex I Biogenic reef (*Lophelia pertusa*) to these pressures is provided in Table 1 and the activities which may be associated with these pressures is given in Appendix II.

The interest feature and associated biological communities of the Hatton Bank site are sensitive to:

#### Physical loss

*Lophelia pertusa* is a fragile, slow growing coral with individual colonies taking up to thousands of years to develop (Bell and Smith, 1999; Roberts, 2002; Friewald *et al*, 2004). Recent research suggests that stony (scleractinian) coral reefs do not recover from trawling impact quickly, with one study showing no signs of recovery on trawled seamounts after 5 and 10 years (Williams *et al*, 2010).

Any construction over the feature would lead to its (partial) removal, and permanent infrastructure may prevent its natural recovery through obstruction. Removal of the hard substrata on which the coral grows would prevent recovery (Shelton, 1980; Mortensen, 2001). In addition to *Lophelia*'s own sensitivity to sediment deposition, the feature's associated ecological communities are also sensitive to smothering, particularly the more low-lying or encrusting typical species.

#### Physical damage

*L. pertusa*'s potential fragility is such that a coral head can be damaged even by the turbulence of a passing research submersible (Wilson, 1979). Coral rubble has been

regularly observed on surveys and in addition to water movements, physical abrasion caused by mobile fishing gear can directly damage the interest feature and its typical species. Such physical disturbance is likely to reduce the structural complexity of the feature (for example, by damaging erect epifaunal species) and reduce biodiversity through the selective removal of large, sessile, long-lived species from the community (Sewell and Hiscock, 2005). Many of the feature's typical species, including *Lophelia* itself, are permanently attached to the substratum and will not re-attach once displaced.

Increases in suspended sediment may cause interference for some suspension feeders on the reef, including *Lophelia*, although recovery from this pressure is thought to be rapid.

#### Toxic and non-toxic contamination

The feature and associated communities are considered sensitive to various types of chemical disturbance. Assessing the effects of toxic and non-toxic contamination on biotopes is extremely difficult because varying quantities of different contaminants can have very different effects (including antagonistic and synergistic effects) on marine organisms, and as such confidence in this assessment is necessarily lower.

JNCC has assigned a sensitivity score of 'moderate' to the introduction of non-synthetic compounds. This is a precautionary approach, incorporating the effects of high levels of contamination (acute or chronic) and /or unexpected synergistic effects.

The MarLIN sensitivity assessment indicates the feature and associated communities is highly sensitive to changes in thermal regime and salinity and sensitive to changes (at a low level) in nutrient loading. Sensitivity to changes in turbidity is considered irrelevant for this feature which lies well below the photic depth and is therefore not subject to changes in light condition, irrespective of changes in turbidity.

#### Biological disturbance

The biological effects of fisheries can include:

- Removal of target species
- Mortality of non-target species

These effects can lead to shifts in community structure (e.g. if predators are removed from the system) which then lead to indirect effects on the food web as a whole.

In addition, many of the species targeted by fisheries in deep water areas are especially vulnerable to the effects of over-fishing due to their slow life histories (Pauly *et al*, 2002; Sewell and Hiscock, 2005).

It has not been possible to determine whether the interest feature is sensitive to the introduction of toxic synthetic compounds, radionuclides, microbial pathogens or non-native species.

## **2.4 Exposure assessment**

Table 1 (column 4) highlights the relative exposure of the Hatton Bank's interest feature to physical, chemical and biological pressures. This assessment is based on known human activities operating in or adjacent to the site, and the anticipated pressures associated with these activities.

As offshore sites cover a relatively large geographical area and precise information on operations within SAC boundaries is not yet available, assigning scores for exposure carries certain assumptions about the spatial extent, frequency and intensity of the pressures associated with offshore activities. Expert judgement was used to determine where onsite and offsite activities are likely to expose interest features to physical, chemical and/or biological pressures.

Spatial data on offshore industry activities has been provided by the Crown Estate for aggregate extraction and windfarm development, UK Deal for oil and gas industry activities and the United Kingdom Cable Protection Committee for submarine cable distribution. UK-wide fisheries data for offshore waters are not yet available to JNCC at sufficient resolution to enable a full assessment of exposure to different types of fishing activities.

Fishing exposure data was derived from work on a Defra marine biodiversity research programme (MB106)<sup>3</sup>. Estimations of fishing activity were derived from Vessel Monitoring System (VMS) data and are available for 2006-9. The derived surfaces represent activity from all vessels (both UK and non-UK registered vessels) of at least 15m length. VMS data for UK vessels were linked to skipper logbook information in order to determine the fishing gear being employed. For non-UK registered vessels where logbook information is not available, information on fishing gear employed has been obtained from 'primary gear' listed on the EU vessel register. Unprocessed VMS data have been filtered using a simple speed rule of between 1 and 6 knots to indicate fishing activity for all gear types. Date and time information attached to unprocessed VMS data were used to determine elapsed time between consecutive VMS locations for each vessel (usually 2 hours) and summarised at a resolution of 0.05 decimal degrees.

From fish landings data, information is available on which species are removed from the ICES rectangle within which the site is located, using particular gear types and the size of the vessel used. We can therefore take into consideration the importance of these target species in the functioning of the biotope when assessing the level of biological disturbance through selective extraction of species. Landings data, however, does not provide information on the possible mortality/extraction of non-target species. Additional research to assess the distribution of static/set demersal gear use and the intensity of its physical and biological impacts is needed. Interest feature exposure and vulnerability to static/set demersal gears are therefore difficult to assess using VMS and landings data.

The exposure assessment is based on best available information on the levels of pressures associated with activities at the Hatton Bank site. If new information becomes available this may lead to modification of the advice on operations presented herein. In addition, an activity may not currently be occurring on the site but may do so in future. As such, competent authorities will need to take into account both the sensitivity of the feature and the conservation objectives outlined in section 1.5 whenever a new activity is proposed<sup>4</sup>. A list of operations that may generate pressures to which the feature is sensitive in the future is given in Annex II.

### **Interest feature exposure to physical, chemical and biological pressures**

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<sup>3</sup> Cefas (2010) Report no. 1: Objective 1 – Provision of geo-database containing standardised layers showing the distribution of specified activities, sites and resources with associated metadata and comments. Project MB106: Further development of marine pressure data layers and ensuring the socio-economic data and data layers are developed for use in the planning of marine protected area networks

<sup>4</sup> For a list of activities that may contribute to the listed pressures, but that are not comprehensive, see Annex II

Based on best-available information the interest feature and associated biological communities of the Hatton Bank site are assessed as not exposed currently to any pressures to which it is sensitive. This includes the pressures associated with bottom fishing listed in Table 1, namely physical loss, physical damage and biological disturbance. Fishing effort provided through the MB106 contract indicates that between 2006 and 2009 there was some UK gill-netting (maximum of 25 hours over 4 years) and potting activity (maximum of 36 hours over 4 years) within the southern section of the SAC. The years cannot be differentiated between with this dataset but it is thought that these activities took place prior to the 2008 closure extension or perhaps, more likely due to the very low hours on site, it does not represent actual fishing effort but rather 'weathering'. This is supported by the FAO review of worldwide bottom fishing, which does not mention any potting activity in this area (Bensch, 2009). Otherwise, the dataset indicates that no other gear is being employed at the site, strongly suggesting that the NEAFC and EU bans on bottom fishing gear introduced in 2007 is being adhered to. The main fishing activity around the Hatton Bank site is Spanish bottom trawling with some Russian and Norwegian longlining. From observations it is not thought that any of these are presently taking place within the site (Tom Blasdale (JNCC), pers. comm.).

There is currently insufficient information to quantify exposure to pressures associated with fishing activity of the under 15m fleet, however due to the distance of the SAC from the coast this site is relatively inaccessible to vessels under 15m.

It has not been possible to determine whether the interest feature is exposed to the introduction of non-native species.

## 2.5 Vulnerability assessment for current activities

The vulnerability of the interest feature to external pressures is determined by integrating the sensitivity evaluation with that of exposure. Only if a feature is both sensitive *and* exposed to a human activity is it considered vulnerable (Appendix III). In this context, therefore, **vulnerability** has been defined as the **exposure** of the habitat, community or individual (or individual colony) of a species to an external factor to which it is **sensitive** (Hiscock, 1996). An assessment of interest features' vulnerability (Table 1) helps to guide site management decisions by highlighting potentially detrimental activities that may need to be managed (or continue to be managed) by the competent authorities.

The **Hatton Bank's reef** and associated biological communities are not currently considered vulnerable to any pressures.

Vulnerability to introduction of non-native species remains unknown for this interest feature.

## 2.6 Risk of damage or disturbance

JNCC considers 'risk' to be the likelihood of deterioration of the feature due to an activity. It is the vulnerability of the feature to an activity, assessed against the level of management of that activity.

High risk activities will be those to which the feature is highly or moderately vulnerable, and for which there is insufficient management. For example, industries which are not location specific and not subject to prior consent procedures or reliable enforcement are more likely to cause damage/disturbance to the interest feature. These industries include fishing and

shipping. However, clearly not all activities associated with these industries are detrimental to interest features.

Low risk activities will be those where there is no feature vulnerability (i.e. the activity does not interact with the feature) or where the moderate or high vulnerability is mitigated for by management. For example, for industries that are location specific which are always subject to prior consent and have clear reliable methods of enforcement there is generally a lower likelihood of causing damage or disturbance to interest features. Under regulation 25 of the Offshore Habitats Regulations, before a Competent Authority undertakes or authorises a plan or project which may have a significant effect on the site, it is required to carry out an Appropriate Assessment to assess the implications for the site in view of its conservation objectives. The Competent Authority can only agree to the plan or project if it has ascertained that it will not adversely affect the integrity of the site but can agree to a plan or project for imperative reasons of overriding public interest, notwithstanding its adverse effect, if there are no alternative solutions.

If consent has already been granted by a Competent Authority for a plan or project at the time a site becomes a European Offshore Marine Site, under the Offshore Habitats Regulations that consent will need to be reviewed against the conservation objectives for the site, and affirmed, modified or revoked. This includes the activities of the oil and gas, aggregates and renewable energy industry sectors.

Only high or medium risk activities are noted here. Table 2 shows the risk assessment for the Hatton Bank reef.

Within the Hatton Bank site, there are no activities known to currently occur which may expose the feature to moderate or high risk of damage or deterioration. This is based on the assumption that the Competent Authority is effectively enforcing the demersal fishing ban so that no illegal, unregulated or unreported fishing is occurring.

Competent Authorities are advised to continue management actions to assess and, if necessary, reduce the risk of damage associated with this activity to the reef interest feature.

The vulnerability of the SAC to climate change is not considered in the tables below, given the uncertainties surrounding the effects of global change in the oceans.

**Table 1: Sensitivity, exposure and vulnerability of the Hatton Bank *Lophelia pertusa* reefs to physical, chemical and biological pressures**

**Sensitivity key:** ••• = High sensitivity •• = Moderate sensitivity • = Low sensitivity, ○ = No known sensitivity\* and ? = Insufficient information to make assessment (\*Meaning: 'Sensitivity of the feature has been researched and no evidence of sensitivity to this pressure has been found')

**Exposure key:** High = High exposure, Medium = Medium exposure, Low = Low exposure, None = No known exposure, Unknown level = Exposure of an unknown level and ? = Insufficient information to make assessment.

List of pressures which may cause deterioration or disturbance (with example activities)		Hatton Banks: <i>Lophelia pertusa</i> reefs		
		Sensitivity	Exposure	Vulnerability
<b>Physical Loss</b>	<b>Removal</b> (e.g. aggregate dredging, isolated rock dump, infrastructure development)	•••	None	No known vulnerability: 0
	<b>Obstruction</b> (e.g. Permanent constructions [oil & gas infrastructure, windfarms, cables] & wrecks)	•••	None	No known vulnerability: 0
	<b>Smothering</b> (e.g. drill cuttings)	••	None	No known vulnerability: 0
<b>Physical Damage</b>	<b>Changes in suspended sediment</b> (e.g. screening plumes from aggregate dredging)	•	None	No known vulnerability: 0
	<b>Physical disturbance or abrasion</b> (e.g. mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, potting)	•••	None	No known vulnerability: 0

<b>Non-physical disturbance</b>	<b>Noise</b> (e.g. boat activity, seismic)	○	?	<b>No known vulnerability: 0</b>
	<b>Visual presence</b> (e.g. recreational activity)	○	<b>None</b>	<b>No known vulnerability: 0</b>
<b>Toxic contamination</b>	<b>Introduction of synthetic compounds</b> (e.g. TBT, PCBs, industrial chemical discharge, produced water, fuel oils)	?	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Introduction of non-synthetic compounds</b> (e.g. heavy metals, crude oil spills)	•	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Introduction of radionuclides</b> (e.g. nuclear energy industry)	?	<b>None</b>	<b>No known vulnerability: 0</b>
<b>Non-toxic contamination</b>	<b>Changes in nutrient loading</b> (e.g. outfalls)	•	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Changes in thermal regime</b> (e.g. cooling water discharges)	•••	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Changes in turbidity</b> (e.g. laying of pipelines, aggregate dredging)	○	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Changes in salinity</b> (e.g. outfalls from rigs, ships)	•••	<b>None</b>	<b>No known vulnerability: 0</b>
<b>Biological disturbance</b>	<b>Introduction of microbial pathogens</b> (e.g. outfalls)	?	<b>None</b>	<b>No known vulnerability: 0</b>
	<b>Introduction of non-native species and translocation</b> (e.g. ballast water, hull fouling)	?	?	<b>Insufficient information</b>
	<b>Selective extraction of species</b> (e.g. bioprospecting, scientific research, demersal fishing)	•••	<b>None</b>	<b>No known vulnerability: 0</b>

**Table 2: Risk of damage to Hatton Bank reefs from current or planned activities (based on vulnerability identified in Table 1).**

**Risk key:** Low=low risk of damage to feature; Moderate=moderate risk of damage to feature; High=high risk of damage to feature.

List of pressures which may cause deterioration or disturbance (with example activities)		Hatton Bank: bedrock, biogenic and stony reef				
		Vulnerability	Activity associated with pressure	Current management	Level of risk	Action advised
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note.

N/A due to fishery closure already in place.

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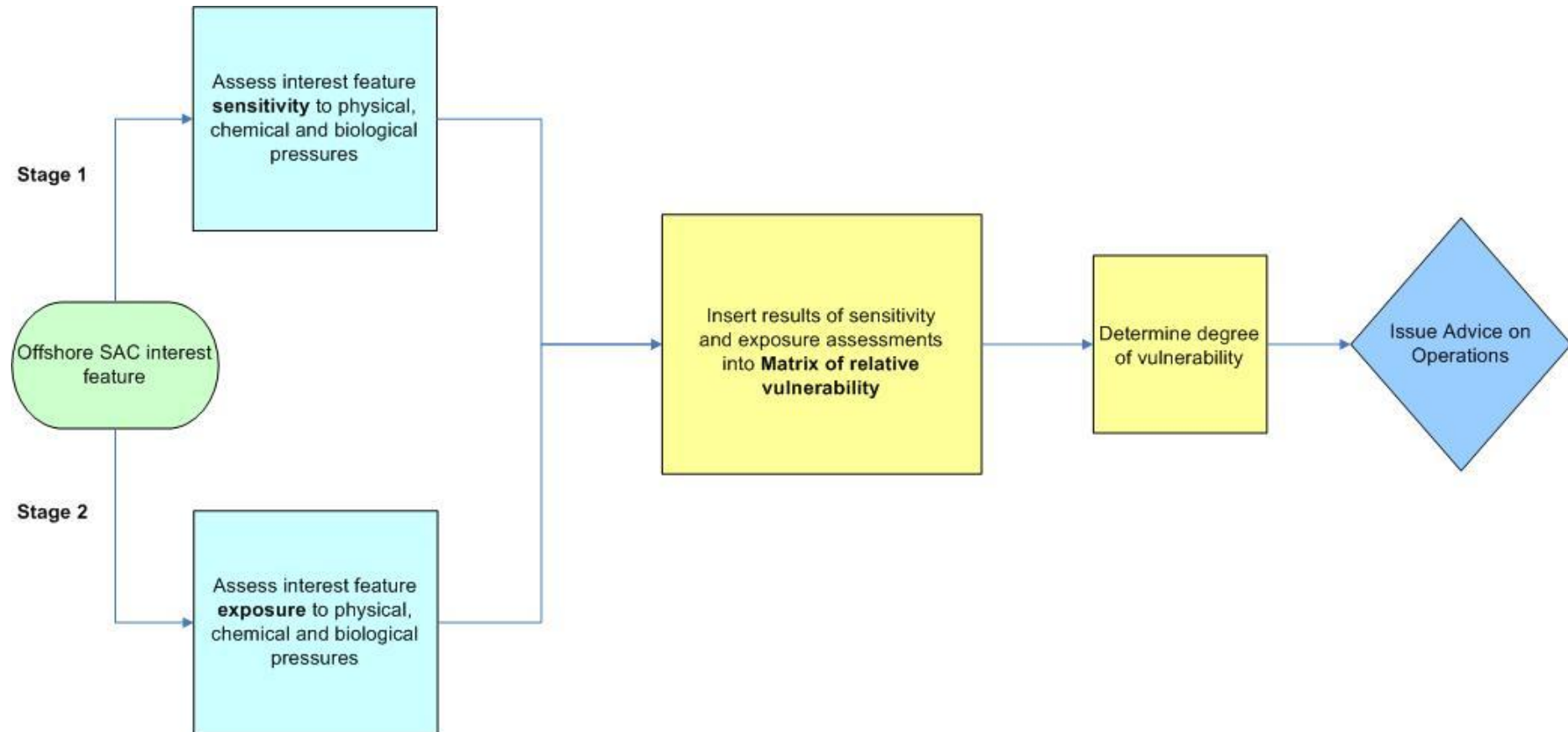
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## Appendix I. Flow diagram illustrating process of determining vulnerability of interest features.



## **Appendix II: Associated activities that contribute to pressures to which reef feature of site is sensitive:**

This list is draft, not definitive, and intends merely to provide Relevant/Competent Authorities with an indication as to the type of activities which may cause damage or deterioration to the feature for which the site is designated. These include activities which may not currently be affecting the site.

### **Physical loss**

#### *Removal*

Aggregate dredging, isolated rock dump, infrastructure development and ship wrecks

#### *Obstruction*

Permanent constructions [oil & gas infrastructure, offshore windfarms, wave and tidal renewable developments, cables and pipelines] & wrecks

#### *Smothering*

Drill cuttings

### **Physical Damage**

#### *Changes in suspended sediment*

Screening plumes from aggregate dredging

#### *Physical disturbance or abrasion*

Mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, creeling/potting

### **Toxic contamination**

#### *Introduction of synthetic compounds*

TBT, PCBs, industrial chemical discharge, produced water, fuel oils

#### *Introduction of non-synthetic compounds*

Heavy metals, crude oil spills

#### *Introduction of radionuclides*

Nuclear energy industry

### **Non-toxic contamination**

#### *Changes in nutrient loading*

Outfalls

#### *Changes in thermal regime*

Cooling water discharges

#### *Changes in turbidity*

Laying of pipelines, aggregate dredging

#### *Changes in salinity*

Outfalls from rigs, ships

### **Biological disturbance**

#### *Introduction of microbial pathogens*

Outfalls

#### *Introduction of non-native species and translocation*

Ballast water, hull fouling

#### *Selective extraction of species*

Bioprospecting, scientific research, demersal fishing

## Appendix III. Matrix of relative vulnerability

The relative vulnerability of an interest feature is determined by combining the sensitivity and exposure assessments according to the table below.

Relative exposure of the interest feature at the site	Relative sensitivity of the interest feature			
	High ●●● (3)	Moderate ●● (2)	Low ● (1)	None detectable ○ (0)
High (3)	9	6	3	0
Medium (2)	6	4	2	0
Low (1)	3	2	1	0
Exposure at an unknown level				0
None (0)	0	0	0	0

Note that if there is insufficient information to assess either the exposure OR sensitivity of a given interest feature, vulnerability will always be categorised 'insufficient information to make any assessment'.

### Categories of relative vulnerability

High vulnerability	6 to 9
Moderate vulnerability	3 to 5
Low vulnerability	1 to 2
Vulnerability identified, but not quantified as level of exposure unknown.	
No known vulnerability	0
Insufficient information to make any assessment	

## Appendix IV: Typical Species Criteria

Identification of a species as typical is not in itself sufficient to indicate the importance of the species or any need for management. The importance of the species should be judged on the contribution made by the species to ecological integrity of the feature. These criteria are intended to help identify or classify typical species and are not limited to the benthos and are relevant to the Annex 1 habitat feature and its component parts at the *site* level.

A typical species should meet one or more of the following criteria a – e below:

### **a Consistently associated with, but not necessarily restricted to, the feature**

For example:

- Can be predicted to occur at certain seasons/times (e.g. seasonal & temporal);
- Stages of life cycle associated with the feature (e.g. spawning);
- Species is dependent upon feature (for food, shelter, nest).

### **b A species on which identification of the habitat is founded**

- This criterion is unlikely to apply to complex physiographic features which may be composed include other Annex 1 features (e.g. H1130 Estuaries, H1160 Large Shallow Inlets and Bays which may include 'H1170 Reefs', 'H1110 Sandbanks which are slightly covered by seawater all the time' etc.).

### **c Characteristic of the habitat**

For example:

- *Ammodytes tobianus*, *Zostera marina* for 'H1110 Sandbanks which are slightly covered by seawater all the time'.

### **d An integral part of the structure of the habitat**

For example:

- Any species that gives the habitat structural complexity (e.g. kelp);
- Any species that forms the habitat (e.g. biogenic reef species, maerl).

### **e A species which influences the habitat's structure and function**

For example:

- Bioturbators;
- Grazers;
- Animals which bore into the substratum;
- Predators;
- Keystone species (i.e. a species that influences the ecological composition, structure, or functioning of its community far more than its abundance would suggest (EEA, 2008).
- 

*Note: the above criteria should not be used to describe non-native species as typical.*

*Non-Native* – These are marine species and plants and algae are transported from their native range to 'new' areas. Species can be introduced to non-native environments accidentally or deliberately. Introductions and transfer of non-native marine species to their non-native environment mainly occurs by the transport and discharge of ballast water and, to a lesser extent, by transport of fouling organisms on hulls or through aquaculture (JNCC, 2008b).