

NORSK-ÍSLENSK VORGOTSSÍLD

NORWEGIAN SPRING-SPAWNING HERRING

Clupea harengus

RÁÐGJÖF – ADVICE

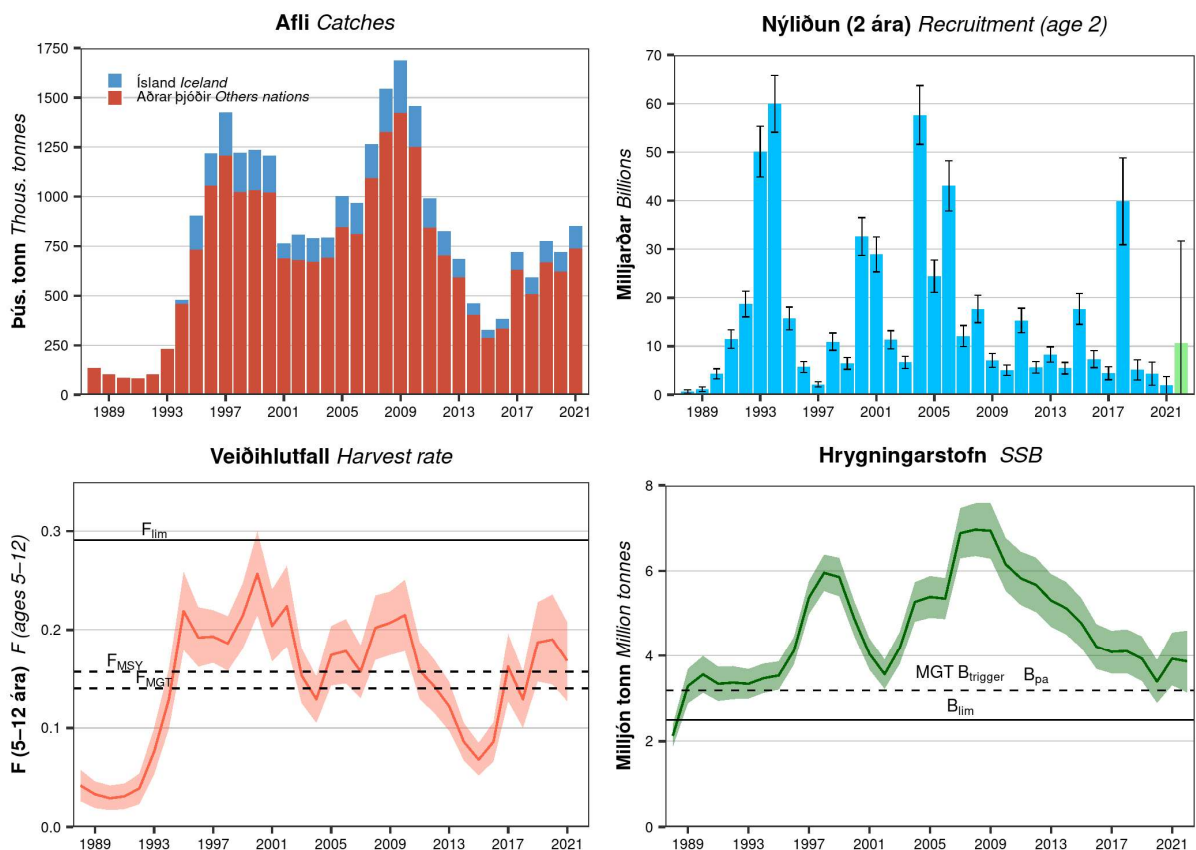
Alþjóðahafrannsóknaráðið (ICES) ráðleggur í samræmi við langtímanýtingarstefnu samþykka af Evrópusambandinu, Færeyjum, Íslandi, Noregi og Rússlandi að afli ársins 2023 verði ekki meiri en 511 171 tonn.

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.

STOFNÞRÓUN – STOCK DEVELOPMENT

Veiðidánartala stofnsins er metin yfir kjörsókn (F_{MSY}) og er á milli F_{pa} og F_{lim} . Stærð hrygningarstofns er yfir aðgerðarmörkum (MGT $B_{trigger}$), gátmörkum (B_{pa}) og varúðarmörkum (B_{lim}).

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



Norsk-íslensk vorgotssíld. Afli, nýliðun 2 ára, veiðidánartala og hrygningarstofn. Stofnmat keyrt frá 1988, eftir að stofn tók að stækka aftur eftir hrun á sjöunda áratug síðustu aldar.

Norwegian spring-spawning herring. Catches, recruitment at age 2, fishing mortality and spawning stock biomass (SSB). Assessment run starts in 1988, when the stock has started to rebuild after collapse in the 1960s.

STOFNMAT OG GÁTMÖRK – BASIS OF ASSESSEMENT AND REFERENCE POINTS

Forsendur ráðgjafar <i>Basis of the advice</i>	Aflaregla <i>Management strategy</i>
Aflaregla <i>Management strategy</i>	Langtímaflaregla sem var samþykkt árið 2018 (Anon. 2018). <i>A long-term management strategy agreed in 2018 (Anon. 2018).</i>
Stofnmat <i>Assessment type</i>	Aldursafllíkan (XSAM; ICES 2016). <i>Statistical age disaggregated assessment model (XSAM; ICES, 2016).</i>
Inntaksgögn <i>Input data</i>	Stofnmatið nær til árána 1988–2022: aldursgreindur afli (stofnþyngdir byggðar á þyngd eftir aldri úr leiðöngrum, og frá 2009 á sýnatöku úr afla). Þrjár leiðangursvísitölur: Norskur bergmálsleiðangur á hrygningarsvæðum í febrúar/mars (NASF, 1994–2005, 2015–2022); Alþjóðlegur vistfræðileiðangur á Austurdjúpi í maí (IESNS; A3675) sem nær yfir fullorðna hluta stofnsins í Noregshafi (1996–2022) og tveggja ára síld í Barentshafi árin 1991–2019 og 2021 (enginn leiðangur var farinn 2020 og 2022). Kynþroskahlutfalli eftir aldri háð stærð árgangs. Fastur náttúrulegur dauði ákvarðaður frá eldri gögnum (settur sem 0.9 fyrir tveggja ára og 0.15 fyrir eldri en tveggja ára). <i>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, 1994–2005, 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 1991–2019 and 2021 (no survey was conducted in 2020 and 2022). Proportion mature depends on year-class size. Natural mortalities are fixed values from historical analyses (age 2 = 0.9; ages greater than 2 = 0.15).</i>

Nálgun <i>Framework</i>	Viðmiðunarmörk <i>Reference point</i>	Gildi <i>Value</i>	Grundvöllur <i>Technical Basis</i>	Heimild <i>Source</i>
MSY nálgun <i>MSY approach</i>	MSY $B_{trigger}$	3.184	B_{pa} ; í milljónum tonna B_{pa} ; in million tonnes	ICES (2018b, 2018c)
	F_{MSY}	0.157	Slembihermanir byggðar á Beverton-Holt, skiptri aðhvarfsgreiningu og Ricker stofn-nýliðunar samböndum, en er að hámarki jafnt $F_{P0.05}$ <i>Stochastic simulations with Beverton-Holt, segmented regression, and Ricker stock-recruitment relationships, capped to $F_{P0.05}$</i>	ICES (2018a)
Varúðarnálgun <i>Precautionary approach</i>	B_{lim}	2.5	MBAL (samþykkt 1998); í milljónum tonna <i>MBAL (accepted in 1998); in million tonnes</i>	ICES (2018b, 2018c)
	B_{pa}	3.184	Byggt á B_{lim} og stofnmatsóvissu. $B_{lim} \times \exp(1.645 \times \sigma)$, með $\sigma = 0.147$; í milljónum tonna <i>Based on B_{lim} and assessment uncertainties. $B_{lim} \times \exp(1.645 \times \sigma)$, with $\sigma = 0.147$; in million tonnes</i>	ICES (2018b, 2018c)
	F_{lim}	0.291	Mismunandi sviðsmyndir metnar með slembinni nýliðun: F gildið samsvarar 50% líkum á $SSB < B_{lim}$ <i>Equilibrium scenarios with stochastic recruitment: F value corresponding to 50% probability of ($SSB < B_{lim}$)</i>	ICES (2018a)
	F_{pa}	0.157	$F_{P0.05}$; F sem leiðir til $SSB \geq B_{lim}$ með 95% líkum <i>$F_{P0.05}$; the F that leads to $SSB \geq B_{lim}$ with 95% probability</i>	ICES (2018a, 2021a)
Langtímanýtingarstefna Evrópusambandsins, Færeyja, Íslands, Noregs og Rússlands <i>EU-Faroes-Iceland-Norway-Russian Federation long-term management strategy</i>	SSB_{mgt_lower}	2.5	Aflaregla byggð á varúðarnálgun metin með nýtingastefnuhermunum. Stærð hrygningastofns í milljónum tonna. <i>Precautionary HCR evaluated by MSE. SSB values in million tonnes</i>	ICES (2018a)
	SSB_{mgt}	3.184		
	F_{mgt_lower}	0.05		
	F_{mgt}	0.14		

HORFUR – PROSPECTS

Gert er ráð fyrir að 2016 árgangurinn verði ráðandi í aflanum árið 2023 og árgangar þar á eftir eru metnir slakir. *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.*

Norsk-íslensk síld. Áætluð þróun stærðar hrygningarstofns (tonn) miðað við veiðar samkvæmt aflareglu.

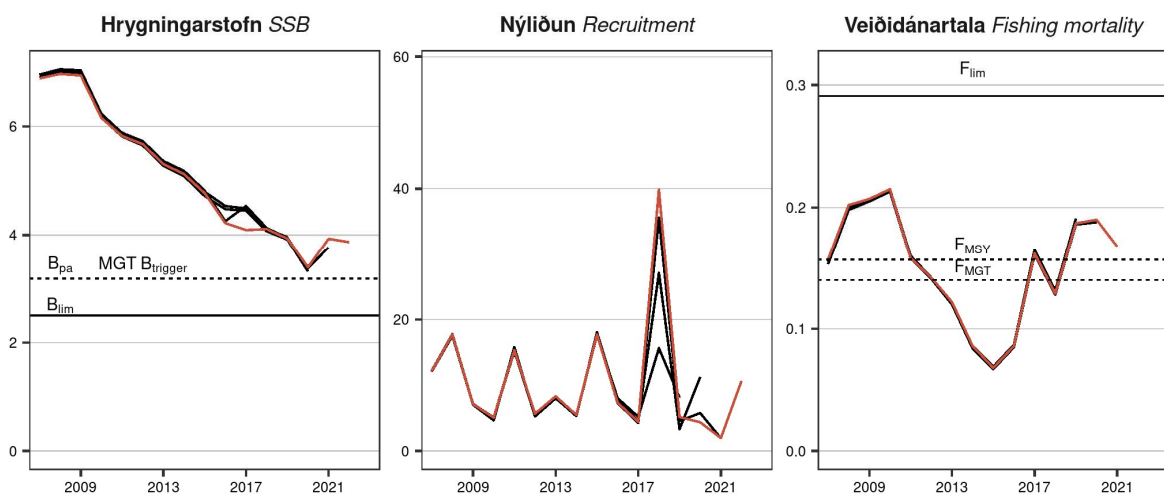
Norwegian spring-spawning herring. Projection of SSB (tonnes) based on adopted management strategy.

2022		2023			2024
Áætlaður afli <i>Estimated catches</i>	F	Aflamark skv. aflareglu <i>TAC based on management strategy</i>	Hrygn. stofn <i>SSB</i>	F	Hrygn. stofn <i>SSB</i>
827 963	0.192	511 171	3 531 608	0.14	3 147 970

GÆÐI STOFNMATS – QUALITY OF THE ASSESSEMENT

Áætluð stærð hrygningarstofns og veiðidauði eru almennt í samræmi við stofnmat síðasta árs. Einu aflagögnin frá Rússlandi fyrir árið 2021 voru heildarafli eftir ICES svæðum úr bráðabirgðaaflagrunni ICES, og engin Rússnesk aflasýni voru tiltæk. Sögulega séð hefur bráðabirgðaafli verið sambærilegur við áætlaðan lokaafli ICES. Sýni frá öðrum fiskveiðiþjóðum sem voru á veiðum á sömu svæðum voru talin nothæf við mat á fjölda og þyngd eftir aldri fyrir Rússneska aflann. Barentshafsleiðangurinn í maí var ekki farinn árið 2022. Engar leiðangursvísitölur eru því til staðar fyrir 2 ára og því var nýliðun ákvörðuð sem miðgildi slembiúrtaks yfir árin 1988–2021 og notað í framreikningum á stofnstærð. Þetta hefur hins vegar engin áhrif á ráðlagðan afla.

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 were 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 no impact on the advised catches.



Norsk-íslensk vorgotssíld. Samanburður á stofnmati árána 2019–2022 (rauð lína: 2022).

Norwegian spring-spawning herring. Current assessment (red line: 2022) compared with previous estimates (2019–2021).

AÐRAR UPPLÝSINGAR – OTHER INFORMATION

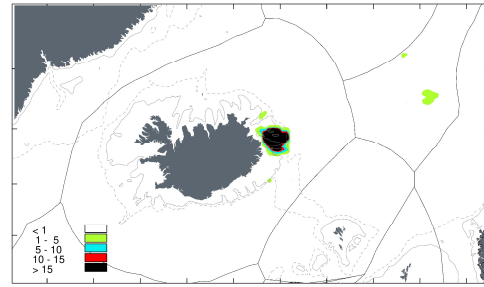
Afli íslenskra skipa úr norsk-íslenska síldarstofninum árið 2021 var 114 299 tonn og var allur veiddur í flotvörpu. Rúmlega 94% aflans fékkst innan íslenskrar lögsögu og 6% á alþjóða hafsvæðinu. veiðar úr stofninum fóru fram frá júní til nóvember og var mest veitt í september (48%). Heildarafli allra þjóða úr stofninum árið 2021 var 851 813 tonn.

Veiðar úr stofninum hafa verið umfram ráðgjöf síðan 2013. Ráðgjöfin byggir á fiskveiðidauða samkvæmt langtímanýtingarstefnu sem samþykkt var af Evrópu-sambandinu, Færeyjum, Íslandi, Noregi og Rússlandi.

Þar er ekki gert ráð fyrir frávikum frá ráðlögðu aflamarki sem er hinsvegar reyndin eins og sjá má af samanlögðum kvóta ríkjanna. Við prófanir á aflareglunni (ICES, 2016) var ekki tekið tillit til að afli væri kerfisbundið umfram ráðgjöf samkvæmt aflareglu. Við núverandi umframveiðar uppfyllir aflareglan mögulega ekki varúðarsjónarmið. Þetta getur leitt til aukinnar áhættu á að hrygningarstofnstærð fari undir varúðarmörk, sem leiðir til minni afkrstrar til lengri tíma litið, og að nýting stofnsins verði ekki lengur sjálfbær.

The Icelandic catch of Norwegian spring-spawning herring in 2021 was 114 299 tonnes, all caught with pelagic trawl. About 94% of the catches were taken within the Icelandic EEZ and 6% in international waters. The fishery took place in June to November with the highest catches in September (48%). The total catch of all nations in 2022 amounted to 851 813 tonnes.

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 utilisation of the resource.



Norsk-íslensk síld. Veiðisvæði íslenskra skipa árið 2021 (t/sjm²)
NSS herring. Fishing grounds of the Icelandic fleet in 2021 (t/nmi²)

RÁÐGJÖF, AFLAMARK OG AFLI – ADVICE, TAC AND CATCH

Norsk-íslensk síld. Tillögur um hámarksaflla, aflamark samkvæmt ákvörðun stjórnvalda og afli (tonn).

Norwegian spring-spawning herring. Recommended TAC, national TAC, and catches (tonnes).

Ár Year	Tillaga ICES Rec. TAC ICES	Aflamark Ísland Iceland national TAC	Afli Íslendinga Catches Iceland	Aflamark allra þjóða Total national TAC	Afli alls Total catch
2011	988 000–1 170 000	145 000	151 074	988 000	992 997
2012	833 000	121 000	120 956	833 000	826 000
2013	619 000	90 000	90 729	692 000*	684 743
2014	418 487	61 000	58 828	436 893*	461 306
2015	283 013	41 000	42 626	328 206*	328 740
2016	≤ 316 876	46 000	50 186	376 612*	383 174
2017	≤ 437 364**	103 000	90 400	805 142*	721 566
2018	≤ 384 197	72 428	83 392	546 448*	592 899
2019	≤ 588 562	102 174	108 046	773 750*	777 165
2020	≤ 525 594	91 243	98 173	693 915*	720 937
2021	≤ 651 033	117 707	114 299	881 097*	851 813
2022	≤ 598 588	108 225		827 963*	
2023	≤ 511 171				

* Ekkert samkomulag um heildaraflamark; því er sýnd summan af aflamarki allra þjóða - *There was no agreement on the TAC; the number is the sum of autonomous quotas from the individual parties.* ** Fyrri ráðgjöf upp á 646 075 þús. tonn var endurskoðuð í nóvember 2017 eftir að villa í stofnmati uppgötvaðist. - *The advice was revised in November 2017 from 646 075 tonnes after an error in the assessment was noted.*

HEIMILDIR OG ÍTAREFNI – REFERENCES AND FURTHER READING

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ICES. 2016. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA), 29 February–4 March 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:34. 106 pp. <https://doi.org/10.17895/ices.pub.5581>

ICES. 2018a. Report of the Workshop on a long-term management strategy for Norwegian Spring-spawning herring (WKNSSHME), 26–27 August 2018, Torshavn, Faroe Islands. ICES CM 2018/ACOM:53. 113 pp. <https://doi.org/10.17895/ices.pub.5583>. Annex 9 is available separately on [ICES website](https://www.ices.dk).

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ICES. 2022b. Working Group on Widely Distributed Stocks (WGWIDE). ICES Scientific Reports. 4:73. 922 pp. <http://doi.org/10.17895/ices.pub.21088804>

Recommended citation: ICES. 2022. Herring (*Clupea harengus*) in subareas 1, 2, 5 and divisions 4.a and 14.a, Norwegian spring-spawning herring (the Northeast Atlantic and Arctic Ocean). *In* Report of the ICES Advisory Committee, 2022. ICES Advice 2022, her.27.1-24a514a. <https://doi.org/10.17895/ices.advice.19772380>