

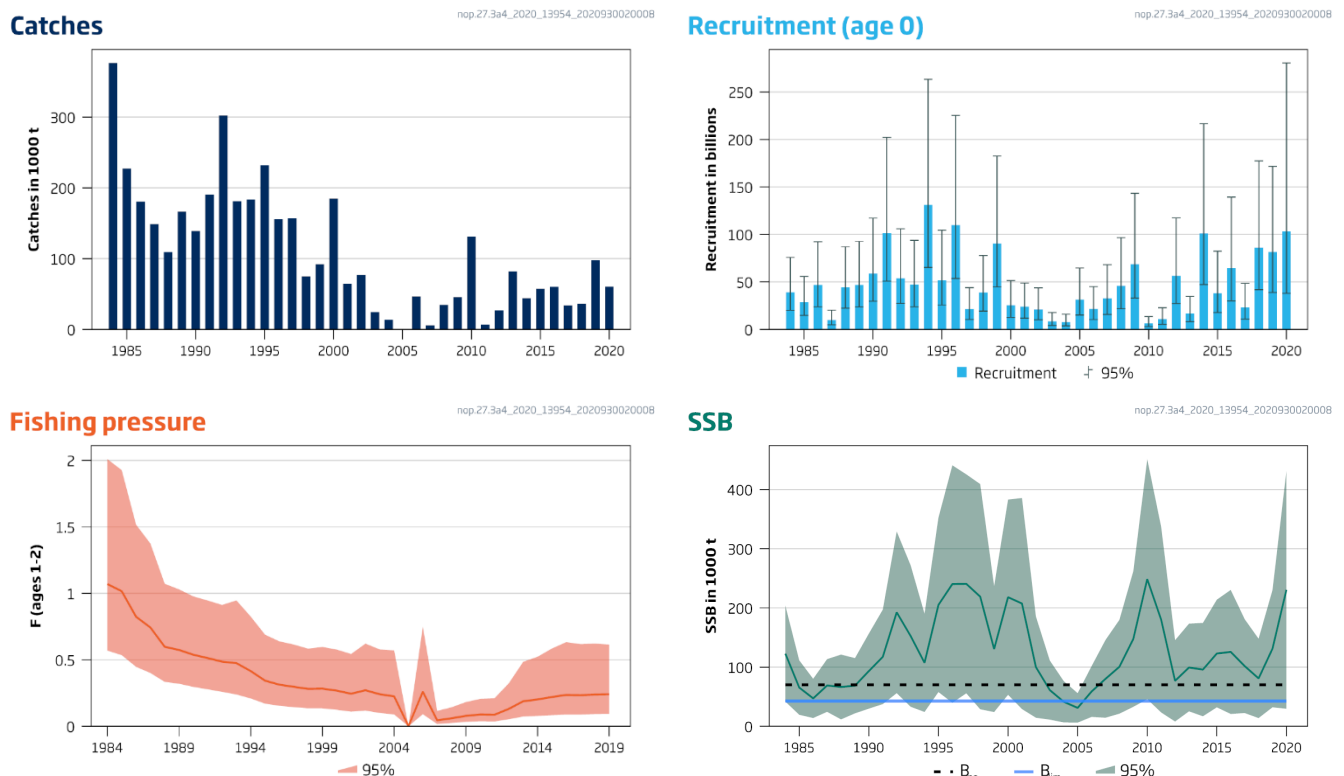
## Norway pout (*Trisopterus esmarkii*) in Subarea 4 and Division 3.a (North Sea, Skagerrak, and Kattegat)

### ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches from 1 November 2020 to 31 October 2021 should be no more than 254 038 tonnes.

*Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 1 November 2019 to 31 October 2020 is attached as Annex 1.*

### Stock development over time



**Figure 1** Norway pout in Subarea 4 and Division 3.a. Summary of the stock assessment. SSB is estimated at the beginning of quarter 4. Shaded areas (F, SSB) and error bars (R) indicate 95% confidence intervals.

### Stock and exploitation status

**Table 1** Norway pout in Subarea 4 and Division 3.a. State of the stock and the fishery relative to reference points.

		Fishing pressure				Stock size			
		2017	2018	2019		2018	2019	2020	
Maximum sustainable yield	$F_{MSY}$	?	?	?	Undefined	$MSY B_{escapement}$	?	?	?
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	Undefined	$B_{pa}, B_{lim}$	✓	✓	✓
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—
									Full reproductive capacity
									Not applicable

## Catch scenarios

**Table 2** Norway pout in Subarea 4 and Division 3.a. The basis for the catch scenarios.

Variable	Value	Notes
$F_{\text{ages 1-2}}$	0.237	F in the 4th quarter of 2019 to the 3rd quarter of 2020. From the assessment.
SSB (4th quarter 2020)	230 750 tonnes	From the assessment model.
$R_{\text{age 0}}$ (2020)	103 267 million	Age 0 in the 3rd quarter of 2020. From the assessment.
$R_{\text{age 0}}$ (2021)	48 552 million	Resampling from estimated historical recruitments.
Total catches	107 875 tonnes	Based on landings statistics from the 4th quarter of 2019 to 20 September 2020.
Discards	0 tonnes	Industrial fishery with negligible discarding.

**Table 3** Norway pout in Subarea 4 and Division 3.a. Annual catch scenarios. All weights are in tonnes.

Basis	Catch (1 November 2020– 31 October 2021) *	F (1 November 2020– 31 October 2021)	5th percentile SSB (4th quarter 2021)	Median SSB (4th quarter 2021)	% SSB change **	% catch change ***	% advice change ^
ICES advice basis							
MSY approach: (escapement strategy) 95% probability of SSB being above $B_{\text{lim}}$ in the 4th quarter of 2021, with an $F_{\text{cap}} =$ 0.7	254038	0.70	62190	211550	-8	135	52
Other options							
MSY approach: (escapement strategy) 95% probability of SSB being above $B_{\text{lim}}$ in the 4th quarter of 2021	349090	1.09	42573	166810	-28	224	109
$F = 0$	0.00	0.00	149050	368180	60	-100	-100
$F = F_{\text{status quo}}$	101451	0.24	108550	299940	30	-6	-39
$F = 0.3$	125191	0.30	100580	284920	23	16	-25
$F = 0.4$	160752	0.40	88360	262700	14	49	-4
$F = 0.5$	193973	0.50	78170	243520	6	80	16
$F = 0.6$	225116	0.60	69420	226610	-2	109	35
$F = 0.7$	254038	0.70	62190	211550	-8	135	52

\* The catch forecast is for the period 1 October to 30 September. ICES considers that this forecast can be used directly for management purposes for the period 1 November 2020 to 31 October 2021.

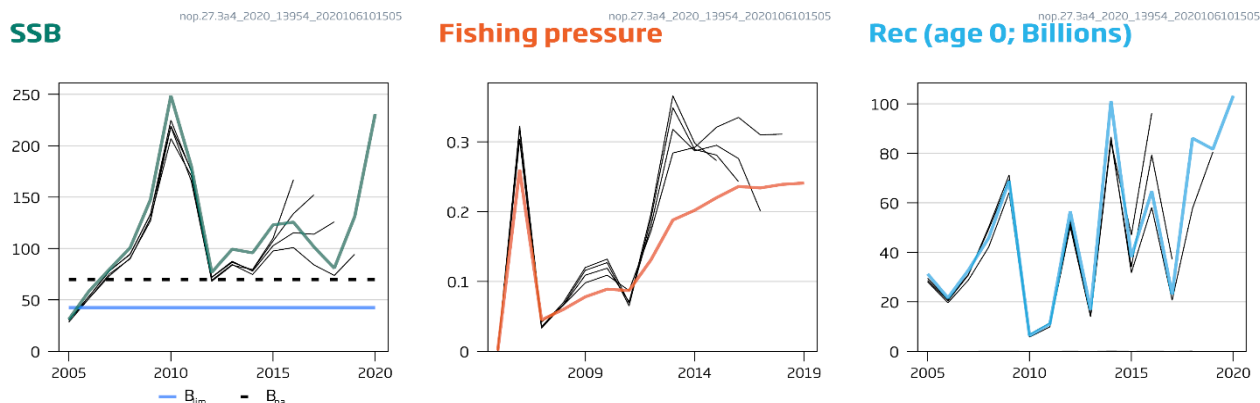
\*\* SSB at the beginning of the 4th quarter of 2021 relative to SSB at the beginning of the 4th quarter of 2020 (= 230 750 tonnes).

\*\*\* Catches 1 October 2020–30 September 2021 relative to catches 1 October 2019–30 September 2020 (= 107 875 tonnes).

^ Advice value 2021 relative to the advice value 2020 (= 167 105 tonnes).

The change in advice (+52%) compared to last year's advice results from an upward revision of SSB as well as the strong 2018–2020 year classes.

## Quality of the assessment



**Figure 2** Norway pout in Subarea 4 and Division 3.a. Historical assessment results.

## Issues relevant for the advice

Reference points were updated after a revision of the IBTS quarter 1 and quarter 3 survey indices, which rescaled the SSB upwards and F downwards. This led to reevaluation of the reference points.

## Reference points

**Table 4** Norway pout in Subarea 4 and Division 3.a. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{\text{escapement}}$	Not defined *		
	$F_{\text{MSY}}$	Not defined		
	$F_{\text{cap}}$	0.70	A long-term mananagement strategy evaluation, indicating that an escapement strategy for Norway pout is only precautionary with the addition of an $F_{\text{cap}}$ ( $F_{\text{bar}(1-2)}$ ) at 0.7.	ICES (2020)
Precautionary approach	$B_{\text{lim}}$	42 573 tonnes (4th quarter)	$B_{\text{lim}} = B_{\text{loss}}$ , the lowest observed biomass in 2005 (as estimated in the updated benchmark assessment).	ICES (2020)
	$B_{\text{pa}}$	69 736 tonnes (4th quarter)	$B_{\text{pa}} = B_{\text{lim}} e^{0.3 \times 1.645}$	ICES (2020)
	$F_{\text{lim}}$	Not defined		
	$F_{\text{pa}}$	Not defined		
Management plan	$SSB_{\text{MGT}}$	Not applicable		
	$F_{\text{MGT}}$	Not applicable		

\* MSY  $B_{\text{escapement}}$  has not been defined, as the escapement strategy uses directly the 95% probability of SSB being above  $B_{\text{lim}}$ .

## History of the advice, catch, and management

**Table 5** Norway pout in Subarea 4 and Division 3.a. History of ICES advice, agreed TACs, official catch, and ICES catch estimate. All weights are in tonnes. Catch values prior to 2004 are presented to the nearest thousand tonnes.

Year	ICES advice	Predicted catch corresponding to advice ^^	TAC Norway	TAC EU	Official catch (including bycatch of other species)	ICES catch
1987	No advice	-	No TAC	200000	215000	149300
1988	No advice	-	No TAC	200000	187000	109300
1989	No advice	-	No TAC	200000	276000	166400
1990	No advice	-	No TAC	200000	212000	163300
1991	No advice	-	No TAC	200000	223000	186600
1992	No advice	-	No TAC	200000	335000	296800

Year	ICES advice	Predicted catch corresponding to advice ^^	TAC Norway	TAC EU	Official catch (including bycatch of other species)	ICES catch
1993	No advice	-	No TAC	220000	241000	183100
1994	No advice	-	No TAC	220000	214000	182000
1995	Can sustain current F	-	No TAC	180000	289000	236800
1996	Can sustain current F; take bycatches into consideration	-	No TAC	220000	197000	163800
1997	Can sustain current F; take bycatches into consideration	-	No TAC	220000	155000	169700
1998	Can sustain current F; take bycatches into consideration	-	No TAC	220000	72000	79800
1999	Can sustain current F; take bycatches into consideration	-	No TAC	220000	93000	94500
2000	Can sustain current F; take bycatches into consideration	-	No TAC	220000	182000	184400
2001	Can sustain current F; take bycatches into consideration	-	No TAC	211200	63000	65600
2002	Can sustain current F; take bycatches into consideration	-	No TAC	198000	93000	80000
2003	Can sustain current F; take bycatches into consideration	-	No TAC	198000	24000	27100
2004	The stock is at risk of decreasing below $B_{lim}$	-	No TAC	198000	7640	13500
2005	Fishery should be closed		1000	5000	1927	1927
2006	Fishery closed until 4th August, where a TAC of 95 000 tonnes was set		1000	95000	53599	46626
2007	Fishery closed because $SSB < B_{pa}$ in 2008	0	1000	5000	5792	5792
2008	$F = 0.35$ or 50 000 tonnes for first half of 2008	< 50000 in first six months		41000		
In-year *	Maintain $SSB > B_{pa}$	< 148000	37500	114616	39222	36138
2009	Reduce F to increase $SSB > B_{pa}$	< 35000		28300		
In-year *	Maintain $SSB > B_{pa}$	< 157000	128170	116279	57170	54500
2010	Maintain $SSB > B_{pa}$	< 307000	86000	76000		
In-year *	Maintain $SSB > MSY B_{escapement}$	< 434000		162950	136974	125955
2011	No directed fisheries	0				
In-year *	Maintain $SSB > MSY B_{escapement}$	< 6000	3150	4500	7283	6524
2012	No fisheries	0		0		
In-year *	No fisheries	0			30148	27073
In-year **	Maintain $SSB > MSY B_{escapement}$	< 101000	25000	70683		

Year	ICES advice	Predicted catch corresponding to advice ^^	TAC Norway	TAC EU	Official catch (including bycatch of other species)	ICES catch
2013	Maintain SSB > MSY B <sub>escapement</sub>	< 458000 (Catch <sub>2012</sub> = 0) < 393000 (Catch <sub>2012</sub> = 101)	157000	165700	84969	82100
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 457000				
2014	Maintain SSB > MSY B <sub>escapement</sub>	< 216000	108000	128250	47120	44170
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 108000	123000			
2015	Precautionary considerations (F = 0.6)	< 326000	178000	150000	63430	63400
2016	MSY approach (escapement biomass with F <sub>cap</sub> )	< 390000	210000	150000	62770	63400
2017	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%)	≤ 358471	204235	141950	33847	33933
2018	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%)	≤ 212531	90978	85265 ^	36060	36147
2019	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%) with F <sub>cap</sub> = 0.7	≤ 135459	82230	55000 ^	100094	97654
2020	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%) with F <sub>cap</sub> = 0.7	≤ 167105	98053	65000 ^		
2021	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%) with F <sub>cap</sub> = 0.7	≤ 254038				

\* Between 2008 and 2014, advice was provided in autumn, while the in-year advice was given in June on the basis of the first surveys and catches in the TAC year.

\*\* Update of in-year advice in October 2012.

^ For 2018–2020, the TAC for EU Member States fishing in EU waters is provided for the period 1 November of the previous year to 31 October of the current year.

^^ Starting with the advice for 2016, ICES advice has been provided for the period 1 November of the previous year to 31 October of the current year.

## Summary of the assessment

**Table 6** Norway pout in Subarea 4 and Division 3.a. Assessment summary. Weights are in tonnes. High and low correspond to 95% confidence intervals.

Year	Recruitment in Q3 (age 0)	High	Low	SSB in Q4	High	Low	Catches * Q1–Q4	Fishing pressure Q1–Q4 (ages 1–2)	High	Low
1984	39078	75871	20127	122843	204044	41643	376555	1.07	2.0	0.57
1985	28734	55712	14820	65391	111433	19349	227482	1.02	1.93	0.54
1986	46842	92267	23780	47120	80321	13918	180508	0.82	1.52	0.45
1987	9979	20219	4925	68889	113438	24339	148894	0.74	1.38	0.40
1988	44179	87049	22422	66405	121217	11593	109295	0.60	1.07	0.33
1989	46839	92648	23680	68506	115218	21794	166559	0.57	1.03	0.32
1990	58997	117169	29706	93249	156742	29755	139095	0.54	0.98	0.30
1991	101374	202188	50828	117278	197128	37429	190406	0.51	0.95	0.28
1992	53833	105883	27370	192549	329235	55862	302490	0.49	0.91	0.26
1993	47242	93809	23791	152576	272187	32965	181265	0.48	0.95	0.24
1994	131071	263309	65245	107293	190413	24172	183585	0.42	0.83	0.21
1995	51703	104516	25577	205148	352565	57731	231772	0.34	0.69	0.170
1996	109888	225351	53585	240310	440936	39683	156079	0.31	0.64	0.154
1997	21391	44026	10393	240662	425700	55623	156937	0.30	0.62	0.144
1998	38807	77767	19365	218997	409267	28726	75034	0.28	0.58	0.135
1999	90384	182557	44749	130471	236909	24033	92302	0.28	0.60	0.135
2000	25494	51506	12619	218113	383073	53152	184970	0.27	0.58	0.124
2001	24025	48753	11839	207372	385743	29002	64373	0.25	0.54	0.110
2002	21016	43758	10093	100035	185629	14441	77108	0.27	0.62	0.118
2003	8526	17694	4109	61168	111188	11148	24647	0.24	0.58	0.100
2004	7799	16108	3776	41456	76407	6505	13487	0.23	0.57	0.089
2005	31283	64690	15128	31075	56028	6122	42	0.001	0.001	0.00
2006	21612	45009	10378	58704	101600	15809	46553	0.26	0.75	0.091
2007	32725	68229	15696	80076	145759	14392	5796	0.045	0.116	0.0170
2008	45856	96652	21756	100525	179830	21220	34844	0.060	0.143	0.025
2009	68801	143337	33024	147561	262304	32818	45813	0.078	0.182	0.033
2010	6395	13535	3022	248598	451412	45785	131078	0.089	0.21	0.038
2011	11005	22918	5285	180157	337020	23295	6843	0.087	0.21	0.036
2012	56541	117387	27233	76778	145551	8005	26947	0.131	0.32	0.053
2013	16834	34745	8156	99316	173434	25198	82109	0.188	0.49	0.073
2014	101164	216608	47247	95785	174713	16857	44164	0.20	0.52	0.078
2015	38177	82355	17698	122949	213946	31952	57417	0.22	0.59	0.083
2016	64708	139221	30076	125615	230473	20756	60241	0.24	0.63	0.088
2017	23076	48482	10984	101709	181080	22339	33940	0.23	0.62	0.088
2018	86116	177443	41793	80880	147958	13803	36130	0.24	0.62	0.092
2019	81670	171635	38861	131157	230283	32031	97668	0.24	0.62	0.094
2020	103267	280529	38014	230750	431890	29609	60502 **			

\* The catches presented are the sum of product values from catch numbers- and weights-at-age used in the assessment model, and do not match exactly ICES estimates presented in previous tables.

\*\* Provisional (first three quarters of 2020 only).

## Sources and references

ICES. 2020. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK). ICES Scientific Reports, 2:61. 1140 pp. <http://doi.org/10.17895/ices.pub.6092>.

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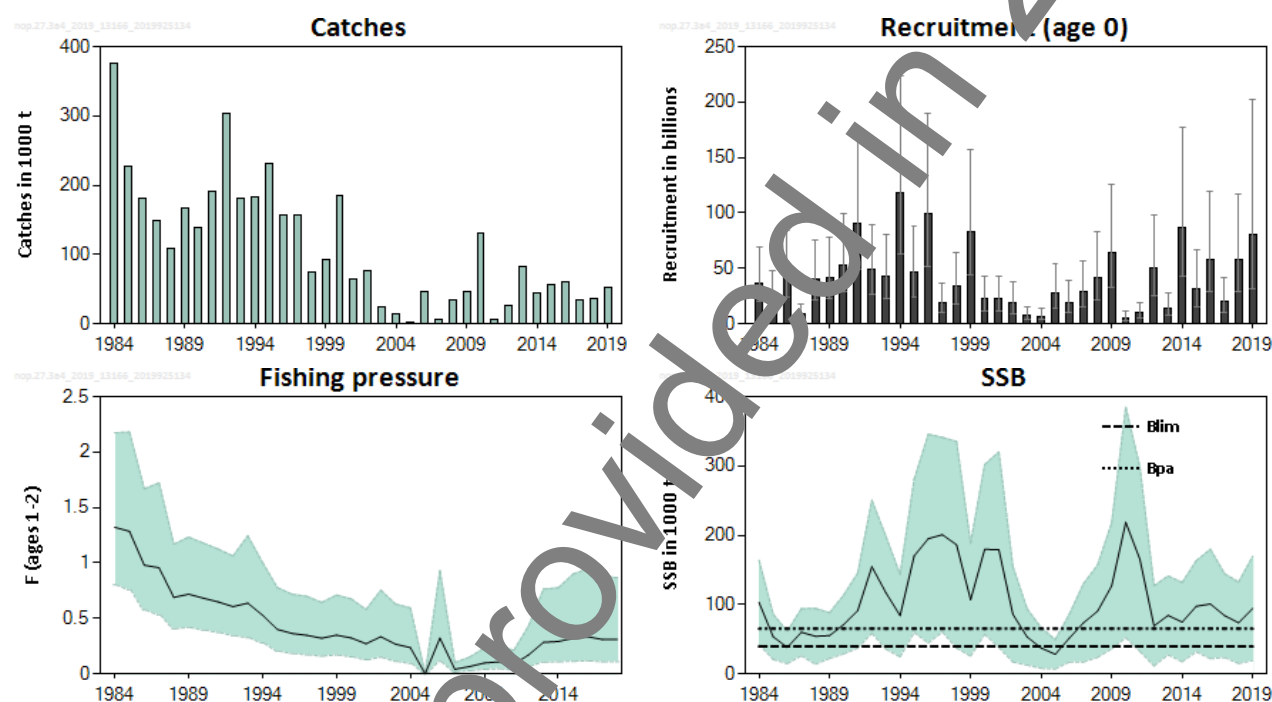
## Norway pout (*Trisopterus esmarkii*) in Subarea 4 and Division 3.a (North Sea, Skagerrak, and Kattegat)

### ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches from 1 November 2019 to 31 October 2020 should be no more than 167 105 tonnes.

### Stock development over time

The stock size is highly variable from year to year, due to recruitment variability and a short life span. Spawning-stock biomass (SSB) is estimated to have been fluctuating above  $B_{pa}$  for most of the time-series. Fishing mortality (F) declined between 1985 and 1995 and has been fluctuating at a lower level since 1995. Recruitment in 2018 and 2019 was above the long-term average.



**Figure 1** Norway pout in Subarea 4 and Division 3.a. Summary of the stock assessment, SSB is estimated at the beginning of quarter 4. Shaded areas (F, SSB) and error bars (R) indicate 95% confidence intervals.

### Stock and exploitation status

ICES assesses that the spawning stock size is above  $B_{pa}$  and  $B_{lim}$ ; no reference points for fishing pressure or for MSY  $B_{trigger}$  have been defined for this stock.

**Table 1** Norway pout in Subarea 4 and Division 3.a. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size				
		2016	2017	2018		2017	2018	2019		
Maximum sustainable yield	$F_{MSY}$	?	?	?	Undefined	$MSY B_{trigger}$	?	?	?	Undefined
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	Undefined	$B_{pa}, B_{lim}$	✓	✓	✓	Full reproductive capacity
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable



## Catch scenarios

**Table 2** Norway pout in Subarea 4 and Division 3.a. The basis for the catch scenarios.

Variable	Value	Notes
F ages 1–2	0.343	F in the 4th quarter of 2018 to the 3rd quarter of 2019. From the assessment.
SSB (4th quarter 2019)	94 420 tonnes	From the assessment model.
R <sub>age 0</sub> (2019)	80 528 million	Age 0 in the 3rd quarter of 2019; from the assessment.
R <sub>age 0</sub> (2020)	41 956 million	Resampling from the vector of estimated historical recruitment.
Total catches	73 905 tonnes	Based on landings statistics from the 4th quarter of 2018 to the 2nd quarter of 2019, plus the best available estimate for catches in the 3rd quarter of 2019.
Discards	0 tonnes	Industrial fishery with no discards.

**Table 3** Norway pout in Subarea 4 and Division 3.a. Annual catch scenarios. All weights are in tonnes.

Basis	Catch (1 November 2019–31 October 2020)*	F (1 November 2019–31 October 2020)	5th percentile SSB in the 4th quarter 2020	Median SSB (4th quarter 2020)	% SSB change **	% Catch change ***	% Advice change ^
ICES advice basis							
MSY approach: (escapement strategy) 95% probability of SSB being above B <sub>lim</sub> in the 4th quarter of 2020, with an F <sub>cap</sub> (F <sub>bar(1–2)</sub> ) = 0.7	167105	0.70	43610	139130	47	126	23
Other options							
MSY approach: (escapement strategy) 95% probability of SSB being above B <sub>lim</sub> in the 4th quarter of 2020	185404	0.81	9451	131130	39	151	37
F = 0	0.00	0.00	97580	228020	141	–100	–100
F = F <sub>status quo</sub>	91256	0.35	63730	176070	86	23	–33
Median SSB at B <sub>lim</sub> in the 4th quarter of 2020	458215	3.58	6370	39450	–58	520	238
Median SSB at B <sub>pa</sub> in the 4th quarter of 2020	367440	2.27	13470	65000	–31	397	171
F = 0.3 (F <sub>cap</sub> of 0.3)	80969	0.30	67000	181770	93	10	–40
F = 0.4 (F <sub>cap</sub> of 0.4)	104365	0.40	59830	168840	79	41	–23
F = 0.5 (F <sub>cap</sub> of 0.5)	126496	0.50	53330	158050	67	71	–7
F = 0.6 (F <sub>cap</sub> of 0.6)	147502	0.60	48220	148350	57	100	9
F = 0.7 (F <sub>cap</sub> of 0.7)	167105	0.70	43610	139130	47	126	23

\* The catch forecast is for the period 1 October 2019–30 September 2020. ICES considers that this forecast can be used directly for management purposes for the period 1 November 2019 to 31 October 2020.

\*\* SSB at the beginning of the 4th quarter of 2020 relative to SSB at the beginning of the 4th quarter of 2019 (= 94 420 t).

\*\*\* Catches 1 October 2019–30 September 2020 relative to catches 1 October 2018–30 September 2019 (= 73 905 t).

^ Advice value 2020 relative to the advice value 2019 (= 135 459 t).

The change in advice (+23%) is due to the relatively strong 2018 and 2019 year classes.

## Basis of the advice

**Table 4** Norway pout in Subarea 4 and Division 3.a. The basis of the advice.

Advice basis	MSY approach (escapement strategy based on stochastic projections) with an F <sub>cap</sub> (F <sub>bar(1–2)</sub> ) = 0.7.
Management plan	ICES is not aware of any agreed precautionary management plan for Norway pout in this area. Norway and EU have requested ICES to evaluate different options for a proposed management plan.  ICES has evaluated additional harvest control rules (HCRs) within the escapement strategy presently used for Norway pout, with additional lower (TAC <sub>min</sub> ) and upper (TAC <sub>max</sub> ) bounds on the TAC as well as a range of upper fishing mortalities (F <sub>caps</sub> ) (ICES, 2018a–2018c). The ICES escapement strategy was only found to be precautionary with an F <sub>cap</sub> at or below 0.7.

## Quality of the assessment

Norway pout was benchmarked in 2016 (ICES, 2016). The assessment shows a tendency to overestimate SSB and underestimate F in recent years.

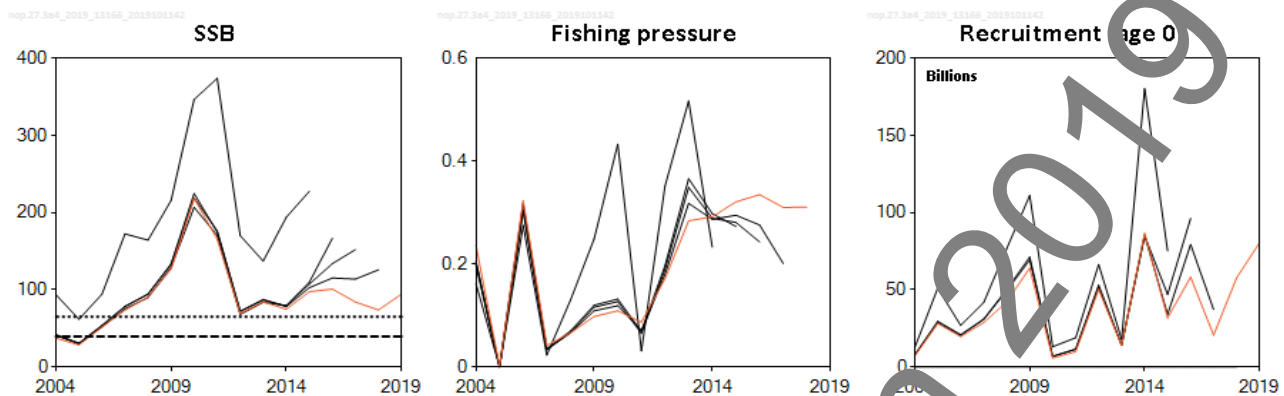


Figure 2 Norway pout in Subarea 4 and Division 3.a. Historical assessment results.

## Issues relevant for the advice

Norway pout is a short-lived species. Recruitment is highly variable, and strongly influences the spawning stock and total biomass. The ICES approach to MSY-based management for short-lived species has been used here in the form of an escapement strategy based on a stochastic forecast, i.e. to maintain, with 95% probability, SSB above  $B_{lim}$  after the fishery has taken place. This includes an  $F_{cap}$  at 0.7.

For the implementation of the escapement strategy, which aims to maintain the SSB above  $B_{lim}$  after the fishery has taken place, SSB is calculated at the beginning of quarter 4 as a proxy for SSB at spawning time (quarter 1).

The catch forecast is for the period 1 October to 30 September. ICES considers that this forecast sufficiently approximates the TAC period, and can be used directly for management purposes for the period 1 November 2019–31 October 2020.

## Reference points

Table 5 Norway pout in Subarea 4 and Division 3.a. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{escapment}$	Not defined *		
	$F_{MSY}$	Not defined		
	$F_{cap}$	0.7	A long-term management strategy evaluation indicating that an escapement strategy for Norway pout, is only precautionary with the addition of an $F_{cap}$ ( $F_{bar(1-2)}$ ) at 0.7.	ICES (2018a–c)
Precautionary approach	$B_{lim}$	39 450 t (4th quarter)	$B_{lim} = B_{loss}$ , the lowest observed biomass in 2005.	ICES (2016)
	$B_{pa}$	65 000 t (4th quarter)	$B_{pa} = B_{lim} e^{0.3 \times 1.645}$	ICES (2016)
	$F_{lim}$	Not defined		
	$F_{pa}$	Not defined		
Management plan	$SSB_{MGT}$	Not applicable		
	$F_{MGT}$	Not applicable		

\* MSY  $B_{escapment}$  has not been defined because it is unnecessary since the escapement strategy directly uses the 95% probability of being above  $B_{lim}$ .

## Basis of the assessment

**Table 6** Norway pout in Subarea 4 and Division 3.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2018d).
Assessment type	Age-based analytical assessment (quarterly SAM model, SESAM).
Input data	Commercial catches (quarterly catches; catch-at-age and mean weight-at-age from catch sampling from the main Danish and Norwegian fisheries), four survey indices (IBTS Q1, IBTS Q3, Enges IBTS-Q3, ScoGFS-IBTS-Q3). Constant maturity data from survey estimates, constant natural mortality estimated from survey indices (IBTS Q1&3), and constant mean weight-at-age in the stock from long-term commercial catch estimates.
Discards and bycatch	Discarding and bycatch of Norway pout is considered negligible and not included in the assessment.
Indicators	None.
Other information	Benchmarked in 2016 (ICES, 2016).
Working group	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

## Information from stakeholders

There is no additional available information for this stock.

## History of the advice, catch, and management

**Table 7** Norway pout in Subarea 4 and Division 3.a. History of ICES advice, agreed TACs, official catch, and ICES catch estimate. All weights are in tonnes. Catch values prior to 2004 are presented to the nearest thousand tonnes.

Year	ICES advice	Predicted catch corresponding to advice **	TAC Norway	TAC EU	Official catch	ICES catch
1987	No advice	-	No TAC	200000	215000	147000
1988	No advice	-	No TAC	200000	187000	102000
1989	No advice	-	No TAC	200000	276000	167000
1990	No advice	-	No TAC	200000	212000	140000
1991	No advice	-	No TAC	200000	223000	155000
1992	No advice	-	No TAC	200000	335000	255000
1993	No advice	-	No TAC	220000	241000	176000
1994	No advice	-	No TAC	220000	214000	176000
1995	Can sustain current F	-	No TAC	180000	289000	181000
1996	Can sustain current F; take bycatches into consideration	-	No TAC	220000	197000	122000
1997	Can sustain current F; take bycatches into consideration	-	No TAC	220000	155000	133000
1998	Can sustain current F; take bycatches into consideration	-	No TAC	220000	72000	62000
1999	Can sustain current F; take bycatches into consideration	-	No TAC	220000	93000	85000
2000	Can sustain current F; take bycatches into consideration	-	No TAC	220000	182000	175000
2001	Can sustain current F; take bycatches into consideration	-	No TAC	211200	63000	57000
2002	Can sustain current F; take bycatches into consideration	-	No TAC	198000	93000	74000
2003	Can sustain current F; take bycatches into consideration	-	No TAC	198000	24000	21000
2004	The stock is at risk of decreasing below $B_{lim}$	-	No TAC	198000	7640	13500
2005	Fishery should be closed	-	Only bycatch	5000	1927	1927
2006	Fishery closed until 4th August where a TAC of 95 000 t was set	-	No TAC	95000	53599	46626
2007	Fishery closed because $SSB < B_{pa}$ in 2008	0	Only bycatch	5000	5792	5792

Year	ICES advice	Predicted catch corresponding to advice **	TAC Norway	TAC EU	Official catch	ICES catch
2008	F = 0.35 or 50 000 t for first half of 2008	< 50000 in first 6 months		41000		
In-year *	Maintain SSB > B <sub>pa</sub>	< 148000	80000	114616	39212	36138
2009	Reduce F to increase SSB > B <sub>pa</sub>	< 35000		28300		
In-year *	Maintain SSB > B <sub>pa</sub>	< 157000	128000	116279	57170	54500
2010	Maintain SSB > B <sub>pa</sub>	< 307000	86000	76000		
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 434000		162950	136974	125955
2011	No directed fisheries	0				
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 6000	3000	4500	7183	6524
2012	No fisheries	0				
In-year *	No fisheries	0			30148	27073
In-year **	Maintain SSB > MSY B <sub>escapement</sub>	< 101000	25000	70683		
2013	Maintain SSB > MSY B <sub>escapement</sub>	< 458000 (Catch <sub>2012</sub> = 0) < 393000 (Catch <sub>2012</sub> = 101)	157000	125700	84969	82100
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 457000				
2014	Maintain SSB > MSY B <sub>escapement</sub>	< 216000	108000	128250	47120	44170
In-year *	Maintain SSB > MSY B <sub>escapement</sub>	< 108000	128000			
2015	Precautionary considerations (F = 0.6)	< 326000	118000	150000	63430	63400
2016	MSY approach (escapement biomass with F <sub>cap</sub> )	< 390000	240000	150000	62770	63400
2017	MSY approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%)	≤ 358471	204235	141950	33845	33933
2018	MSY Approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%)	≤ 212551	90978	85265*	36060	36147
2019	MSY Approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%) with F <sub>cap</sub> = 0.7	≤ 35459	82230	55000*		
2020	MSY Approach (escapement strategy; probability of SSB falling below B <sub>lim</sub> is less than 5%) with F <sub>cap</sub> = 0.7	≤ 167105				

\* TAC for EU Member States fishing in EU waters from 1 November to 31 October.

\*\* Starting with the advice for 2016, ICES advice has been provided for the period 1 November of the previous year to 31 October of the current year.

### History of the catch and landings

**Table 8** Norway, out of ICES area 4 and Division 3.a. Catch distribution by fleet as estimated by ICES.

Total catch (2008)	Landings	Discards
35 147 t	100% taken by the small-meshed trawl fleet	Discarding is considered negligible
	36 147 t	

**Table 9** Norway pout in Subarea 4 and Division 3.a. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Norway pout ICES Division 3.a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	110	-	18	24	156	-	51	2	118	2045	538	2220	918	110	159
Faroe Islands	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	41	-	2	-	-	209	711	-	-	147	9	41	82	72	6
Sweden	-	-	-	-	-	-	10	-	-	1	1	1	1	4	1
Germany	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	250	0	20	24	156	209	772	2	118	7093	548	2262	1001	186	166
Norway pout ICES Division 4.a	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	10762	941*	39531	59	32158	19226	71032	4038	15431	31375	27894	10760	21125	12312	10367
Faroe Islands	1085	24	-	-	-	-	-	-	-	-	-	5270	3156	-	-
Netherlands	-	-	-	-	-	22	18	-	-	-	-	17	8	1	2
Germany	-	-	15	-	-	-	-	-	-	-	-	22	27	1	-
Norway	4953	962	13618	4712	6650	36961	64303	3389	4528	45839	18647	43742	35959	21275	25498
Sweden	-	-	-	-	10	-	-	1	3	4	1	12	-	-	4
UK(Scotland)	-	-	-	-	-	-	9	-	6	-	8	3	12	-	-
Total	16800	1927	53164	4771	38818	56209	13535	7228	29962	77218	46542	59823	60275	33589	35871
Norway pout ICES Division 4.b	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	473	-	394	-	244	595	229	32	9	43	16	53	1463	45	20
Faroe Islands	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	19	-	-	75	-	-	-	-	-	-	-	13	3
Netherlands	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Norway	-	-	2	-	-	82	620	21	59	615	8	577	11	10	-
Sweden	88	-	-	-	-	-	-	-	-	-	-	714	1	2	-
UK (E/W/Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UK (Scotland)	-	-	-	-	-	-	-	-	-	-	6	-	18	-	-
Total	590	0	415	0	244	752	849	53	68	658	30	1345	1493	70	23
Norway pout ICES Division 4.c	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
France	-	-	-	**	**	-	-	-	-	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UK (E/W/Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

**Table 9 (cont.)** Norway pout in Subarea 4 and Division 3.a. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Norway pout Subarea 4 and Division 3.a (Skagerrak) combined	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	11345	941*	39943	83	32558	19821	71312	4072	25558	39363	28448	13033	23507	12467	10546
Faroe Islands	1159	24	0	0	0	0	0	0	0	0	0	5270	3156	0	0
Norway	4994	962	13622	4712	6650	37252	65634	3210	4587	46601	18664	44360	36052	21357	25504
Sweden	88	0	0	0	10	0	10	1	2	5	2	727	2	6	5
Netherlands	0	0	0	0	0	22	18	0	0	0	0	18	8	1	2
Germany	54	0	34	0	0	75	0	0	0	0	0	22	27	14	3
UK	0	0	0	0	0	0	0	0	0	0	6	0	18	0	0
Total nominal landings	17640	1927	53599	4795	39218	57170	136974	283	30148	84969	47120	63430	62770	33845	36060
Bycatch of other species	-4140	-	-6973	-	-3080	-2670	-11019	-59	-3075	-2869	-2950	-30	630	88	87
ICES estimate of total landings (Subarea 4 + Division 3.aN)	13500	1927	46626	4795	36138	54500	120955	6524	27073	82100	44170	63400	63400	33933	36147

\* 781 tonnes from trial fishery (directed fishery); 160 tonnes from bycatches in other fisheries.

\*\* Landings less than 1 tonne.

**Table 10** Norway pout in Subarea 4 and Division 3.a. History of the commercial catch. ICES estimates of catches by country. Weights are in tonnes. Catch values prior to 2017 are presented to the nearest hundred tonnes.

Year	Denmark		Faroes	Norway	Sweden	UK (Scotland)	Others	Total
	North Sea	Skagerrak						
1961	20500	-	-	8100	-	-	-	28600
1962	121800	-	-	27900	-	-	-	149700
1963	67400	-	-	70400	-	-	-	137800
1964	10400	-	-	51000	-	-	-	61400
1965	8200	-	-	35000	-	-	-	43200
1966	35200	-	-	17800	-	-	-	53000
1967	169600	-	-	12900	-	-	*	182500
1968	410800	-	-	40900	-	-	*	451700
1969	52500	-	19600	41400	-	-	*	113500
1970	142100	-	32000	63500	-	200	200	238000
1971	178500	-	47200	79300	-	100	200	305300
1972	259600	-	56800	120500	6800	900	200	444800
1973	215200	-	51200	63000	2900	13000	600	345900
1974	464500	-	85000	154200	2100	20700	3300	735800
1975	251200	-	63600	218900	2300	22700	1000	559700
1976	244900	-	64600	108900	*	17300	1700	437400
1977	232200	-	48800	98300	2900	4600	1000	387800
1978	163400	-	18500	80800	700	5500	-	268900
1979	219900	9000	21900	75400	-	3000	-	329200
1980	366200	11600	34100	70200	-	600	-	482700
1981	167500	2800	16400	51600	-	*	-	238300
1982	256300	35600	12300	80000	-	-	-	392200
1983	301100	28500	30700	9700	-	*	-	457600
1984	251900	38100	19110	80800	-	100	-	393010
1985	163700	8600	9900	22000	-	100	-	205100
1986	146300	4000	2500	20500	-	-	-	174300
1987	108300	2100	4800	34100	-	-	-	149300
1988	7900	7900	1300	11100	-	-	-	109300
1989	95700	4200	800	65300	*	100	300	166400
1990	61500	23800	100	77100	*	-	-	163300
1991	85000	32000	1300	68300	*	-	*	186600
1992	146900	41700	10600	105500	*	-	100	296800
1993	97300	6700	2400	76700	-	-	*	183100
1994	97900	6300	1600	74200	-	-	*	182000
1995	138100	46400	18900	43100	100	*	200	236800
1996	74300	33800	1600	47800	200	100	*	163800
1997	94200	29300	7000	39100	*	*	100	169700
1998	39800	3700	4700	22100	-	-	*	79800
1999	4100	6000	2500	44200	*	-	-	94500
2000	12700	9000	-	48000	100	-	*	184400
2001	40600	1500	-	16800	700	*	*	65600
2002	5020	2800	3400	23600	-	-	-	80000
2003	9900	3400	2400	11400	-	-	-	27100
2004	8100	300	-	5000	-	-	100	13500
2005	1000	-	-	1000	-	-	-	1900
2006	35100	100	-	11400	-	-	-	46600
2007	1000	-	-	3700	-	-	-	5700
2008	10400	-	-	5700	*	-	*	36100
2009	17500	-	-	37000	*	-	*	54500
2010	64900	200	-	60900	*	*	*	126000
2011	3300	-	-	3200	*	*	*	6500

Year	Denmark		Faroes	Norway	Sweden	UK (Scotland)	Others	Total
	North Sea	Skagerrak						
2012	22300	100	-	4600	*	*	*	27000
2013	29000	6200	-	46900	*	*	*	82100
2014	25000	500	-	18700	*	*	*	44200
2015	10800	2200	5300	44400	700	*	*	63400
2016	23200	900	3200	36100	*	*	*	63400
2017	12345	109	-	21479	*	*	*	33933
2018	10486	159	-	25502	*	*	*	36147

\* Catches less than 100 tonnes.

## Summary of the assessment

**Table 11** Norway pout in Subarea 4 and Division 3.a. Assessment summary. Weights are in tonnes. High and low correspond to 95% confidence intervals.

Year	Recruitment in Q3 (age 0)	High	Low	SSB in Q4	High	Low	Catches* Q1–Q4	Fishing pressure Q1–Q4 (ages 1–2)	High	Low
1984	37068	68569	20039	103230	164051	42408	306555	1.32	2.2	0.80
1985	25786	47473	14006	53578	86283	20873	227422	1.28	2.2	0.76
1986	44841	83800	23994	38189	61517	14861	180508	0.98	1.67	0.58
1987	9106	17516	4734	60076	94089	26067	148894	0.96	1.72	0.53
1988	40400	75108	21731	54211	94444	13971	109295	0.69	1.17	0.41
1989	41711	77638	22409	55293	88312	22274	166559	0.72	1.23	0.42
1990	53309	99444	28577	71218	113720	28715	139095	0.68	1.18	0.40
1991	90984	170021	48688	91417	145503	42551	190406	0.65	1.13	0.37
1992	48587	89528	26369	154545	250472	58597	302490	0.61	1.06	0.35
1993	42684	80037	22763	116964	198106	39733	181265	0.64	1.25	0.33
1994	118210	223826	62431	83995	102535	24457	183585	0.53	1.00	0.28
1995	45998	88246	23976	170206	280727	59684	231772	0.40	0.78	0.21
1996	99101	189988	51692	195122	345639	44605	156079	0.36	0.72	0.184
1997	19121	37004	9880	200764	341243	60384	156937	0.35	0.70	0.173
1998	34286	64205	18309	181295	335256	37334	75034	0.32	0.64	0.161
1999	82929	156610	43913	101986	188472	25501	92302	0.35	0.71	0.171
2000	22710	43379	11889	179598	302082	57113	184970	0.32	0.68	0.155
2001	22130	42342	11566	100223	320323	38123	64373	0.27	0.58	0.127
2002	18835	37453	9472	85865	154639	17091	77108	0.34	0.76	0.149
2003	7600	14913	3003	3407	94126	12688	24647	0.27	0.63	0.114
2004	6993	13589	3598	37301	66606	7997	13487	0.24	0.60	0.095
2005	28125	54584	14491	28279	49441	7117	42	0.00100	0.00100	0.00
2006	19601	38515	9076	51610	86111	17110	46553	0.32	0.93	0.112
2007	28739	56307	14769	73577	130026	17128	5796	0.042	0.102	0.0170
2008	42128	83059	21368	90443	157035	23852	34844	0.066	0.151	0.029
2009	64106	125140	32840	126809	217514	36103	45813	0.098	0.23	0.041
2010	5740	11304	2892	218498	384844	52153	131078	0.109	0.25	0.047
2011	9867	20180	5076	165517	298531	32503	6843	0.087	0.21	0.035
2012	50298	98240	25752	69243	127033	11453	26947	0.172	0.43	0.069
2013	13933	27214	7133	84413	141336	27489	82109	0.28	0.77	0.106
2014	86025	176941	42468	74686	131868	17504	44164	0.29	0.78	0.110
2015	31711	66206	15237	97555	163342	31768	57417	0.32	0.90	0.114
2016	58187	119212	28401	100870	179857	21883	60241	0.34	0.95	0.118
2017	20599	41054	10336	84099	144574	23624	33940	0.31	0.87	0.110
2018	57745	116737	28564	73774	132459	15089	36130	0.31	0.87	0.111
2019	80528	202264	32061	94420	169664	19176	51613**			

\* The catches presented are the sum of product values from catch- and weights-at-age used in the assessment model and do not match exactly the ICES estimates presented in previous tables.

\*\* Provisional (first three quarters of 2019 only).



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