Small-eyed ray (*Raja microocellata*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea North)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, landings should be no more than 123 tonnes in each of the years 2021 and 2022. ICES cannot quantify the corresponding catches.

Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2019 and 2020 is attached as Annex 1.

Stock development over time

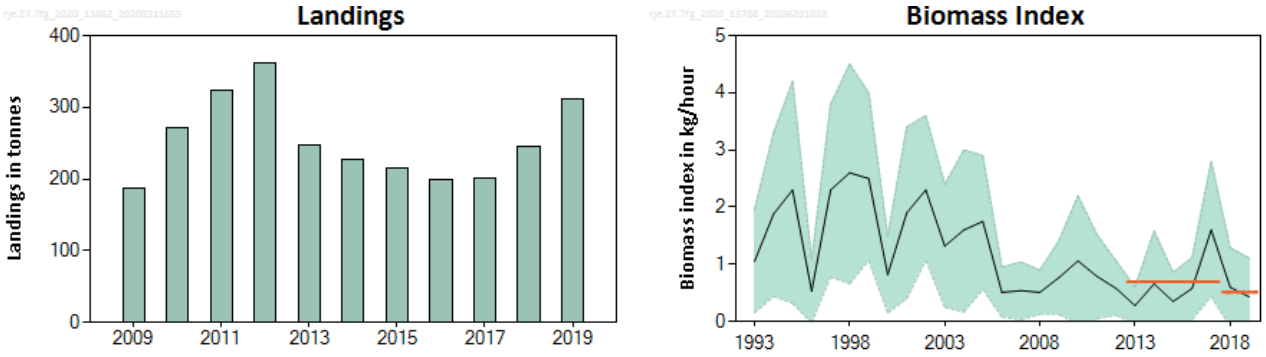

Figure 1 Small-eyed ray in divisions 7.f and 7.g. Summary of the stock assessment. Left: ICES estimates of species-specific landings of *Raja microocellata* since 2009. Right: Biomass index (kg h^{-1} and 95% confidence interval [CI] as shaded area) from the UK (E&W)-BTS-Q3 survey in divisions 7.f–g (individuals of ≥ 50 cm in total length). The horizontal lines show the mean stock-size indicator for 2013–2017 and 2018–2019.

Stock and exploitation status

Table 1 Small-eyed ray in divisions 7.f and 7.g. State of the stock and the fishery relative to reference points.

		Fishing pressure				Stock size				
		2017	2018	2019			2017	2018	2019	
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	MSY $B_{trigger}$	?	?	?	Undefined
Precautionary approach	F_{pa},F_{lim}	?	?	?	Unknown	B_{pa},B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	–	–	–	Not applicable	B_{MGT}	–	–	–	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	↗	↘	↘	Decreasing

Catch scenarios

The precautionary buffer was last applied to the landings advice in 2014. The stock size and fishing pressure status relative to reference points is unknown and the precautionary buffer is therefore applied again in 2020.

Discarding is known to take place; however, ICES cannot quantify the corresponding dead catch.

Table 2 Small-eyed ray in divisions 7.f and 7.g. The basis for the catch scenarios *.

Index A (2018–2019)		0.51
Index B (2013–2017)		0.69
Index ratio (A/B)		0.74
Uncertainty cap	Applied	0.8
Advised landings for 2019–2020 issued in 2018		192 tonnes
Discard rate	Unknown	-
Precautionary buffer	Applied	0.8
Landings advice **		123 tonnes
% advice change ***		−36%

* 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.
** [Advice for 2019–2020] × [Uncertainty cap] × [Precautionary buffer].
*** Advice value for 2021 and 2022 relative to the advice value for 2019 and 2020.

The advised landings have decreased by more than 20% compared to last year's advice due to the decreasing biomass index and the application of the precautionary buffer.

History of the advice, catch, and management

Table 3 Small-eyed ray in divisions 7.f and 7.g. History of ICES advice and ICES estimates of landings *. All weights are in tonnes.

Year	ICES advice	Landings corresp. to advice	EU TAC **	ICES species-specific landings: minimum estimate based on reported landings *
2011	No specific advice			323
2012	No specific advice			362
2013	No TAC, species-specific measures needed, catch to decrease by at least 36% (reduction of 20% followed by 20% PA buffer).	-		247
2014	No new advice, same as 2013.	-		227
2015	Reduce catches by 36%.	188		216
2016	No new advice, same as 2015.	188	188	198
2017	Precautionary approach	≤ 154	154	201
2018	Precautionary approach (same value as advised catches for 2017)	≤ 154	154	245
2019	Precautionary approach	≤ 192	192	312
2020	Precautionary approach	≤ 192	192	
2021	Precautionary approach	≤ 123		
2022	Precautionary approach	≤ 123		

* Data revised in 2020.
** Fishing opportunities are managed through an overall TAC by management unit, which includes all species of skates and rays. Since 2016, there has been a specified TAC for this stock in the overall management unit.

Summary of the assessment

Table 4 Small-eyed ray in divisions 7.f and 7.g. Time-series of survey index used for the advice. Series are the mean biomass per hour (for specimens ≥ 50 cm total length) from the UK (E&W–BTS–Q3).

Year	Biomass index kg h^{-1}	High 95% CI	Low 95% CI	Landings tonnes
1993	1.05	1.96	0.154	
1994	1.88	3.3	0.44	
1995	2.3	4.2	0.32	
1996	0.53	1.08	0	
1997	2.3	3.8	0.78	
1998	2.6	4.5	0.66	
1999	2.5	4.0	1.07	
2000	0.82	1.49	0.15	
2001	1.90	3.4	0.40	
2002	2.3	3.6	1.07	
2003	1.32	2.4	0.25	
2004	1.60	3.0	0.167	
2005	1.75	2.9	0.56	
2006	0.51	0.95	0.080	
2007	0.54	1.04	0.031	
2008	0.51	0.90	0.128	
2009	0.77	1.42	0.127	187
2010	1.06	2.2	0	272
2011	0.79	1.52	0.051	323
2012	0.58	1.06	0.110	362
2013	0.28	0.61	0	247
2014	0.66	1.58	0	227
2015	0.35	0.86	0	216
2016	0.58	1.12	0.033	198
2017	1.60	2.8	0.44	201
2018	0.60	1.29	0	245
2019	0.43	1.11	0	312

Sources and references

ICES. 2020. Working Group on Elasmobranch Fishes (WGEF). ICES Scientific Reports, 2:77. http://doi.org/10.17895/ices.pub.7470.

Recommended citation: ICES. 2020. Small-eyed ray (*Raja microocellata*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea North). *In* Report of the ICES Advisory Committee, 2020. ICES Advice 2020, rje.27.7fg. https://doi.org/10.17895/ices.advice.5790.

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Small-eyed ray (*Raja microocellata*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea North)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, landings should be no more than 192 tonnes in each of the years 2019 and 2020. ICES cannot quantify the corresponding catches.

Stock development over time

The most recent stock size indicator is higher than in the preceding ten years.

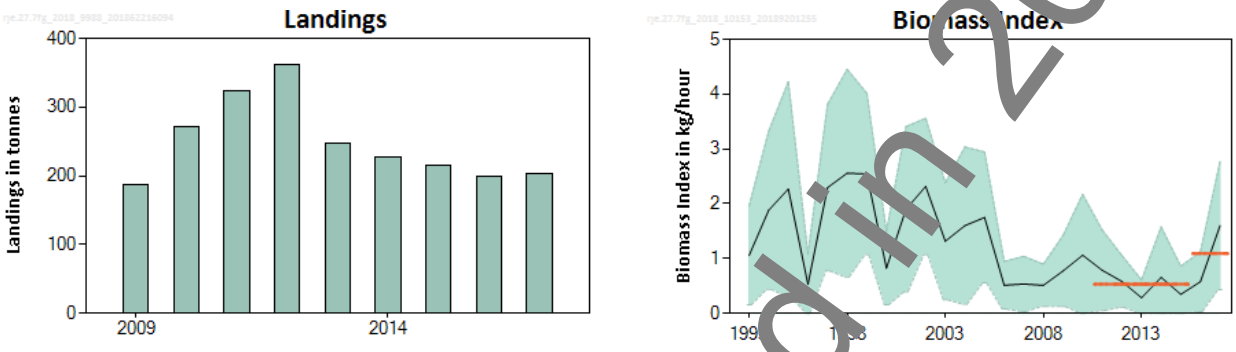

Figure 1 Small-eyed ray in divisions 7.f and 7.g. Summary of the stock assessment. Left: ICES estimates of species-specific landings of *Raja microocellata* since 2009. Right: Biomass index (kg h^{-1} and 95% CI as shaded area) as from the UK (E&W)-BTS-Q3 survey in divisions 7.f–g (individuals ≥ 50 cm total length). The dotted horizontal lines show the mean stock size indicator for 2016–2017 and 2013–2015.

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 Small-eyed ray in divisions 7.f and 7.g. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size			
		2015	2016	2017			2015	2016	2017
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	MSY $B_{trigger}$	?	?	? Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Unknown	B_{pa}, B_{lim}	?	?	? Undefined
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). The UK (E&W)-BTS-Q3 was used as the index of stock size. 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 most recent advised landings.

The recent advised landings for 2017 and 2018 were originally derived using landings statistics from 2011-2013. In 2018, landing statistics for this period were revised. As a result, the basis which was used to provide advice in 2016 for 2017 and 2018 has been adjusted to account for the update in the landing statistics in the period 2011-2013.

The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The stock size relative to candidate reference points is unknown. The precautionary buffer was applied previously in 2014. The survey index has increased more than 50% and therefore the precautionary buffer has not been applied.

Discarding is known to take place, but ICES cannot quantify the corresponding dead catch.

Table 2 Small-eyed ray in divisions 7.f and 7.g. The basis for the catch scenarios *.

Index A (2016–2017)		1.09
Index B (2011–2015)		0.53
Index ratio (A/B)		2.05
Uncertainty cap	Applied	1.2
Advised landings for 2017–2018 issued in 2016		154 t
Adjusted advised landings for 2017v2018**		160 t
Discard rate		Unknown
Precautionary buffer	Not applied	-
Landings advice ***		192t
% Advice change ^		+25%

* 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 a revision in the statistics.
*** [Adjusted advised landings for 2017–2018] × [uncertainty cap].
^ Advice value for 2019 and 2020 relative to advice value for 2018.

The advised landings are higher than advised for 2016 and 2017 because the biomass index has increased and the landing statistics used to calculate the previous advice has been revised upwards.

Basis of the advice

Table 3 Small-eyed ray in divisions 7.f and 7.g. The basis of the advice.

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

Quality of the assessment

Previous advice was based on an abundance stock indicator but is now based on a biomass index.

The quality of landings data has improved in recent years, especially following the Workshop to compile and refine catch and landings of elasmobranchs (WKSHARK2; ICES, 2016a) to revise available data. In particular, some official landings data from divisions 7.a, 7.f, and 7.g attributed to *Leucoraja circularis* are now considered to refer to *Raja microocellata*, owing to confusion over the local name "sandy ray". These landings have therefore been reallocated to this stock, making landings data more reliable. Whilst the main part of the stock occurs in Division 7.f and the eastern part of Division 7.g, the stock also extends into the southern parts of Division 7.a (with occasional vagrants in the northern Irish Sea). Hence, reported landings from Division 7.a are also allocated to this stock.

The survey used for the stock size indicator (UK (E&W)-BTS-Q3) covers a large part of the main stock area in the Bristol Channel. The abundance of small-eyed ray has also increased since 2013 (ICES, 2018).

Issues relevant for the advice

This is a coastal species, and it is a bycatch of trawl and gillnet fisheries. Although not usually targeted, it is one of the important components of the Bristol Channel skate fishery.

The stock extends into the southern parts of Division 7.a. European regulations for fishing opportunities in 2018 have a TAC of 154 t for *R. microocellata* in divisions 7.f–g within the overall TAC for skates and rays in Union waters of divisions 6.a, 6.b, 7.a–c, and 7.e–k.

The distribution of the juveniles of this species covers large areas of Carmarthen Bay (Division 7.f). These grounds are often fished by whelk potters, and the presence of such static gear may limit the impacts of trawling on the nursery grounds.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 4 Small-eyed ray in divisions 7.f and 7.g. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2016b).
Assessment type	Survey-based trends (ICES, 2018).
Input data	Survey (UK (E&W)-BTS-Q3).
Discards and bycatch	Discarding is known to take place but has not been fully quantified.
Indicators	None.
Other information	None.
Working group	Working Group on Elasmobranch Fishes (WGEF)

Information from stakeholders

No additional information is available.

History of the advice, catch, and management

Table 5 Small-eyed ray in divisions 7.f and 7.g. History of ICES advice and ICES estimates of landings**. All weights are in tonnes.

Year	ICES advice	Landings corresp. to advice	EU TAC	ICES species-specific landings: minimum estimate based on reported landings*
2011	No specific advice			323
2012	No specific advice			362
2013	No TAC, species-specific measures needed [illegible] to decrease by at least 36 % (reduction of [illegible]0% followed by 20% PA buffer).	-		247
2014	No new advice, same as 2013.	-		227
2015	Reduce catches by 36 %.	188		216
2016	No new advice, same as 2015.	188	188	198
2017	Precautionary approach	≤ 154	154	204
2018	Precautionary approach (same value as advised catches for 2017)	≤ 154	154	
2019	Precautionary approach	≤ 192		
2020	Precautionary approach	≤ 192		

* Data revised in 2018.
** Fishing opportunities are managed through an overall TAC by management unit, which includes all species of skates and rays. Since 2016, there has been a specified TAC for this stock in the overall management unit.

History of the catch and landings

The distribution of this stock does not extend into the NEAFC regulatory area.

Table 6 Small-eyed ray in divisions 7.f and 7.g. Catch distribution by fleet in 2017 as estimated by ICES. Landings data for Division 7.a also allocated to this stock.

Catch (2017)	Landings			Discards
Unknown	beam trawl	Trawl	nets	Unquantified
	51%	46%	3%	
	204 tonnes			

Table 7 Small-eyed ray in divisions 7.f and 7.g. History of landings. ICES estimates of landings by country (in tonnes). Data revised in 2018.

Year	Belgium	UK	Ireland	France	Total landings
2009		157		29	187
2010	37	214	0.2	21	272
2011	117	189	0.2	16	323
2012	124	208	0.0	30	362
2013	99	117	0.2	30	247
2014	83	79	0.1	65	227
2015	106	78	0.4	[illegible]	216
2016	123	69	0.2	5	198
2017	116	31		57	204

Summary of the assessment

Table 8 Small-eyed ray in divisions 7.f and 7.g. Time-series of survey index used for the advice. Series are the mean biomass per hour (for specimens ≥ 50 cm total length) from the UK (E&W–BTS–Q3).

Year	Stock size indicator	Upper 95% CI	Lower 95% CI
1993	1.05	1.96	0.15
1994	1.88	3.32	0.44
1995	2.27	[illegible]	0.32
1996	0.53	1.08	0.00
1997	2.29	[illegible].81	0.78
1998	2.56	4.45	0.66
1999	2.54	[illegible].01	1.07
2000	0.82	1.49	0.15
2001	1.90	3.41	0.40
2002	2.32	3.56	1.07
2003	1.32	2.38	0.25
2004	1.60	3.03	0.17
2005	1.75	2.94	0.56
2006	0.51	0.95	0.08
2007	0.5[illegible]	1.04	0.03
2008	0.5[illegible]	0.90	0.13
2009	[illegible].77	1.42	0.13
2010	1.[illegible]	2.17	0.00
2011	[illegible].79	1.52	0.05
2012	0.[illegible]8	1.06	0.11
2013	[illegible].28	0.61	0.00
2014	0.[illegible]6	1.58	0.00
2015	0.35	0.86	0.00
2016	0.58	1.12	0.03
2017	1.60	2.77	0.44

Sources and references

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM:68. 42 pp.

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ICES. 2016b. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2018. Report of the Working Group on Elasmobranch Fishes (WGEF), 19–28 June 2018, Lisbon, Portugal. ICES CM 2018/ACOM:16.