

# Status Assessment 2021 - Spotted ray

The ICES stock-size indicators for spotted ray show an increasing trend within some OSPAR regions where the species is assessed, with OSPAR Region II showing a more pronounced increase since 2009. For Regions III and IV, the indicative trend based on stock size is less clear, there are comparatively wide confidence limits around the estimates and the increases indicated are more recent (i.e. over the last decade or so). Like all elasmobranchs this species is vulnerable to fishing mortality.



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Assessment of status		Distribution	Population size	Demographics, e.g. productivity	Previous OSPAR status assessment	Status	
Region	I					NA	
	II	?	↑ <sup>1</sup>	?	•	Good	↑ <sup>1</sup>
	III	?	?	?	•	?	
	IV	?	?	?	•	?	
	V				•	NA	

Assessment of key pressures		Key pressure Excessive mortality (bycatch fisheries)	Key pressure	Habitat damage	Threat or impact
Region	I				NA
	II	↔ <sup>1,2</sup>	?		↔ <sup>2</sup>
	III	↔ <sup>1,2</sup>	?		↔ <sup>2</sup>
	IV	↔ <sup>1,2</sup>	?		↔ <sup>2</sup>
	V				NA

#### ⊕ Table Legend

#### ⊕ Method of Assessment

### Confidence

Medium

### Background Information

The spotted ray was first nominated for inclusion in the OSPAR List of Threatened and/or Declining Species and Habitats in 2001 and it was last assessed in 2010. The key criteria for listing were a decline, sensitivity and rarity within Belgian waters (Region II) where spotted ray was considered to be a common occurrence in the mid-1900s. More contemporary studies in the North Sea (and other parts of Region II) and in other parts of the OSPAR area have shown increases in the relative abundance of spotted ray. Nevertheless, the species remains rare in Belgian, German, Norwegian, and Swedish waters. There is some uncertainty regarding its historical occurrence and abundance in many of these 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 spotted ray is a small-bodied skate that is widely distributed in the Northeast Atlantic; its absolute range extends from Morocco in the south to the Shetland Isles and Scandinavia in the north, and includes the Mediterranean Sea (Ellis et al. 2007). Within the Northeast Atlantic (OSPAR

Regions II, III and IV) it tends to occur in shelf seas at depths of 8m to 400m (Ellis et al. 2005, ICES 2018), although it is most common in waters less than 150m deep (ICES 2018). Juveniles tend to occur closer inshore on sandy sediments, with adults more common further offshore on sand and coarse sand-gravel substrates.



Figure 1: Geographic distribution of spotted ray *Raja montagui*. Source: <https://www.iucnredlist.org/species/63146/12623141>

## Population/Abundance

ICES provides advice on fishing opportunities for five stocks of spotted ray: (i) ICES Subarea 4 and Divisions 3.a and 7.d (OSPAR Region II); (ii) Divisions 7.a,e-h, and (iii) Subarea 6 and Divisions 7.b and 7.j (OSPAR Region III); (iv) Subarea 8 and (v) Division 9.a (OSPAR Region IV).

An increasing stock size indicator has been observed for OSPAR Region II since 2009 (Figure 2a). Stock size indicators are also increasing in recent years in OSPAR Region IV.

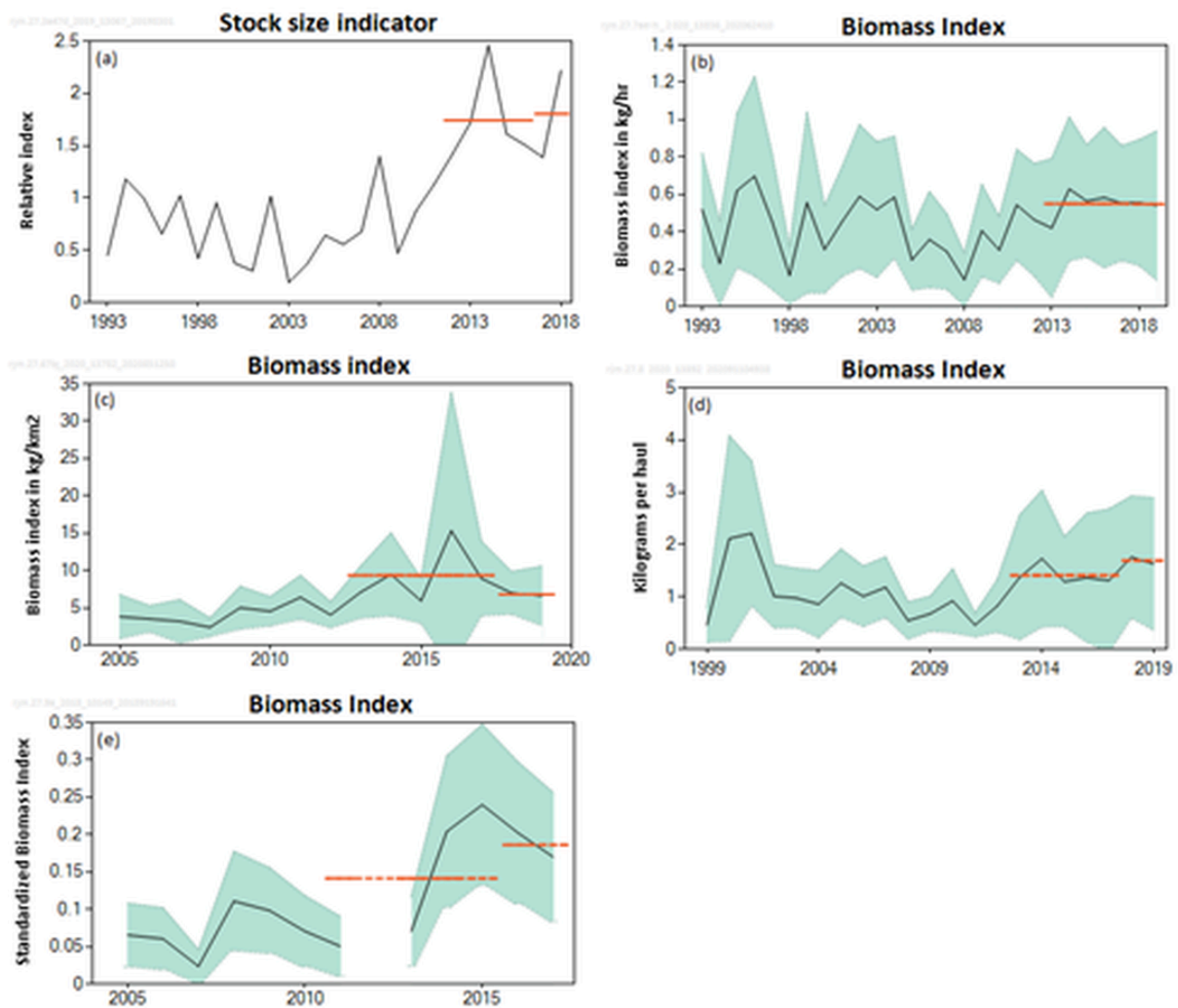


Figure 2: ICES stock-size indicators for spotted ray in OSPAR Regions as follows: (a) Region II (Subarea 4 and Divisions 3.a and 7.d.); (b) Region III (Divisions 7a,e-h); (c) Region III (Subarea 6 and Divisions 7bj); (d) Region IV (Subarea 8) and (e) Region IV (Division 9a). Source: ICES (2020a-d), 2018) and ICES (2019a). Red lines indicate the mean of the stock size indicators for (a) the periods 2012–2016 and 2017–2018, (b, c, d) the periods 2013–2017 and 2018–2019, and (e) the periods 2011–2015 and 2016–2017, as used in the stock assessment.

## Condition

Recorded length-at-maturity (L50) for spotted rays measures 50.9 cm in total length (TL) for males and 62.5 cm TL for females (McCully et al. 2012). The observed length range was 10–67 cm TL and 10–76 cm TL for males and females, respectively (McCully et al. 2012). Juveniles and egg cases are often abundant in sheltered inshore nursery areas, e.g. Welsh and eastern Irish coasts (Ellis et al. 2005). Length data for spotted ray in the North Sea, Skagerrak, Kattegat and eastern English Channel, derived from scientific surveys, have shown no trend in the average length over time and are relatively stable in terms of length range. Individual rays up to the expected maximum length have been reported consistently over the time series. The length distribution of spotted ray obtained from a Portuguese survey in Division 9a is also relatively stable over the time-series (ICES 2019b).

## Threats and Impacts

The main threat identified in the last assessment was “fisheries mortality (primarily bycatch in commercial fisheries)”. Habitat damage (e.g. due to mobile fishing gears, pollution, eutrophication) was also considered but not evaluated (OSPAR 2010).

A decrease in fishing effort is shown in the Northeast Atlantic from the beginning of the 21st century (e.g. Gascuel et al. 2016; Couce et al. 2020, ICES 2020e). However bycatch remains a threat to the species.

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

For EU waters, fishing pressure on spotted ray is currently regulated through a Group-TAC which includes all skate and ray species except *Raja undulata* and those listed as prohibited. The Group-TAC was introduced in 1999 in the North Sea (Division 3.a and Subarea 4) and in 2009 in the eastern English Channel (Division 7.d) and other areas. Recent studies suggest variable at-vessel mortality and discard survival, depending on several factors (e.g. gear type, soaking time, fish size) (Ellis et al. 2018, Schram and Molenaar 2018, Serra-Pereira and Figueiredo 2019). It is possible that this bycaught small-bodied species may be less susceptible to fishing pressure than the large-bodied skates (e.g. Silva et al. 2012), though further studies on discard survival are required.

## Conclusion (including management considerations)

The ICES stock-size indicators show an increasing trend for spotted ray stocks within all OSPAR regions where the species is assessed, with OSPAR Region II showing a more pronounced increase as compared to other areas. The IUCN assessment for spotted ray is as a species of “Least Concern” (Nieto et al. 2015). However these indicative trends are relatively recent (i.e. gradual increase overall during the last decade or so) and there is also significant uncertainty (i.e. wide confidence limits) around some stock size estimates. Therefore the conclusion on the species’ status across relevant OSPAR regions is unknown with the exception of Region II in which the upward trend represents a stronger signal over a longer time-frame.

The species remains rare in Belgian, German, Norwegian, and Swedish waters. There is uncertainty regarding its historical occurrence and abundance in many of these areas but there is some evidence that the species was never abundant in the south-western bight of the North Sea (Rijnsdorp et al. 1996, Rogers and Ellis 2000). While there have been improvements in scientific understanding of this species’ biology, knowledge of their life-cycle and population structure remains incomplete.

The ongoing requirement for species-specific reporting of landings has improved the management of skates and rays. In the coming years, attention should be given to the species-specific differences in susceptibility to fishing pressure, and a species-specific approach to management could be considered.

In conclusion, the available information on spotted ray indicates slight improvements in the abundance of the species. However, long-term trends are unsure and identified threats to the species remain. Furthermore, the species fulfils the Texel-Faial criteria of regional importance and sensitivity.

## Knowledge Gaps

Although there have been recent studies (e.g. Ellis et al. 2005, 2012, AFBI 2009, Serra-Pereira et al. 2014) on ecologically important habitats for this species, spawning and nursery grounds have yet to be fully delineated. The lack of a defined population structure may also hamper the development of potential spatio-temporal management measures. Therefore, additional tagging programmes (conventional and electronic) and DNA analyses of spotted rays throughout the distributional range could usefully be considered. Further research to examine gear selectivity and discard survival is also required.

## Method used

The assessment is based on ICES stock assessments (survey trends).

## References

## Sheet reference:

BDC2021/Spotted ray



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