

KEILA – TUSK

Brosme brosmes

RÁÐGJÖF - ADVICE

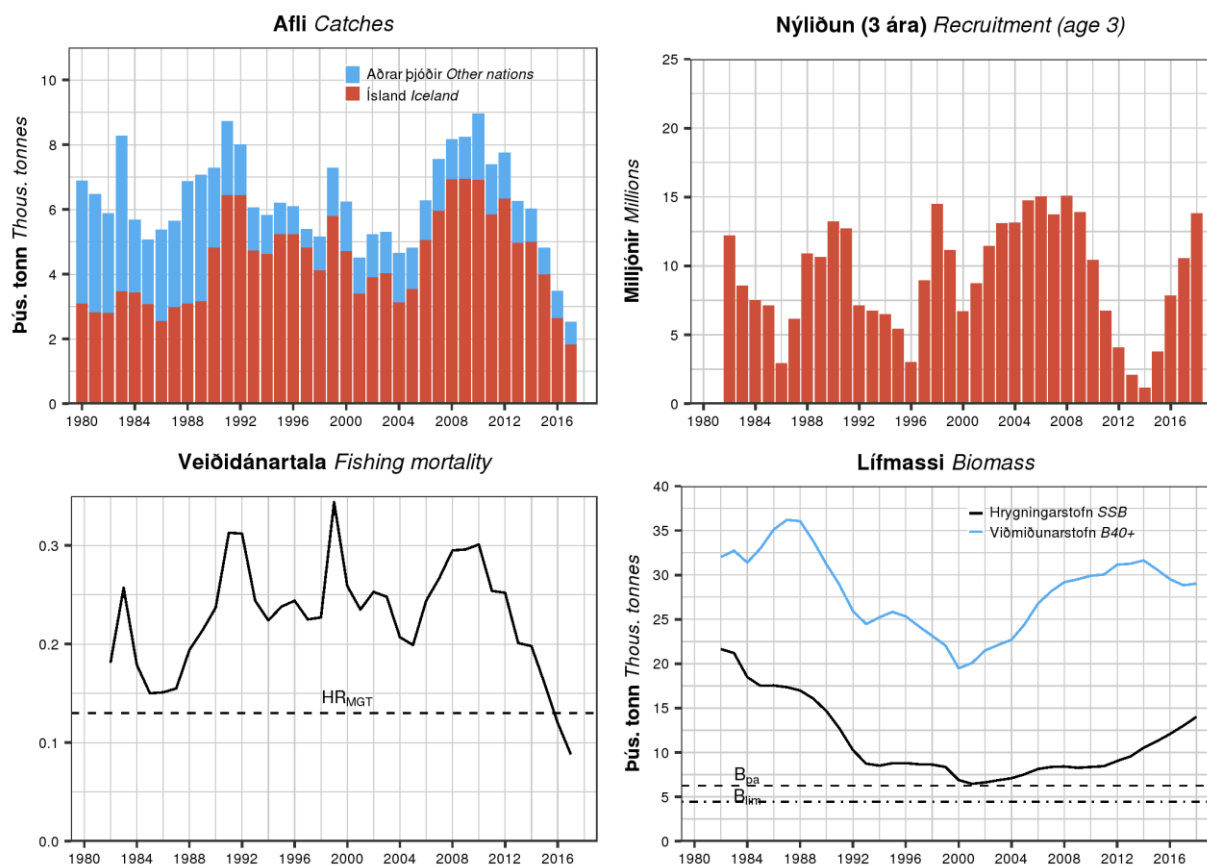
Hafrannsóknastofnun og Alþjóðahafrannsóknaráðið leggja til, í samræmi við aflareglu íslenskra stjórnvalda, að afli fiskveiðiárið 2018/2019 verði ekki meiri en 3776 tonn. Hafrannsóknastofnun leggur til áframhaldandi bann á veiðum á uppvaxtarsvæðum keilu við Suður- og Suðausturland.

MFRI and ICES advise that when the Icelandic management plan is applied, catches in the fishing year 2018/2019 should be no more than 3776 tonnes. In addition, continued closure of the nursery areas off the southeast and southern coast should be maintained.

STOFNÞRÓUN - STOCK DEVELOPMENT

Nýliðun árána 2012-2015 var lítil en hefur aukist síðustu ár. Veiðihlutfall hefur lækkað og er undir markmiði aflareglu (HR_{MGT}). Hrygningarstofn hefur vaxið á undanförunum árum en viðmiðunarstofn (keila 40 cm og stærri) hefur minnkað lítillega en er hár í sögulegu samhengi.

Recruitment in 2012-2015 was low, but has increased since then. Harvest rate has declined in recent years and is below HR_{MGT} . SSB has increased in recent years while the reference biomass (tusk >40 cm) has declined but remains at a high level.



Keila. Aflí, nýliðun 3 ára, veiðihlutfall, og stærð viðmiðunarstofns (B_{40+}) og hrygningarstofns.

Tusk. Catches, recruitment at age 3, harvest rate, and SSB and reference biomass (B_{40+}).

STOFNMAT OG GÁTMÖRK – BASIS OF THE ASSESSMENT AND REFERENCE POINTS

Forsendur ráðgjafar <i>Advice basis</i>	Aflaregla <i>Management plan</i>
Aflaregla <i>Management plan</i>	Aflamark sett sem 13% af stærð viðmiðunarstofns (B_{40+}) á stofnmatsári <i>TAC set as 13% of reference biomass (B_{40+}) in the assessment year</i>
Stofnmat <i>Assessment type</i>	Gadget – aldurs og lengdar líkan. <i>Gadget: Analytical age-length based assessment</i>
Inntaksgögn <i>Input data</i>	Aldurs og lengdargögn úr afla og stofnmælingum (SMB). <i>Age and length data from commercial catches and surveys (IS-SMB)</i>

Nálgun <i>Framework</i>	Gátmörk <i>Reference point</i>	Gildi <i>Value</i>	Grundvöllur <i>Basis</i>
Aflaregla <i>Management plan</i>	SSB _{MGT}	6240 t	B_{pa}
	HR _{MGT}	0.13	Veiðihlutfall af viðmiðunarstofni (B_{40+}) leiðir til langtíma hámarksafraksturs. Vænt gildi veiðihlutfalls, þegar veitt er samkvæmt aflareglu, er 0.09–0.18. <i>Percentage of biomass 40+ cm leads to long-term MSY. Realized HR can range from 0.09–0.18.</i>
MSY	MSY- $B_{trigger}$	6240 t	B_{pa}
	HR _{MSY}	0.17	Slembireikningar innan Gadget líkans <i>Stochastic projections</i>
	F _{MSY}	0.226	Slembireikningar innan Gadget líkans <i>Stochastic projections</i>
Varúðarnálgun <i>Precautionary approach</i>	B_{lim}	4460 t	$B_{pa}/1.4$
	B_{pa}	6240 t	B_{loss}
	F _{lim}	0.41	Veiðidánartala sem leiðir til þess að hrygningarstofn er yfir B_{lim} með 50% líkum <i>Equilibrium F which will maintain the stock above B_{lim} with a 50% probability</i>
	F _{pa}	0.27	95% líkur á að veiðidánartala sé undir F _{lim} <i>95% probability that true F is below F_{lim}.</i>
	HR _{lim}	0.27	Veiðihlutfall sem leiðir til þess að hrygningarstofn er yfir B_{lim} með 50% líkum <i>Equilibrium HR which will maintain the stock above B_{lim} with a 50% probability</i>
	HR _{pa}	0.20	95% líkur á að veiðihlutfall sé undir HR _{lim} <i>95% probability that true is below HR_{lim}.</i>

HORFUR – PROSPECTS

Framreikningar benda til að hrygningarstofn og veiðistofn muni ekki vaxa á næstu árum vegna lítillar nýliðunar árána 2012–2015 og afli mun líklega verða svipaður og nú er.

According to the prognosis, the SSB and harvestable biomass will not increase in the near future, due to low recruitment in 2012–2015. Catch levels will likely be at a similar level as the current advice.

Keila. Áætluð þróun á stærð hrygningarstofns (tonn) miðað við veiðar samkvæmt aflareglu.

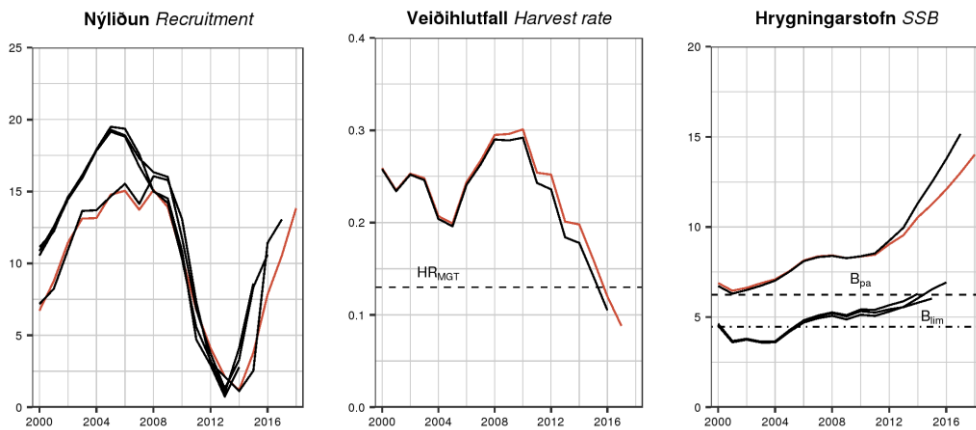
Tusk. Projection of SSB (tonnes) based on catch according to the management plan.

2018	2018/2019		2020
Viðmiðunarstofn (B_{40+}) <i>Reference biomass (B_{40+})</i>	Hrygningarstofn SSB	Aflamark TAC	Veiðihlutfall 2019 Harvest rate 2019
29050	14017	3776	0.133
			Hrygningarstofn SSB
			13512

GÆÐI STOFNMATS – QUALITY OF THE ASSESSMENT

Stofnmat keilu var endurskoðað á rýnifundi WKICEMSE (ICES, 2017) og því er stofnmatið árána 2017 og 2018 ekki að fullu sambærilegt við stofnmat fyrri ára. Veiðiálag er nú skilgreint sem veiðihlutfall keilu 40 cm og stærri, en í stofnmati fyrir 2017 var það skilgreint sem fiskveiðidánartala 7–10 ára. Auk þess er kynþroski metinn innan stofnmatslíkansins.

This stock was benchmarked in 2017 (ICES, 2017), therefore the assessments in 2017 and 2018 are not fully comparable with previous assessments. In previous assessments, spawning stock biomass was estimated using a fixed maturity ogive, but maturity is now estimated in the model. Fishing pressure was defined as F for ages 7–10 but is now defined as harvest rate of tusk 40 cm and larger. Recruitment is estimated with high uncertainty.

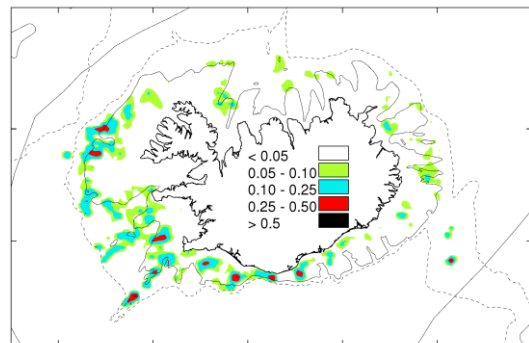


Keila. Samanburður á stofnmati árána 2013–2018 (rauð lína: 2018).
Tusk. Current assessment (red line) compared with previous estimates (2013–2017).

VEIÐAR – THE FISHERY

Frá árinu 1991 hafa Íslendingar veitt 75–80% keiluafllans en færeysk og norsk skip 20–25%. Á árunum 2004–2010 tvöfaldaðist afli Íslendinga og var um 7000 tonn árin 2008–2010 sem er mesti keiluafli Íslendinga. Íslendingar veiddu rúm 1833 tonn árið 2017 en heildarafli var 2541 tonn. Keila veiðist nær eingöngu á línu.

Since 1991, Icelandic vessels have caught 75–80% of the tusk catches in Icelandic waters, but Faroe Islands and Norway the rest. In 2004–2010 catches doubled and peaked around 7000 tonnes in 2008–2010. Icelandic catches amounted to 1833 tonnes in 2017, total catches were 2541 tonnes. Tusk is primarily caught by longliners.



Keila. Veiðisvæði árið 2017 (t/sjm²)
Tusk. Fishing grounds in 2017 (t/nmi²)

Afli 2017 (tonn) Catches 2017 (tonnes)	Lína Longline	Annað Other
2541	98%	2%

AÐRAR UPPLÝSINGAR – OTHER INFORMATION

Árið 2017 tóku stjórnvöld upp aflareglu sem áður hafði verið rýnd af Alþjóðahafrannsóknaráðinu (ICES) m.t.t. varúðarnálgunar, sem og hvort hún væri í samræmi við hámarksafkrastur til lengri tíma litið (MSY).

Keila er fremur hægvaxta fiskur og árlegur vöxtur á bilinu 3–5 cm. Keila byrjar að koma í veiðistofninn um 40 cm, en verður ekki kynþroska fyrr en um 55 cm. Það eru því 3–5 ár frá því að keila kemur inn í veiðarnar þar til hún verður kynþroska. Mikil sókn getur því leitt til þess að lágt hlutfall fiska náði að hrygna.

In 2017, the Ministry of Industries and Innovation adopted a harvest control rule for tusk which had previously been reviewed by ICES in terms of the precautionary approach, and if it was consistent with ICES MSY-approach.

Tusk is a rather slow-growing fish and annual growth is about 3–5 cm. Tusk enter the fishable stock at about 40 cm of length, but reach sexual maturity at about 55 cm. That means that about 3–5 years elapse from the time they enter the fishable stock until they reach maturity. Therefore, heavy fishing pressure can lead to a low number of fish being able to spawn.

RÁÐGJÖF, AFLAMARK OG AFLI – ADVICE, TAC AND CATCH

Keila. Tillögur um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Tusk. Recommended TAC, national TAC, and catches (tonnes).

Fiskveiðiár Fishing year	Tillaga Rec. TAC	Aflamark National TAC	Afli Íslendinga Catches Iceland	Afli annarra þjóða Catches other	Afli alls Total catch
2010/11	6000	6000	6223	1545	7768
2011/12	6900	7000	5981	1420	7401
2012/13	6700	6400	5549	1284	6833
2013/14	6300	5900	4847	1034	5881
2014/15	4000	3700	4135	823	4958
2015/16	3440	3000	3221	900	4121
2016/17	3780	3380	1689	729	2418
2017/18	4370 ¹⁾	3770			
2018/19	3776 ¹⁾				

¹⁾ 13% aflaregla. 13% harvest control rule

HEIMILDIR OG ÍTAREFNI – REFERENCES AND FURTHER READING

ICES. 2017. Report of the Workshop on Evaluation of the Adopted Harvest Control Rules for Icelandic Summer Spawning Herring, Ling and Tusk (WKICEMSE), 21–25 April 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:45. 196 pp. http://www.hafogvatn.is/wp-content/uploads/2017/05/wkicemse_2017.pdf

ICES. 2018. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 11 - 18 April 2018, Copenhagen, Denmark. ICES CM 2018/ACOM:14. https://www.hafogvatn.is/static/files/Veidiradgjof/2018/01-wgdeep-report_tusk.pdf

MFRI Assessment Reports 2018. Tusk. Marine and Freshwater Research Institute, 13 June 2018.