

### 35. *Sabellaria spinulosa* reef



Figure A10.35.1. Ross worm, *Sabellaria spinulosa*. Source © Joint Nature Conservation Committee (JNCC)

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#### Background

Under favourable conditions, *Sabellaria spinulosa*, a small tube-building polychaete worm, can form dense subtidal aggregations, creating reef habitat up to 60 cm high, in depths of 10-50 m, and spanning hectares. *Sabellaria spinulosa* reef provides biogenic habitat for many infaunal species, including polychaetes (*Protodorvillea kefersteini*, *Scoloplos armiger*, *Harmothoe* spp., *Mediomastus fragilis*, *Lanice conchilega*, and cirratulids), bivalves (*Abra alba* and *Nucula* spp.), and tube-building amphipods (*Ampelisca* spp.). *Sabellaria spinulosa* reef epifauna include calcareous tubeworms, pycnogonids, hermit crabs, amphipods, hydroids, bryozoans, sponges, and ascidians (OSPAR Commission, 2008).

#### Rationale for spatial protection in the Celtic Sea

*Sabellaria spinulosa* reef is listed by OSPAR with reference to its sensitivity, rarity, ecological significance and decline. *Sabellaria spinulosa* reef provides biogenic habitat and hosts a wide range of associated species. This habitat is not currently protected or conserved in the Celtic Sea but is amenable to spatial protection.

### Sensitivity assessment

The sensitivity assessment was based on the three *Sabellaria spinulosa* biotopes, as described under The Marine Habitat Classification for Britain and Ireland (JNCC, 2022): circalittoral *Sabellaria* reefs (on rock)(Tillin et al., 2023a), *Sabellaria spinulosa* on stable circalittoral mixed sediment (Tillin et al., 2023b), and *Sabellaria spinulosa* encrusted circalittoral rock (Tillin et al., 2023c). For all pressures assessed, sensitivities values were identical across all three biotopes except for 'change to another sediment type' and 'extraction', which are not relevant pressures for biotopes on rock (Tyler-Walters et al., 2018).

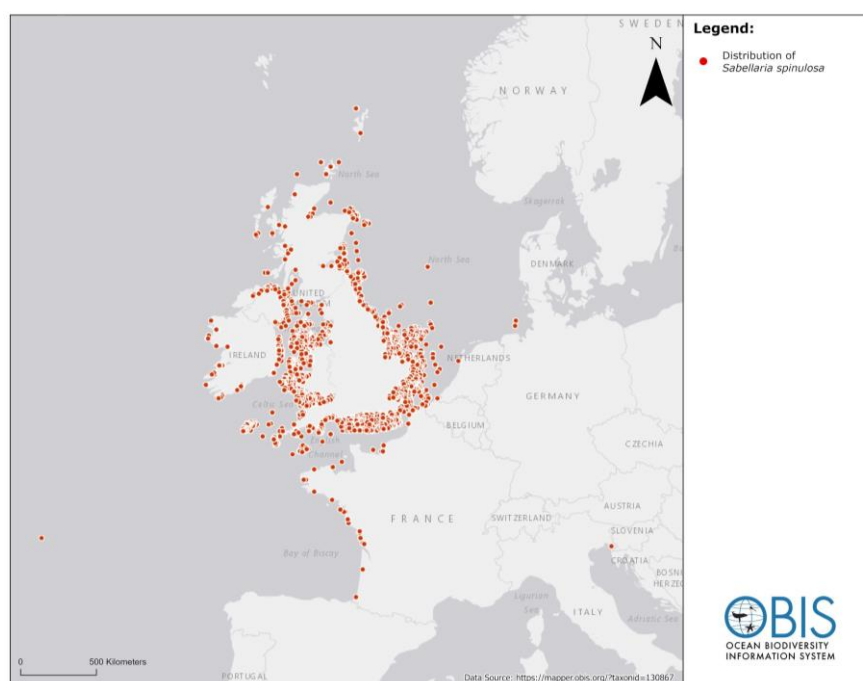


Figure A10.35.2. The distribution of *Sabellaria spinulosa* in the Northeast Atlantic, Irish Sea, and North Sea. Note: this is the distribution of the species and not necessarily the distribution of *Sabellaria spinulosa* reefs. Source: <https://mapper.obis.org/?taxonid=130867>

***Sabellaria spinulosa* reef is sensitive to pressures associated with the construction and operation of offshore wind farms.** All marine habitats and benthic species are considered to have a resistance of None to physical loss (to land or freshwater habitat) and to be unable to recover from a permanent loss of habitat meaning resilience is Very Low (Tyler-Walters et al., 2018). *Sabellaria spinulosa* reef is highly sensitive to physical change - whether to another seabed type or to another

sediment type. A change to coarser sediment is unlikely to negatively impact *Sabellaria spinulosa* reef as this species can also generate biogenic reef on coarser sediments. An increase in finer sediments, from coarse sediment, to sand or sandy mud, would result in a loss of the biogenic reef, hence the high sensitivity to a change in sediment type (Tillin et al., 2023). *Sabellaria spinulosa* reef was assessed as moderately sensitive to removal of substratum (high confidence). The removal of sediment or substratum down to 30 cm depth is likely to remove the whole *Sabellaria spinulosa* reef within the extraction footprint. Therefore, resistance to this pressure is assessed as None. If suitable substratum were to remain, recruitment rates are high and recovery could be quite rapid, therefore resilience is considered to be Medium (Tillin et al., 2023).

***Sabellaria spinulosa* reef is highly sensitive to pressures associated with the fishing sector.**

*Sabellaria spinulosa* reef is highly sensitive to physical change to another sediment type as discussed above. *Sabellaria spinulosa* reef has medium sensitivity to the pressures 'abrasion/disturbance of substratum surface or seabed' (low confidence) and 'penetration or disturbance of substratum subsurface' (medium confidence). Abrasion at the surface of *Sabellaria spinulosa* reef is likely to damage the tubes and result in sub-lethal and lethal damage to the worms while structural damage to the seabed sub-surface is likely to damage and break tube aggregations leading to the loss of reef within the footprint of direct impact. However, depending on the level of impact, recovery is likely to be quick (Tillin et al., 2022). Both 'abrasion/disturbance of substratum surface or seabed', and 'penetration or disturbance of substratum subsurface' are pressures also associated with ORE. *Sabellaria spinulosa* reef has medium sensitivity to the pressure 'removal of non-target species', as accidental damage by fishing gear would have the same effect as abrasion and penetration of the substratum.

***Sabellaria spinulosa* reef was not assessed for the chemical pressures associated with shipping.**

There is a lack of evidence as to the sensitivity of *Sabellaria spinulosa* reef to the pressures 'transition elements & organo-metal contamination', 'hydrocarbon & PAH contamination', 'synthetic compound contamination', and 'introduction of other substances'. These pressures are also associated with ORE and the fishing sector.

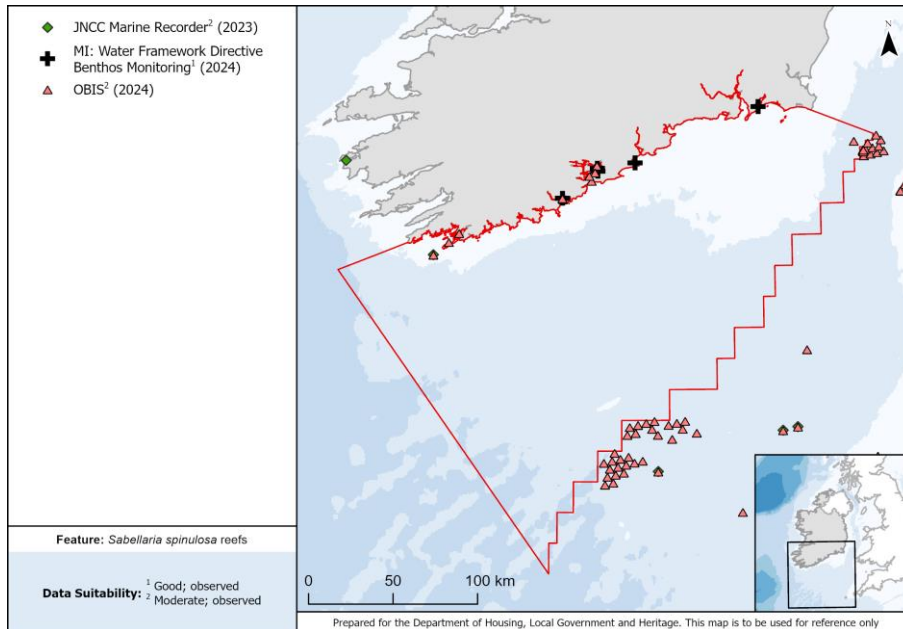


Figure A10.35.3. Data available for *Sabellaria spinulosa* reef in the Celtic Sea.

#### Data sources available

Data sources for *Sabellaria spinulosa* reef in the Celtic Sea AOI that were available to the MPA Advisory Group, and the quality / suitability of those data for conservation prioritization analyses (See Table 3.2.1 Main Report), are shown in Figure A10.35.3. For information on how data were prepared for use in prioritization analyses, and for a visualisation of layers used, see Appendix 5e, section 5e.4.

#### Further research needs

There is a lack of knowledge on the distribution of *Sabellaria spinulosa* reef in the Celtic Sea. Due to this, there is also no information on the persistence and stability of the reefs. There is a lack of data on temporal stability of *Sabellaria spinulosa* reef in all regions where it occurs. There is insufficient evidence on the effects of chemical pressures on *Sabellaria sabellaria* reef. These pressures are 'transition elements & organo-metal contamination', 'hydrocarbon & PAH contamination', 'synthetic compound contamination', and 'introduction of other substances'. Further studies are needed to properly assess the sensitivity of *Sabellaria sabellaria* reef.

#### References

OSPAR Commission (2009). *Background document on Sabellaria spinulosa reefs*. OSPAR Commission, United Kingdom. <https://www.ospar.org/documents?v=7342>

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