

Herring (*Clupea harengus*) in subdivisions 20–24, spring spawners (Skagerrak, Kattegat, and western Baltic)

ICES advice on fishing opportunities

ICES advises that when the MSY approach and precautionary considerations are applied, there should be zero catch in 2024.

This advice applies to the catch of western Baltic spring-spawning herring (WBSS) in subdivisions 20–24 and the eastern part of Subarea 4 (Figure 3).

ICES advice on conservation aspects

ICES advises that measures to protect and restore known spawning habitats and nursery areas are needed.

Stock development over time

Fishing pressure on the stock is below F_{MSY} ; spawning-stock size is below MSY $B_{trigger}$, B_{pa} , and B_{lim} .

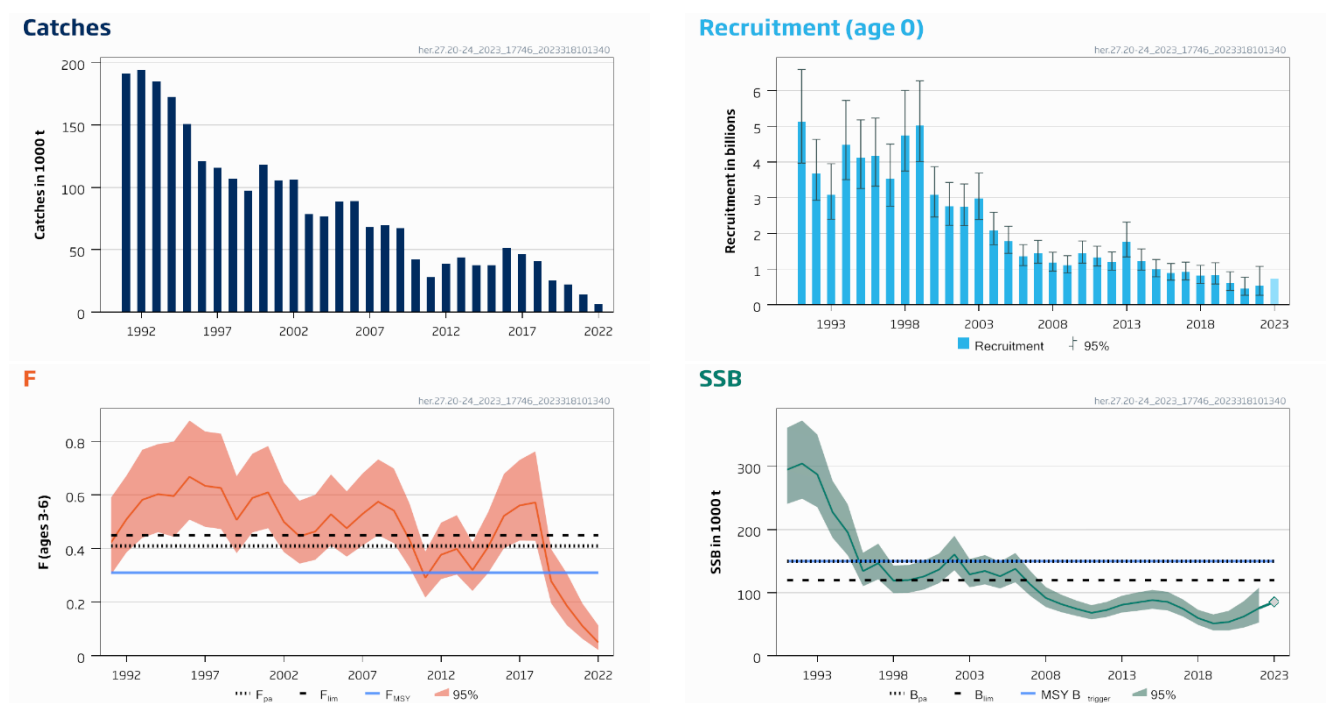


Figure 1 Herring in subdivisions 20–24, spring spawners. Summary of the stock assessment. The assumed recruitment value for 2023 is shaded in a lighter colour and the grey diamond in the SSB plot is a predicted number for 2023 at spawning time.

Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

Catch scenarios

Table 1 Herring in subdivisions 20–24, spring spawners. Values in the forecast and for the interim year. All weights are in tonnes, and recruitment (R) is in thousands.

Variable	Value	Notes
F _{ages 3–6} (2023)	0.044	Based on catch constraint in 2023
SSB (2023)	85 431	Short-term forecast
R _{age 0} (2023 and 2024)	725 195	Average 2017–2021
Total catch (2023)	6 663	See Table 9 and issues relevant to the advice for the fleet descriptions. A-fleet: 5282 t corresponding to the A-fleet TAC (396 556 t) plus what is transferred from the C-fleet in Division 3.a to the North Sea (21 971 t), scaled by the 3-year average proportion of WBSS in A-fleet catch (1.26%, 2020–2022) C-fleet: 439 t in Division 3.a based on 310 t agreed maximum Norwegian catch* and 47.5% (proportion of C-fleet EU catches in the total EU catches in 3.a in 2022) of 969 t agreed maximum EU catch*, scaled by the 3-year average proportion of WBSS in the C-fleet catch (57%, 2020–2022) D-fleet: 154 t in Division 3.a based on 52.5% (proportion of D-fleet catches in the total EU catches in 3.a in 2022) of 969 t agreed maximum EU catch*, scaled by the 3-year average proportion of WBSS in the D-fleet catch (30.2%, 2020–2022) F-fleet: 788 t (TAC**)

* Council Regulation (EU) 2023/194 and amendment on 17 March 2023 (EU, 2023b).

** Council Regulation (EU) 2022/2090 (EU, 2022).

Table 2 Herring in subdivisions 20–24, spring spawners. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2024)	F _{3–6} (2024)	SSB* (2024)	SSB* (2025)	% SSB change **	% advice change ***
ICES advice basis						
MSY approach: zero catch	0	0	92 726	103 649	12	0
Other scenarios						
EU Baltic Sea multiannual plan (MAP): $F = F_{MSY} \times \frac{SSB_{2023}}{MSY B_{trigger}}$ ^	27 346	0.177	90 148	80 228	–11	
MAP: $F = F_{MSY lower} \times \frac{SSB_{2023}}{MSY B_{trigger}}$ ^	19 958	0.123	90 919	86 404	–5	
$F = F_{MSY}$	43 103	0.310	88 265	67 575	–23	
$F = F_{pa}$	52 915	0.410	86 889	59 887	–31	
$F = F_{lim}$	56 452	0.450	86 347	57 171	–34	
SSB (2025) = B_{lim} ^^						
SSB (2025) = B_{pa} ^^						
SSB (2025) = $MSY B_{trigger}$ ^^						
$F = F_{2023}$	7 669	0.044	92 074	96 985	5	
Catch of WBSS by A-fleet and D-fleet only^^^	5 436	0.028	92 275	99 119	7	

* For spring-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries and natural mortality between 1 January and spawning time (April).

** SSB (2025) relative to SSB (2024).

*** The advised catch in 2022 was 0 tonnes.

^ Because SSB_{2023} is below $MSY B_{trigger}$, the F_{MSY} and $F_{MSY lower}$ values in the MAP are adjusted by the $SSB_{2023}/MSY B_{trigger}$ ratio.

^^ B_{lim} and B_{pa} cannot be achieved in 2025, even with zero catch.

^^^ Only (i) the A-fleet that targets North Sea autumn-spawning (NSAS) herring but also catches WBSS herring in the eastern part of the North Sea and (ii) the D-fleet that targets fish for reduction in Division 3.a, assuming the same catch as in the intermediate year 2023. C-fleet and F-fleet are directed WBSS fisheries, thus have zero catch in this scenario.

Table 3 Herring in subdivisions 20–24, spring spawners. Medium-term catch scenarios. Different low F scenarios are provided, where $F_{2025} = F_{2024}$. All weights are in tonnes.

Basis	Total catch (2024)	Total catch (2025)	F_{3-6} (2024)	SSB* (2024)	SSB* (2025)	SSB* (2026)	% SSB change (2024–2025)	% SSB change (2025–2026)
Medium-term catch scenarios								
F = 0	0	0	0	92 726	103 649	115 511	12	11
F = 0.010	1 800	2 134	0.010	92 577	102 077	112 390	10	10
F = 0.025	4 436	5 125	0.025	92 355	99 783	107 946	8	8
F = 0.050	8 667	9 603	0.050	91 986	96 126	101 124	5	5
F = 0.100	16 559	16 944	0.100	91 254	89 386	89 360	–2	0
F = 0.150	23 768	22 576	0.150	90 529	83 326	79 630	–8	–4
Constant catch 2023–2025**	6 663	6 663	0.038	92 162	97 926	105 128	6	7

* For spring-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries and natural mortality between 1 January and spawning time (April).

** It is assumed that the fleets' 2023 catches (as defined in Table 1) are kept constant for 2024–2025.

The stock is estimated to be below B_{lim} . There are no catch scenarios that will rebuild the stock above B_{lim} by 2026.

Basis of the advice

On the fishing opportunities

Table 4 Herring in subdivisions 20–24, spring spawners. The basis of the advice.

Advice basis	MSY approach
Management plan	An EU Baltic Sea multiannual plan (MAP; EU, 2016) was established in 2016 and updated in 2019 (MAP; EU, 2019). It applies to herring in subdivisions 22–24, which are part of the distribution area of the WBSS stock. This plan is not adopted by Norway and, thus, is not used as basis of the advice for this shared stock.

On the conservation aspects

Table 5 Herring in subdivisions 20–24, spring spawners. The basis of the advice.

Advice basis	Ecosystem-based management (EBM) considerations
Existing conservation measures	ICES is not aware of any conservation measures for this stock.

Quality of the assessment

The 2023 assessment gives consistent estimates of SSB and fishing mortality compared to the 2022 assessment.

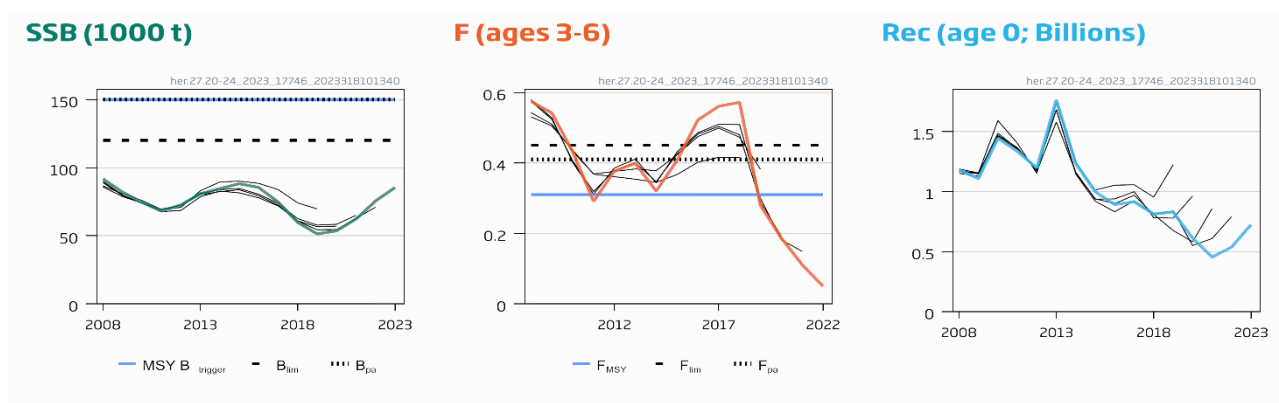


Figure 2 Herring in subdivisions 20–24, spring spawners. Historical assessment results (final-year recruitment included for each line, corresponding to the recruitment assumption in the intermediate year. Final-year SSB prediction is included for each line).

Issues relevant for the advice

On the fishing opportunities

ICES MSY approach stipulates that F is reduced proportionally to SSB when the spawning-stock size falls below MSY $B_{trigger}$. When SSB is below B_{lim} , measures should be taken so that it can be brought above B_{lim} in the short term. All catch scenarios, including zero catch, result in SSB remaining below B_{lim} in 2025 (Table 2). Therefore, zero catch is advised for 2024.

The input catch data are disaggregated in these different fleets based on assumptions that deviate from the definition of those fleets for management purposes (based on TAC settings). In the context of this advice, the fleets are currently described as follows:

Fleet A: Directed fishery for herring for human consumption in the North Sea and Division 7.d, but includes herring bycatches in the Norwegian industrial fishery. The catch of herring is almost exclusively NSAS herring, with some catches of WBSS herring in the eastern part of the Subarea 4 (Transfer area, Figure 3).

Fleet C: Directed fishery for herring for human consumption in Kattegat and Skagerrak (Division 3.a). This fleet also includes catches from the Swedish D-fleet until 2021. The catch of herring consists of a mixture of NSAS and WBSS herring.

Fleet D: Bycatch of herring in Kattegat and Skagerrak (Division 3.a) in the Danish and (from 2022) the Swedish small-meshed industrial fleet for sprat, Norway pout, and sandeel. The catch of herring consists of a mixture of NSAS and WBSS herring.

Fleet F: Catches from subdivisions 22–24. Most of the catches are taken in a directed fishery for herring and some as bycatch in a directed sprat fishery. The catch of herring consists exclusively of WBSS herring.

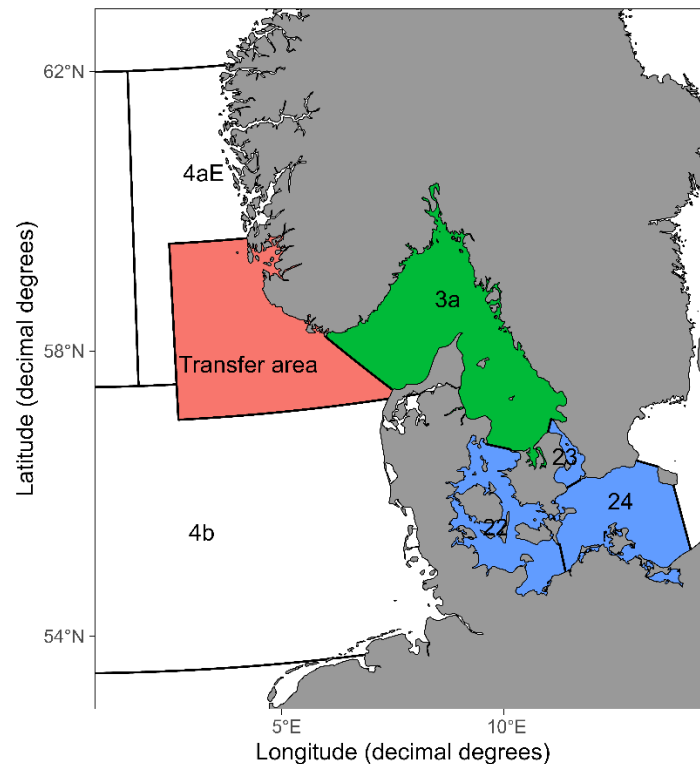


Figure 3 Herring in subdivisions 20–24, spring spawners. Areas relevant to the advice for WBSS herring.

This stock is caught across three different management areas (Figure 3), and recovery will be impaired if catches of this stock are not minimized in all areas. Based on agreed catches for 2023 and assumptions on stock mixing, it is predicted that around 79% of the total WBSS catches in 2023 will be taken in the eastern parts of divisions 4.a and 4.b. The remaining 21% is assumed to be shared between the two management areas, subdivisions 20–21 and subdivisions 22–24.

The catch of WBSS in the North Sea in recent years has been substantial (estimated at 5236 t, based on the average over the 2020–2022 period). The catches of WBSS in 2023 are expected to continue to be larger in the North Sea than in subdivisions 20–24. Without additional area and seasonal restrictions on herring fishery in the North Sea in 2024, catches of WBSS in the North Sea will be unavoidable, delaying the recovery of the WBSS stock.

On the conservation aspects

Non-fishing impacts are substantial for WBSS herring, particularly for the survival of early life-stages. At present, ICES is not fully able to quantify the level and relative impact of cumulative non-fisheries anthropogenic factors on the reproductive capacity of the stock. These drivers can be grouped as follows:

a) Climate change related effects have resulted in lower early life-stage survival and reduced productivity of the Rugen spawning component. As this development will likely continue in the following years, it is of the highest importance to monitor and minimize additional environmental stressors for WBSS herring.

b) Eutrophication and spawning habitat degradation have negative effects on the early life-stage survival and the productivity of WBSS herring. The homing behaviour of WBSS herring and the corresponding strong spawning site fidelity implies a strong vulnerability of early life-stages to these threats. The implementation of environmental legislation (e.g. the EU Water Framework [WFD] and the Marine Strategy Framework directives [MSFD]) aims to protect the marine environment and ecosystems (e.g. nutrient load, freshwater run-off). This would have a positive effect on the reproductive potential of WBSS herring.

The WBSS herring stock consists of several spawning components. The relative contribution of the different components to the stock is unclear, but it is likely variable in time and is considered an important aspect of the resilience of the stock. Degradation of the spawning habitats can reduce this population diversity, harming the resilience of the stock.

Reference points

Table 6 Herring in subdivisions 20–24, spring spawners. Reference points, values, and their technical basis. Weights in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	150 000	B_{pa}	ICES (2018)
	F_{MSY}	0.31	Stochastic simulations (EqSim) with Beverton-Holt, Ricker, and segmented regression stock–recruitment curve from the full time-series (1991–2016)	ICES (2018)
Precautionary approach	B_{lim}	120 000	Chosen as the mean of the two lowest SSB (1998, 1999) values with above-average recruitment	ICES (2018)
	B_{pa}	150 000	Upper 95% confidence limit of B_{lim} with $\sigma \approx 0.136$, using the CV from the final-year SSB estimate in the assessment	ICES (2018)
	F_{lim}	0.45	F_{p50} leading to 50% probability of SSB > B_{lim} under stochastic simulations with Beverton-Holt, Ricker, and segmented stock–recruitment from the full time-series (1991–2016)	ICES (2018)
	F_{pa}	0.41	The maximum F that provides a 95% probability for SSB to be above B_{lim} ($F_{p.05}$ with advice rule)	ICES (2018)
Management plan (2018)*	MAP (2018) MSY $B_{trigger}$	150 000	B_{pa} equal to the upper 95% confidence limit of B_{lim}	ICES (2018)
	MAP (2018) B_{lim}	120 000	Chosen as the mean of the two lowest SSB (1998, 1999) values with above-average recruitment	ICES (2018)
	MAP (2018) F_{MSY}	0.31	Stochastic simulations (EqSim) with Beverton-Holt, Ricker, and segmented regression stock–recruitment curve from the full time-series (1991–2016)	ICES (2018)
	MAP (2018) target range F_{lower}	0.216–0.310	Consistent with the ranges, resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2018)
	MAP (2018) target range F_{upper}	0.310–0.379	Consistent with the ranges, resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2018)

*Revised Baltic MAP (EU, 2016, 2019), which refers to most recent reference points (ICES, 2018).

Basis of the assessment

Table 7 Herring in subdivisions 20–24, spring spawners. Basis of assessment and advice.

ICES stock data category	1(ICES, 2023)
Assessment type	Age-based analytical assessment, multi-fleet SAM (ICES, 2023b) that uses catches by fleet in the model and in the forecast
Input data	Two acoustic, two trawl, and indices from one larval survey (HERAS [A5092], GerAS/BIAS [A1588], IBTS/BITS-Q1 [G1022/G2916], IBTS/BITS-Q3–4 [G2829/G8863], and N20 [I2308, I7165]); and catch statistics and corrections for historical area misreporting, including split for North Sea herring (NSAS)/WBSS in catches, HERAS, IBTS, and split for Central Baltic Herring (CBH)/WBSS in GerAS.
Discards and bycatch	Discarding is considered to be negligible. The amount of slippage in Division 3.a is unknown.
Indicators	None
Other information	Last benchmarked in 2018 (ICES, 2018)
Working group	Herring Assessment Working Group for the Area South of 62°N (HAWG)

History of the advice, catch, and management

Table 8 Herring in subdivisions (SDs) 20–24, spring spawners. ICES advice, TACs, and ICES estimated catch. Weights are in tonnes.

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC Division 3.a ***	Agreed TAC SDs 22–24	ICES estimated catch^			
					SDs 22–24	Division 3.a	Subarea 4	Total
1987	Reduction in F	224 000	218 000		102 000	59 000	14 000	175 000
1988	No increase in F	196 000	218 000		99 000	129 000	23 000	251 000
1989	TAC	174 000	218 000		95 000	71 000	20 000	186 000
1990	TAC	131 000	185 000		78 000	118 000	8 000	204 000
1991	TAC	180 000	155 000		70 000	112 000	10 000	192 000
1992	TAC	180 000	174 000		85 000	101 000	9 000	195 000
1993	Increased yield from reduction in F; reduction in juvenile catches	188 000	210 000		81 000	95 000	10 000	186 000
1994	TAC	130 000–180 000	191 000		66 000	92 000	14 000	172 000
1995	If required, TAC not exceeding recent catches	168 000–192 000	183 000		74 000	80 000	10 000	164 000
1996	If required, TAC not exceeding recent catches	164 000–171 000	163 000		58 000	71 000	1 000	130 000
1997	3.a: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	66 000–85 000*	100 000		68 000	55 000	1 000	124 000
1998	Should be managed in accordance with NSAS	-	97 000		51 000	53 000	8 000	112 000
1999	3.a: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	-	99 000		50 000	43 000	5 000	98 000
2000	3.a: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~60 000 for SDs 22–24	101 000		54 000	57 000	7 000	118 000
2001	3.a: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~50 000 for SDs 22–24	101 000		64 000	42 000	6 000	112 000

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC Division 3.a ***	Agreed TAC SDs 22–24	ICES estimated catch^			
					SDs 22–24	Division 3.a	Subarea 4	Total
2002	3.a: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~50 000 for SDs 22–24	101 000		53 000	47 000	7 000	107 000
2003	Reduce F	< 80 000	101 000		40 000	36 000	2 000	78 000
2004	Separate management regime; reduce F	< 92 000	91 000		42 000	28 000	7 000	77 000
2005	Separate management regime; <i>status quo</i> F	95 000	120 000		44 000	38 000	7 000	89 000
2006	Separate management regime; <i>status quo</i> F	95 000	102 000	47 500	42 000	36 000	11 000	89 000
2007	Separate management regime; <i>status quo</i> F	99 000	69 000	49 500	40 000	28 000	1 000	69 000
2008	Separate management regime; reduce F 20% towards $F_{0.1}$	71 000	51 700	45 000	44 000	25 000	0	69 000
2009	Separate management regime. Reduce F to $F = 0.25$	< 32 800	37 700	27 200	31 000	32 000	4 000	67 000
2010	Separate management regime; reduce F to $F = 0.25$	< 39 800	33 900	22 700	18 000	24 000	1 000	43 000
2011	MSY transition in 1–5 years and no increase in catches of WBSS herring in the North Sea	26 500–53 600	30 000	15 800	16 000	12 000	300	28 300
2012	$F_{MSY} = 0.25$ and no increase in catches of WBSS herring in the North Sea	< 42 700	45 000	20 900	21 000	15 000	2 000	38 000
2013	$F_{MSY} = 0.25$ and no optional transfer of catch scenarios to the North Sea	< 51 900	55 000	25 800	26 000	17 000	500	43 500
2014	Transition to MSY approach	< 41 602	46 800	19 800	18 000	16 000	3 000	37 000
2015	MSY approach ($F_{MSY} = 0.28$)**	< 44 439	43 600	22 200	22 000	13 000	2 000	37 000
2016	MSY approach ($F_{MSY} = 0.32$)	< 52 547	51 048	26 274	25 000	24 000	2 000	51 000
2017	MSY approach ($F_{MSY} = 0.32$)	< 56 802	50 740	28 401	26 513	19 195	632	46 340
2018	MSY approach ($F = 0.295$)	< 34 618	48 427	17 309	18 992	19 902	2 164	41 058
2019	MSY approach	0	29 326	9 001	9 831	8 832	6 757	25 420
2020	MSY approach	0	24 528	3 150	3 966	11 361	6 802	22 130
2021	MSY approach	0	21 604	1 575	1 601	9 074	3 505	14 180
2022	MSY approach	0	25 021 [#]	788	638	212	5 402	6 251
2023	MSY approach	0	23 250 [#]	788				
2024	MSY approach	0						

* Catch in subdivisions 22–24.

** Advice for 2015 was for wanted catch.

*** Including mixed clupeid TAC and a bycatch ceiling in the small-meshed fisheries until 2005 and for 2007. For 2006, and from 2008, human consumption only, not including industrial bycatch or mixed clupeids but including NSAS catch in Fleet C, with an optional 50% transfer from Division 3.a to Subarea 4 since 2011 and 100% since 2022.

[#] Agreed to be limited to 1136 t in 2022 and 1 279 t in 2023 (Council Regulation [EU] 2023/194 [EU 2023b]).

[^] WBSS only.

History of the catch and landings

Table 9 Herring in subdivisions 20–24, spring spawners. Catch distribution, by stock and by fleet, of WBSS and NSAS herring in 2022 as estimated by ICES.

WBSS catch area	Fleet	Fisheries	WBSS 2022 catch (t)	NSAS 2022 catch (t)
Division 3.a	C	Directed herring fisheries with purse-seiners and trawlers	180	296
	D	Bycatches of herring caught in the small-meshed fisheries	32	219
Subdivisions 22–24	F	All herring fisheries in subdivisions 22–24.	638	0
Transfer area	A	Directed herring fisheries with purse-seiners and trawlers	5 402	85 521
Total area	C, D, F, A	All	6 251	86 036

Table 10 Herring in subdivisions 20–24, spring spawners. Catch distribution of WBSS in 2022 as estimated by ICES.

Total catch (2022)	Landings		Discards
6 251 tonnes	13% directed fishery	87% as bycatch in other herring and sprat fisheries*	Negligible
	6 251 tonnes		

* of WBSS by the A-fleet and bycatch by the D-fleet.

Table 11 Herring in subdivisions 20–24. History of commercial catch by area and country as estimated by ICES for all herring stocks caught within the management area for subdivisions 20–24. Values prior to 2002 are rounded. Weights are in tonnes.

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Skagerrak														
Denmark	47 400	62 300	58 700	64 700	87 800	44 900	43 700	28 700	14 300	10 300	10 100	16 000	16 200	25 968
Norway	1600	5 600	8 100	13 900	24 200	17 700	16 700	9 400	8 800	8 000	7 400	9 700	0	0
Sweden	47 900	56 500	54 700	88 000	56 400	66 400	48 500	32 700	32 900	46 900	36 400	45 800	30 800	26 354
Total	96 900	124 400	121 500	166 600	168 400	129 000	108 900	70 800	56 000	65 200	53 900	71 500	47 000	52 322
Kattegat														
Denmark	57 100	32 200	29 700	33 500	28 700	23 600	16 900	17 200	8 800	23 700	17 900	18 900	18 800	18 609
Sweden	37 900	45 200	36 700	26 400	16 700	15 400	30 800	27 000	18 000	29 900	14 600	17 300	16 200	7 246
Total	95 000	77 400	66 400	59 900	45 400	39 000	47 700	44 200	26 800	53 600	32 500	36 200	35 000	25 855
Subdivisions 22 and 24														
Denmark	21 700	13 600	25 200	26 900	38 000	39 500	36 800	34 400	30 500	30 100	32 500	32 600	28 300	13 066
Germany	56 400	45 500	15 800	15 600	11 100	11 400	13 400	7300	12 800	9 000	9 800	9 300	11 400	22 400
Poland	8 500	9 700	5 600	15 500	11 800	6 300	7 300	6000	6 900	6 500	5 300	6 600	9 300	0
Sweden	6 300	8 100	19 300	22 300	16 200	7 400	15 800	9000	14 500	4 300	2 600	4 800	13 900	10 717
Total	92 900	76 900	65 900	80 300	77 100	64 600	73 300	56 700	64 700	49 900	50 200	53 300	62 900	46 184
Subdivision 23														
Denmark	1 500	1 100	1 700	2 900	3 300	1 500	900	700	2 200	400	500	900	600	4 572
Sweden	100	100	2 300	1 700	700	300	200	300	100	300	100	100	200	0
Total	1 600	1 200	4 000	4 600	4 000	1 800	1 100	1000	2 300	700	600	1 000	800	4 572
Grand total	286 400	279 900	257 800	311 400	294 900	234 400	231 000	172 700	149 800	169 400	137 200	162 000	145 700	128 932

Year	2003	2004	2005	2006**	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Skagerrak														
Denmark	15 477	11 782	14 768	5 156	3 595	3 867	12 720	5 309	3 577	3 244	4 886	6 449	4 137	3 554
Faroe Islands	0	0	440	0	0	0	552	447	0	0	0	0	480	318
Netherlands	725	484	751	600	454	1 566	255	145	54	629	194	84	128	125
Germany	0	0	0	0	0	0	0	395	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	30	0
Norway	0	0	0	0	3 466	4 024	3 295	3 281	116	446	3 019	2 048	2 475	3 924
Sweden	25 830	21 806	32 545	26 000	19 422	16 501	12 869	17 445	9 458	16 210	16 677	12 594	12 857	13 321
Total	42 032	34 073	48 504	31 756	26 937	25 958	29 691	27 023	13 205	20 530	24 776	21 175	20 107	21 242
Kattegat														
Denmark	15 952	7 563	11 109	8 617	9 181	7 020	4 896	7 567	5 155	6 26	3 877	4 266	3 976	2 448
Sweden	10 236	9 626	9 986	10 800	11 153	5 213	3 612	2 693	1 661	800	2 586	3 412	3 752	6 206
Germany	0	0	0	0	0	0	631	0	0	0	0	0	0	0
Total	26 188	17 189	21 095	19 417	20 334	12 234	9 140	10 260	6 800	7126	6 464	7 678	7 728	8 653
Subdivisions 22 and 24														
Denmark	6 143	7 305	5 311	1 405	2 839	3 073	2 146	762	3 089	4105	5 060	4 283	4 487	5 714
Germany	18 776	18 493	21 040	22 870	24 583	22 823	15 981	12 239	8 187	11 170	14 591	10 241	13 289	14 427
Poland	4 398	5 512	6 292	5 504	2 945	5 535	5 232	1 799	1 803	2394	3 110	2 381	2 648	2 918
Sweden	9 379	9 865	9 171	9 604	7 220	7 024	4 050	2 034	2 179	2706	2 067	1 078	1 497	1 659
Total	38 696	41 175	41 814	39 383	37 587	38 456	27 409	16 833	15 258	20 400	24 800	17 983	21 922	24 718
Subdivision 23														
Denmark	2 315	94	1 779	1 827	2 871	5 324	2 817	1***	26	38	44	47	30	26
Sweden	243	317	384	652	0	327	807	934	544	681	632	319	192	332
Total	2 558	411	2 163	2 479	2 871	5 651	3 623	1 000	600	700	700	366	222	359
Grand total	109 473	92 848	113 576	93 035	87 729	82 298	69 863	55 200	35 863	48 755	56 740	47 202	49 978	54 972

Year	2017	2018	2019	2020	2021	2022*
Skagerrak						
Denmark	2 699	858	593	3 189	2 865	131
Faroe Islands	400	149				
Netherlands						
Germany	85	205	121	155	143	
Lithuania						
Norway	3 337	3 411	2 472	2 119	1 122	249
Sweden	11 936	11 332	8 509	9 073	6 133	99
Total	18 458	15 956	11 695	14 537	10 263	479
Kattegat						
Denmark	912	1 258	1 499	672	210	108
Sweden	7 426	6 044	1 725	2 570	2 845	140
Germany						
Total	8 338	7 302	3 224	3 242	3 055	249
Subdivisions 22 and 24						
Denmark	5 586	4 487	2 041	586	147	9
Finland		1				
Germany	14 694	11 304	5 571	2 069	843	225
Poland	3 330	1 773	1 130	596	249	151
Sweden	2 287	943	729	233	75	7
Total	25 898	18 507	9 470	3 484	1 315	393
Subdivision 23						
Denmark	260	69	9	1	5	1
Sweden	356	416	351	481	281	245
Total	616	485	360	482	286	
Grand total	53 309	42 250	24 750	21 745	14 918	245

* Preliminary data.

** 2000 t of Danish catches are missing (ICES, 2007).

*** 3103 t officially reported catches (ICES, 2011).

Summary of the assessment

Table 12 Herring in subdivisions 20–24, spring spawners. Assessment summary. High and Low refer to the 95% confidence intervals.

Year	Recruitment			Spawning-stock biomass			Catches	Fishing mortality		
	Recruitment (age 0)	High	Low	SSB*	High	Low		F (ages 3–6)	High	Low
	thousands			tonnes						
1991	5116963	6593528	3971062	294773	361280	240510	191573	0.42	0.59	0.30
1992	3684550	4634981	2929011	304636	372902	248867	194408	0.51	0.67	0.39
1993	3078506	3953874	2396940	287341	350693	235433	185010	0.58	0.77	0.44
1994	4479773	5724135	3505922	227748	277532	186895	172439	0.60	0.79	0.46
1995	4110015	5181165	3260314	195407	240038	159074	150820	0.60	0.80	0.44
1996	4171325	5231316	3326114	134244	163444	110260	121260	0.67	0.88	0.51
1997	3527199	4503943	2762275	146775	177913	121087	115585	0.63	0.84	0.48
1998	4744073	6005230	3747772	119220	143057	99355	107033	0.63	0.83	0.47
1999	5018116	6276791	4011841	120005	144003	100006	97234	0.51	0.67	0.38
2000	3086006	3870691	2460397	125841	150854	104976	118277	0.59	0.75	0.46
2001	2764627	3430703	2227871	136767	162319	115236	105803	0.61	0.78	0.48
2002	2740867	3387256	2217827	160622	190376	135519	106189	0.50	0.65	0.39
2003	2971033	3693490	2389890	129048	153308	108627	78310	0.45	0.58	0.34
2004	2088989	2592645	1683176	134457	159739	113177	76814	0.46	0.60	0.36
2005	1780760	2200108	1441341	126104	149007	106721	88404	0.53	0.68	0.41
2006	1361488	1686286	1099249	137834	163090	116489	88931	0.48	0.61	0.37
2007	1451383	1806132	1166312	112660	134144	94616	68180	0.53	0.68	0.41
2008	1180250	1475167	944293	91780	109057	77241	69576	0.57	0.73	0.45
2009	1109111	1377642	892922	82061	97181	69293	67261	0.54	0.70	0.42
2010	1444975	1788134	1167671	74567	87861	63284	42214	0.43	0.57	0.33
2011	1335731	1641608	1086848	68146	80422	57744	27771	0.29	0.39	0.22
2012	1198209	1480507	969739	72629	85635	61598	38648	0.38	0.50	0.29
2013	1765082	2319080	1343427	80901	95371	68627	43829	0.40	0.53	0.30
2014	1233676	1565800	971998	84593	100414	71265	37358	0.32	0.42	0.24
2015	998672	1270290	785133	88247	104601	74449	37491	0.41	0.54	0.31
2016	893169	1157332	689301	85406	101523	71847	51298	0.52	0.68	0.40
2017	915592	1198826	699274	74730	89581	62341	46340	0.56	0.73	0.43
2018	813788	1106650	598428	59805	73019	48982	41058	0.57	0.76	0.43
2019	830255	1179485	584427	51376	65638	40213	25420	0.28	0.40	0.196
2020	612037	927607	403824	53628	71370	40296	22130	0.187	0.31	0.114
2021	454304	772694	267107	62343	86824	44764	14180	0.111	0.195	0.063
2022	537470	1076573	268327	75548	108157	52770	6251	0.050	0.114	0.022
2023	725195**			85431***						

* SSB at spawning time (April).

** Recruitment is the average of 2017–2021.

*** SSB is predicted.

Sources and references

- EU. 2016. Regulation (EU) 2016/1139 of the European Parliament and of the Council of 6 July 2016 establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, amending Council Regulation (EC) No 2187/2005 and repealing Council Regulation (EC) No 1098/2007. Official Journal of the European Union, L 191. 15 pp. <https://data.europa.eu/eli/reg/2016/1139/oj>
- EU. 2019. Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008. Official Journal of the European Union, L 83. 17 pp. <https://data.europa.eu/eli/reg/2019/472/oj>
- EU. 2022. Council Regulation (EU) 2022/2090 of 27 October 2022 fixing the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Baltic Sea for 2023 and amending Regulation (EU) 2022/109 as regards certain fishing opportunities in other waters. Official Journal of the European Union, L 281. 15 pp. <http://data.europa.eu/eli/reg/2022/2090/oj>
- EU. 2023a. Council Regulation (EU) 2023/194 of 30 January 2023 fixing for 2023 the fishing opportunities for certain fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, as well as fixing for 2023 and 2024 such fishing opportunities for certain deep-sea fish stocks. Official Journal of the European Union, L 28. 219 pp. <http://data.europa.eu/eli/reg/2023/194/oj>
- EU. 2023b. Agreed record of conclusions of fisheries consultations between Norway and the European Union on the regulation of fisheries in Skagerrak and Kattegat for 2023. 17 March 2023. 16 pp. https://oceans-and-fisheries.ec.europa.eu/document/download/62b3194f-c482-4e1c-b7df-94ea865237fa_en?filename=2023-eu-norway-skagerrak-fisheries-consultations_en.pdf
- ICES. 2007. Report of the Herring Assessment Working Group for the Area South of 62°N (HAWG), 13–22 March 2007, ICES Headquarters, Copenhagen, Denmark. ICES CM 2007/ACFM:11. 538 pp. <https://doi.org/10.17895/ices.pub.19268438>
- ICES. 2011. Report of the Herring Assessment Working Group for the Area South of 62°N (HAWG), 16–24 March 2011, ICES Headquarters, Copenhagen, Denmark. ICES CM 2011/ACOM:06. 749 pp. <https://doi.org/10.17895/ices.pub.8499>
- ICES. 2018. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA 2018), 12–16 February 2018, ICES HQ, Copenhagen, Denmark. ICES CM 2018/ACOM:32. 313 pp. <https://doi.org/10.17895/ices.pub.5432>
- ICES. 2023a. Advice on fishing opportunities. In Report of the ICES Advisory Committee, 2023. ICES Advice 2023, section 1.1.1. <https://doi.org/10.17895/ices.advice.22240624>
- ICES. 2023b. Herring Assessment Working Group for the Area South of 62°N (HAWG). ICES Scientific Reports. 5:23. <http://doi.org/10.17895/ices.pub.22182034>

[Download the stock assessment data and figures](#)

Recommended citation: ICES. 2023. Herring (*Clupea harengus*) in subdivisions 20–24, spring spawners (Skagerrak, Kattegat, and western Baltic). In Report of the ICES Advisory Committee, 2023. ICES Advice 2023, her.27.20-24. <https://doi.org/10.17895/ices.advice.21907944>