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Status Assessment 2021 - Angel shark

Angel shark remain a rare species across its biogeographical range, including OSPAR regions II–III–IV. It is a very sensitive species that has declined severely in the OSPAR Area and adjacent waters (e.g. Mediterranean Sea). This decline occurred during the 20th century, with Angel shark lost from large parts of the OSPAR Area from the 1960s to the 1990s. Their low productivity and limited movements means that any perceptible improvement in status would only occur over a decadal time-frame. This is still the case in the current assessment and, whilst there is no evidence of further deterioration, there is no sign of improving status.

OSPAR QSR2023

(/en/ospar-assessments/quality-status-reports/qsr-2023/)

Assessment of status		Distribution	Population size	Demographics, e.g. productivity	Previous OSPAR status assessment	Status
Region	I					NA
	II	?	?	?	•	Poor
	III	?	?	?	•	Poor[2]
	IV	?	?	?	•	Poor
	V					NA

Assessment of key pressures		Excessive mortality	Habitat damage	Prey availability	Bycatch	Threat or impact
Region	I				←→[1]	NA
	II	←→[2]	←→[2]	?	←→[1]	?
	III	←→[2]	←→[2]	?	←→[1]	?
	IV	←→[2]	←→[2]	?	←→[1]	?
	V				←→[1]	NA

⊞ Table Legend

⊞ Method of Assessment

Confidence

Medium

Background Information

Angel shark (*Squatina squatina*) is a medium flat-bodied shark with large pectoral fins. The species can reach up to 2.5m TL. It inhabits sandy and muddy bottoms, in shallow depths of 5-150m (Roux 1984, Morey et al. 2019).

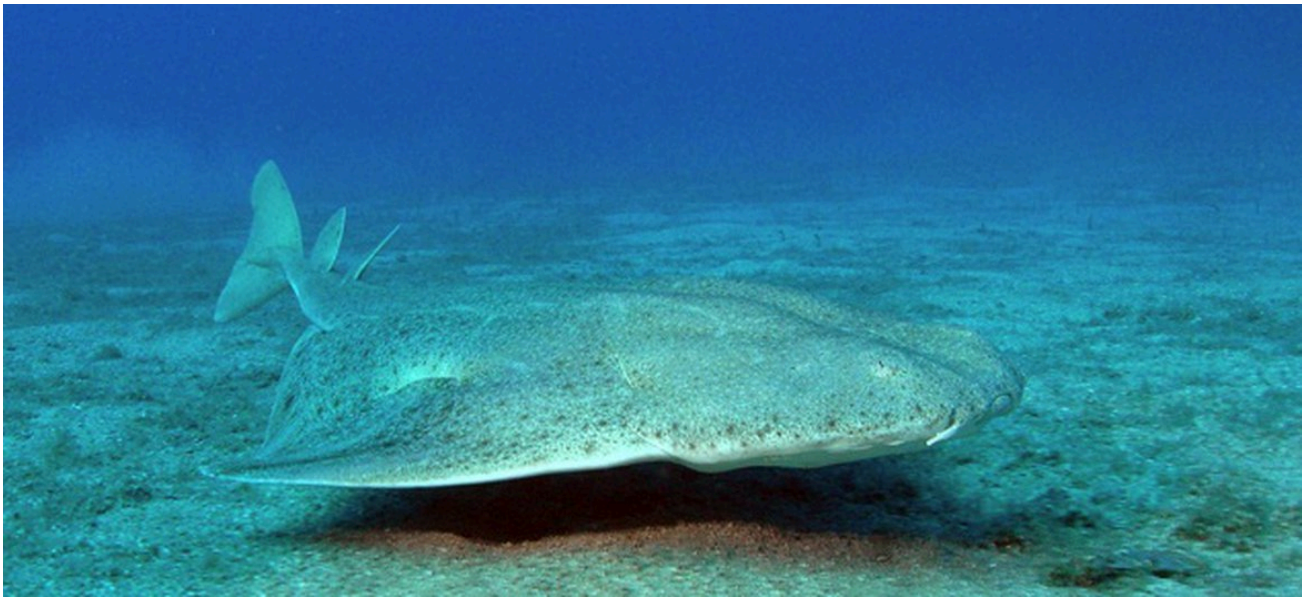
Angel shark was first nominated in 2001, listed as a threatened/declining species from 2008, and last assessed by OSPAR in 2010 (OSPAR 2010). The key criteria for listing were rarity, sensitivity and decline. The identified threats were excessive mortality caused by fisheries, habitat damage and prey availability. The decline in the geographical extent of angel shark, which is very sensitive to accidental capture, is particularly marked. Recent population trends are unknown, given the current rarity of the species.

The status of this species is based on ICES advice to fisheries managers for fishing opportunities. This advice has been integrated into an assessment for conservation purposes.

Geographical Range and Distribution

The biogeographical range of angel shark extends from Scotland and southern Scandinavia to Northwest Africa, the Canary Islands and the Mediterranean Sea (where it may enter the Black Sea close to the Sea of Marmara). This area covers OSPAR Regions II-IV. The geographic extent of angel shark has declined by an estimated 58%, with refuge populations in Welsh and Irish waters (OSPAR Region III) and outside the OSPAR Area (Canary Islands and parts of the Mediterranean Sea) (Lawson et al. 2020).

In OSPAR Region III, Tralee Bay, Clew Bay, Cardigan Bay and parts of the Bristol Channel have been identified as important for angel shark (Shepherd et al. 2019, Barker et al. 2020).



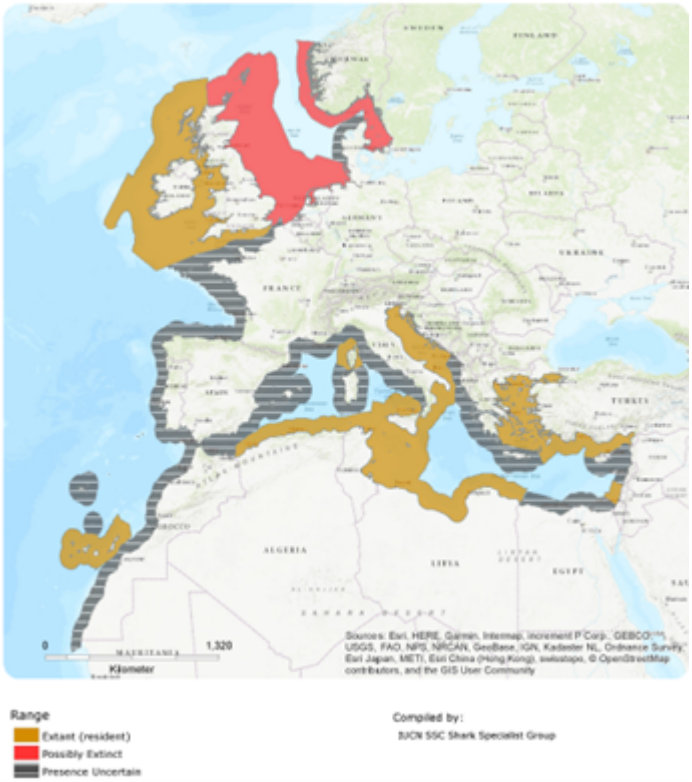


Figure 1. Distribution of angel shark showing areas where it is considered extant (a sighting since 1987), former range with no sightings (despite monitoring surveys) and areas of uncertain presence (Source: Morey et al. 2019).

Population/Abundance

Reported landings of angel shark declined between the mid-1970s and early 1990s. Landings have been very low since then (ICES 2019). ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2020–2023.

ICES gave advice on this species for the first time in 2008. The advice stated that *"Angel shark has a localized and patchy distribution, and is extirpated from parts of its former range. It should receive the highest possible protection. Any incidental bycatch should not be landed, but returned, to the sea, as they are likely to have a high survival rate."*. The basis of this advice was ICES' inferences from historic literature, survey and recreational fisheries data. These studies showed that the species had disappeared from most of its former range (ICES 2008). None of the new information has altered the ICES' advice first adopted in 2008, that the species is depleted in the Northeast Atlantic.

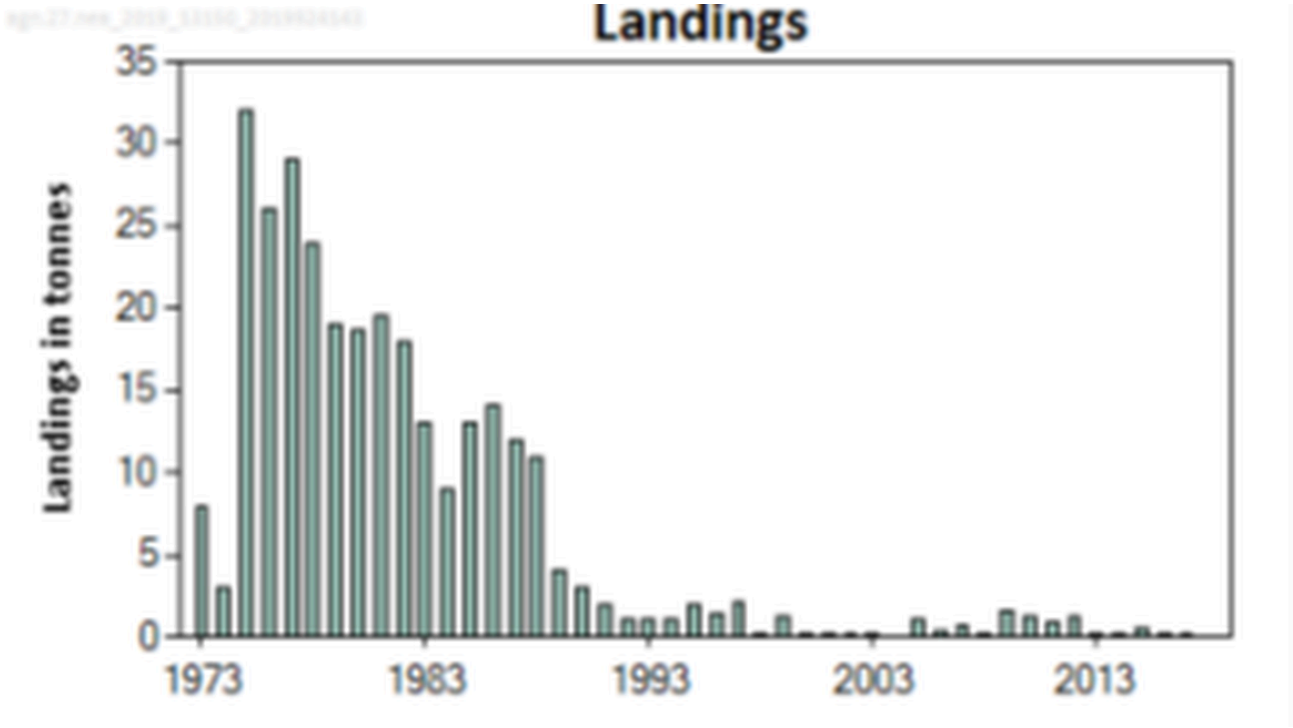


Figure 2: Angel shark landing data from the Northeast Atlantic based on ICES landings (tonnes) in subareas 6 and 7 from 1973 and subareas 6, 7, and 8 from 1996. Angel shark has been on the prohibited species list since 2010 and only minimal bycatch landings are reported. (Source: ICES 2019)

Condition

Given the rarity of angel shark, there are insufficient data to examine the condition of the stock in the OSPAR Area, in terms of either the length composition or sex ratio. However, available data suggest Angel sharks (*Squatinidae*) have a low fecundity and exhibit a biennial reproductive cycle (Baremore 2010, Capapé et al., 1990). *S. squatina* is live bearing, producing 7-25 embryos (Bini, 1967; Capapé et al., 1990; Osaer et al., 2015, Patterson 1905, Tortonese, 1956). Its gestation period is 10 months and neonates are 20-30cm TL (Roux 1984).

Threats and Impacts

Threats to angel shark identified in the 2010 OSPAR assessment were excessive mortality with all life stages of this low productivity stock susceptible to capture in fisheries, habitat damage, and prey availability. Fishing mortality through accidental captures (including recreational fisheries) is the main pressure. The prohibited listing should reduce mortality in commercial fisheries to a degree, depending on discard survival, which is thought to be variable. Recreational fisheries may result in additional mortality in areas where the species is not fully protected. The potential impact of habitat deterioration is undocumented, whilst prey availability is likely of limited impact, given that it may predate on a wide range of demersal fish.

In Tralee Bay in southwest Ireland, one of its main refuges, it is particularly vulnerable to static net fisheries targeting crustaceans (Clarke et al. 2016, BIM 2012). It is also occasionally bycaught in mixed trawl fisheries, particularly in St. George's Channel (Clarke et al. 2016). In Wales, priority threats identified were possible incidental mortality of angel sharks from accidental bycatch in fisheries, possible habitat loss or degradation at Critical Angelshark Areas, and possible low genetic diversity due to population fragmentation (Barker et al. 2020).

Measures that address key pressures from human activities or conserve the species/habitat

In 2008, ICES advised that angel shark should receive the highest protection possible. It has since been listed as a prohibited species in EU fishery regulations, thus minimising mortality from commercial fisheries. EU Regulation 2015/812 (EU 2015a) requires all angel shark discards to be recorded. Some nations (e.g. UK, Spain) have protected angel shark under national legislation, thus affording protection from other activities (e.g. recreational fishing). Angel shark may have received indirect protection through the designation of MPAs in parts of their coastal range, although this has not been evaluated. While protective measures are in place, the low productivity and high site fidelity of angel shark means that population recovery and recolonization of former habitat would only be expected to occur over a decadal time-frame. The Wales Angelshark Action Plan was launched in August 2020, which provides a priority list of Actions to be delivered over the next five years in the region (Barker et al. 2020).

Conclusion (including management considerations)

Angel shark is a prohibited species according to EU fishing regulations. This should reduce fishing mortality in commercial fisheries, depending on the spatial overlap between fisheries and angel shark populations and also depending on discard survival, but fishing mortality is unquantified. Full species protection (to minimise potential mortality from recreational fisheries) does not apply across all of its OSPAR range.

Angel sharks display limited mixing and may form discrete stocks. While angel shark may occur in some designated marine protected areas (MPAs), the potential role of existing MPAs in affording protection to their populations has not been evaluated. There are ongoing efforts to better protect

angel sharks in some remaining areas, including Wales (OSPAR Region III),the Canary Islands and parts of the Mediterranean Sea (outside the OSPAR Area).

Angel shark was listed in Appendices I and II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) in 2017. Contracting parties to the CMS "shall endeavour to provide immediate protection" for species in Appendix I. Angel shark is listed as Critically Endangered on the IUCN Red List of Threatened Species (Morey et al. 2019). Angel shark was listed on Schedule 5 the United Kingdom's Wildlife and Countryside Act (WCA) in 2008, for which Section 9 of the Act makes it an offence to intentionally kill, injure, or take this species.

Angel shark is still a rare species across its biogeographical range, including OSPAR regions II–III–IV. It is a very sensitive species that has declined severely in the OSPAR Area and adjacent waters (e.g. Mediterranean Sea). This decline occurred during the 20th century, with angel shark lost from large parts of the OSPAR Area from the 1960s to the 1990s. Their low productivity and limited movements means that any perceptible improvement in status would only occur over a decadal time-frame. This is still the case in the current assessment and, whilst there is no evidence of further deterioration, there is no sign of improving status.

Knowledge Gaps

There is a lack of information on the species' current range and the efficacy of the prohibited listing. Dedicated, non-destructive surveys of areas of former local abundance are needed to inform on the current habitat and range, and to assess the possibilities of spatial management. Improved liaison and training with the fishing industry is required to ensure that any specimens that are incidentally captured are released alive following best practices. National at-sea observer programmes encountering this species could usefully collect information on the vitality of discarded individuals, and could also deploy increased observer coverage in areas where encounter rates are expected to be higher. The Wales Angelshark Action Plan outlines priority research questions to address current evidence gaps in the region, namely habitat use, movement, connectivity, impact of fishing gears, fate of accidentally caught individuals post-release and population status (Barker et al. 2020).

Method used

The assessment is based on ICES examinations of catch, effort and distribution patterns, peer reviewed literature, and expert opinion.

⊞ References

Sheet reference:

BDC2021/Angel shark

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