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# Status Assessment 2021 - Leafscale gulper shark

All pressures identified in the last OSPAR assessment of the leafscale gulper shark have declined. Several fisheries regulations in the Northeast Atlantic have been adopted within and beyond EU waters. However, abundance and biomass index estimates for this species are highly variable and uncertain, and the data derived from discard sampling are not adequate to provide robust estimates of the quantities caught (ICES 2019a). Therefore, it is not possible to evaluate the current status of the species. However, the species is known to exhibit life-history traits that make the recovery process slow.

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 | ←→2 | ←→2 | low | • | ? | |
| | II | | | | • | NA | |
| | III | ←→2 | ←→2 | low | • | Poor | ←→2 |
| | IV | ←→2 | ←→2 | low | • | Poor | ←→2 |
| | V | ←→2 | ←→2 | low | • | Poor | ←→2 |

| Assessment of key pressures | | Fisheries: targeted and bycatch | Ghost fishing | Threat or impact |
|---|---|---|---|---|
| Region | I | ↓[1] | ?/ ↓[2] | ? |
| | II | | | NA |
| | III | ↓[1] | ?/ ↓[2] | ? |
| | IV | ↓[1] | ?/ ↓[2] | ? |
| | V | ↓[1] | ?/ ↓[2] | ? |

⊞ Table Legend

⊞ Method of Assessment

## Confidence

Medium

## Background Information

The leafscale gulper shark was included on the OSPAR List of Threatened and Declining Species in 2010, according to the Texel-Faial criteria concerned with sensitivity and decline. Members of the Genus *Centrophorus* are considered to be vulnerable to depletion by fisheries given their life-history characteristics (e.g. low productivity, high longevity, slow growth rates). Following a decline in abundance in some ICES areas, European fisheries regulations included a zero Total Allowable Catch (TAC) in 2010 for a list of deep-water sharks, including this species. A limited TAC, for deep-water shark bycatch in longline fisheries targeting black scabbardfish, was provided from 2017 to 2020. Discards from deep-water fisheries are likely to occur, but these have not been quantified for all areas.

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 leafscale gulper shark has a wide distribution in the Atlantic (from Iceland to Senegal, including the Mid-Atlantic Ridge from Iceland to the Azores) at depths ranging from 230–2,360 m (Ebert and Stehmann 2013). The stock is likely to extend outside the OSPAR area, in particular to the Madeira

archipelago where concentrations of gravid females have been reported (Severino et al. 2009; Moura et al. 2014). The species is also present in waters around the Faraday Seamount and Reykjanes Ridge area of the Mid-Atlantic Ridge (Hareide and Garnes 1998).


Figure 1: Distribution of leafscale gulper shark. Note: This distribution is not considered fully accurate, given that leafscale gulper shark does not occur in the Irish Sea and Bristol Channel. Source: IUCN https://www.iucnredlist.org/species/41871/10581731

## Population/Abundance

ICES advises that when the precautionary approach is applied, there should be zero catches of this species in each of the years 2020–2023. Landings of deep-water sharks (primarily leafscale gulper shark and Portuguese dogfish) peaked in 2001–2004, but declined thereafter in response to restrictive management measures (ICES 2019a).

ICES provided advice on this species for the first time in 2005. The advice stated that *"The rates of exploitation and stock sizes of deepwater sharks cannot be quantified. However, based on the CPUE information, the stocks of Portuguese dogfish and Leafscale Gulper shark are considered to be depleted and likely to be below any candidate limit reference point. Given their very poor state, ICES recommends a zero catch of deepwater sharks"* (ICES 2005). The basis of this advice was that these species were depleted according to substantial declines in CPUE series in subareas 6, 7 and 12 (ICES 2005). No new information has become available to alter the ICES advice first adopted in 2005 that the species is depleted in the Northeast Atlantic.

## Condition

Small or juvenile sharks of this species are never encountered in Scottish, Irish or Spanish surveys (Bañón et al. 2006; Clarke et al. 2002) but they are found in Portugal including Madeira (Figueiredo et al. 2008). The species is thought to undertake large-scale migrations associated with reproduction. Mature females give birth off the Madeira archipelago and in Icelandic waters (Severino et al. 2009, Moura et al. 2014, Rodriguez-Cabello et al. 2016).

The species' maximum age range is 21–71 years, while size at maturity is 99-102 and 125-128 cm for males and females respectively (Clarke et al. 2002 ; Bañon et al., 2006; Figueiredo et al., 2008 ). In Irish waters the length range is 80–145 cm (Clarke 2000). Fecundity is reported as 2-10 near-term embryos (Severino et al. 2009) or 7-12 (Bañón et al. 2006). The species has a slow growth rate and high longevity (Clarke et al. 2002). These life history traits render them vulnerable to human impacts and removal by fishing activity. ICES considers that a single stock exists in the Northeast Atlantic in the absence of more clear infomariton on stock identity (ICES 2005) and this finding has been supported by the work of Verissimo et al. (2012) that did not reject the null hypothesis of genetic homogeneity among North East Atlantic samples.

## Threats and Impacts

This species is subject to bycatch in deep-water fisheries. However, landings have been prohibited since 2010 with the exception of a limited bycatch in certain deep-water longline fisheries. This exception no longer exists for the deep-water longlines targeting black scabbardfish. Since the beginning of the year 2021, deep-water sharks landings are forbidden (i.e. TAC=0).

Fishing pressure has strongly decreased in the last 15 years, given the EU management measures adopted such as Regulation (EU) 2016/2336 (EU 2016) which prohibits the use of static nets or bottom trawling at depths ≥600m and ≥800m respectively. Ghost fishing is no longer considered to be a major threat to leafscale gulper shark given the regulations in place that prohibit the use of static nets at depths greater than 600m. However, although it is unlikely that lost nets keep fishing over decades, it is unknown for how long any lost nets could have an impact on deep-water shark populations.

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

In the EU, a zero TAC for a list of deep-water sharks, including leafscale gulper shark, was adopted in 2010 (noting the recent provision for some bycatch; see below). Outside these TAC areas, leafscale gulper shark has, since 2015, been included in the EU prohibited species list for EU waters of Division 2.a and Subarea 4, and in all waters of subareas 1 and 14.

In some other areas, there is a limited TAC for deep-water sharks that are bycaught in longline fisheries targeting black scabbardfish. Given the potential negative impact on deep-water species, gill nets, entangling nets, and trammel nets were banned for fisheries at depths >600m from 2007 onwards. In order to mitigate the potential damaging impacts of bottom trawling, fishing with bottom trawls was permitted only at depths ≤800m after 2016. In the Azores, bottom trawls have been prohibited in most of the EEZ since 2005 (Council Regulation (EC) No 1568/2005 of 20 September 2005; Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019; Portaria nº 114/2014, of 28 May of 2014).

In the NEAFC Regulatory Area the species is designated as Category 2, which means that directed fisheries are not authorised and that bycatches should be minimised.

## Conclusion (including management considerations)

All the pressures identified in the last OSPAR assessment of the leafscale gulper shark have declined. Several fisheries regulations in the Northeast Atlantic have been adopted within and beyond EU waters. However, abundance and biomass index estimates for this species are highly variable and uncertain, and the data derived from discard sampling are not adequate to provide robust estimates of the quantities caught (ICES 2019a). Therefore, it is not possible to fully evaluate the current status of the species, but the species is known to exhibit life-history traits that make the recovery process slow.

Incidental bycatch of leafscale gulper shark continues to take place in some deep-water fisheries targeting other species. Spatio-temporal management could be considered to further minimise bycatch (e.g. avoidance of some fishing grounds or times of the year where there is a spatial overlap between the target species of the fisheries and deep-water shark species) (ICES 2020). However, the information available is not adequate to frame such measures at present. Among the other possible bycatch mitigation measures for this species in deep-water fisheries, the development of gear-based technical measures for improving selectivity such as electromagnetic exclusion devices, acoustic or light-based deterrents could be considered.

## Knowledge Gaps

For the Northeast Atlantic, the current knowledge on deep-water shark species' distribution and stock structure is highly deficient. Life-history and biological information are only available for some areas and that information should be updated.

A major scientific investment is required to gain a full understanding of the spatial and temporal population dynamics that would enable estimates of sustainable exploitation levels or the development of conservation-oriented measures. This would include:

i) increased and rigorous monitoring of deep-water shark populations;

ii) development of specific studies to assess the distribution patterns of species and to estimate the spatial overlap with fisheries;

iii) evaluation of the effect on the bycatch of deep water sharks of modifications in deep water fishing operations (ICES 2019b).

## Method used

The assessment is based on ICES stock assessments, peer reviewed literature, and expert opinion.

## References

## Sheet reference:

BDC2021/Leafscale gulper shark

(https://www.ospar.org)