

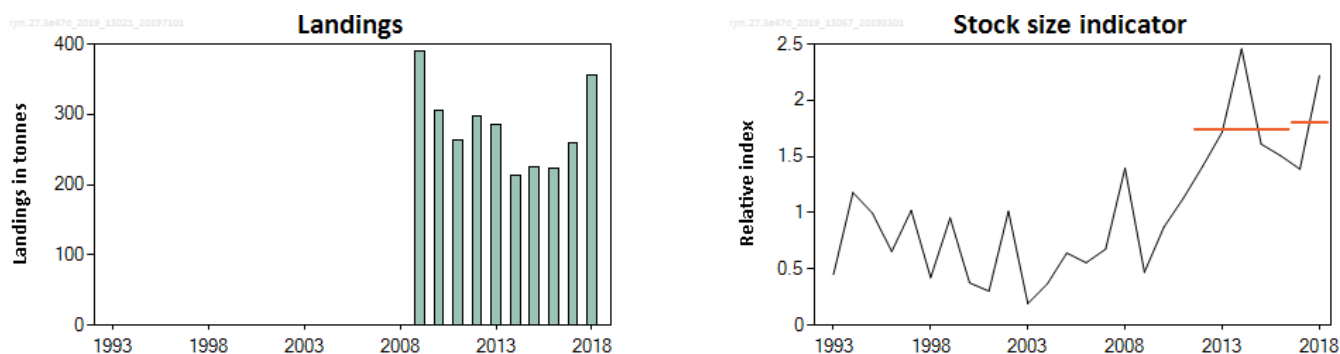
## Spotted ray (*Raja montagui*) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel)

### ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, landings should be no more than 301 tonnes in each of the years 2020 and 2021. ICES cannot quantify the corresponding catches.

### Stock development over time

The stock size indicator increased from 2003 and has remained above the long-term average since 2011.



**Figure 1** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Summary of the stock assessment. Left: ICES estimates of species-specific landings since 2009. Right: stock size indicator of exploitable biomass from three surveys, NS-IBTS-Q1, NS-IBTS-Q3, and UK(E&W)-BTS-Q3 ( $\text{kg h}^{-1}$ , for individuals of  $\geq 50$  cm total length) relative to the time-series mean. The horizontal lines show the mean stock indicators for 2017–2018 and 2012–2016.

### Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to maximum sustainable yield (MSY) and precautionary approach (PA) reference points because the reference points are undefined.

**Table 1** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size					
		2016	2017	2018	2016	2017	2018			
Maximum sustainable yield	$F_{MSY}$	?	?	?	Unknown	$MSY B_{trigger}$	?	?	?	Unknown
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	Unknown	$B_{pa}, B_{lim}$	?	?	?	Unknown
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	↘	↘	↗	Increasing

### Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). Biomass indices derived from the NS-IBTS-Q1, NS-IBTS-Q3, and UK(E&W)-BTS-Q3 surveys were used to provide the stock size indicator. The advice is based on a comparison of the two latest index values (index A) with the five preceding values (index B), multiplied by the advised landings for 2018 and 2019. The index is estimated to have increased by less than 20% and thus the uncertainty cap was not applied. The stock

status relative to reference points is unknown, however the precautionary buffer was last applied in 2017 and therefore its application was not considered in 2019.

Discarding is known to take place, but ICES cannot quantify the corresponding catch. In addition, discard survival, which is likely to occur, has not been estimated.

**Table 2** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. The basis for the catch scenarios.\*

Index A (2017–2018)		1.80
Index B (2012–2016)		1.74
Index ratio (A/B)		1.04
Uncertainty cap	Not applied	-
Advised landings for 2018 and 2019 (issued in 2017)		291 tonnes
Discard rate		Unknown
Precautionary buffer	Not applied	-
Landings advice **		301 tonnes
% Advice change ^		3.6%

\* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

\*\* [Advised landings for 2018 and 2019 ] × [index ratio].

^ Advice value for 2020 and 2021 relative to the advice value 2019.

The advised landings are higher than those advised for 2018 and 2019 because the biomass indicator has increased.

### Basis of the advice

**Table 3** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	ICES is not aware of any agreed precautionary management plan for spotted ray in this area.

### Quality of the assessment

Species-specific landings data are incomplete prior to 2009.

Fishery-independent trawl surveys provide the longest time-series of species-specific information and cover most of the stock area.

### Issues relevant for the advice

Misidentification occurs between spotted ray (*Raja montagui*) and blonde ray (*Raja brachyura*).

### Reference points

Reference points are not defined for this stock.

## Basis of the assessment

**Table 4** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2018).
Assessment type	Survey-based trends (ICES, 2019).
Input data	Surveys: NS-IBTS-Q1, NS-IBTS-Q3, and UK(E&W)-BTS-Q3.
Discards and bycatch	Unknown.
Indicators	None.
Other information	None.
Working group	Working Group on Elasmobranch Fishes (WGEF).

## Information from stakeholders

There is no additional available information.

## History of the advice, catch, and management

**Table 5** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. History of ICES advice, agreed TAC, and estimates of landings. All weights are in tonnes.

Year	ICES advice	Predicted landings corresp. to advice	Agreed TAC*			ICES landings
			2.a and 4	7.d	3.a	
2009	<i>Status quo</i> catch	-	1643	1044	68	390
2010	No new advice, same as 2010	-	1397	887	58	306
2011	<i>Status quo</i> catch	-	1397	887	58	263
2012	No new advice, same as 2011	-	1395	887	58	298
2013	No TAC, species-specific measures needed, catch to decrease by at least 20%	-	1256	798	52	286
2014	No new advice, same as 2013	-	1256	798	47	214
2015	No new advice, same as 2014	-	1382	798	47	225
2016	Precautionary approach	292	1313	966	47	223
2017	Biennial advice	292	1378	1063	47	259
2018	Precautionary approach	≤ 291	1654	1276	47	355
2019	Precautionary approach (same advice as for 2018)	≤ 291	1654	1404	47	
2020	Precautionary approach	≤ 301				
2021	Same advice as in 2020	≤ 301				

\* EU combined TAC for skates and rays.

## History of the catch and landings

The distribution of this stock does not extend into the NEAFC Regulatory Area.

**Table 6** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Catch distribution by fleet in 2018 as estimated by ICES.

Catch (2018)	Landings			Discards
	Beam trawl	Bottom trawl	Other gears	
Unknown	45%	47%	8%	Unknown
	355 tonnes			

**Table 7** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. ICES estimates of landings by country (in tonnes). Blank = no data reported; + = data less than 0.5 t.\*

Year	Belgium	Germany	Denmark	France	UK	Netherlands	Total
2009	35			128	28	200	390
2010	35			32	56	182	306
2011	31			31	93	108	263
2012	10			25	82	180	298
2013	12			28	127	119	286
2014	4		1	36	107	66	214
2015	9		+	15	124	77	225
2016	10	4		16	117	76	223
2017	15	6		37	114	87	259
2018	27	11		16	189	112	355

\* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

### Summary of the assessment

**Table 8** Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Assessment summary. Biomass indices from trawl surveys (NS-IBTS-Q1, NS-IBTS-Q3, and UK(E&W)-BTS-Q3; all indices are in kg h<sup>-1</sup>, for individuals of ≥ 50 cm total length) and stock size indicator (the annual mean of the three surveys after they had each been normalized by their long-term means).

Year	NS-IBTS-Q1	NS-IBTS-Q3	UK(E&W)-BTS-Q3	Stock size indicator
1993	0.44	0.91	0.00	0.45
1994	0.55	1.63	1.36	1.18
1995	1.03	0.47	1.49	1.00
1996	0.44	0.30	1.22	0.66
1997	0.48	0.00	2.58	1.02
1998	0.80	0.02	0.45	0.42
1999	0.50	2.36	0.00	0.95
2000	0.28	0.02	0.83	0.38
2001	0.30	0.05	0.56	0.30
2002	0.55	0.07	2.42	1.01
2003	0.54	0.04	0.00	0.19
2004	0.35	0.40	0.36	0.37
2005	0.45	0.49	0.99	0.64
2006	0.10	0.29	1.28	0.56
2007	0.95	1.08	0.00	0.68
2008	2.75	0.39	1.05	1.40
2009	0.55	0.87	0.00	0.47
2010	1.31	0.97	0.34	0.87
2011	0.82	1.16	1.40	1.13
2012	1.68	1.56	1.00	1.42
2013	1.70	1.27	2.18	1.72
2014	1.73	5.00	0.64	2.46
2015	2.28	1.20	1.35	1.61
2016	1.39	1.81	1.33	1.51
2017	1.79	1.16	1.21	1.39
2018	2.23	2.47	1.96	2.22

## Sources and references

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*Recommended citation:* ICES. 2019. Spotted ray (*Raja montagui*) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel). *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, rjm.27.3a47d, <https://doi.org/10.17895/ices.advice.4839>.