KOLMUNNI – BLUE WHITING
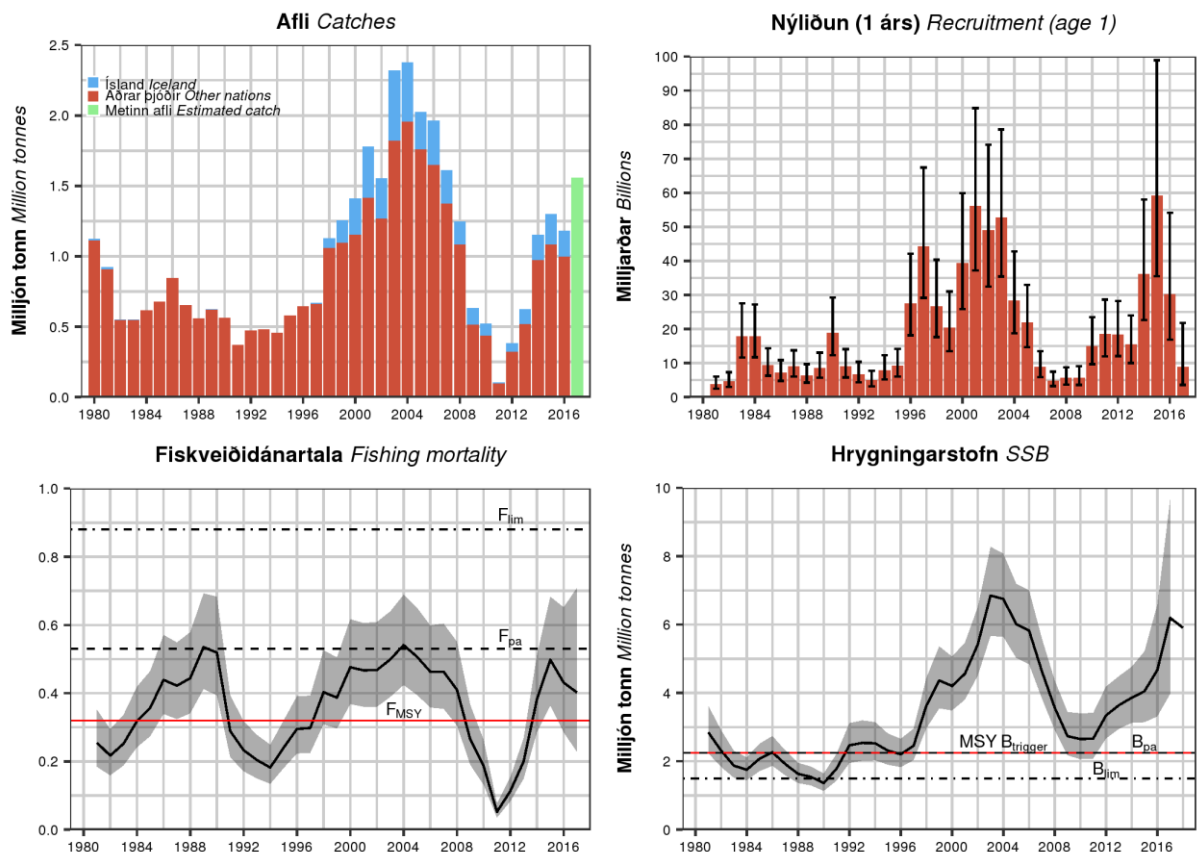## *Micromesistius poutassou*

RÁÐGJÖF – *ADVICE*

Alþjóðahafrannsóknaráðið (ICES) leggur til, í samræmi við langtímanýtingarstefnu, að afli ársins 2018 verði ekki meiri en 1 387 872 tonn.

ICES advises that when the long-term management strategy is applied, catches in the year 2018 should be no more than 1 387 872 tonnes.

STOFNÞRÓUN – *STOCK DEVELOPMENT*

Veiðidánartala 2016 lækkaði frá fyrra ári en dánartalan er enn hærri en sá fiskveiðidauði sem gefur hámarksafrakstur til lengri tíma litið (F_{MSY}). Hrygningarstofninn stækkaði á árunum 2010–2016 og er ofan við aðgerðamörk (MSY $B_{trigger}$) eins og verið hefur frá 1997. Nýliðun 2017 er metin undir meðallagi sem er breyting frá árunum 2010–2016 (ICES 2017a).

Fishing mortality (F) declined in 2016 compared to 2015 but remains above F_{MSY}. Spawning stock biomass (SSB) increased from 2010 to 2016 and remains above MSY $B_{trigger}$ as it has been since 1996. Recruitment in 2017 is estimated to be below the long-term average, after seven years of above average recruitment (ICES 2017a).

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. Aðgerðamörk í aflareglu standast MSY viðmið ICES (ICES 2017a) *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 2017a)*
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 (IBWSS) *Catch in numbers and age disaggregated index from an acoustic survey (IBWSS)*

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 aflagegluhermun 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 × σ), with σ = 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 × σ), with σ = 0.299

HORFUR – *PROSPECTS*

Samkvæmt stofnmatslíkani er 2016 árgangurinn lítill, sem er í samræmi við niðurstöður rannsóknaleiðangra sem ekki eru notaðar í líkaninu. Niðurstöður stofnmats benda því til að hrygningarstofninn muni minnka næstu árin þótt aflareglu verði fylgt árið 2018.

The assessment estimates a small 2016 year class, which is confirmed by a series of surveys not used in the assessment model. The assessment indicates that SSB will decrease in the next few years even if the management plan is followed in 2018, due to a small 2016 year class which will be fully selected in the fishery in 2019.

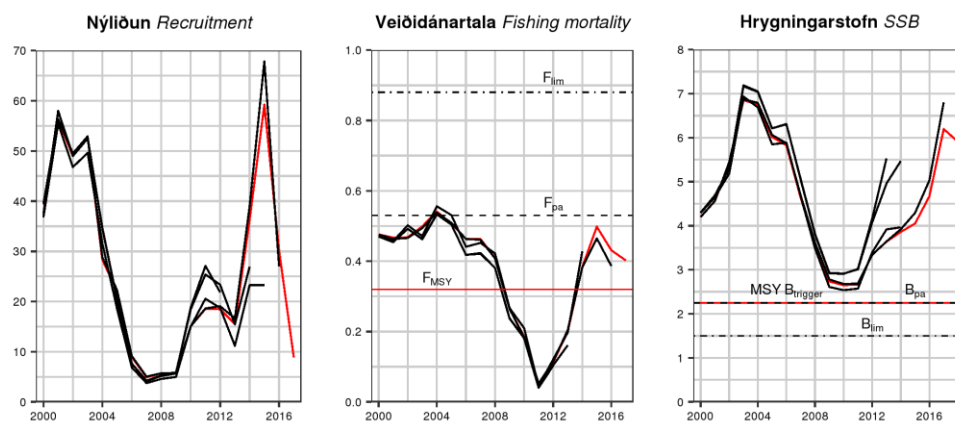**Kolmunni.** Áætluð þróun stærðar hrygningarstofns (tonn) miðað við afla samkvæmt langtímaaflareglu.
Blue whiting. *Projection of SSB (tonnes) based on adopted long-term management strategy.*

2017		2018			2019
Áætlaður afli *Estimated catches*	F	Aflamark skv. aflareglu *TAC based on management strategy*	Hrygn. stofn *SSB*	F	Hrygn. stofn *SSB*
1 559 400	0.40	1 387 872	5 906 696	0.32	5 181 388

GÆÐI STOFNMATS – *QUALITY OF THE ASSESSMENT*

Frá 2016 hafa bráðabirgðatölur fyrir aldursgreind aflagögn frá tímabilinu janúar til júní líðandi árs verið notuð í stofnmat, ásamt vísitölu frá bergmálsleiðangri (IBWSS) sem er framkvæmdur að vori. Þetta er gert vegna þess að meira en 90% af afla 3 ára og eldri kolmunna er tekinn fyrri hluta árs. Vænst er að þetta geri stofnmatið stöðugra milli ára þar sem árssveiflur í IBWSS vísitölu hafa valdið miklum sveiflum í stofnmati. Niðurstöður stofnmatsins 2017 eru svipaðar og í stofnmatinu 2016 sem er fyrsta árið sem bráðabirgðaaflagögn voru notuð.

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 more robust to the year effects sometimes observed in the survey index from the International Blue Whiting Spawning Stock Survey (IBWSS). The historical assessment results show a consistent picture of SSB and F for the assessments since 2016; these assessments include a preliminary estimate of the catch-at-age for the year in which the assessment is carried out.
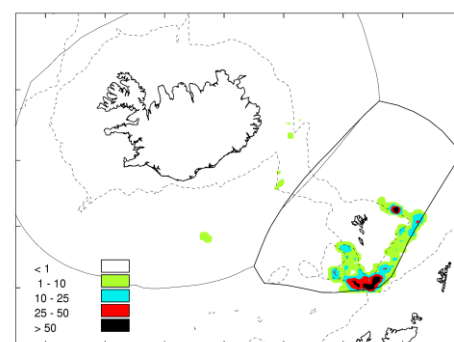

Kolmunni. Samanburður á stofnmati áranna 2013–2017 (rauð lína: 2017).
Blue whiting. *Current assessment (red line) compared with previous estimates (2013–2016).*

VEIÐAR ÍSLENDINGA – *THE ICELANDIC FISHERY*

Kolmunnaafli íslenskra skipa árið 2016 var 186 914 tonn. Mest var veitt innan færeyskrar lögsögu, rúm 171 000 tonn. Um 8% aflans fékkst innan íslenskrar lögsögu, sem er svipað og verið hefur frá árinu 2006, en á árunum 1997–2005 var um 61% afla íslenskra skipa tekinn innan íslenskrar lögsögu. Heildarafli úr stofninum árið 2016 var um 1 183 187 tonn.

Icelandic landings of blue whiting in 2016 were approximately 186 914 tonnes. The bulk of the catches were taken within the EEZ of Faroes, around 171 000 tonnes. Around 8% of Icelandic catches were taken within the EEZ of Iceland which is similar as in 2006–2015. In 1997– 2005, on average 61% were caught within the Icelandic EEZ. The total blue whiting landings (all nations) in 2016 were 1 183 187 tonnes.

Kolmunni. Veiðisvæði íslenskra skipa árið 2016 (t/sjm²)
Blue whiting. *Fishing grounds of the Icelandic fleet in 2016 (t/nmi²)*

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.

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.

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		1 675 400	
2018	≤ 1 387 872				

*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. 2017a. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 30 August–5 September 2017, ICES HQ, Copenhagen, Denmark. ICES CM 2017/ACOM:23.

ICES. 2017b. 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 Advice 2017 Blue whiting