

EU request on management areas for sandeel in the North Sea

Advice summary

ICES advises that the resolution of the available data does not allow to change the stock area and advice to include EU waters of sandeel management area (SA) 3r to the SA 2r.

ICES estimated that, from 2005 onwards, the level of Danish catches taken in the EU waters of SA 3r have ranged between zero and 16% relative to the catches in SA 2r, and from zero to 42% relative to catches in SA 3r.

ICES advises that a joint TAC for EU waters of SAs 2r and 3r (allowing the EU TAC for SA 2r to be fished also in EU waters of SA 3r) would be precautionary for SA 2r. However, this may not be precautionary for SA 3r because catches from the EU waters of SA 3r would be counted against the SA 2r TAC. This could create the potential for catches to be above the advised catch for the SA 3r area if SA 3r catches in the remainder of SA 3r amount to the full advised catch to be taken in SA 3r. ICES was not able to quantify the associated risk to the sandeel stock in SA 3r.

Request

Background:

During the sandeel benchmark in 2016 the management areas for sandeel were amended. This included amendments to management areas 2 and 3¹, whereby management area 3 now predominantly covers Norwegian waters, whereas management area 2 predominantly covers EU-waters. However due to the breakdown into statistical rectangles, there are areas of management area 3 in EU-waters, where sandeel banks are present. ICES is requested to advice on a way forward for taking this into account.

Request: ICES is requested to assess, in order of descending priority, whether:

- 1. it is possible to include the areas of management area 3, located in EU waters, where sandeel banks are present, to the advice given for management area 2*
- 2. it is possible to assess the historical level of EU catches (as % of total catches) taken on the sandeel banks in the amended management area 3, located in EU waters*
- 3. it is seen as precautionary to set a joint TAC for EU waters of management areas 2 and 3, allowing the EU TAC for area 2 to be fished also in management area 3*

Elaboration on the advice

- ICES interpreted this part of the request as changing the present stock definition of SAs 2r and 3r to follow the Exclusive Economic Zone (EEZ) line that demarcates Norwegian and EU waters. This would imply updating the data used in the stock assessments according to these new stock areas. In this region, the spatial resolution of available biological data and historical catches does not allow exact stock boundaries between SAs 2r and 3r to be determined. Biological information indicated that EU waters of SA 3r could have been included in SA 2r and using the EEZ line was an option considered in the benchmark held in 2016 (ICES, 2017a). However, the catch data are currently available only by ICES rectangles and ICES is not in a position to split these to obtain the full data series used in the assessment. Therefore, it is currently not possible to change the stock areas to follow the EEZ boundary and thus not possible to give combined advice for SA 2r and EU waters of SA 3r.
- It is currently only possible to assess the Danish historical catch by EEZ from 2005 onwards. Denmark has taken on average 88% of all international catches in SA 2r over the period considered, and it is considered that this percentage is representative of the fishery in EU waters of SA 3r given that these waters are adjacent to SA 2r. While the percentage

¹ Following the benchmark held in 2016 (ICES, 2017a) where SAs 2 and 3 were amended, ICES has referred to these amended sandeel management areas as SAs 2r and 3r.

taken in the EU part of SA 3r by the Danish fishery is less than 5% of the total international catches in SA 2r in most years, it was as much as 14% in 2008 and 16% in 2016. The percentage of catches taken in the EU waters of SA 3r varied from zero to 13% of the total catches in SA 3r, when excluding the years with highly restricted Norwegian catches. In 2009, the percentage was as high as 42%, although the total international catch in SA 3r was small.

3. ICES interpreted question 3 of the request as maintaining the present stock definitions for SAs 2r and 3r while expanding the fishable area of SA 2r to include EU waters of SA 3r. Using this approach would imply that exploitation rates could potentially be lower in SA 2r. While this would be precautionary in SA 2r, it would create the potential for extra catches to be taken in SA 3r. ICES was not able to quantify the associated risk to the sandeel stock in SA 3r. The request focuses solely on the overlap of the EU waters with SA 3r. However, though SA 2r is mostly within EU waters, some parts of SA 2r are within the Norwegian EEZ. As the request did not refer to the Norwegian area of SA 2r, it was assumed that Norwegian catches in SA 2r would continue to be counted against the SA 2r TAC.

Basis of the advice

Biological data and modelling exercises presented at the ICES sandeel benchmark in 2016 (ICES, 2017a) supported retaining SAs 2r and 3r as separate sandeel management areas instead of merging them into one area. However, it was not possible to judge, based on biology, exactly where the border between the two areas should be drawn. Instead, the ICES benchmark group chose the pragmatic solution for the boundary between SAs 2r and 3r, basing it on ICES rectangles in such a way that the surface area of EU sandeel fishing grounds in SA 3r was as small as possible. The decision to use ICES rectangles was made to accommodate the historical data, which have been collected on that basis. Catches prior to 2005 cannot be allocated to other than ICES rectangles due to the lack of VMS data, and even after 2005 the allocation of catches to each VMS ping is an estimate with underlying assumptions. Moreover, age data are only resolved at the level of ICES rectangles.

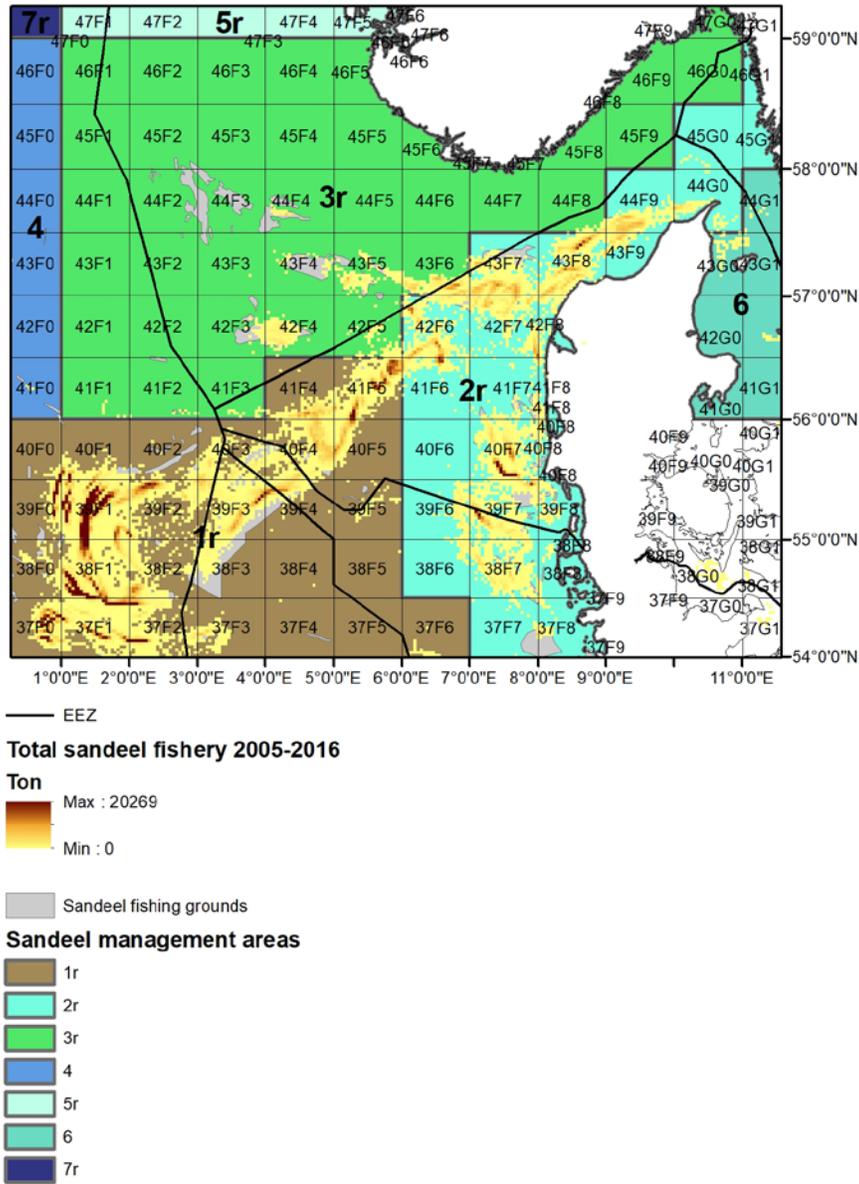


Figure 1 Map of total Danish sandeel catches from 2005 to 2016, distributed using VMS pings. Landing estimates are plotted on a map showing ICES rectangles, sandeel management areas, sandeel fishing grounds (Jensen *et al.*, 2010), and EEZs (black lines).

Results and conclusions

Based on the analysis of Danish fishing activities in EU waters of SA 3r within ICES rectangles 42F5, 43F6, and 44F8 (see Figure 1), the percentage of catches in EU waters of SA 3r were estimated and compared with the total sandeel catches in SAs 2r and 3r (Table 1). Danish catches taken in EU waters of SA 3r correspond, on average, to 5% of the total international catches in SA 2r, and to 8% of international catches in SA 3r (3.7% when excluding the years in which Norwegian catches in SA 3r were highly restricted). On an annual basis, these percentages are highly variable, ranging from zero to 16% of catches in SA 2r (zero to 14% if excluding 2016 with very low total catches) and from zero to 42% of catches in SA 3r (zero to 13% if excluding years with very restricted fisheries in the Norwegian EEZ). Table 1 shows total catches in SAs 2r and 3r, as well as the percentage of total estimated catches within the EU part of SA 3r relative to total catches in SAs 2r and 3r.

Methods

From Danish logbooks, trips in the sandeel fishery were identified and merged with VMS data by vessel-id and date for the years 2005–2016. The VMS ping rate is one position per hour. Since 2005, VMS has been mandatory for vessels larger than 15 m, and since 2012 for vessels larger than 12 m. The positions were filtered by speed to include those with speed between 2 and 4 knots. The sandeel catches reported for a given catch date were distributed to the VMS positions with estimated fishery by the time difference between the VMS pings. There was insufficient time to analyse logbooks and VMS information for other countries; therefore these data were not considered. In addition, the years 2014 and 2015 were excluded from the analysis because substantial area misreporting has been detected (ICES, 2015, 2016). Denmark has taken on average 88% of all EU sandeel catches over the period considered and can therefore be considered a representative sample. However, the analysis is based on estimated catches, where the catch for a given vessel and date is distributed evenly among VMS pings from that vessel. For these reasons, any historical (and future) record is uncertain. Data from other countries are not currently available, thereby increasing uncertainty.

The distribution of catches between rectangles has been determined by the catch advice for individual sandeel management areas (from 2011 onwards) and the implementation of restrictions related to EEZ (i.e. from 2006 only Norway has been allowed to fish in the Norwegian EEZ). The very low stock size of sandeel in SA 3r during the period 2000 to 2006 resulted in a fishery that was substantially more spatially widespread during that period. SA 2r has had low stock size from 2004 to 2010. In 2005, 2006, and 2009, Norwegian catches were highly restricted in the Norwegian EEZ.

In 2016, the fishery along the coast of Denmark (the previous SA 2) was restricted to a monitoring fishery while a large TAC was given for SA 3, now the northern part of SA 2r. In years when one of the stocks is at a low level, there is likely to be increased fishing activity along the border of the area with the lowest TAC. Overall, for none of the years in the period for which data are available can the distribution of catches be seen as unaffected by management measures or very low stock sizes.

Additional information

Table 1 Total international catches in SAs 2r and 3r and estimated Danish catches taken in the EU part of SA 3r (inside rectangles 42F5, 43F6, and 44F8), presented as a percentage of total international catches in SAs 2r and 3r.

Year	Total international catches in SA 2r	Total international catches in SA 3r	Estimated catch in EU waters of SA 3r (% of SA 2r)	Estimated catch in EU waters of SA 3r (% of SA 3r)
2005	34569	13994	6	15
2006	37952	7008	0	1
2007	43403	75391	2	1
2008	35123	74992	14	7
2009	36709	6362	7	42
2010	51640	61243	2	2
2011	24897	92452	1	0
2012	12552	40134	0	0
2013	47847	9844	3	13
2014	NA	95464		
2015	NA	104631		
2016	9238	43973	16	3

NA = not available.

Sources and references

Jensen, H., Rindorf, A., Wright, P. J., and Mosegaard, H. 2010. Inferring the location and scale of mixing between habitat areas of lesser sandeel through information from the fishery. *ICES Journal of Marine Science*, 68(1): 43–51.

ICES. 2015. Sandeel (*Ammodytes* spp.) in Divisions IIIa, IVa, and IVb, SA 3 (Skagerrak and Kattegat, North and Central North Sea). In Report of ICES Advisory Committee on Fishery Management, 2015. ICES Advice 2015, Book 6, Section 6.3.39. 8 pp. <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/san-ns3.pdf>

ICES. 2016. Sandeel (*Ammodytes* spp.) in Divisions 3a, 4a, and 4b, SA 3 (Skagerrak and Kattegat, North and Central North Sea). In Report of ICES Advisory Committee on Fishery Management, 2016. ICES Advice 2016, Book 6, Section 6.3.39. 7 pp. <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/san-ns3.pdf>

ICES. 2017a. Report of the Benchmark Workshop on Sandeel Stocks (WKSAND), 31 October–4 November 2016, Bergen, Norway. ICES CM 2016/ACOM:33. 301 pp.

ICES. 2017b. Sandeel in Division 3.a and Subarea 4 [Section 9]. In Report of the Herring Assessment Working Group for the Area South of 62°N (HAWG), 14–22 March 2017, ICES HQ, Denmark. ICES CM 2017/ACOM:07. 856 pp. Section 9 available separately at <http://www.ices.dk/community/groups/Pages/HAWG.aspx>

ICES. 2018. Sandeel management areas. Coming as Annex 7 in the report of the Herring Assessment Working Group for the Area South of 62°N (HAWG), scheduled to meet 12–20 March 2018 at ICES HQ, Denmark. Annex 7 is currently available separately at <http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2018/HAWG/23%20HAWG%20Report%202018%20Annex%2007%20Request%20on%20sandeel%20management%20areas.pdf>