ICES Advice on fishing opportunities, catch, and effort
Azores and Oceanic Northeast Atlantic ecoregions
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ICES
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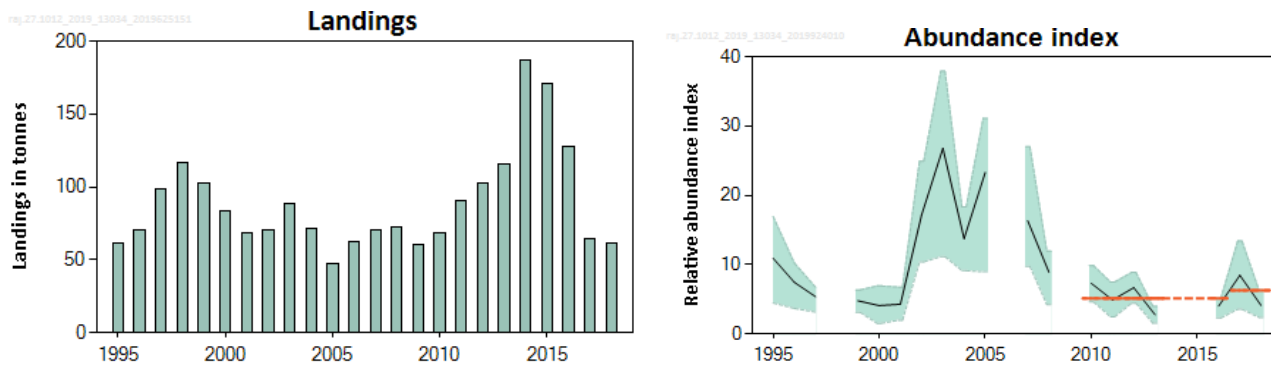Conseil International pour
l'Exploration de la Mer

Rays and skates (Rajidae), mainly thornback ray (*Raja clavata*), in subareas 10 and 12 (Azores grounds and north of Azores)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, landings should be no more than 75 tonnes in each of the years 2020 and 2021. ICES cannot quantify the corresponding catches.

Stock development over time

The abundance index peaked in the mid-2000s; recent values are low compared to this period.

Figure 1 Rays and skates in subareas 10 and 12. Summary of the stock assessment. Left: ICES landings (in tonnes) of rays and skates for ICES subareas 10 and 12. Right: Abundance index for *Raja clavata* in the ARQDACO(P)–Q1 longline survey. Shaded area represents 95% CI.The dotted horizontal lines indicate mean catch rates for the last two years (2017 and 2018) compared to the preceding five values (2010–2013 and 2016). Survey data for 2006, 2009, 2014, and 2015 are not available.

Stock and exploitation status

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

Table 1 Rays and skates in subareas 10 and 12. 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	-		?	↗	↘ Decreasing

Catch scenarios

The ICES framework for category 3 stocks (ICES, 2012) was applied. An abundance index derived from the Azorean bottom longline survey (ARQDACO(P)–Q1) was used as the index of stock development. The advice is based on the ratio of the mean of the last two index values (Index A) and the mean of the five preceding values (Index B), excluding the missing values, and multiplied by the recent advised landings. It should be noted that the survey was not undertaken in 2006, 2009, 2014, or 2015. The abundance index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The precautionary buffer was last applied in 2015. Because the stock status relative to reference points is unknown, the precautionary buffer has been applied again in 2019.

Discarding is known to take place, but ICES cannot quantify the corresponding catch. Discard survival, which may occur, has also not been estimated.

Table 2   Rays and skates in subareas 10 and 12. The basis for the catch scenarios. *

Index A (2017 and 2018)		6.28
Index B (2010–2016; 2014 and 2015 missing)		5.13
Index ratio (A/B)		1.22
Uncertainty cap	Applied	1.2
Advised landings for 2018, 2019 (issued in 2017)		78 tonnes
Discard rate		Unknown
Precautionary buffer	Applied	0.8
Landings advice **		75 tonnes
% Advice change ***		−4%

* 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] × [uncertainty cap] × [precautionary buffer].
*** Advice value for 2020–2021 relative to the advice value for 2018–2019.

The advised landings for 2020 and 2021 are lower than the previous advice, as the precautionary buffer was applied.

Basis of the advice

Table 3   Rays and skates in subareas 10 and 12. The basis of the advice.

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

Quality of the assessment

The Azorean longline survey is considered indicative of changes in stock size for thornback ray, which constitutes around 90% of the skates and rays caught in the survey. The survey abundance index series was re-calculated in 2019, excluding the statistical area of the western islands (Flores and Corvo), because this statistical area had not been covered in some years.

The species composition in commercial skate landings is unknown, while thornback ray is the dominant skate species caught in surveys on the main Azorean fishing grounds (Subdivision 10.a.2).

Issues relevant for the advice

The status of skate species in the region, other than thornback ray, is uncertain.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 4   Rays and skates in subareas 10 and 12. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2018).
Assessment type	Survey-based trends (ICES, 2019).
Input data	Portuguese bottom longline survey for thornback ray (ARQDACO(P)-Q1).
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   Rays and skates in subareas 10 and 12. ICES advice and ICES estimated landings. All weights are in tonnes.

Year	ICES advice	Predicted landings corresp. to advice	ICES landings
2008	No advice	-	72
2009	No advice	-	62
2010	No advice	-	73
2011	No advice	-	93
2012	No advice	-	104
2013	No TAC for this stock, additional measures needed + catch should decrease by 36% (20% reduction followed by 20% PA buffer)	-	116
2014	No new advice, same catch value as for 2013	-	190
2015	No new advice, same catch value as for 2014	-	171
2016	Precautionary approach	≤ 87	127
2017	Biennial advice	≤ 87	64
2018	Precautionary approach	≤ 78	61
2019	Precautionary approach (same advice as for 2018)	≤ 78	
2020	Precautionary approach	≤ 75	
2021	Same advice as in 2020	≤ 75	

History of the catch and landings

Whilst various skate species may be caught in the NEAFC Regulatory Area, the quantities caught and the species composition are uncertain; catches cannot be quantified.

Table 6   Rays and skates in subareas 10 and 12. Catch distribution by fleet in 2018 as estimated by ICES.

Catch (2018)	Landings	Discards
Unknown	Hooks and lines 100%	Unknown
	61 tonnes	

Table 7   Rays and skates in subareas 10 and 12. History of ICES species-specific estimates of landings inside and outside of the NEAFC regulatory area. All weights are in tonnes.

Year	Inside the NEAFC regulatory area	Outside the NEAFC regulatory area	ICES species-specific estimates of landings
2014	3	187	190
2015	0	171	171
2016	0	127	127
2017	0	64	64
2018	0	61	61

Table 8 Rays and skates in subareas 10 and 12. ICES estimates of landings by country (in tonnes). + = landings of < 0.01 tonnes.

Year	Spain		France			Portugal	Total
	12.b	10.a	10.a	12.a	12.c	10.a.2	
2005			0.06	0.6		47	48
2006				0.03		62	62
2007				0.01		71	71
2008			0.06	+		72	72
2009	1.5		0.16	0.8		60	62
2010	5		0.07	0.28		68	73
2011	2		0.16	0.4		91	93
2012	0.7		+	03		103	104
2013	0.5		0.08			115	116
2014	3		0.03	0.2		187	190
2015					0.06	171	171
2016						127	127
2017						64	64
2018						61	61

Summary of the assessment

Table 9 Rays and skates in subareas 10 and 12. Assessment summary. Abundance index (catch per unit effort relative to the abundance index, weighted by the size of the strata) of thornback ray (*Raja clavata*) from the Azores (ICES Subarea 10) from the Portuguese bottom longline survey (ARQDACO(P)–Q1).

Year	Lower	Abundance index	Upper
1995	4.46	10.91	16.93
1996	3.67	7.44	10.22
1997	3.15	5.36	6.74
1998	NA	NA	NA
1999	3.11	4.77	6.34
2000	1.53	4.08	6.92
2001	1.97	4.29	6.74
2002	10.39	17.16	24.92
2003	11.15	26.78	37.88
2004	9.12	13.75	18.30
2005	8.96	23.30	31.07
2006	NA	NA	NA
2007	9.76	16.33	27.01
2008	4.24	8.91	11.93
2009	NA	NA	NA
2010	4.62	7.29	9.86
2011	2.47	4.90	7.49
2012	4.43	6.67	8.88
2013	1.53	2.77	3.97
2014	NA	NA	NA
2015	NA	NA	NA
2016	2.29	4.02	5.11
2017	3.56	8.45	13.39
2018	2.37	4.11	5.98

NA = not available.

Sources and references

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