

27. Circalittoral Mud

Background

Sublittoral muds occur below moderate depths of 15-20m and to a maximum depth of 50m, either on the open coast or in marine inlets such as sea lochs. The seapens *Virgularia mirabilis* and *Pennatula phosphorea* are characteristic of this biotope complex together with the burrowing anemone *Cerianthus lloydii* and the ophiuroid *Amphiura* spp. The relatively stable conditions often lead to the establishment of communities of burrowing megafaunal species, such as *Nephrops norvegicus* (JNCC, 2022).

Table 1. 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	
	<i>Pennatula phosphorea</i>	
	<i>Funiculina quadrangularis</i>	https://www.marlin.ac.uk/species/detail/1154
	<i>Virgularia mirabilis</i>	https://www.marlin.ac.uk/species/detail/1396
Group 3	Mobile predators and scavengers	
	<i>Asterias rubens</i>	https://www.marlin.ac.uk/species/detail/1194
Group 5	Small-medium suspension and/or deposit feeding polychaetes	
	<i>Chaetozone setosa</i>	
Group 6	Predatory polychaetes	
	<i>Nephtys hystrix</i>	
Group 8(a)	Subsurface dwelling Echinoids	
	<i>Brissopsis lyrifera</i>	https://www.marlin.ac.uk/species/detail/1654
Group 8(c)	Free living interface suspension/deposit feeders: Ophiuroidea	
	<i>Amphiura brachiate</i>	
	<i>Amphiura filiformis</i>	https://www.marlin.ac.uk/species/detail/1400
	<i>Amphiura chiajei</i>	https://www.marlin.ac.uk/species/detail/1657
	<i>Ophiura ophiura</i>	
Group 9	Burrowing, hard-bodied species	
	<i>Nephrops norvegicus</i>	https://www.marlin.ac.uk/species/detail/1672
	<i>Calocaris macandreae</i>	
Group 10	Burrowing, soft-bodied species	
	<i>Cerianthus lloydii</i>	

	<i>Maxmuelleria lankesteri</i>	
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*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

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

*Sensitivity scores and the ecological groups associated were similar among MSFD habitats.

Circalittoral mud is highly sensitive to pressures associated with the construction and operation of offshore renewable infrastructure (medium confidence). 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* and *F. quadrangularis* (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).

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). Overall, surface abrasion is unlikely to adversely affect the three seapen species within the group. 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. However, *F. quadrangularis* cannot withdraw and is the tallest of all three of the seapens (up to 2m) and is the most likely to be displaced or removed by surface abrasion and towed gear (Tillin & Tyler-Walters, 2014). Hence, a sensitivity score of ‘**High**’ has been assigned to this ecological group for abrasion and penetration of the substratum (low confidence).

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*, *Amphiura chiajei* and *Amphiura filiformis* have a medium sensitivity to hydrocarbon and PAH contamination while *Brissopsis lyrifera* 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. In addition, some pressures associated with shipping have not been assessed or no evidence is available for this biotope. Further research is needed to determine the true sensitivity of this biotope to shipping activities.

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.

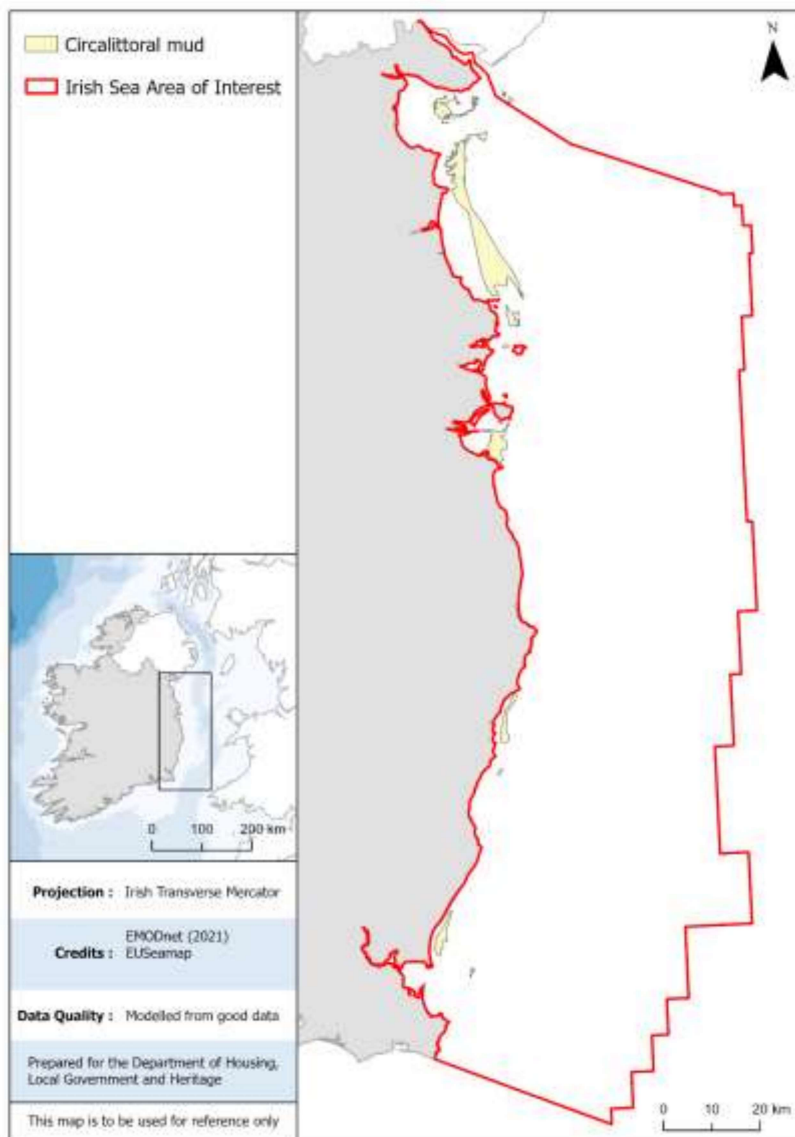


Figure 1. Data available for circalittoral mud in the western Irish Sea.

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.
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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.
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