KOLMUNNI – BLUE WHITING

Micromesistius poutassou

RÁÐGJÖF – *ADVICE*

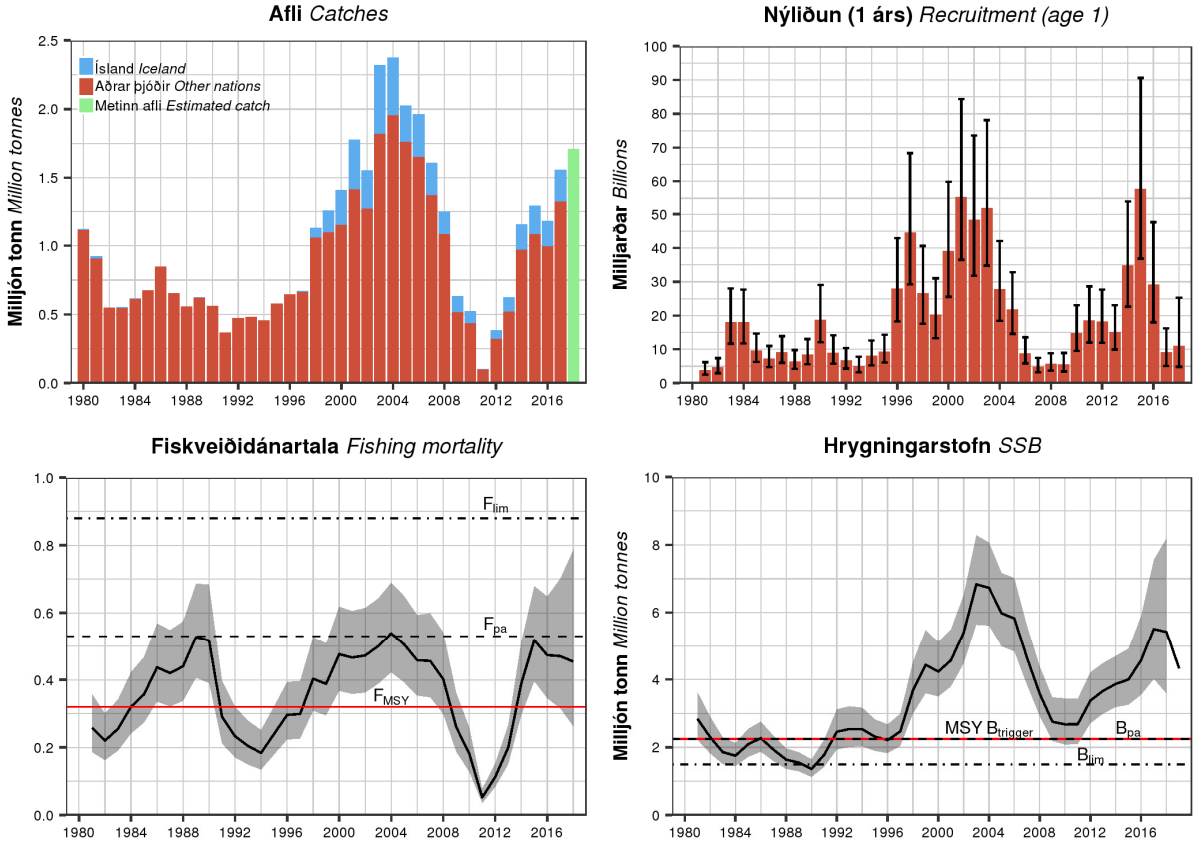
Alþjóðahafrannsóknaráðið (ICES) leggur til, í samræmi við langtímanýtingarstefnu, að afli ársins 2019 verði ekki meiri en 1 143 629 tonn.

ICES advises that when the long-term management strategy is applied, catches in the year 2019 should be no more than 1 143 629 *tonnes.*

STOFNÞRÓUN – *STOCK DEVELOPMENT*

Frá árinu 2011 hefur veiðidánartala hækkað og hefur frá árinu 2014 verið yfir þeim fiskveiðidauða sem gefur hámarksafrakstur til lengri tíma litið (F_{MSY}). Hrygningarstofninn hefur minnkað frá árinu 2017 en er enn vel ofan við aðgerðamörk (MSY $B_{trigger}$). Árgangar 2016 og 2017 eru metnir undir meðallagi en árgangar 2013–2015 voru stórir.

Fishing mortality (F) has increased from a historical low in 2011 to above FMSY since 2014. Spawning-stock biomass (SSB) decreased since 2017 but remains well above MSY Btrigger. Recruitments (R) in 2017 and 2018 are estimated to be low, following a period of high recruitments.



Kolmunni. Heildarafli og afli Íslendinga, nýliðun 1 árs, veiðidánartala og stærð hrygningarstofns.
Blue whiting. *Total and Icelandic catches, recruitment at age 1, fishing mortality and spawning stock biomass (SSB).*

STOFNMAT OG VIÐMIÐUNARMÖRK – *BASIS OF ASSESSEMENT AND REFERENCE POINTS*

Forsendur ráðgjafar *Basis of the advice*	Langtímaaflaregla *Long-term management strategy*
Aflaregla *Management plan*	Langtímaaflaregla samþykkt af Evrópusambandinu, Færeyjum, Íslandi og Noregi 2016 (Anon 2016). Aðgerðamörk í aflareglu standast MSY viðmið ICES (ICES 2016) *A long-term management strategy was agreed by the European Union, the Faroe Islands, Iceland and Norway in 2016 (Anon 2016). ICES evaluated the strategy and found it to be precautionary (ICES 2016)*
Stofnmat *Assessment type*	Aldurs-afla líkan *Age-based analytical assessment (SAM; Berg and Nielsen, 2016) that uses catches for the model and the forecast*
Inntaksgögn *Input data*	Aldursgreindur afli og aldursgreindar fjöldavísitölur úr stofnmælingum *Catch in numbers and age disaggregated index from an acoustic survey*

Nálgun *Framework*	Viðmiðunarmörk *Reference point*	Gildi *Value*	Grundvöllur *Basis*
Aflaregla *Management plan*	MGT SSB_{lower}	1 500 000 t	B_{lim}
	MGT SSB	2 250 000 t	B_{pa}
	MGT F_{lower}	0.05	Valið lágt gildi fyrir F *Arbitrary low F*
	MGT F	0.32	$F = F_{MSY}$
MSY nálgun *MSY approach*	MSY $B_{trigger}$	2 250 000 t	B_{pa}
	F_{MSY}	0.32	Slembireikningar í aflaregluhermun með ákveðnu sambandi milli hrygningarstofns og nýliðunar *Stochastic simulations with segmented regression stock–recruitment relationship*
Varúðarnálgun *Precautionary approach*	B_{lim}	1 500 000 t	B_{loss}. Hrygningarstofn með miklum líkum á skertri nýliðun *B_{loss}. SSB with high probability of impaired recruitment*
	B_{pa}	2 250 000 t	$B_{lim} * \exp(1.645 \times \sigma)$, with $\sigma = 0.246$
	F_{lim}	0.88	Veiðidánartala sem leiðir til þess að hrygningarstofn er yfir B_{lim} með 50% líkum *Equilibrium F which will maintain the stock above B_{lim} with a 50% probability*
	F_{pa}	0.53	5% líkur á að veiðidánartala sé yfir F_{lim} *5% probability that true F is above F_{lim}* *$F_{lim} * exp(-1.645 \times \sigma)$, with $\sigma = 0.299$*

HORFUR – *PROSPECTS*

Samkvæmt stofnmatslíkani er 2017 árgangurinn lítill, sem er í samræmi við niðurstöður rannsóknaleiðangra sem ekki eru notaðar í líkaninu. Stofninn muni því líklega minnka næstu árin þegar árgangar 2016 og 2017 koma að fullu inn í veiðistofninn.

The assessment estimates a low 2017 year class, which is confirmed by a series of surveys not used in the assessment model. This is likely to result in a decrease in stock size, and a reduction in fishing opportunities when the 2016 and the 2017 year classes are fully selected in the fishery from 2020.

Kolmunni. Áætluð þróun stærðar hrygningarstofns (tonn) miðað við afla samkvæmt langtímaaflareglu.

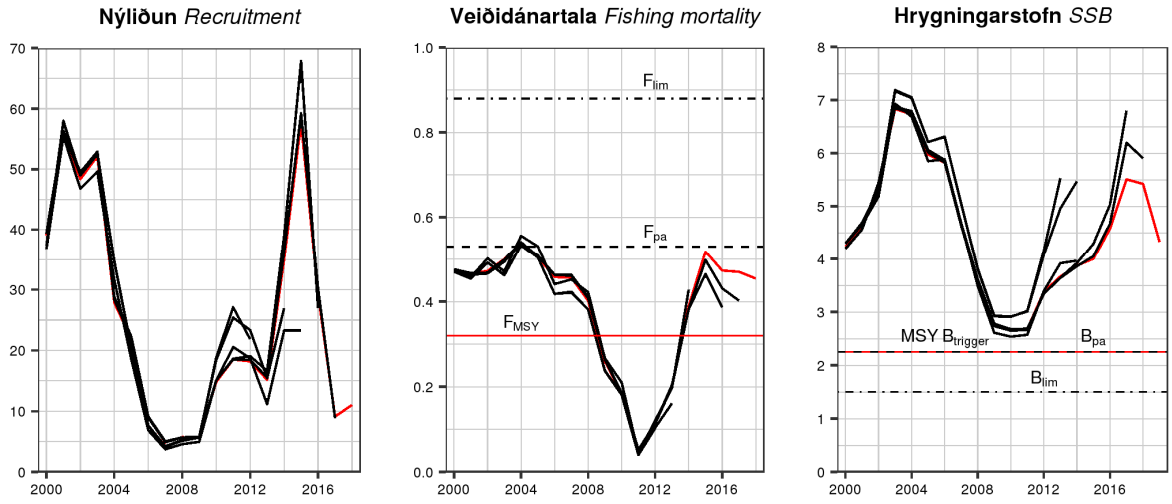
Blue whiting. *Projection of SSB (tonnes) based on adopted long-term management strategy.*

2018		2019			2020
Áætlaður afli *Estimated catches*	F	Aflamark skv. aflareglu *TAC based on management strategy*	Hrygn. stofn *SSB*	F	Hrygn. stofn *SSB*
1 712 874	0.45	1 143 629	4 326 857	0.32	3 752 236

GÆÐI STOFNMATS – *QUALITY OF THE ASSESSMENT*

Frá árinu 2016 hafa bráðabirgðatölur fyrir aldursgreind aflagögn frá tímabilinu janúar til júní líðandi árs verið notuð í stofnmat en yfir 90% af afla 3 ára og eldri kolmunna er tekinn fyrri hluta árs. Þetta var gert til að draga úr árabreytileika í stofnmati sem stafaði af miklum sveiflum milli ára í bergmálsmælingum á hrygningarstofni að vori. Breytingar á stofnmati milli ára eiga sér þó enn stað og þannig hefur stærð hrygningarstofns verið ofmetin og fiskveiðidauði vanmetinn síðustu tvö ár.

Since 2016, the assessment has used a preliminary estimate of catch-at-age in the year in which the assessment is carried out to supplement information from the acoustic survey conducted in the spring. In most recent years more than 90% of the annual catches of the age 3+ fish are consistently taken in the first half year, which makes it reasonable to estimate the total annual catch-at-age from preliminary first semester data. This is expected to provide an assessment that is less prone to the year effects sometimes observed in the survey index from the International Blue Whiting Spawning Stock Survey (IBWSS). However, there are annual changes in assessment results. SSB has been overestimated and F underestimated in the last two years.

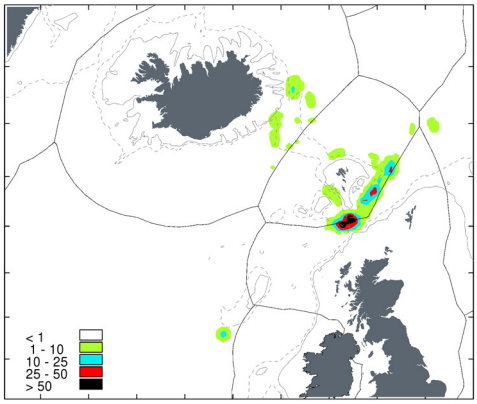


Kolmunni. Samanburður á stofnmati áranna 2014–2018 (rauð lína: 2018).
Blue whiting. *Current assessment (red line) compared with previous estimates (2014–2017).*

VEIÐAR ÍSLENDINGA – *THE ICELANDIC FISHERY*

Kolmunnaafli íslenskra skipa árið 2017 var 228 935 tonn sem er 22% aukning frá 2016. Mest var veitt innan færeyskrar lögsögu, rúm 195 000 tonn. Um 11% aflans fékkst innan íslenskrar lögsögu, sem er svipað og verið hefur frá árinu 2006. Til samanburðar var um 60% afla íslenskra skipa veiddur innan íslenskrar lögsögu á árunum 1997–2005. Heildarafli úr stofninum árið 2017 var 1 558 061 tonn sem er 32% aukning frá 2016.

Icelandic landings of blue whiting in 2017 were 228 935 tonnes which is 22% more than in 2016. The bulk of the catches were taken within the EEZ of Faroes, around 195 000 tonnes. Around 11% of catches were caught within the Icelandic EEZ which is similar as in 2006–2015. In 1997–2005, on average 60% were caught within the Icelandic EEZ. The total blue whiting landings (all nations) in 2017 were 1 558 061 tonnes which is a 32% increase compared to 2016.



Kolmunni. Veiðisvæði íslenskra skipa árið 2017 (t/sjm^2)
Blue whiting. *Fishing grounds of the Icelandic fleet in 2017 (t/nmi^2)*

AÐRAR UPPLÝSINGAR – *OTHER INFORMATION*

Norðmenn, Rússar, Færeyingar og Evrópusambandið hafa síðan 2004 mælt stærð hrygningarstofns kolmunna með bergmálsmælingum á hrygningarstöðvunum vestan Bretlandseyja og sunnan Færeyja í mars–apríl. Þetta er eini leiðangurinn sem notaður er til samstillingar í stofnmatslíkaninu.

Ekki hefur náðst samkomulag milli þeirra þjóða sem stunda veiðar úr stofninum um skiptingu aflamarks og hafa veiðar verið langt umfram ráðgjöf ICES.

The International Blue Whiting Spawning Stock Survey has been carried out annually since 2004 on the spawning grounds west of the British Isles in March–April. The survey is carried out by Norway, Russia, the Faroe Islands and the EU. This is the only survey providing data for tuning in the analytical assessment.

There is no agreement between the participating nations about catch allocation. This has resulted in catches exceeding the advice given by ICES.

RÁÐGJÖF, AFLAMARK OG AFLI – *ADVICE, TAC AND CATCH*

Kolmunni. Tillögur um hámarksafla, aflamark samkvæmt ákvörðun stjórnvalda og afli (tonn).
Blue whiting. *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	40 100–223 000	6 507	5 887	40 000	103 620
2012	391 000	63 447	63 056	391 000	384 021
2013	643 000	104 339	104 918	643 000	628 169
2014	948 950	194 722	182 879	1 200 000	1 155 279
2015	839 886	202 958	214 870	1 260 000	1 396 244
2016	≤ 776 391	163 570	186 914	1 147 000	1 183 187
2017	≤ 1 342 330	264 000	228 935	1 675 400	1 558 061
2018	≤ 1 387 872	275 971		1 712 874	
2019	≤ 1 143 629				

*Reglugerðir um stjórn kolmunnaveiða íslenskra skipa - *Regulations about blue whiting TAC of Icelandic vessels*

HEIMILDIR OG ÍTAREFNI – *REFERENCES AND FURTHER READING*

Anon. 2016. Agreed record of conclusions of fisheries consultations between the European Union, the Faroe Islands, Iceland and Norway on the management of blue whiting in the north-east Atlantic in 2017. 6 pp. https://d3b1dqw2kzexi.cloudfront.net/media/8742/agreed-record-blue-whiting-2017.pdf

Berg, C. W., and Nielsen, A. 2016. Accounting for correlated observations in an age-based state–space stock assessment model. ICES Journal of Marine Science, 73: 1788–1797. doi: 10.1093/icesjms/fsw046

ICES. 2016. Report of the Workshop on Blue Whiting (*Micromesistius poutassou*) Long Term Management Strategy Evaluation (WKBWMS), 30 August 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:53. 104 pp.

ICES. 2018a. Blue whiting (*Micromesistius poutassou*) in subareas 1-9, 12, and 14 (Northeast Atlantic and adjacent waters). ICES Advice on fishing opportunities, catch, and effort. Ecoregions of the Northeast Atlantic and Arctic Ocean. whb.27.1-91214.

ICES. 2018b. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 28 August–3 September 2018, The Faroe Marine Research Institute, Tórshavn, Faroe Islands. ICES CM 2018/ACOM:23.