29. Offshore circalittoral rock and biogenic reef

Background

Offshore circalittoral rock and biogenic reef habitats occur below the wave base at 50-200 m and are not affected by wave action. The habitats consist of rocky substrates or biogenic substrates formed by polychaetes, bivalves or corals. (EUNIS, 2017a, 2017b).

Table A10.29.1. Offshore circalittoral rock ecological groups. Characterising species within those groups on which each group sensitivity assessment was based are listed (Maher et al., 2016).

Group number	Group description	Characterising species
Group 2	Non-predatory mobile species	*Echinus esculentus*
Group 3	Mobile predators and scavengers	*Asterias rubens, Cancer pagurus, Nucella lapillus*
Group 4	Bivalves and brachiopods	*Pholas dactylus*
Group 5	Tube-dwelling fauna	*Lanice conchilega, Sabella pavonina*
Group 6(a)	Attached soft-bodied species	*Alcyonium digitatum, Clavelina lepadiformis, Dysidea fragilis*
Group 6(b)	Attached encrusting species	*Cliona celata, Electra pilosa*
Group 6(c)	Attached erect species	*Axinella dissimilis, Eunicella verrucosa, Flustra foliacea*
Group 6(d)	Attached robust fauna	*Balanus crenatus, Spirobranchus triqueter*

Rationale for spatial protection in the Celtic Sea

Offshore circalittoral rock and biogenic reef habitats is included in the features list as it is a Marine Strategy Framework Directive (MSFD) priority habitat and is a broadly distributed feature of ecological importance within the Celtic Sea. This habitat hosts a wide range of

species, contributing to the biodiversity of Irish waters. Broadscale habitats do not have existing protection or management, but Ireland has a legal obligation under the MSFD to protect them and they are amenable to spatial protection.

Sensitivity Assessment

The sensitivity analysis is focused on the ecological groups, and their characterising species, listed under circalittoral rock by Maher et al. (2016) due to the lack of evidence on characterising species of offshore circalittoral rock in the Celtic Sea. It is assumed that the same ecological groups are present on offshore circalittoral rock and subsequently have the same sensitises. Offshore biogenic reefs, such as horse mussel reefs or cold-water coral reefs, do not have a significant range in the Celtic Sea and the sensitivity of these habitats was not therefore included in the assessment.
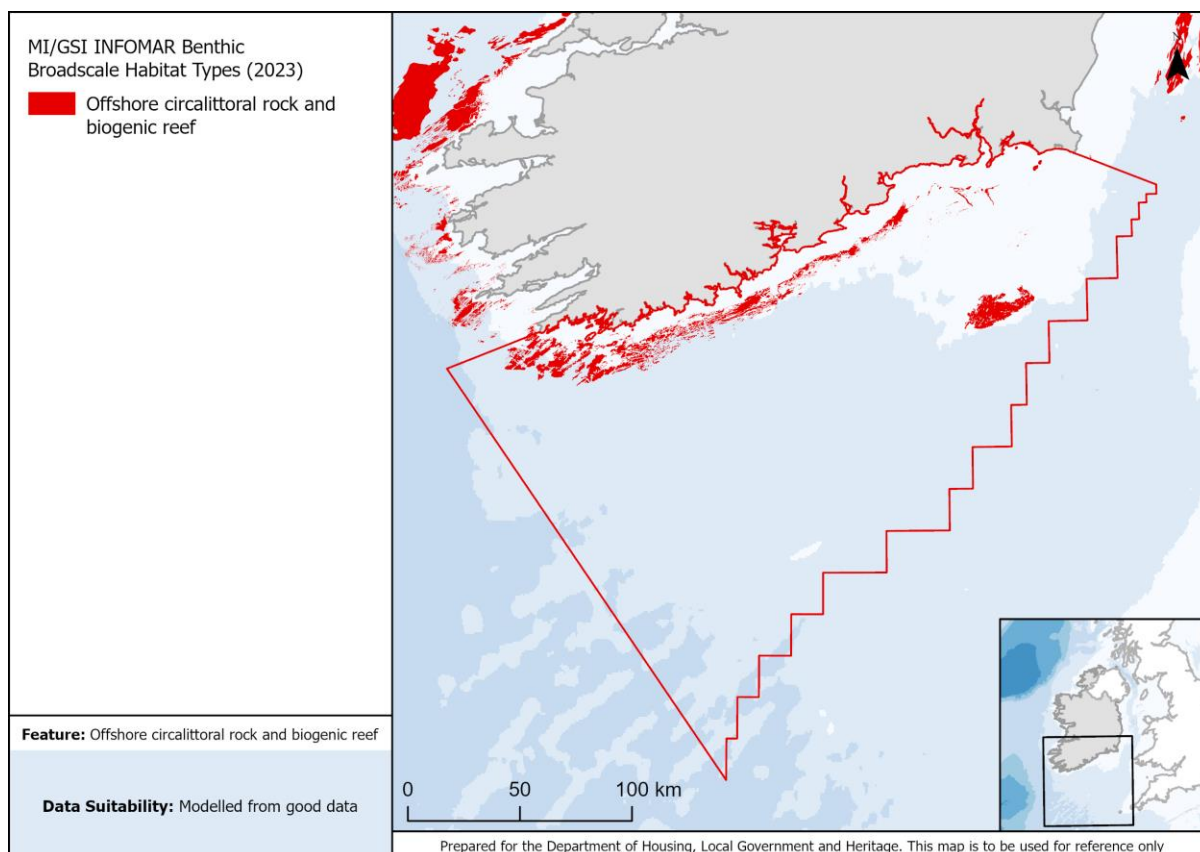
Figure A10.29.1. Data available for offshore circalittoral rock and biogenic reef in the Celtic Sea.

Offshore circalittoral rock and biogenic reef is highly sensitive to pressures associated with the construction and operation of offshore wind farms. All marine habitats and benthic species are considered to be highly sensitive to the pressure 'physical loss (to land of freshwater habitat)' with a resistance of None and no resilience. Offshore circalittoral rock and biogenic reef is highly sensitive to change to another seabed type. A permanent change from rock to sediment would change the habitat classification, meaning a resistance and resilience of None. Ecological group 6(c), an attached erect species, is highly sensitive to heavy smothering and siltation changes. Comprising permanently attached species that generally are less than 25 cm in height, this group would be totally smothered by a deposition of 30 cm and suitable substratum for resettlement would be similarly covered (Maher et al., 2016).

Offshore circalittoral rock and biogenic reef is highly sensitive to pressures associated with the fishing sector. Ecological group 6(c), an attached erect species, is highly sensitive to the pressure 'hydrocarbon & PAH contamination'. No direct effects of this pressure have been reported for the characterising species and this assessment is based on the effects on gorgonian corals (e.g., *Eunicella verrucosa)*. Exposure is most likely through

the ingestion of contaminated plankton and organic material, and exposure can damage up to 50% of a coral population (Etnoyer et al., 2016). Sporadic recruitment and slow growth rates mean resilience was assessed as Low (Maher et al., 2016). Ecological group 3, mobile predators, and scavengers, are highly sensitive to the pressure 'transition elements & organo-metal contamination'. Tributyl tin (TBT) used in antifouling paint can kill or reduce the reproductive capacity of *Asterias rubens* which leads to population declines through natural mortality and poor recruitment (Maher et al., 2016). Ecological group 3 is also highly sensitive to synthetic compound contamination. Comprising predators and scavengers, this group is susceptible to bioaccumulation of contaminants. Polychlorinated biphenyls (PCBs) can accumulate in *A. rubens,* resulting in reduced survival rates of larvae (den Besten et al., 1989).

Offshore circalittoral rock and biogenic reef is highly sensitive to pressures associated with shipping. Offshore circalittoral rock and biogenic reef is highly sensitive to the chemical pressures 'transition elements & organo-metal contamination', 'hydrocarbon & PAH contamination', and 'synthetic compound contamination' (Maher et al., 2016), the effects of which are described above in relation to the fishing sector.

Data sources available

See Figure A10.29.1 for data available for this broadscale habitat type in the Celtic Sea. This layer was used in prioritization analyses.

Further research needs

As with other MSFD broadscale habitats, better evidence is needed as to which species particularly characterise these habitats in the Celtic Sea. Further research is needed to assess the sensitivity of the full list of relevant characterising species present to provide a more comprehensive analysis for each ecological group. There is a lack of knowledge on the prevalence and distribution of biogenic reefs in the Celtic Sea, hindering the ability to place them under appropriate protection. Genetic data on characterising species could help identify populations with high genetic variability or distinctness, and provide information on connectivity among populations. An integrated approach where genetic data are used in combination with sensitivity and conservation prioritization analyses could provide more comprehensive spatial protection.

References

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