4. Bull huss (*Scyliorhinus stellaris*)

Irish name: Fíogach mór

Also commonly known as the greater spotted dogfish, greater spotted catshark and nursehound.

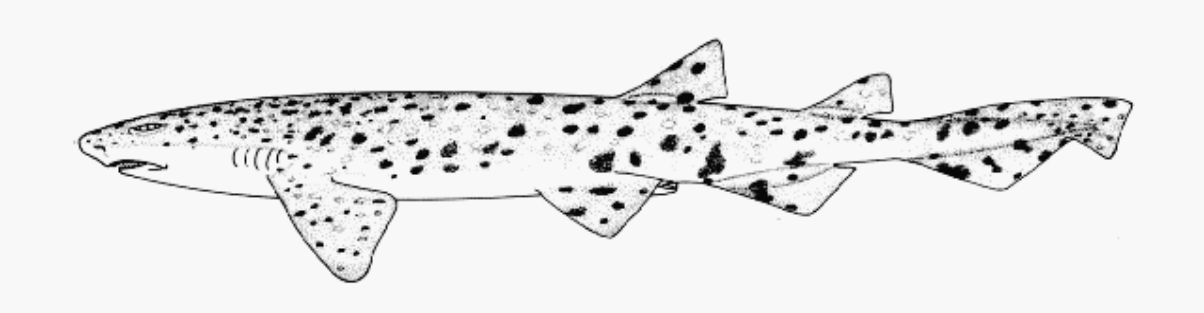

Figure A10.4.1. Bull huss (*Scyliorhinus stellaris*) (Compagno, 1984)

This case report has been updated from the western Irish Sea case report published in 2023. A new Web of Science literature review was conducted to assess whether any new research on the species had been conducted since the western Irish Sea report was published, and used to inform both the report and the sensitivity analysis.

Background

The bull huss is a medium-sized cartilaginous fish species in the Class Chondrichthyes, and is the largest species of catshark in Irish waters. The bull huss has a maximum estimated age of 17 years, and a maximum reported total length of 170 cm (Sanches, 2001; Rodríguez-Cabello et al*.,* 2005). It is a predominately demersal species with a depth range of 1-400 m (Reiner, 1996), and is usually found between 20 - 63 m (Compagno, 1984). Bull huss are associated with a variety of bottom-types, including rocky or coralline ground, and algal-covered (e.g., kelp forest) bottom types (Heessen et al., 2015). Bull huss are benthic feeders, and feed on molluscs, crustaceans, and fishes, including small sharks. Bull huss are oviparous, with two eggs released at a time (one from each oviduct; Compagno, 1984). It is thought that eggs are laid over most of the year (Heesen et al., 2014), with estimates of total eggs laid per year ranging from 9-41 (based on animals kept in captivity; Capapé et al., 2006). Maximum age and size-at-maturity are unknown but, based on the small-spotted catshark (*Scyliorhinus canicula*), females are thought to mature at 9 years and reach a maximum age of 17 years (Rodríguez-Cabello et al*.,* 2005). Bull huss young hatch after around 9 months (Capape et al., 2006). Scyliorhinids are thought to be productive species compared to other demersal elasmobranchs (McCully Phillips et al., 2015), however, information on bull huss life history is limited. Bull huss are distributed within the northeast Atlantic (from southern Scandinavia and the British

Isles) and the Mediterranean Sea (Morocco) (Compagno, 1984). Recorded presence in tropical west Africa is uncertain, and may be due to misidentification of West African catshark (*Scyliorhinus cervigoni*). Migration, dispersal and mixing between populations is unknown. A study of this species in a tidal sea lough suggests it has high site fidelity (Sims et al., 2005).

Rationale for spatial protection in the focal area

Bull huss was nominated for inclusion with particular reference to its conservation listing by the IUCN as Vulnerable globally (Finucci et al., 2021) and Near Threatened in Europe (Nieto et al., 2015). It is classified as Least Concern in Irish waters (Clarke et al., 2016). Population trends modelled from standard catch-per-unit-effort (CPUE) in the Irish Sea and Bristol Channel suggest an annual increase of 4.7%, consistent with an increasing population over three generation lengths (48 years) (ICES-WGEF, 2019). However, in the Mediterranean Sea where this species was previously common (pre 1940s), recent research surveys and commercial fisheries suggest bull huss are locally extinct in some areas (Aldebert, 1997, Ragonese et al., 2013, Ramírez-Amaro et al., 2020). Population recovery is thought to be affected by low levels of interconnectivity between isolated island-associated populations situated far from the continental coast (Ellis et al., 2009).

There are currently no management measures in place for this species in Europe or Ireland. The recent ICES report (published in 2023, advises catches for 2024-2025) estimates landings of *S. stellaris* at 638 tonnes across subareas 6 and 7 (West of Scotland, southern Celtic Sea, and the English Channel). The recent ICES advice is the first time quantitative landing advice has been provided for this stock unit. While fishing pressure is below the proxy for maximum sustainable yield, and the stock-size indicator is above the index trigger level, this is a data-limited (category 3) assessment and landings may be combined with species under “dogfish” or “catshark” categories making quantification of landings challenging. (ICES, 2023).

Additionally, a 4.25 year study conducted along the Welsh coastline by Moore et al. (2023), across 10,741 pot hauls, revealed 1529 fishes were taken as bycatch, and, of these, 33.4% (510) were *S. stellaris*, and 44% of bycatch individuals were retained for bait (est. <1% of annual lobster pot fishing in Welsh waters). A similar study from the Isle of Man suggests local differences in pot bycatch: in 2489 fisheries-independent pot hauls, *S. stellaris* was not common as bycatch (Ondes et al., 2018). A recent report on tangle and pot bycatch by the Marine Institute did not identify this species as a common pot bycatch species in Irish waters (2% of bycatch observed in Irish inshore waters, 2015-2022 data; Marine Institute and Bord Iascaigh Mhara, 2023). However, owing to its global population reduction of around 30-49% suspected over three generation lengths (48 years), a precautionary approach is advised.

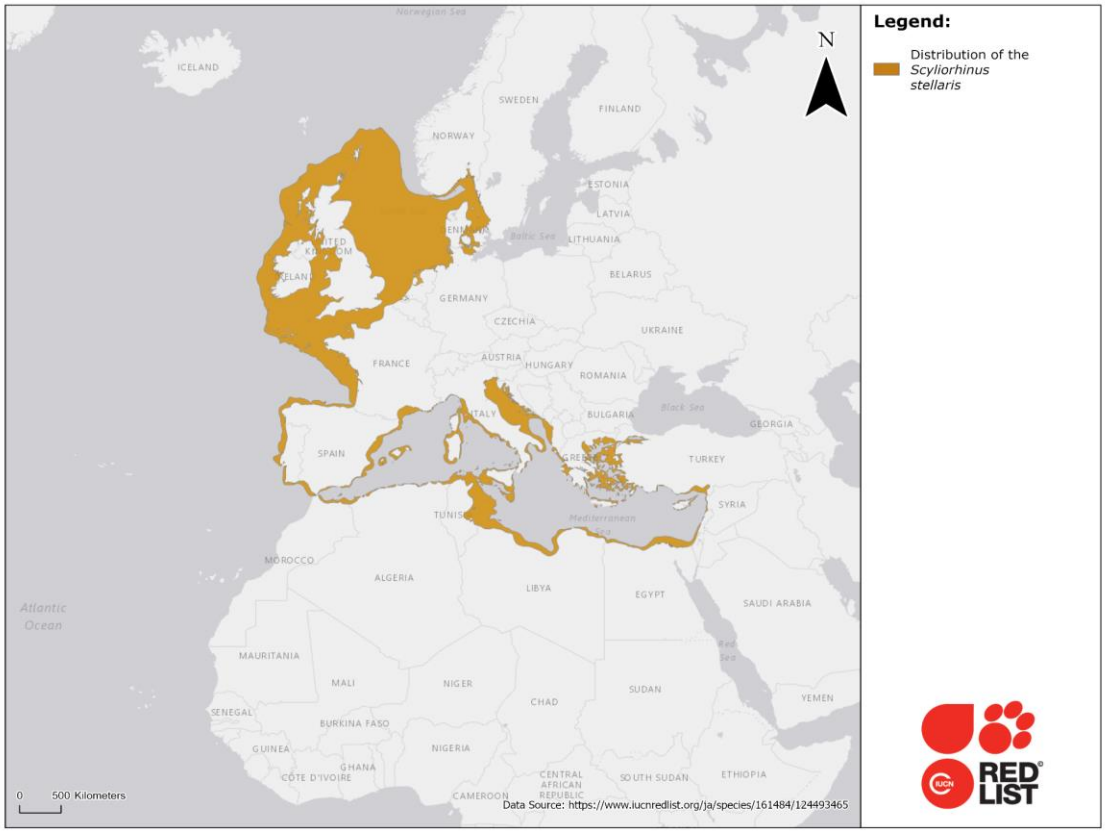

Figure A10.4.2. Geographic distribution of bull huss (*Scyliorhinus stellaris*) in the northeast Atlantic, from Finucci et al. (2021) https://www.iucnredlist.org/ja/species/161484/124493465.

The focal area is likely an important part of its range. While deemed a species of Least Concern in Ireland (2016), suggesting good numbers of individuals are present in Irish waters, the inability to quantify discard retention and its misidentification with other hounds suggests the evidence to quantify populations of bull huss in Irish waters may not be accurate and a precautionary approach for spatial protection should be followed.

While limited, current knowledge suggests bull huss are amenable to spatial protection. A study of acoustic-tracked bull huss in a tidal sea loch suggests refuging behaviour and site fidelity. However, the dispersal and movement ecology of this species are not well understood in an open-ocean setting.

Sensitivity assessment

The highest associated sensitivity scoring for bull huss was in relation to its targeted (high confidence) and non-targeted removal (bycatch) by fishing (high confidence). Bull huss is targeted throughout its range by gill nets, bottom set longlines, bottom trawls, handlines and occasionally

pelagic trawls (Shark Trust, 2010). Actual discard quantities are thought to be several times higher than landed quantities (ICES 2021a). However, a recent report of Irish pot fisheries bycatch did not identify *S. stellaris* as a common bycatch species (90 individuals or 2% of 2015-2022 bycatch) (Marine Institute and Bord Iascaigh Mhara, 2023).

Following a precautionary principle, bull huss were identified as sensitive to some shipping related pressures. While evidence for this species was limited (low confidence), it is thought that elasmobranchs are vulnerable to environmental pollutants such as transition elements given they are long-lived and consume a range of lower trophic level prey (Dulvy et al., 2017). Elasmobranchs are thought to tolerate high metal levels in their tissues, however, a precautionary approach is applied and bull huss were deemed sensitive to this pressure. Elasmobranchs lack a swim bladder and specialised hearing structures, and therefore are considered to only detect particle motion, and not the pressure component of sound (Banner, 1967; Mickle et al., 2020; Popper & Hawkins, 2021). The impacts of vessel noise on elasmobranch species are poorly understood. Lab-based studies suggest noise can increase swimming activity (de Vincenzi et al., 2021), whereas research in the wild indicates an unclear response to boat traffic (Rider et al., 2021). Hearing in demersal and benthopelagic elasmobranch species is thought to be most sensitive to low frequencies (Casper et al., 2006; Nieder et al., 2023). However, hearing range varies by species (Popper & Fay, 1999). A low frequency range is within the operational range of both wind turbines and shipping activities (Tougaard et al., 2020). Whether sensitivity translates to turbine and boat avoidance is yet to be determined, but owing to the mobile nature of this species, operational noise is unlikely to result in mortality. Ship strike is deemed not to be a significant pressure owing to the benthic nature of this species (low confidence).

Offshore energy impacts on elasmobranchs are poorly understood, however, bull huss were deemed moderately sensitive to several offshore energy impacts. They were deemed to be moderately sensitive to pressures including physical loss of marine habitat (low confidence) and physical change to another seabed type (low confidence) owing to the limited mobility of early life stages. Bull huss were deemed moderately sensitive to heavy smothering and siltation changes (low confidence) due to their sessile and slow maturing egg cases, which likely require well aerated water for survival. Given the nursery areas for egg-laying have not been delineated in the southern Celtic Seas, a precautionary approach is recommended. Construction activities may displace some elasmobranch species, although quantitative data are absent. Electromagnetic fields from high voltage cables are likely to affect the behaviour of some species (low confidence) (Gill et al., 2009; Hutchison et al., 2020), however, long-term impacts are unknown at present. Post construction, wind

farms may provide refugia and artificial reef communities which could prove beneficial to some species of elasmobranch. Given bull huss are mobile and occupy the lower water column, they were deemed not sensitive to underwater noise.

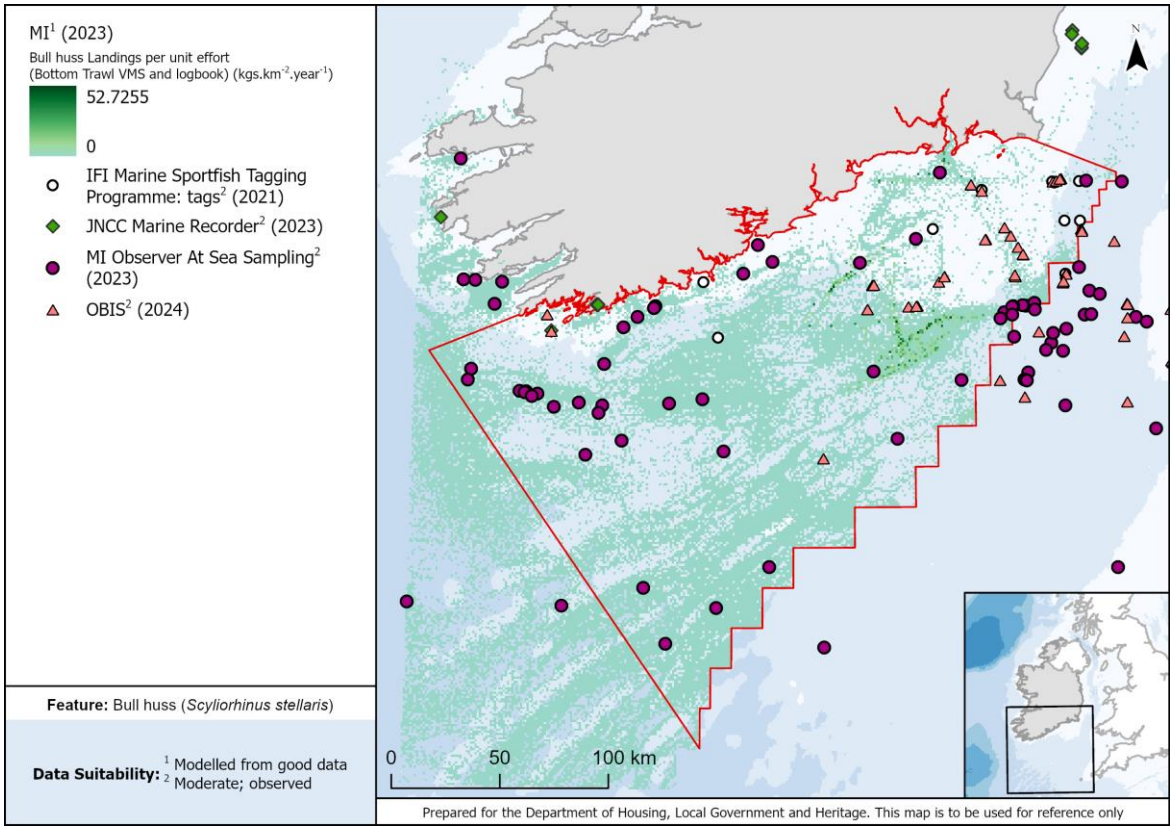

Figure A10.4.3. Data available for bull huss (*Scyliorhinus stellaris*) in the Celtic Sea.

Data sources available

Data sources for bull huss 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 A10.4.3. 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

Key knowledge on the ecology of bull huss including age at maturity, life span, dispersal and population mixing is required to devise an effective management strategy for the species. Identifying nursery areas would help to identify areas of higher perceived sensitivity to pressures including smothering and physical loss of habitat. In addition, evidence to identify the potential effect of multiple pressures was insufficient to form an assessment, or relieved heavily on expert judgement. These pressures included changes in suspended solids (water clarity), light smothering and siltation

changes, electromagnetic energy, water flow changes, transition elements and organo-metal contamination, hydrocarbon and PAH contamination, synthetic compound contamination, introduction of other substances, organic enrichment and the introduction or spread of invasive and non-indigenous species. Quantification of bycatch and subsequent retention is key for informing accurate stock assessments of this species.

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