8. Edible Sea Urchin (*Echinus esculentus*)

Figure 1: Edible Sea Urchin, *Echinus esculentus.* © Sue Scott (marlin.ac.uk)

Background

A large globular sea urchin, reaching up to 15 -16 cm in diameter at 7-8 years of age. The test may be relatively flat in shallow water but taller in deep water with spines closely covering the test. *E. esculentus* is found on rocky substrata from the sublittoral fringe to circa 40 m, although it may be found at depths of 100 m or more. It is an omnivorous grazer feeding on seaweeds (e.g., *Laminaria* spp. sporelings), Bryozoa, barnacles and other encrusting invertebrates (Tyler-Walters, 2008).

Maximum spawning occurs in spring although individuals may spawn over a protracted period. The number of eggs produced will vary with location and nutritive state of the adult, but it is likely to be high. Comely & Ansell (1989) demonstrated differences in reproductive condition between sites and habitats. Planktonic development is complex and takes between 45 -60 days in captivity (MacBride 1914). Recruitment is sporadic or variable depending on locality, e.g., Millport populations showed annual recruitment, whereas few recruits were found in Plymouth populations during Nichols studies between 1980-1981 (Nichols 1984). Settlement is thought to occur in autumn and winter (Comely & Ansell, 1988). Newly settled juveniles have an ambital diameter of 0.68 - 0.95mm (Nichols 1984) (Tyler-Walters, 2008).

Application of feature list inclusion criteria

Echinus esculentus was nominated for inclusion on the features list with particular reference to its listing on IUCN. The species is listed as near threatened globally on the IUCN red list. The western Irish Sea is a significant part of its distribution and it is amenable to spatial protection. However, further research is required to determine the full extent of *E. esculentus* distribution in the western Irish Sea.

Sensitivity assessment

***Echinus esculentus* are highly sensitive to pressures associated with construction and operation of ORE as well as bottom trawling and dredging/beam trawling (low confidence).** 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 (resilience is 'Very Low')(high confidence) (Tyler-Walters et al., 2018). *Echinus esculentus* can be found on a variety of habitats including crevices/fissures, boulders, rockpools and overhangs showing preference towards habitats with high rugosity and heterogeneity. Therefore, a change from hard rock or soft rock to sediment or artificial structures would result in loss of suitable habitat and loss of the species from the affected area. Hence, resistance is assessed as **'None'.** The change is defined as permanent so that resilience is assessed as **'Very low'** and sensitivity is assessed as **'High'** (low confidence).

Echinus esculentus was assessed as not sensitive to pressure associated with the shipping sector (low confidence).

Further research needs

Further research on the distribution of *Echinus esculentus* is required for the western Irish Sea.

Figure 2. Global distribution of *Echinus esculentus*, Source: https://mapper.obis.org/?taxonid=124287

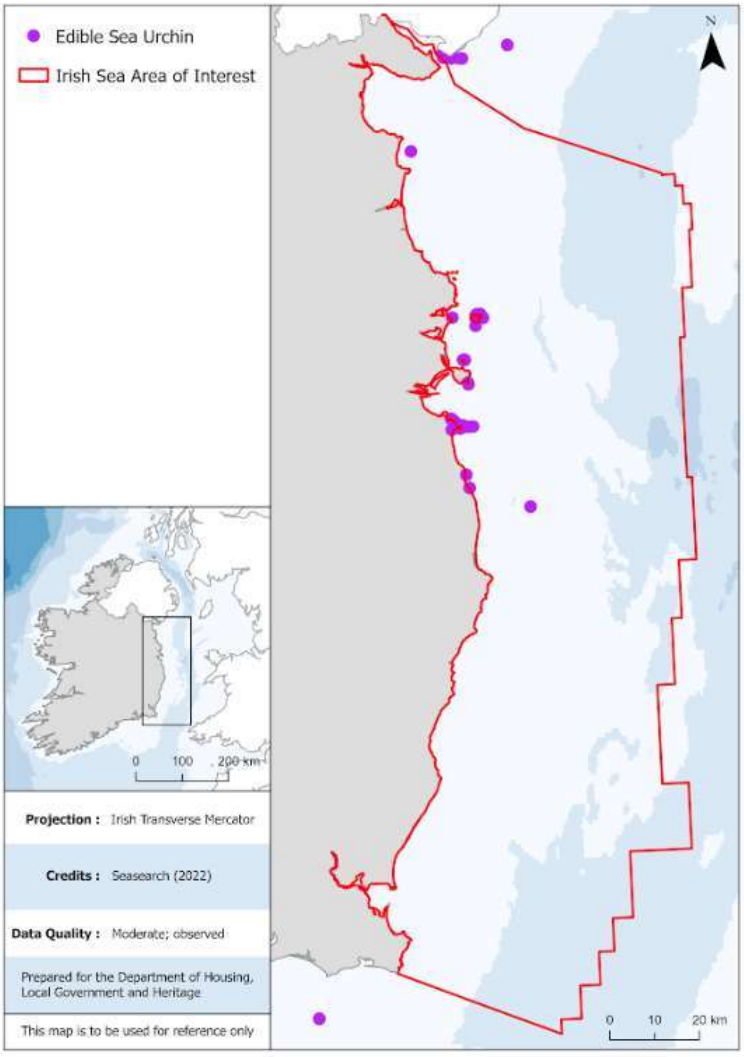

Figure 3. Data available for Edible sea urchin, *echinus esculentus* in the western Irish Sea.

Data sources and quality

Dataset Name	Data Owning Organisation	Dataset Quality	Metadata URL	Comments
Marine Institute Water Framework Directive Benthic Data	Marine Institute	Moderate; observed		
National Biodiversity Data Centre Seasearch	Seasearch	Moderate; observed	NBDC Seasearch	

References

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