

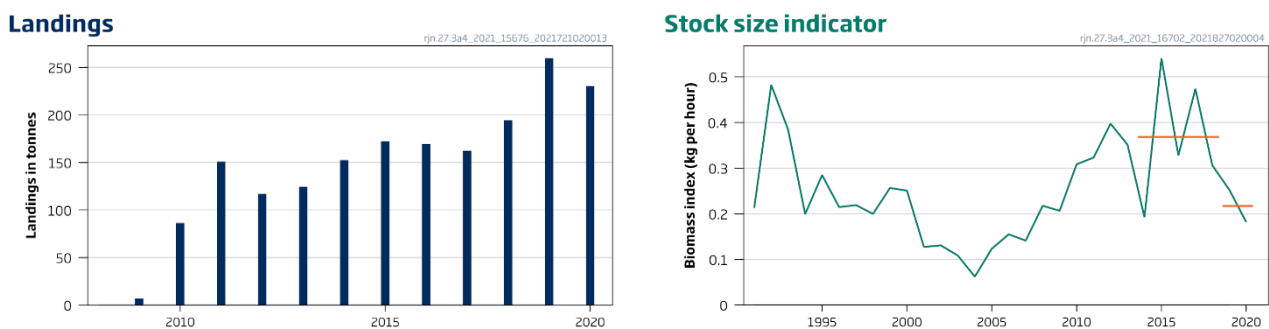
## Cuckoo ray (*Leucoraja naevus*) in Subarea 4 and Division 3.a (North Sea, Skagerrak, and Kattegat)

### ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches should be no more than 89 tonnes in each of the years 2022 and 2023.

### Stock development over time

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.



**Figure 1** Cuckoo ray in Subarea 4 and Division 3.a. Summary of the stock assessment. Left: ICES estimates of landings of cuckoo ray since 2009. Right: mean stock-size indicator of exploitable biomass from two trawl surveys, NS-IBTS-Q1 (G1022) and NS-IBTS-Q3 (G2829 [kg h<sup>-1</sup> for individuals of ≥ 50 cm total length]). Horizontal lines show the mean stock indicators for 2019–2020 and 2014–2018.

### Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). Biomass indices derived from two surveys (NS-IBTS-Q1 [G1022] and NS-IBTS-Q3 [G2829]) were used to provide the stock-size indicator. The advice is based on the ratio of the mean of the last two index values (index A) with the mean of the five preceding values (index B), multiplied by the recent landings advice. The index is estimated to have decreased by more than 20% and thus the uncertainty cap was applied. The precautionary buffer was applied in 2017 and has therefore been considered in 2021. The stock status relative to reference points is unknown; therefore, the precautionary buffer was applied in the advice.

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

**Table 1** Cuckoo ray in Subarea 4 and Division 3.a. The basis for the catch scenarios.\*

Index A (2019–2020)		0.22
Index B (2014–2018)		0.37
Index ratio (A/B)		0.59
Uncertainty cap	Applied	0.8
Advised landings for 2020 and 2021 (issued in 2019)		139 tonnes
Discard rate		Unknown
Precautionary buffer	Applied	0.8
Landings advice **		89 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.

\*\* [Advised landings for 2020 and 2021] × [uncertainty cap] × [precautionary buffer].

^ Advice value for 2022 and 2023 relative to the advice value for 2021.

The advised landings have been reduced (-36%) because the biomass indicator has decreased and the precautionary buffer was applied.

### Basis of the advice

**Table 2** Cuckoo ray in Subarea 4 and Division 3.a. The basis of the advice.

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

### Quality of the assessment

Species-specific landings data are incomplete prior to 2009 and therefore are not shown.

Fishery-independent trawl surveys provide the longest time-series of species-specific information.

### Issues relevant for the advice

There is no information to present for this stock.

### Reference points

No reference points are defined for this stock.

### Basis of the assessment

**Table 3** Cuckoo ray in Subarea 4 and Division 3.a. Basis of the assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2021a</a> )
Assessment type	Survey-based trends (ICES, 2021b)
Input data	Surveys NS-IBTS-Q1 (G1022) and NS-IBTS-Q3 (G2829)
Discards and bycatch	Unknown
Indicators	None
Other information	None
Working group	Working Group on Elasmobranch Fishes ( <a href="#">WGEF</a> )

## History of the advice, catch, and management

**Table 4** Cuckoo ray in Subarea 4 and Division 3.a. History of ICES advice, agreed TAC, and species-specific estimates of landings. All weights are in tonnes.

Year	ICES advice	Landings corresp. to advice	Agreed TAC*		ICES landings
			2.a and 4	3.a	
2009	<i>Status quo</i> catch	-	1643	68	7
2010	No new advice, same as 2009	-	1397	58	86
2011	<i>Status quo</i> catch	-	1397	58	151
2012	No new advice, same as 2011	-	1395	58	117
2013	No TAC, species-specific measures needed, catch could increase by max. 20%	-	1256	52	124
2014	No new advice, same as 2013	-	1256	47	153
2015	No new advice, same as 2014	-	1382	47	172
2016	Precautionary approach	128	1313	47	170
2017	Same advice as 2016	128	1378	47	162 <sup>^</sup>
2018	Precautionary approach	≤ 116	1654	47	194 <sup>^</sup>
2019	Precautionary approach (same advice as 2018)	≤ 116	1654	47	260
2020	Precautionary approach	≤ 139	1737	47	231
2021	Same advice as in 2020	≤ 139	1650	45	
2022	Precautionary approach	≤ 89			
2023	Precautionary approach	≤ 89			

\* Combined TAC for skates and rays.

<sup>^</sup> Data were revised in 2021 (ICES, 2021b)

## History of the catch and landings

**Table 5** Cuckoo ray in Subarea 4 and Division 3.a. Catch distribution by fleet in 2020 as estimated by ICES.

Catch (2020)	Landings		Discards
	Bottom trawls	Other	
Unknown	99%	1%	Unknown
231 tonnes			

**Table 6** Cuckoo ray in Subarea 4 and Division 3.a. ICES estimates of landings by country (in tonnes). Blank cell = no data reported; 0 = value less than 0.5 .

Year	Belgium	Denmark	France	UK	Netherlands	Total
2009	1		1	5	0	7
2010	4		1	81	0	86
2011	5	2	1	143		151
2012	1		0	115		117
2013	1	1	0	123	0	124
2014	0		0	152	0	153
2015	3	0	0	169		172
2016	0	1	0	168	0	170
2017	0	7	0	154		162 <sup>^</sup>
2018	0	15	0	180		194 <sup>^</sup>
2019	0	57	1	202		260
2020	0	54	0	176		231

<sup>^</sup> Data revised in 2021 (ICES, 2021b).

## Summary of the assessment

**Table 7** Cuckoo ray in Subarea 4 and Division 3.a. Assessment summary. Biomass indices were derived from two NS-IBTS surveys (NS-IBTS-Q1 and Q3; all indices are in kg h<sup>-1</sup> and based on individuals of ≥ 50 cm total length). The stock-size indicator is the annual mean of the two survey indices.

Year	NS-IBTS-Q1	NS-IBTS-Q3	Biomass index
1991	0.33	0.097	0.21
1992	0.64	0.33	0.48
1993	0.67	0.098	0.38
1994	0.25	0.154	0.20
1995	0.40	0.174	0.28
1996	0.36	0.068	0.21
1997	0.15	0.29	0.22
1998	0.29	0.106	0.20
1999	0.27	0.25	0.26
2000	0.33	0.174	0.25
2001	0.137	0.118	0.127
2002	0.130	0.131	0.131
2003	0.102	0.115	0.109
2004	0.055	0.070	0.062
2005	0.091	0.156	0.123
2006	0.119	0.191	0.155
2007	0.160	0.122	0.141
2008	0.130	0.31	0.22
2009	0.084	0.33	0.21
2010	0.182	0.44	0.31
2011	0.21	0.44	0.32
2012	0.28	0.52	0.40
2013	0.35	0.35	0.35
2014	0.22	0.167	0.193
2015	0.69	0.39	0.54
2016	0.33	0.33	0.33
2017	0.53	0.42	0.47
2018	0.25	0.36	0.31
2019	0.28	0.23	0.25
2020	0.21	0.159	0.182

## 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. <https://doi.org/10.17895/ices.pub.5322>.

ICES. 2021a. Advice on fishing opportunities. In Report of the ICES Advisory Committee, 2021. ICES Advice 2021, section 1.1.1. <https://doi.org/10.17895/ices.advice.7720>.

ICES. 2021b. Working Group on Elasmobranch Fishes (WGEF). ICES Scientific Reports, 3:59. <http://doi.org/10.17895/ices.pub.8199>.

To download this year's stock assessment data and figures, please go here: [Stock Assessment Graphs](#)

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