

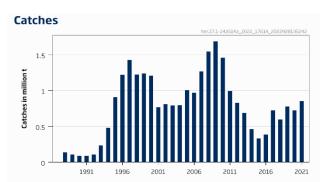
Herring (*Clupea harengus*) in subareas 1, 2, and 5, and in divisions 4.a and 14.a, Norwegian spring-spawning herring (Northeast Atlantic and Arctic Ocean)

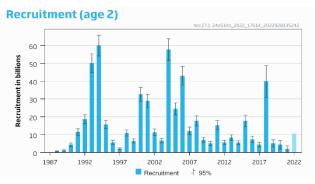
ICES advice on fishing opportunities

ICES advises that when the long-term management strategy agreed by the European Union, the Faroe Islands, Iceland, Norway, and the Russian Federation is applied, catches in 2023 should be no more than 511 171 tonnes.

Stock development over time

Fishing pressure on the stock is above FMSY and between Fpa and Flim; spawning-stock size is above MSY Btrigger, Bpa, and Blim.





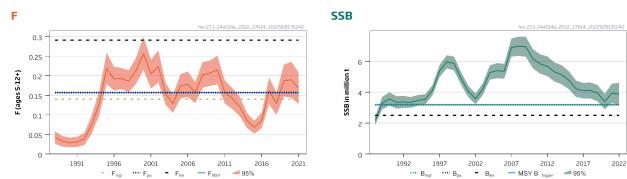


Figure 1 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Summary of the stock assessment. The assumed recruitment value for 2022 is shaded in a lighter colour.

Catch scenarios

Table 1Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Values in the
forecast and for the interim year.

Variable	Value	Notes
Fages 5-12+ (2022)	0.192	Based on assumed catches in 2022
SSB (2023)	3 531 608	From the assessment model; in tonnes
R _{age 2} (2022)	10.671	Median stochastic recruitment based on the years 1988–2021; in billions
R _{age 2} (2023)	10.671	Median stochastic recruitment based on the years 1988–2021; in billions
Catch (2022)	827 963	Sum of declared unilateral quotas from the individual parties; in tonnes

Table 2 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2023)	F (2023)	SSB (2024)	% SSB change*	% catch change**	% advice change***				
ICES advice basis										
Agreed management strategy^	511171	0.14	3147970	-11	-38	-15				
Other scenarios										
MSY approach: F _{MSY}	568410	0.157	3098334	-12	-31	-5				
F = 0	0	0	3592990	2	-100	-100				
F _{pa}	568410	0.157	3098334	-12	-31	-5				
F _{lim}	986742	0.291	2736980	-23	19	65				
SSB ₂₀₂₄ = B _{lim} ^^	1262850	0.390	2500025	-29	53	111				
$SSB_{2024} = B_{pa} = MSY B_{trigger}^{A}$	469646	0.128	3184005	-10	-43	-22				
$F = F_{2022}$	684536	0.192	2997770	-15	-17	14				

* SSB₂₀₂₄ relative to SSB₂₀₂₃.

** Catch in 2023 relative to ICES estimated catch in 2022 (827 963 tonnes).

*** Advice value 2023 relative to advice value 2022 (598 588 tonnes).

^ According to the harvest control rule in the management strategy F (2023) = F_{mgt} = 0.14, since the SSB is forecasted to be above $B_{trigger}$ on 1 January 2023.

^^ SSB_{2024} values are the closest available approximation to B_{lim} and $B_{\text{trigger}}.$

The advice for 2023 is 15% lower than for 2022 because the stock size is declining as a result of low recruitment since the large 2016 year class.

Basis of the advice

Table 3Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). The basis of the
advice.

Advice basis	Management strategy				
Management strategy	A long-term management strategy was agreed by the European Union, the Faroe Islands, Iceland,				
	Norway, and Russian Federation in 2018 (Anon, 2018). ICES has evaluated the long-term management				
	strategy and found it to be precautionary (ICES, 2018a).				

Quality of the assessment

The estimated SSB and fishing mortality are generally in line with the estimates from last year's assessment.

The only available catch data from Russian Federation for 2021 was total catch by ICES division from ICES preliminary catch database, and no Russian catch samples were available. Historically, preliminary catches are comparable to ICES final estimated catch. There were adequate samples from other fishing nations operating in the same areas, which were used to estimate catch-at-age and weight-at-age.

The Barents Sea survey (IESNS; A3675) was not conducted in 2022. There was no survey information on age 2, and therefore median stochastic recruitment based on the years 1988–2021 was used instead in the forecast. However, this has negligible impact on the advised catches.

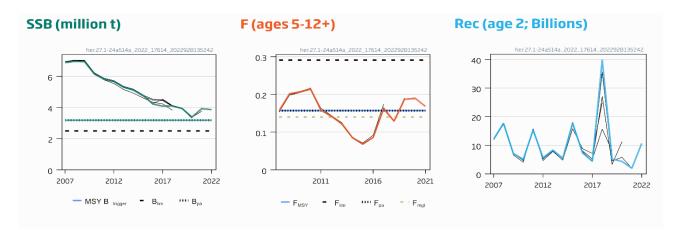


Figure 2 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Historical assessment results.

Issues relevant for the advice

The 2016 year class is expected to dominate the catches in 2023, and the subsequent year classes recruiting to the fishery are estimated to be weak.

SSB is predicted to be below SSB_{mgt} in 2024 if F_{mgt} is applied in 2023.

There has been an overshoot of the catches in relation to the advised TAC since 2013. The advice is based on the target fishing mortality in the long-term management strategy agreed by the European Union, the Faroe Islands, Iceland, Norway, and the Russian Federation; it does not consider the deviations from the long-term management strategy as evident from the sum of declared unilateral quotas. During the evaluation of the long-term management strategy (ICES, 2018a), the implementation error in the form of a consistent overshoot of the TAC was not included. Therefore, failing to adhere to the advised catches as derived from the application of the long-term management strategy may not be precautionary. Specifically, this may result in an increased risk for the stock to fall below B_{lim}, loss of catch in the long term, and unsustainable utilization of the resource.

Reference points

Table 4Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Reference points,
values, and their technical basis. F values corresponded to fishing mortality weighted by the population numbers, for
ages 5–12+.

Framework	Reference point	Value	Technical basis	Source	
	MSY B _{trigger}	3.184	B _{pa} ; in million tonnes.	ICES (2018b)	
MSY approach	F _{MSY}	0.157	Stochastic simulations with Beverton–Holt, segmented regression, and Ricker stock–recruitment relationships, capped to F _{P05}	ICES (2018a)	
	B _{lim}	2.5	MBAL (accepted in 1998) ; in million tonnes	ICES (2018b)	
Precautionary	B_{pa}	3.184	Based on B_{lim} and assessment uncertainties. $B_{lim} \times exp(1.645 \times \sigma)$, with σ = 0.147; in million tonnes	ICES (2018b)	
approach	F _{lim}	0.291	Equilibrium scenarios with stochastic recruitment: F value corresponding to 50% probability of (SSB < B _{lim})	ICES (2018a)	
	F _{pa}	0.157	F_{P05} ; the F that leads to SSB $\geq B_{lim}$ with 95% probability	ICES (2018a, 2021)	
EU–Faroes–Iceland–	SSB_{mgt_lower}	2.5			
Norway–Russian	SSB _{mgt}	3.184	Precautionary HCR evaluated by MSE. SSB values in	ICES (2018a)	
Federation long-term	F_{mgt_lower}	0.05	million tonnes.	ices (2010d)	
management strategy	F _{mgt}	0.14			

Basis of the assessment

 Table 5
 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Basis of the assessment and advice.

ussessmen	
ICES stock data category	1 (<u>ICES, 2022a</u>)
Assessment type	Statistical assessment model (XSAM; ICES, 2016) that uses catches in the model and in the forecast and
Assessment type	also includes uncertainty in catches and abundance indices
Input data	Assessment period 1988–2022: commercial catches-at-age (stock weight-at-age from surveys and, since 2009, from catch sampling). Three survey indices: Norwegian acoustic survey on spawning grounds in February/March (NASF [A7918]; 1988–1989, 1994–1996, 1998–2000, 2005–2008, 2015–2022); International Ecosystem Survey in the Nordic Seas (IESNS; A3675) covering the adult stock in the Nordic seas (1996–2022), and the juvenile stock in the Barents Sea (1991–2002, 2005–2007, 2009-2019, 2021). Maturity ogive variable by year-class strength. Natural mortalities are fixed values from historical analyses (age 2 = 0.9; ages greater than 2 = 0.15).
Discards and bycatch	Not included, considered negligible
Indicators	None
Other information	This stock was benchmarked in 2016 (ICES, 2016). A re-evaluation of reference points and the current management plan took place in 2018 (ICES, 2018a, 2019b).
Working group	Working Group on Widely Distributed Stocks (WGWIDE; ICES 2022b).

History of the advice, catch, and management

Table 6

6 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). ICES advice and landings. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Sum of agreed quotas	ICES catch
1987	TAC	150000	115000	127306
1988	TAC	120000-150000	120000	135301
1989	TAC	100000	100000	103830
1990	TAC	80000	80000	86411
1991	No fishing from a biological point of view	0	76000	84683
1992	No fishing from a biological point of view	0	98000	104448
1993	No increase in F	119000	200000	232457
1994	Gradual increase in F towards F _{0.1} ; TAC suggested	334000	450000	479228
1995	No increase in F	513000	900000*	905501
1996	Keep SSB above 2.5 million tonnes	-	1425000*	1220283
1997	Keep SSB above 2.5 million tonnes	-	1500000	1426507
1998	Do not exceed the harvest control rule	-	1300000	1223131
1999	Do not exceed the harvest control rule	1263000	1300000	1235433
2000	Do not exceed the harvest control rule	≤ 1500000	1250000	1207201
2001	Do not exceed the harvest control rule	753000	850000	766136
2002	Do not exceed the harvest control rule	853000	850000	807795
2003	Do not exceed the harvest control rule	710000	711000*	789510
2004	Do not exceed the harvest control rule	825000	825000*	794066
2005	Do not exceed the harvest control rule	890000	1000000*	1003243
2006	Do not exceed the harvest control rule	732000	967000*	968958
2007	Do not exceed the harvest control rule	1280000	1280000	1266993
2008	Do not exceed the harvest control rule	1518000	1518000	1545656
2009	Do not exceed the harvest control rule	1643000	1643000	1687371
2010	Do not exceed the harvest control rule	1483000	1483000	1457015
2011	See scenarios in the 2010 advice	988000-1170000	988000	992997
2012	Follow the management plan	833000	833000	826000
2013	Follow the management plan	619000	692000*	684743
2014	Follow the management plan	418487	436893*	461306
2015	Follow the management plan	283013	328206*	328740
2016	Follow the management plan	≤ 316876	376612*	383174
2017	Follow the management plan	≤ 437364**	805142*	721566
2018	Follow the management plan	≤ 384197	546448*	592899

Year	ICES advice	Catch corresponding to advice	Sum of agreed quotas	ICES catch
2019	Follow the management strategy, F _{mgt} = 0.14 and B _{mgt} = 3.184 million tonnes	≤ 588562	773750*	777165
2020	Follow the management strategy, F _{mgt} = 0.14 and B _{mgt} = 3.184 million tonnes	≤ 525594	693915*	720937
2021	Follow the management strategy, F _{mgt} = 0.14 and B _{mgt} = 3.184 million tonnes	≤ 651033	881097*	851813
2022	Follow the management strategy, F _{mgt} = 0.14 and B _{mgt} = 3.184 million tonnes	≤ 598588	827963*	
2023	Follow the management strategy, F _{mgt} = 0.14 and B _{mgt} = 3.184 million tonnes	≤ 511171		

* There was no agreement on the TAC; the number is the sum of the declared unilateral quotas from the individual parties.

** Value corrected in October 2017 (previously 646 075 tonnes).

Table 7Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Catches inside and
outside the NEAFC Regulatory Area (RA), as estimated by ICES, as well as total landings. Weights are in tonnes.

Year	Inside the NEAFC RA Outside the NEAFC RA		Total catches	Percentage inside the NEAFC RA
2019	281092	496073	777165	36
2020	95322	625615	720937	13
2021*	20347	738626	758972	2

* Without catches from the Russian Federation which did not report catches inside/outside the NEAFC RA for 2021. In the past, around 50% of Russian catches were taken inside the NEAFC RA.

History of the catch and landings

Table 8

Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Catch distribution by fleet in 2021 as estimated by ICES.

Catch (2021)	Lanc	Discards
851813 tonnes	48% purse seine	Discarding is considered to be negligible,
	851813	but some slippage is known to occur

Table 9

Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). History of commercial landings; ICES estimated values are presented for each country participating in the fishery. All weights are in tonnes.

by by by1910192019201920 <th></th> <th></th> <th>are in ton</th> <th>163.</th> <th></th>			are in ton	163.											
1987 108417 18889 - - - - - - - - - - - - - - - - - 1 127306 1988 18507 15123 -	Year	Norway	Russian Federation*	Denmark	Faroes	Iceland	Ireland	Netherlands	Greenland	UK	Germany	France	Poland	Sweden	Total
1987 108417 18889 - - - - - - - - - - - - - - - - - 1 127306 1988 18507 15123 -	1986	199256	26000	-	-	-	-	-	-	-	-	-	-	-	225256
1989 88707 15123	1987			-	-	-	-	-	-	-	-	-	-	-	127306
1989 88707 15123	1988			-	-	-	-	-	-	-	-	-	-	-	135301
1991 73683 11000	1989	88707	15123	-	-	-	-	-	-	-	-	-	-	-	103830
1992 91111 13337 <	1990	74604	11807	-	-	-	-	-	-	-	-	-	-	-	86411
1993 199771 32645 . <	1991	73683	11000	-	-	-	-	-	-	-	-	-	-	-	84683
1994 380771 74400 - 211 21146 - - - - - - - 479228 1995 52838 101987 30577 57084 174109 - 7969 2500 881 556 - - - 905501 1996 669061 11920 60681 52788 164957 19541 1964 - 46131 11978 - - 22424 1220283 1997 860963 168090 42252 20154 12877 12871 12871 1591 7003 605 - 14863 122311 1999 740640 157328 37010 55527 20381 2412 5871 - 1405 12354 12017 123543 120171 120171 1699 392 - 1402 3171 1276 3643 3017 - 126 9486 807795 2001 47776 115876	1992	91111	13337	-	-	-	-	-	-	-	-	-	-	-	104448
1995 529838 101987 30577 57084 174109 . 7969 2500 881 556 90501 1996 699161 119290 60681 52788 164957 19541 1964 . 46131 11978 . . 220233 1997 860963 168900 42429 55519 6213 12737 8694 . 5191 703 605 . 14265 12231 1998 740640 157328 37010 55527 20381 2412 5871 . 19207 . . 14057 123543 2000 143503 10994 32302 127197 1699 932 . 3428 3017 . 1226 9486 80779 2001 47773 122846 1414 2793 117910 1400 8678 . 9214 3371 . . 6431 7906 <	1993	199771	32645	-	-	-	-	-	-	-	-	-	-	-	232457
199669916111929060681527881649571954119664.4613111978222424122028319978609631689004429259987220154111798694.514961001500.1949914265071998743925124049355193551720338124125871.15971700360514057123433199974064015328370105552720338124125871140912371112071200071350016326134968686251860358939140912373314079140701207012001495031095424038341707769360706439.122315888077532003477753122861414427931171714098678348230176431	1994	380771	74400	-	2911	21146	-	-	-	-	-	-	-	-	479228
1997 860963 168900 44292 59987 220154 11179 8694 - 25149 6190 1500 - 19499 1426507 1998 743925 124049 35519 68136 197789 2437 12827 - 15971 7003 605 - 14863 1223131 1999 740640 157328 37010 55577 20381 2412 5871 - 14096 3298 - - 14095 3298 - 14749 120701 2001 48703 113763 18988 32302 12717 1699 9392 - 3482 3017 - 1226 9486 80795 2003 477573 12286 14144 27943 11710 1400 8678 - 9214 3371 - - 6431 789510 2004 477776 11586 2311 42771 10277 1408 4800 - <	1995	529838	101987	30577	57084	174109	-	7969	2500	881	556	-	-	-	905501
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200071350016326134968686251860358939140963298147491207201200149503610905424038341707769360706439-12230158898187661362002487233113763189983230212719716999392-34823017-12269486807795200347757312284614144279431179114008678-92143371643178951020044770761158762311142771102787111769518694810400697966790662005580804132099283686507115647-215171767660561680100324320065672371208361844963137157474469311625-1252995880-294696895820077790891624322911642511736264112976448971324460380043330012669932008961603193119311287426121760279032815538101973783380000168737120108711319472267928028120564806126693453241511113300016	1998	743925	124049	35519	68136	197789	2437	12827	-	15971	7003	605	-	14863	1223131
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2002487233113763189983230212719716999392-34823017-122694868077952003477573122846141442794311791014008678-921433716431789510200447707611587623111427711027871117369-18694810400-798679406620055808041320992836865071156467-21517-1223995880-294696895820065672371208361844963137157474469311625-1223995880433301264996895820077790891624322911642511736216111216237301234460380433300126993200896160319319311287426121760279328153810173783380001265932009101657210105323208508265479100142402137302547714452000145701520108711131994722679280281205648061266953453241511113300014570152011572641144282674053271151075727834834261404513296<	2000	713500	163261	34968	68625	186035	8939	-	-	14096	3298	-	-	14749	1207201
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20044770761158762311427711027871117369.18694810400.798679406620055808041320992836865071156467.2151717676.0.561.660.003243200656723712083618449631371574744693116252523.9958.802946.968958200777908916243422911642511736216411.2974.4897.13244.6038.0.4333.00.126699320089616031931193112874261.217602.7903.8155.8101.9737.8338.00.0.0.16873712019101667521010532320.8508.256791014.24021.3730.247714452.00.0.0.16873712010.87111.199472.26792.80281.20584.8061.26695.3453.24151.1133.00.0.0.14570152011.57741144428.26740.53271.15174.5727.8348.342614451.1133.0.0.0.2929972012.491005.144428.26740.53271.15174.5626.1788.3424.404.0.0.0.268642014.49105.1855.1636.1535.2660.	2002	487233	113763	18998	32302	127197	1699	9392	-	3482	3017	-	1226	9486	807795
20055808041320992836865071156467-21517176760561660100324320065672371208361844963137157474469311625-125239958800-2946968958200777908916243422911642511736216411297644897132446038043330012669932008961603193119311287426121760279032815538101977783380000168737120108711131994722679280281205848061266953453241511113300001457015201157264114442826740532711510745727834834261404513296000992997201249100511859521754361901209564813623714901231011945000992997201157264114442826740532711510745727834834261404513296000099299720124910051185952175436190120956481362371490123101194500023866672014263253602921251338529588287069175131084233669<	2003	477573	122846	14144	27943	117910	1400	8678	-	9214	3371	-	-	6431	789510
20065672371208361844963137157474469311625-125239958800-2946968958200777908916243422911642511736216411297644897132446038043330012669932008961603193119311287426121760279032815538101973783380001545656200910166752101053230850982654791001424021373025477144520001687371201087111319947226792802812058648061266953453241511113300014570152011572641144428267405327115107457278348342614045132960009929972012491005118595217543619012095648136237149012310119450009299720124910051185952175436190120956481362371490123101194500082600020133594587852117160105038907293815562611788834242440002387402014263253602921251338529582870691751310842336690	2004	477076	115876	23111	42771	102787	11	17369	-	1869	4810	400	-	7986	794066
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2011572641144428267405327115107457278348342614045132960.00.00.09929972012491005118595217543619012095648136237149012310119450.00.070582600020133594587852117160105038907293815562611788834242440.00.00.068474320142632536029212513385295882870691751310842336690.00.00.046130620151763214585391053303142625140052551243455526600.00.00.03287402016197501504551038444727504182048351917508403125820.00.00.03831742017389383911181903798170904003495667912569435852010.01.11155721566201833202864185170528206283393242842902465258219890.00.042559289920194305078436421207113945108045277551113190180141880.01327705771652020409436749361652310302998173270450603546143	2009	1016675	210105	32320	85098	265479	10014	24021	3730	25477	14452	0	0	0	1687371
2012 491005 118595 21754 36190 120956 4813 6237 1490 12310 11945 0.0 0.0 705 826000 2013 359458 78521 17160 105038 90729 3815 5626 11788 8342 4244 0.0 0.0 23 684743 2014 263253 60292 12513 38529 58828 706 9175 13108 4233 669 0.0 0.0 23 684743 2015 176321 45853 9105 33031 42625 1400 5255 12434 55 2660 0.0 0.0 0.0 328740 2016 197501 50455 10384 44777 50418 2048 3519 17508 4031 2582 0.0 0.0 0.0 383174 2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 0.	2010	871113	199472	26792	80281	205864	8061	26695	3453	24151	11133	0	0	0	1457015
2013 359458 78521 17160 105038 90729 3815 5626 11788 8342 4244 00 00 23 684743 2014 263253 60292 12513 38529 58828 706 9175 13108 4233 669 0 0 0 461306 2015 176321 45853 9105 33031 42625 1400 5255 12434 55 2660 00 0 0 383174 2016 197501 50455 10384 44727 50418 2048 3519 17508 4031 2582 0 0 0 383174 2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 0 1 1155 721566 2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 0 0	2011	572641	144428	26740	53271	151074	5727	8348	3426	14045	13296	0	0	0	992997
2014 263253 60292 12513 38529 58828 706 9175 13108 4233 6669 0 0 0 461306 2015 176321 45853 9105 33031 42625 1400 5255 12434 555 2660 00 00 328740 2016 197501 50455 10384 44727 50418 2048 3519 17508 4031 2582 00 00 00 383174 2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 00 11 1155 721566 2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 00 0 425 592899 2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 00 1327	2012	491005	118595	21754	36190	120956	4813	6237	1490	12310	11945	0	0	705	826000
2015 176321 45853 9105 33031 42625 1400 5255 12434 555 2660 00 00 00 328740 2016 197501 50455 10384 44727 50418 2048 3519 17508 4031 2582 00 00 00 383174 2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 00 10 1155 721566 2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 00 0 425 592899 2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 00 1327 705 777165 2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2696 0	2013	359458	78521	17160	105038	90729	3815	5626	11788	8342	4244	0	0	23	684743
2016 197501 50455 10384 44727 50418 2048 3519 17508 4031 2582 0.0 0.0 0.83174 2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 0.0 1 1155 721566 2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 0.0 0.0 425 592899 2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 0.0 1327 705 777165 2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2969 0.0 1352 3065 720937	2014	263253	60292	12513	38529	58828	706	9175	13108	4233	669	0	0	0	461306
2017 389383 91118 19037 98170 90400 3495 6679 12569 4358 5201 0 1 1155 721566 2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 0 0 425 592899 2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 0 1327 705 777165 2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2969 0 1352 3065 720937	2015	176321	45853	9105	33031	42625	1400	5255	12434	55	2660	0	0	0	328740
2018 332028 64185 17052 82062 83393 2428 4290 2465 2582 1989 0 0 425 592899 2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 0 1327 705 777165 2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2069 0 1352 3065 720937	2016	197501	50455	10384	44727	50418	2048	3519	17508	4031	2582	0	0	0	383174
2019 430507 84364 21207 113945 108045 2775 5111 3190 1801 4188 0 1327 705 777165 2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2969 0 1352 3065 720937	2017	389383	91118	19037	98170	90400	3495	6679	12569	4358	5201	0	1	1155	721566
2020 409436 74936 16523 103029 98173 2704 5060 3546 143 2969 0 1352 3065 720937	2018	332028	64185	17052	82062	83393	2428	4290	2465	2582	1989	0	0	425	592899
	2019		84364	21207	113945	108045	2775	5111	3190	1801	4188	0	1327	705	777165
2021 489632 92841^ 15854 114291 1793 10939 6456 0 3365 0 1242 1101 851813	2020	409436	74936	16523	103029	98173	2704	5060	3546	143	2969	0	1352	3065	720937
	2021	489632	92841^	15854	114291	114299	1793	10939	6456	0	3365	0	1242	1101	851813

* USSR before 1992

^ From ICES preliminary catch database

Summary of the assessment

Table 10

Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Assessment summary. All weights are in tonnes and recruitment in thousands. F is the fishing mortality weighted by population numbers.

	Re	cruitment (age		SSB	Total	F (ages 5–12	(+)		
Year	Low	Value	, High	Low	Value	High	catch	Low	Value	, High
1988	349000	672000	996000	1863000	2126000	2389000	135301	0.026	0.042	0.058
1989	693000	1173000	1653000	2881000	3287000	3694000	103830	0.0190	0.033	0.046
1990	3320000	4339000	5358000	3131000	3562000	3993000	86411	0.0170	0.029	0.042
1991	9592000	11466000	13340000	2937000	3340000	3743000	84683	0.0180	0.031	0.044
1992	16058000	18683000	21308000	2982000	3368000	3753000	104448	0.023	0.039	0.054
1993	44859000	50101000	55342000	2993000	3340000	3687000	232457	0.053	0.076	0.100
1994	54096000	59953000	65811000	3125000	3471000	3817000	479228	0.099	0.129	0.160
1995	13419000	15751000	18082000	3205000	3536000	3868000	905501	0.179	0.22	0.26
1996	4601000	5722000	6843000	3787000	4118000	4450000	1220283	0.162	0.192	0.22
1997	1587000	2152000	2716000	4984000	5374000	5765000	1426507	0.166	0.193	0.22
1998	9163000	10941000	12719000	5526000	5954000	6383000	1223131	0.158	0.186	0.21
1999	5246000	6461000	7677000	5403000	5854000	6304000	1235433	0.180	0.21	0.25
2000	28751000	32626000	36501000	4458000	4873000	5287000	1207201	0.22	0.26	0.30
2001	25328000	28927000	32527000	3669000	4043000	4416000	766136	0.167	0.20	0.24
2002	9465000	11339000	13212000	3218000	3565000	3913000	807795	0.183	0.22	0.27
2003	5399000	6678000	7956000	3806000	4189000	4571000	789510	0.125	0.153	0.181
2004	51584000	57658000	63732000	4805000	5269000	5734000	794066	0.105	0.129	0.152
2005	21072000	24428000	27784000	4898000	5389000	5880000	1003243	0.143	0.174	0.20
2006	37840000	43044000	48247000	4868000	5350000	5832000	968958	0.145	0.178	0.21
2007	9976000	12127000	14277000	6294000	6882000	7471000	1266993	0.130	0.157	0.184
2008	14863000	17706000	20549000	6346000	6965000	7584000	1545656	0.169	0.20	0.24
2009	5681000	7109000	8536000	6285000	6937000	7588000	1687373	0.174	0.21	0.24
2010	3977000	5074000	6171000	5533000	6154000	6775000	1457014	0.178	0.22	0.25
2011	12785000	15315000	17846000	5198000	5824000	6450000	992998	0.129	0.158	0.188
2012	4504000	5658000	6812000	5034000	5673000	6312000	825999	0.115	0.142	0.169
2013	6760000	8319000	9879000	4687000	5307000	5926000	684743	0.097	0.122	0.147
2014	4300000	5491000	6681000	4506000	5123000	5741000	461306	0.067	0.086	0.105
2015	14504000	17709000	20913000	4183000	4772000	5360000	328740	0.052	0.068	0.085
2016	5588000	7341000	9094000	3690000	4220000	4750000	383174	0.066	0.086	0.106
2017	3113000	4432000	5752000	3585000	4091000	4596000	721566	0.127	0.162	0.196
2018	30907000	39850000	48793000	3590000	4110000	4630000	592899	0.100	0.129	0.157
2019	3066000	5149000	7231000	3406000	3934000	4463000	777165	0.147	0.187	0.23
2020	1958000	4358000	6757000	2891000	3393000	3895000	720937	0.144	0.190	0.24
2021	148000	1958000	3768000	3304000	3930000	4555000	851813	0.127	0.168	0.21
2022		10671000		3134000	3867000	4600000				

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Download the stock assessment data and figures.

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