

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

ICES stock advice

ICES advises that when the precautionary approach is applied, landings should be no more than 291 tonnes in each of the years 2018 and 2019. ICES cannot quantify the corresponding catches.

Stock development over time

The stock size indicator has increased during the last decade and has been above the long-term average since 2011.

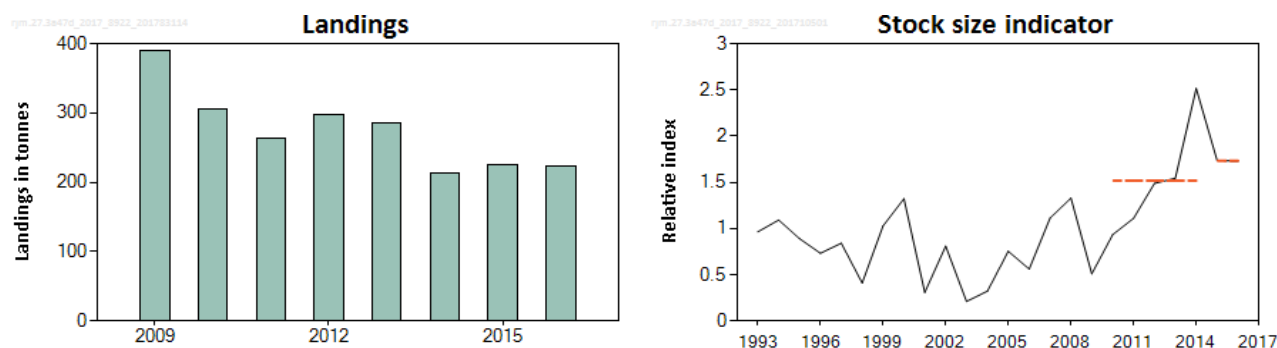


Figure 1 Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Summary of the stock assessment. Left: ICES estimates of species-specific landings of *R. montagui* since 2009. Right: stock size indicator from three surveys, IBTS-Q1, IBTS-Q3, and BTS-Eng-Q3 (kg h^{-1} , relative to the time-series mean). The dotted horizontal lines show the mean stock indicators for 2015–2016 and 2010–2014.

Stock and exploitation status

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			
		2014	2015	2016		2014	2015	2016	
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	MSY	?	?	?
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Undefined	$B_{trigger}$?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	B_{pa}, B_{lim}	?	?	?
Qualitative evaluation	-	?	?	?	Unknown	B_{MGT}	-	-	-
							↗	↘	→
									Stable

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). Biomass indices derived from the IBTS-Q1, IBTS-Q3, and UK-7d-BTS surveys were used to provide an overall index for the stock development.

The previous advised landings for 2016 and 2017 were originally derived using landings statistics from 2012–2014. In 2016, a review of the landing statistics of elasmobranchs (ICES, 2016a) was conducted. As a result, the basis which was used to provide advice in 2015 for 2016 and 2017 has been adjusted to account for the update in the landing statistics in the period 2012–2014.

The advice is based on a comparison of the two latest index values (index A) with the five preceding values (index B), multiplied by advised landings adjusted for 2016 and 2017. The stock size relative to candidate reference points is unknown, and since the precautionary buffer has not been applied for three years, it is applied in 2017. Discarding is known to take place, but ICES cannot quantify the corresponding catches.

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

Index A (2015–2016)		1.73
Index B (2010–2014)		1.52
Index ratio (A/B)		1.14
Uncertainty cap	Not applied	-
Advised landings (2016, 2017)		292 tonnes
Advised landings adjusted (2016, 2017)** [292 t × 1.10]		319 tonnes
Discard rate		Unknown
Precautionary buffer	Applied	0.8
Landings advice ***		291 tonnes

* 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 adjusted for the revision of the landings statistics in 2012–2014 (ICES, 2016a).

*** [Advised landings, adjusted (2016, 2017)] × [index ratio] × [precautionary buffer].

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

There is insufficient information to present species-specific landings for this stock prior to 2008/2009, when legal obligations to report the main commercial skates to species level were introduced. A greater proportion of data have been reported to species level since 2009, but data remain incomplete. Fishery-independent trawl surveys provide the longest time-series of species-specific information and cover most of the stock area. There are species identification issues in all data sources, as some data for spotted ray (*Raja montagui*) and blonde ray (*Raja brachyura*) can be confounded.

Issues relevant for the advice

Improved estimates of discard rates and discard survival are required.

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, 2016b).
Assessment type	Survey-trends (ICES, 2017).
Input data	Annual landings since 2009. Surveys IBTS-Q1, IBTS-Q3, and BTS-Eng-Q3.
Discards and bycatch	Unknown.
Indicators	None.
Other information	None.
Working group	Working Group on Elasmobranch Fishes (WGEF)

Information from stakeholders

As yet unpublished industry data from the Dutch pulse trawl fisheries in the southern and central North Sea have shown that 90% of the total catch (biomass) of *Raja montagui* in quarter 4 of 2016 are discarded (ICES, 2017).

History of the advice, catch and management

Table 5 Spotted ray in Subarea 4 and in divisions 3.a and 7.d. ICES advice and species-specific estimates of landings. All weights are in tonnes.

Year	ICES advice	Predicted landings corresp. to advice	ICES species-specific estimates of landings*
2009	Status quo catch	-	390
2010	No new advice, same as 2010	-	306
2011	Status quo catch	-	263
2012	No new advice, same as 2011	-	298
2013	No TAC, species-specific measures needed, catch to decrease by at least 20%	-	286
2014	No new advice, same as 2013	-	214
2015	No new advice, same as 2014	-	225
2016	Precautionary approach	292	223
2017	Biennial advice	292	
2018	Precautionary approach	≤ 291	
2019	Precautionary approach (same advice as for 2018)	≤ 291	

* Data revised in 2016 (ICES, 2016a) are minimum estimates, based on reported landings.

History of the catch and landings

Table 6 Spotted ray in Subarea 4 and in divisions 3.a and 7.d. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings			Discards
Unknown	Beam trawl 47%	Bottom trawl 43%	Other gears 9%	Unknown
	223 tonnes			

Table 7 Spotted ray in Subarea 4 and in divisions 3.a and 7.d. ICES estimates of landings by country (in tonnes). Data revised in 2016 (ICES, 2016a).

Year	Belgium	Germany	Denmark	France	UK	Netherlands	Total
2005				41.9	0.0		41.9
2006				25.9			25.9
2007	0.1			93.4	0.0		93.5
2008	38.7			46.2	9.4	240.4	334.7
2009	34.6			127.8	28.3	199.7	390.3
2010	35.1			32.2	56.2	182.3	305.8
2011	31.2			30.8	93.2	108.0	263.2

Year	Belgium	Germany	Denmark	France	UK	Netherlands	Total
2012	10.0			25.5	82.2	180.0	297.7
2013	11.6			28.2	127.1	119.4	286.2
2014	4.3		1.0	35.7	106.7	66.4	214.0
2015	9.4		0.1	15.2	123.6	76.9	225.3
2016	9.9	4.1		15.7	117.2	76.3	223.2

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 (IBTS-Q1, IBTS-Q3, and BTS-Eng-Q3; all indices are in kg h⁻¹, 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	IBTS-Q1	IBTS-Q3	BTS-Eng Q3	Stock size indicator
1993	0.217	0.412	0.099	0.963
1994	0.271	0.737	0.064	1.091
1995	0.505	0.213	0.072	0.889
1996	0.216	0.138	0.096	0.731
1997	0.238	0	0.138	0.841
1998	0.395	0.008	0.023	0.410
1999	0.247	1.068	0	1.028
2000	0.135	0.011	0.252	1.3228
2001	0.146	0.022	0.038	0.309
2002	0.27	0.033	0.121	0.809
2003	0.266	0.016	0	0.210
2004	0.173	0.179	0.011	0.323
2005	0.219	0.224	0.086	0.7533
2006	0.049	0.133	0.087	0.560
2007	0.466	0.489	0.079	1.112
2008	1.352	0.175	0.039	1.328
2009	0.269	0.393	0	0.510
2010	0.642	0.439	0.023	0.934
2011	0.402	0.527	0.082	1.109
2012	0.824	0.708	0.066	1.488
2013	0.836	0.577	0.097	1.543
2014	0.851	2.263	0.02	2.515
2015	1.12	0.545	0.099	1.738
2016	0.681	0.818	NA	1.727

* NA = not available.

Sources and references

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