

32. Infralittoral Sand

Background

Clean sands which occur in shallow water (5m-20m), either on the open coast or in tide-swept channels of marine inlets. The habitat typically lacks a significant seaweed component and is characterised by robust fauna, particularly amphipods (*Bathyporeia*) and robust polychaetes including *Nephtys cirrosa* and *Lanice conchilega* (JNCC, 2022).

Table 1. Infralittoral Sand characterising species defined by Tillin & Tyler-Walters (2013).

	Characterising species	MarLIN Link
Group 1(b)	Erect, shorter lived epifaunal species	
	<i>Hydrallmania falcata</i>	
	<i>Sertularia cupressina</i>	
Group 1(c)	Soft-bodied epifaunal species	
	<i>Alcyonidium diaphanum</i>	
	<i>Urticina feline</i>	https://www.marlin.ac.uk/species/detail/1392
Group 1(d)	Small epifaunal species with hard or protected bodies	
	<i>Balanus crenatus</i>	https://www.marlin.ac.uk/species/detail/1381
Group 3	Mobile predators and scavengers	
	<i>Cancer pagurus</i>	https://www.marlin.ac.uk/species/detail/1179
	<i>Pagurus bernhardus</i>	
	<i>Asterias rubens</i>	https://www.marlin.ac.uk/species/detail/1194
	<i>Liocarcinus depurator</i>	https://www.marlin.ac.uk/species/detail/1175
	<i>Carcinus maenas</i>	https://www.marlin.ac.uk/species/detail/1497
Group 5	Small-medium suspension and/or deposit feeding polychaetes	
	<i>Spio filicornis</i>	https://www.marlin.ac.uk/species/detail/1698
	<i>Scoloplos armiger</i>	
	<i>Spiophanes bombyx</i>	https://www.marlin.ac.uk/species/detail/1705
	<i>Lanice conchilega</i>	https://www.marlin.ac.uk/species/detail/1642
	<i>Magelona mirabilis</i>	https://www.marlin.ac.uk/species/detail/1630
	<i>Chaetozona setosa</i>	
Group 6	Predatory polychaetes	
	<i>Nephtys cirrose</i>	
Group 7	Very small-small, short lived (<2 years) free-living species	

	<i>Bathyporeia elegans</i>	
	<i>Bathyporeia guillamsoniana</i>	

*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

Infralittoral sand 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.

Infralittoral sands are highly sensitive to pressures associated with the construction (high confidence) and moderately sensitive to pressures associated with the operation (high confidence) of offshore renewable infrastructure. Loss of the physical habitat will result in a loss of biodiversity and lead to changes in the community structure associated with this biotope (high confidence). This biotope has a medium sensitivity to removal of the substratum (medium confidence). A number of the ecological groups (1(b), 1(c), 1(d), 3, 5, 6) consists of surface dwelling or shallowly buried species and removal of substratum would result in all individuals within the extraction footprint being removed. Ecological groups 1(c), 1(d), 4, and 5 were also moderately sensitive to heavy smothering and siltation changes (low confidence). Groups 1(c) and 1(d) are considered likely to express little resistance to this pressure as individuals are attached to the substratum and are likely to exhibit no or little vertical mobility. Groups 4 and 5 are shallowly buried and they would be buried by the deposit. Some species are considered to be unable to vertically migrate through a layer of overburden at the pressure benchmark level, that is, 30cm of fine material. For mobile species, the character of the overburden is an important factor determining the degree of vertical migration of buried bivalves. Individuals are more likely to escape from a covering similar to the sediments in which the species is found than a different type (Tillin & Tyler-Walters, 2014).

Infralittoral sands are moderately sensitive to pressures associated with the fishing sector (high confidence). Species of ecological group 4 are infauna found close to the sediment surface. This life habit provides some protection from abrasion at the surface only, however it was considered that surface abrasion may damage and kill a proportion of the population. As erect epifauna, the growth form of members of group 1(c) means they are

exposed to direct physical damage from abrasion and sub-surface damage. Individuals may be directly displaced, damaged or removed

Members of these ecological groups will also be directly impacted by penetration and disturbance of the substratum below the surface (Tillin & Tyler-Walters, 2014). In addition, species within ecological group 4 are moderately sensitive to a change in suspended solids (low confidence). It is not predicted to be sensitive to acute changes in turbidity. However at the pressure benchmark the change is chronic and sustained for a year. This is predicted to have negative impacts on growth and fecundity by reducing filter feeding efficiency and imposing costs on clearing and producing pseudofaeces for the filter feeders (Tillin & Tyler-Walters, 2014).

Infralittoral sands are moderately sensitive to pressures associated with shipping related activities (high confidence). MarLIN has carried out sensitivity analyses for a number of characterising species found in this habitat type. Many of the species were assigned a medium sensitivity to chemical pressures associated with the shipping sector (high confidence). *Asterias rubens* and *Carcinus maenas* have a medium sensitivity to hydrocarbon and PAH contamination while *Spiophanes bombyx*, *Spio filicornis*, *Lanice conchilega*, *Urticina felina*, *Cancer pagurus* and *Balanus crenatus* have a medium sensitivity to synthetic compound contamination.

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.

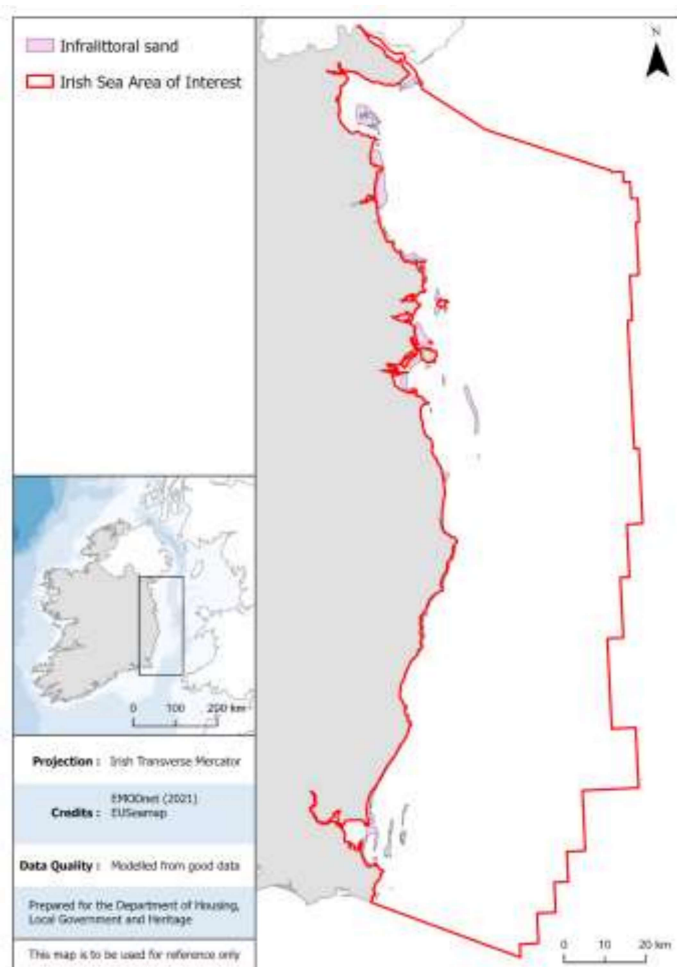


Figure 1. Data available for infralittoral sand in the western Irish Sea.

Data sources and quality

Dataset Name	Data Owning Organisation	Dataset Quality	Metadata URL	Comments
EUSemap EMODnet Benthic Broadscale Habitat Types	EMODnet	Modelled from good data	EUSemap (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