35. Offshore Circalittoral Mud

Background

In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as *Thyasira* spp., echinoderms and foraminifera (JNCC, 2022).

Table 1. Offshore Circalittoral Mud characterising species defined by Tillin & Tyler-Walters (2013).

	Characterising species	MarLIN Link
Group 1(a)	**Erect, longer-lived epifaunal species with some flexibility**	
	Pennatula phosphorea	
Group 1(c)	**Soft-bodied epifaunal species**	
	Ascidiella aspersa	
	Styela gelatinosa	
Group 2	**Temporary or permanently attached surface dwelling or shallowly buried larger bivalves**	
	Pseudamussium septemradiatum	
Group 3	**Mobile predators and scavengers**	
	Asterias rubens	https://www.marlin.ac.uk/species/detail/1194
Group 4	**Infaunal very small to medium sized suspensions and/or deposit feeding bivalves**	
	Abra alba	https://www.marlin.ac.uk/species/detail/1722
	Abra nitida	
	Myrtea spinifera	
	Parvicardium ovale	
	Thyasira flexuosa	
Group 5	**Small-medium suspension and/or deposit feefing polychaetes**	
	Ampharete falcata	
	Chaetozone setosa	
	Heteromastus filiformis	
	Levinsenia gracilis	

	Sabella pavonina	
Group 6	**Predatory polychaetes**	
	Nephtys hystricis	
	Paramphinome jeffreysii	
Group 8(c)	**Free living interface suspension/deposit feeders: Ophiuroidea**	
	Amphiura filiformis	https://www.marlin.ac.uk/species/detail/1400

*Within each group species (shown in bold) with a good evidence base were selected for specific sensitivity assessment to ensure that the range of biological traits or habitat preferences expressed by species within that ecological group were represented.

Rationale for spatial protection in the Irish Sea

Offshore Circalittoral Mud habitats were included in the features list as it is an MSFD priority habitat and is a broadly distributed feature of ecological importance within the Irish Sea. This habitat hosts a wide range of species, contributing to the biodiversity of Irish waters. These broadscale habitats do not have existing protection or management but Ireland has a legal obligation under MSFD to protect them and they are amenable to spatial protection.

Sensitivity Assessment

Offshore circalittoral mud is highly sensitive to pressures associated with the construction (high confidence) and operation (medium confidence) of offshore renewable infrastructure. Loss or change of the physical habitat could lead to a loss of biodiversity and lead to changes in the community structure associated with this biotope (high confidence). A change in sediment type will adversely affect the seapens. Based on their reported distribution a change of 'mud' to 'sandy mud' or 'slightly gravelly mud' will probably exclude *P. phosphorea* (medium confidence)(Tillin & Tyler-Walters, 2014). In addition, characterising species within group 1(a) have a high sensitivity to a change in habitat structure through extraction of the substratum (medium confidence). An extraction of sediment to 30cm (the benchmark) will remove most of the resident seapens present and recovery is expected to be low (Tillin & Tyler-Walters, 2014).

Offshore circalittoral mud is highly sensitive to pressures associated with the fishing sector (medium confidence). The ecological group 1(a), present in circalittoral muds have a high sensitivity to each of the four fishing sectors (low confidence). Towed gear is likely to remove a proportion of sea pens from the sediment, and if damaged they are likely to die, but if undamaged displaced and/or returned to suitable sediment they can recover relatively quickly. *V. mirabilis* and *P. phosphorea* can avoid abrasion by withdrawing into the sediment, but frequent disturbance will probably reduce feeding time and hence viability.

Therefore, a sensitivity score of **'High**' has been assigned to this ecological group for abrasion and penetration of the substratum (low confidence) (Tillin & Tyler-Walters, 2014). Additionally, groups 2 and 4, which include suspension feeders, are also moderately sensitive to a change in suspended solids (medium confidence). The change in suspended solids is chronic and sustained for a year and is predicted to have negative impacts on growth and fecundity by reducing filter feeding efficiency (Tillin & Tyler-Walters, 2014).

Offshore circalittoral muds are moderately sensitive to pressures associated with the shipping sector (high confidence). A small number of characterising species were assigned a medium sensitivity to chemical pressures associated with the shipping sector (high confidence). Asterias rubens *and Amphiura filiformis* have a medium sensitivity to hydrocarbon and PAH contamination while *Abra alba* and *Amphiura filiformis* have a medium sensitivity to synthetic compound contamination. These pressures have been assessed based on a few characterising species where sensitivity analyses were already available.

Further research needs

As with the other MSFD broadscale habitats, a better evidence base is needed as to the actual suite of species, particularly characterising species present in the habitats in the western Irish Sea. In addition, a number of the pressures in the analyses for the broadscale habitats are scored based on the sensitivity of a small number of characterising species due to a lack of evidence for others. Further research is needed to assess the sensitivity of the full list of characterising species present to provide a more comprehensive analysis for each biotope.

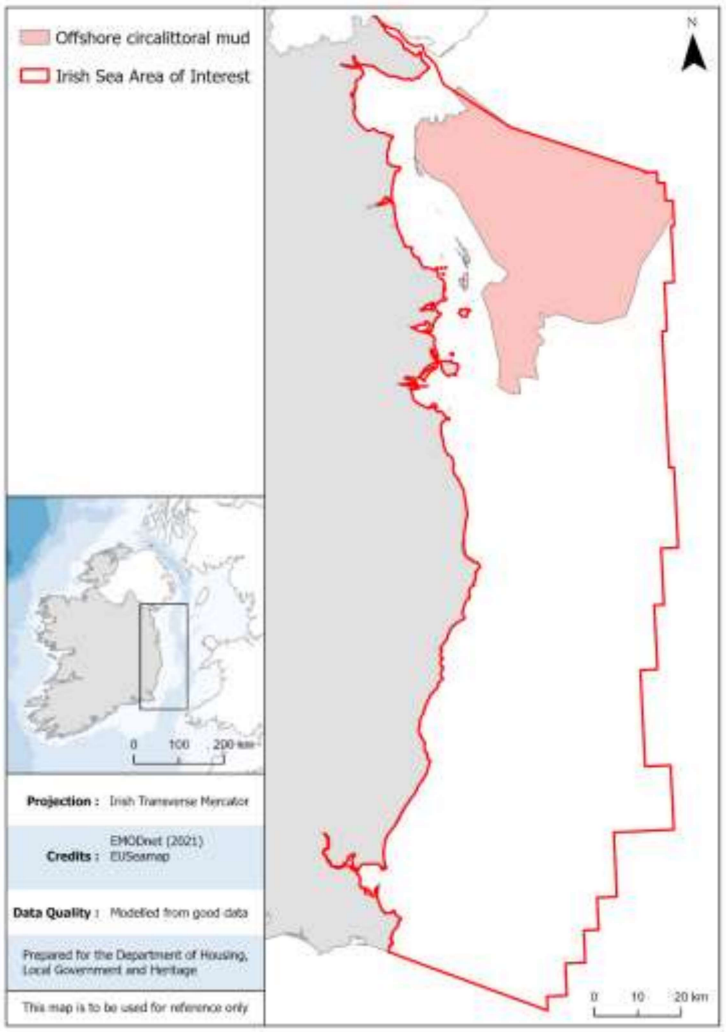

Figure 1. Data available for offshore circalittoral mud in the western Irish Sea.

Data sources and quality

Dataset Name	Data Owning Organisation	Dataset Quality	Metadata URL	Comments
EUSeaMap EMODnet Benthic Broadscale Habitat Types	EMODnet	Modelled from good data	EUSeamap (2021)	

Information on the sensitivity assessment above has been sourced from:

Tillin, H.M. & Tyler-Walters, H. (2014). Assessing the sensitivity of subtidal sedimentary habitats to pressures associated with marine activities: Phase 2 Report – Literature review and sensitivity assessments for ecological groups for circalittoral and offshore Level 5 biotopes. JNCC Report 512B

References

JNCC (2022) The Marine Habitat Classification for Britain and Ireland Version 22.04. Available from: https://mhc.jncc.gov.uk/

Tillin, H, Tyler-Walters, H. (2013). Assessing the sensitivity of subtidal sedimentary habitats to pressures associated with marine activities. Phase 1 Report: Rationale and proposed ecological groupings for Level 5 biotopes against which sensitivity assessments would be best undertaken JNCC Report No. 512A

Tillin, H.M. & Tyler-Walters, H. (2014). Assessing the sensitivity of subtidal sedimentary habitats to pressures associated with marine activities: Phase 2 Report – Literature review and sensitivity assessments for ecological groups for circalittoral and offshore Level 5 biotopes. JNCC Report 512B