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Nytjastofnar sjávar 2014/2015 og aflahorfur fiskveiðiárið 2015/2016

State of Marine Stocks in Icelandic Waters 2014/2015 and Prospects for the Quota Year 2015/2016

Hafrannsóknastofnun (Marine Research Institute) 2015

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Foreword

In this report on the state of marine stocks in Icelandic waters for the quota year 2014/2015 and prospects for the quota year 2015/2016 is provided a customary overview of the state of specific stocks, development of fisheries, stock size and the recommended total allowable catch (TAC) based on the estimated potential yield and a precautionary approach. The report also contains sections on stocks that Iceland utilize with other nations. The report begins with a short section on important environmental variables and their effects on marine life.

As before, the report is the product of the cooperation of many employees of the Marine Research Institute (MRI) of Iceland and external collaborators, both at sea and on land, whose diligence and professionalism is hereby much appreciated. As always, the most important stocks have also been evaluated by working groups and the advisory committee of the International Council for the Exploration of the Sea (ICES) and the reader is directed to their website for further information: www.ices.dk.

With this report is also introduced the new MRI data server (data.hafro.is) that is open to all. It contains all tables in this report and all datasets behind the figures will be added shortly after its publication. The idea is to improve access to numerical data on marine stocks in Icelandic waters in a format useful for closer inspection and analysis, for example, using a spreadsheet, statistical software, or a web service. Instructions and column names are in English so individuals from outside of Iceland can also use of the data server.

Formal management plans and the adoption of harvest control rules (HCR, a mathematical method to determine TAC) are key aspects of managing fisheries, as requested by the international community. To this end, fisheries data, stock assessments and biological understanding of species are used to evaluate HCRs following accepted guidelines to achieve sustainable fisheries and to maximize the yield of the resource. Recent years have seen considerable progress in this direction. For some years HCRs have been in place for cod, haddock, and saithe in Icelandic waters that have been approved by ICES review panels as fulfilling international criteria of precaution as well as goals set by the Icelandic government for sustainable fishing and maximum yield in the long term.

In 2014 the government decided that the golden redfish fishery will be managed with a HCR, and this spring it was also decided that the capelin fishery will be managed on the basis of the criteria listed above. The HCR for capelin will be used to set a preliminary catch limit and a final catch limit to ensure with overwhelming probability that the spawning stock remains above a predetermined threshold at the time of spawning.

Thus, fishing of many of the most valuable stocks is now managed with HCRs evaluated by ICES and conforming to international standards of precaution. It is important that formal management plans and HCRs be adopted for other species, like summer-spawning herring, Atlantic wolffish, ling and tusk, where the analytical foundations have already been laid.

The following passage was published in the foreword of the MRI stock status report from a decade ago: *"Although the cod spawning stock has been improving recently, the stock status is still a cause for concern. Unless proper measures are taken, it is unlikely that the stock status will improve in the near future. Most upcoming cohorts of cod are well below the historical average, which limits the potential for increasing catches in the coming years. There is reason to emphasize the reiterated warnings of the MRI over the last 25 years, regarding the risk if the spawning stock goes below a specific threshold, which could reduce the stock's recruitment potential in the long term".* This passage is brought up here to remind the reader of the importance of moderate utilization, and also to highlight the substantial success during the last decade in increasing the stock size.

Ten years ago, cautionary statements were firm and the MRI strongly recommended that the HCR of the time be changed and the harvest rate reduced to 20%, in accordance with the results of the Fisheries Minister's committee on long-term utilization of fish stocks from April 2004. The HCR was changed in quota year 2007/2008 and the harvest rate reduced considerably. This change required some short-term sacrifices, but in recent years the benefits of these actions have become clear. According to the stock assessment, the reference biomass is now estimated around 1300 thousand tonnes and the spawning stock 547 thousand tonnes, following a steady growth in the stock since 2007. The spawning stock is now three times larger than when it reached its minimum in 1992–1994 and the reference stock is larger than any time in the last 30 years. According to the HCR, TAC for the coming quota year will be 239 thousand tonnes, almost twice that of quota year 2007/2008. This success shows the importance of measures taken to decrease the harvest rate in 2007 and to formally re-evaluate the HCR in 2009 on the basis of rational utilization of the cod stock.

Early in 2015 an ICES working group evaluated the stock assessments and HCR for the cod stocks, among other things to evaluate the performance of the current HCR. The conclusion was that in order to fulfill the conditions of the precautionary approach and maximum yield, the 20% harvest rate should be maintained for the next 5 years. At the request of a government-appointed working group on long-term utilization of fish stocks, MRI scientists conducted additional analyses earlier this year, among other things to assess whether it is advisable to adopt a varying harvest rate, depending on the cod stock size. Based on this analysis, the committee has advised the Fisheries Minister that the management of the cod fishery should continue for the next 5 years to be based on the current HCR.

Many of our marine stocks are in fair balance and fishing is moderate, so changes in stock size and advice are subject to uncertainty in stock assessment and the size of upcoming cohorts. The first estimates of the 2014 cohorts of haddock and cod indicate that they are above average, after a long period of poor recruitment in haddock. Recruitment has been distinctly poor in many warm water species in recent years. Thus, the stock size is expected to decrease for tusk, ling, blue ling, anglerfish, witch, *Nephrops* and other species whose range is mostly in the warmer water off the south and western coast. There are also clear indications that recruitment of herring is very poor, which results in a decreased recommended TAC for the coming season. Reasons for the decline in recruitment among so many stocks are unknown, but the most likely explanation is a widespread environmental change in Icelandic waters during the last 10–15 years.

This spring and winter, there have been indications of cooling in the marine environment. Although it is too early to make predictions, there might be an upcoming pause in the warming of Icelandic waters. It is therefore more important than ever to monitor the development of marine conditions in order to explain changes in recruitment, and also because fluctuations in temperature and currents have a strong effect on the migrations of fish stocks, especially the pelagic stocks.

Reykjavík, 11. júní 2015

Jóhann Sigurjónsson

Ágrip af skýrslu Hafrannsóknastofnunar um nytjastofna sjávar 2014/2015 og aflahorfur fiskveiðiárið 2015/2016

2.1 Þorskur

Þorskafli árið 2014 var 221 þús. tonn samanborið við 223 þús. tonn árið 2013. Aflamark fyrir fiskveiðiárið 2014/2015, byggt á aflareglu, er 218 þús. tonn.

Heildarvísitala í stofnmælingu botnfiska í mars (SMB) hefur hækkað mikið undanfarin ár og er síðustu fjögur ár í sögulegu hámarki. Meðalþyngd í SMB og í afla hefur aukist undanfarin ár og er nú nálægt meðaltalinu frá 1985.

Samkvæmt stofnmati er viðmiðunarstofninn árið 2015 metinn 1302 þús. tonn og hrygningarstofninn 547 þús. tonn. Hrygningarstofninn er nú þrefalt stærri en þegar hann var í lágmarki 1992–1994 og viðmiðunarstofninn stærri en hann hefur verið undanfarna þrjá áratugi. Á síðasta áratug hefur veiðihlutfallið minnkað úr 34–40% í um 20% og veiðidánartalan úr rúmum 0.7 árið 2000 í um 0.3 árið 2014.

Meðalstærð árganga 2006–2011, sem nú eru uppistaðan í stofninum, er um 150 milljónir þriggja ára nýliða. Það er 85% af meðaltali árganga 1955–2012 sem er 176 milljónir. Árgangur 2012 er metinn 160 milljónir og árgangur 2013 er metinn slakur eða 115 milljónir. Fyrsta mat á 2014 árganginum bendir til að hann sé nokkuð yfir meðaltali.

Þar sem nýliðun á undangengnum áratug hefur verið nokkuð undir meðallagi, er stækkun stofnsins á undanförnum árum afleiðing minni sóknar. Ef aflareglunni er fylgt eru líkur á að afli haldist svipaður á komandi árum. Meiri afla er ekki hægt að búast við nema nýliðun batni.

Samkvæmt gildandi aflareglu verður aflamark 239 þús. tonn á fiskveiðiárinu 2015/2016. Hafrannsóknastofnun ítrekar að við úthlutun aflahlutdeildar sé tekið fullt mið af væntanlegum afla utan aflamarks.

2.2 Ýsa

Ýsuaflinn á árinu 2014 var 34 þús. tonn samanborið við 44 þús. tonn árið 2013. Aflamark fiskveiðiársins 2014/2015, byggt á aflareglu, var 30 400 tonn.

Samkvæmt aflareglu er aflamark næsta fiskveiðiárs 40% af áætluðum lífmassa 45 cm og stærri ýsu (viðmiðunarstofn) í upphafi næsta almanaksárs. Ef hrygningarstofn fer undir gátmörk (45 þús. tonn) er veiðihlutfallið lækkað. Viðmiðunarstofninn er að meðaltali álíka stór og hrygningarstofn, en ekki háður sveiflum í kynþroskahlutfalli sem myndu leiða til meiri breytileika í aflamarki.

Á árunum 2010–2015 minnkaði ýsustofninn, því flestir árgangar sem bættust í stofninn voru litlir. Lítið veiðiálag leiddi þó til þess að minnkun stofnsins var ekki mjög hröð. Árgangur 2007 er stór og hefur verið uppistaða aflans undanfarin ár. Árgangar 2008–2013 eru allir metnir litlir en fyrstu vísbendingar um árgang 2014 eru að hann sé stór.

Vöxtur var mjög hægur á árunum 2004–2009 en vaxtarhraði hefur aukist eftir það. Vöxtur 2014 var yfir meðaltali áranna 1985–2013. Þyngd eftir aldri er nálægt meðaltali hjá árgöngum 2007 og eldri, en yfir meðaltali hjá litlu árgöngunum frá 2008–2013.

Stofnstærð þriggja ára og eldri ýsu í upphafi árs 2015 er nú metin 112 þús. tonn og hrygningarstofn 78 þús. tonn. Er stofninn stærri en gert var ráð fyrir í stofnmati ársins 2014, mest vegna þess að meðalþyngdir árið 2014 voru hærri en gert var ráð fyrir. Árgangar 2008–2013 eru að meðaltali aðeins um 28 milljónir nýliða sem svarar til um 24 þús. tonna afla úr hverjum þeirra.

Samkvæmt stofnmati gefur aflareglan 36 400 tonna aflamark fyrir fiskveiðiárið 2015/2016.

2.3 Ufsi

Ufsaaflinn árið 2014 var 46 þús. tonn samanborið við 58 þús. tonn árið 2013. Aflamark fyrir fiskveiðiárið 2014/2015, byggt á aflareglu, er 58 þús. tonn.

Meðalþyngdir í afla hafa farið lækkandi hjá 4–6 ára ufsa en eru í meðallagi hjá öðrum aldursflokkum. Heildarvísitala úr SMB var há árin 2012–2013, en lægri árin 2014–2015. Viðmiðunarstofn ufsa fjögurra ára og eldri í ársbyrjun 2015 er metinn 255 þús. tonn og veiðihlutfall ársins 2014 er metið 18%. Árgangar 2008 og 2009 eru yfir meðallagi, en nýliðun hefur verið minni eftir það. Framreikningar benda til að viðmiðunarstofninn í ársbyrjun 2016 verði um 238 þús. tonn.

Samkvæmt gildandi aflareglu verður aflamark 55 þús. tonn á fiskveiðiárinu 2015/2016.

2.4 Gullkarfi

Gullkarfi við Austur-Grænland, Ísland og Færeyjar er talinn af sama stofni. Afli gullkarfa á svæðinu var tæp 51 þús. tonn árið 2014 sem er 2 500 tonna minnkun frá árinu áður. Afli á Íslandsmiðum árið 2014 var tæp 48 þús. tonn en var 51 þús. tonn árið 2013.

Samkvæmt stofnmati hefur fiskveiðidauði undanfarin ár verið nálægt því sem gefur hámarksafrakstur til lengri tíma ($F_{MSY,9–19} = 0.097$). Hrygningarstofninn hefur stækkað hratt undanfarinn áratug og er nú svipaður og hann var um 1985. Árgangar frá árunum 1996–2004 eru metnir stórir, en vísbendingar eru um að nýliðun hafi verið léleg við Ísland og Austur-Grænland undanfarin ár.

Íslensk stjórnvöld hafa nú tekið upp formlega nýtingarstefnu við gullkarfaveiðar. Aflareglan miðast við svæðið Austur-Grænland/Ísland/Færeyjar og eiga grænlensk og færeysk stjórnvöld eftir að staðfesta aflaregluna. Samkvæmt stofnmati gefur aflaregla 51 þús. tonn á svæðinu Austur-Grænland/Ísland/Færeyjar á fiskveiðiárinu 2015/2016. Sú sókn leiðir til afla sem er nálægt hámarksafrakstri úr stofninum.

2.5 Djúpkarfi og úthafskarfi

Alls voru veidd 9 500 tonn af **djúpkarfa í landgrunnshlíðum Íslands** árið 2014 sem er um 700 tonnum meiri afli en árið 2013. Ráðgjöf fyrir stofninn byggist á þróun hans samkvæmt stofnmælingu botnfiska að hausti (SMH) sem sýnir að veiðistofninn hefur minnkað á tímabilinu 2000–2014. Hafrannsóknastofnun og ICES leggja til að djúpkarfaafli í landgrunnshlíðum Íslands á fiskveiðiárinu 2015/2016 fari ekki yfir 10 þús. tonn.

Efri stofn úthafskarfa hefur að mestu veiðst suður og suðaustur af Grænlandi. Aflinn var rúm 6 300 tonn á árinu 2014 og að mestu veiddur af Rússum suður af Hvarfi. Árlegur afli fór mest í um 100 þús. tonn á árunum 1993–1995. Vegna mjög neikvæðrar þróunar stofnstærðar hefur ICES ráðlagt að engar beinar veiðar verði stundaðar úr efri stofni úthafskarfa.

Veiðisvæði **neðri stofns úthafskarfa** er að mestu vestan við Reykjaneshrygg, við lögsögumörk Íslands og Grænlands og innan þeirrar íslensku. Skráður afli allra veiðiþjóða var áætlaður tæp 24 þús. tonn árið 2014, samanborið við 46 þús. tonn árið 2013 og 75–140 þús. tonn árin 1995–2004. Er þetta minnsti afli síðan árið 1993 þegar veiðarnar voru að hefjast. Afli Íslendinga árið 2014 var rúmlega 2 000 tonn og er þetta minnsti afli frá upphafi.

ICES mun í október 2015 veita ráðgjöf um veiðar á stofnum úthafskarfa fyrir árið 2016. Mun þar m.a. verða byggt á niðurstöðum mælinga á stofnstærð úthafskarfa í leiðangri Íslendinga og Þjóðverja sem fram fer í júní–júlí 2015.

2.6 Litli karfi

Beinar veiðar á litla karfa hófust árið 1997 og var aflinn það ár tæp 1 200 tonn en minnkaði hratt til ársins 2000. Frá þeim tíma og allt til ársins 2009 var aflinn óverulegur. Veiðar hófust að nýju árið 2010 og var aflinn um 2 600 tonn, en hefur minnkað síðan og var árlegur afli síðustu þrjú ár rúm 500 tonn. Í varúðarskyni leggur Hafrannsóknastofnun til að sókn verði takmörkuð og að afli fiskveiðiárið 2015/2016 fari ekki yfir 1 500 tonn.

2.7 Grálúða

Grálúða við Austur-Grænland, Ísland og Færeyjar er talin vera af sama stofni. Heildarafli grálúðu á þessu svæði var rúm 21 þús. tonn árið 2014 og var hlutdeild Íslendinga tæp 10 þús. tonn. Afli á sóknareiningu á Íslandsmiðum hefur aukist lítillega frá sögulegu lágmarki árið 2005. Stofnvísitala grálúðu við Grænland og Ísland hefur hækkað undanfarin ár og er nú nálægt því sem hún var árin 1998–2001. ICES og Hafrannsóknastofnun leggja til að aflamark í grálúðu miðist við þá sókn sem gefur hámarksafrakstur til lengri tíma litið. Sú sókn samsvarar því að heildarafli grálúðu á svæðinu Austur-Grænland/Ísland/Færeyjar fari ekki yfir 22 þús. tonn fiskveiðiárið 2015/2016.

2.8 Lúða

Í ársbyrjun 2012 tók gildi reglugerð sem bannar beinar lúðuveiðar og kveður á um að allri lífvænlegri lúðu skuli sleppt, sama í hvaða veiðarfæri hún er veidd. Síðan hefur landaður lúðuafli á Íslandsmiðum verið mjög lítill og var einungis 45 tonn árið 2014. Lúða hefur aðallega veiðst sem meðafli við aðrar veiðar, en á árunum fyrir 2012 var aukning á beinni sókn með línu. Vísitölur úr SMB hafa lækkað mikið á seinni árum og virðist ástand lúðustofnsins vera afar slæmt. Engar vísbendingar eru um aukna nýliðun í hrygningarstofninn á næstu árum. Hafrannsóknastofnun leggur til að umrædd reglugerð verði í gildi þar til merki sjást um verulegan bata í stofninum.

2.9 Skarkoli

Skarkolaaflinn árið 2014 var um 6 000 tonn. Vísitölur úr stofnmælingu botnfiska í mars hafa verið tiltölulega stöðugar undanfarin ár. Vísbendingar eru um að stofnstærð sé vaxandi og fiskveiðidánartala hafi lækkað umtalsvert á síðustu árum. Afli á sóknareiningu hefur

farið vaxandi frá 2003. Hafrannsóknastofnun leggur til að afli fiskveiðiárið 2015/2016 fari ekki yfir 6 500 tonn. Auk þess leggur stofnunin til áframhaldandi friðun á hrygningarstöðvum við suður-, suðvestur- og vesturströndina á hrygningartíma.

2.10 Sandkoli

Landaður sandkolaafli var mestur árin 1996 og 1997 eða tæp 8 000 tonn en hefur minnkað síðan og var rúm 500 tonn árið 2014. Vísitala sandkola í stofnmælingu botnfiska í mars lækkaði umtalsvert í ár og vísitala ungfisks einnig. Hafrannsóknastofnun leggur til að sandkolaafli fiskveiðiárið 2015/2016 á skilgreindu aflamarkssvæði, sem nær frá Snæfellsnesi suður um að Stokksnesi, fari ekki yfir 500 tonn.

2.11 Skrápflúra

Árið 2014 var landaður skrápflúruafli einungis um 70 tonn en var mestur 6 400 tonn árið 1996. Vísitala veiðistofns og afli á sóknareiningu hafa verið við sögulegt lágmark síðustu ár og beinar veiðar ekki arðbærar. Í ljósi þess að skrápflúra veiðist nú fyrst og fremst sem meðafli og landaður afli er lítill leggur Hafrannsóknastofnun ekki fram tillögur um hámarksafla fiskveiðiárið 2015/2016. Vegna bágs ástands stofnsins leggur stofnunin til að helstu hrygningarsvæðum skrápflúru verði lokað á hrygningartíma.

2.12 Langlúra

Frá árinu 1988 hefur langlúruafli verið á bilinu 900–3 000 tonn og var aflinn tæplega 1 200 tonn árið 2014. Vísitala veiðistofns í humarleiðangri náði hámarki árið 2005, lækkaði síðan til ársins 2008 en hefur verið stöðug síðan. Afli á sóknareiningu meira en tvöfaldaðist árin 1998–2006, minnkaði síðan til ársins 2010 en hefur aukist undanfarin tvö ár samfara minnkandi sókn. Þrátt fyrir að stærð veiðistofnsins hafi mælst stöðug síðustu ár, bendir slök nýliðun til að hann muni minnka á næstu árum. Hafrannsóknastofnun leggur til að afli langlúru á fiskveiðiárinu 2015/2016 fari ekki yfir 1 100 tonn.

2.13 Þykkvalúra

Árið 2014 var þykkvalúruaflinn 1 200 tonn. Afli á sóknareiningu hefur meira en tvöfaldast frá því sem hann var 1993–1998. Vísitala veiðistofns var há á árunum 2003–2010, en hefur farið lækkandi á síðustu árum. Nýliðun virðist hafa verið góð undanfarin ár. Stofnmat bendir til þess að veiðidánartölur séu háar. Hafrannsóknastofnun leggur til að hámarksafli þykkvalúru fiskveiðiárið 2015/2016 verði 1 300 tonn.

2.14 Stórkjafta

Stórkjafta veiðist sem meðafli, einkum í dragnót og humarvörpu. Landaður afli árið 2014 var 340 tonn. Lítið er vitað um stofnstærð og veiðiþol stórkjöftu. Hafrannsóknastofnun gerir ekki tillögu um hámarksafla stórkjöftu fyrir fiskveiðiárið 2015/2016.

2.15 Steinbítur

Steinbítsafli á árinu 2014 var um 7 300 tonn, sem er minnsti ársafli síðan fyrir 1950. Vísitala veiðistofns steinbíts er yfir meðaltali en nýliðunarvísitala er í sögulegu lágmarki. Samkvæmt stofnmati hefur veiðistofninn farið minnkandi frá árinu 2006 og fyrirséð lítil stækkun stofnsins á komandi árum sökum slakrar nýliðunar. Hafrannsóknastofnun leggur til að steinbítsaflinn miðist við þá veiðidánartölu sem gefur hámarksafrakstur og samsvarar 8 200 tonna hámarksafla á fiskveiðiárinu 2015/2016. Einnig ítrekar stofnunin fyrri ráðgjöf um að steinbítur á hrygningarslóð á Látragrunni verði friðaður á hrygningar- og klaktíma.

2.16 Hlýri

Hlýraafli á árinu 2014 var um 1 900 tonn. Meðalaflinn var rúm 900 tonn á árunum 1982–1997 en hefur aukist í um 2 300 tonn eftir 1997. Vísitölur nýliðunar, stofnstærðar og veiðistofns eru í sögulegu lágmarki og vísitala veiðihlutfalls er þrefalt hærri en hún var á árunum 1985–1997. Ráðgjöf Hafrannsóknastofnunar miðar að því að lækka veiðihlutfallið niður í helming af meðaltali áranna 2000–2013 og leggur til að hámarksafli hlýra á fiskveiðiárinu 2015/2016 verði 900 tonn.

2.17 Blálanga

Blálönguafli árið 2014 var um 1 700 tonn. Samkvæmt niðurstöðum stofnmælinga stækkaði blálöngustofninn mikið á árunum 2005–2010 en mælingar 2012–2014 benda til að stofninn fari nú minnkandi. Nýliðunarvísitala hefur verið mjög lág undanfarin ár og því mun stofninn minnka enn frekar á næstu árum. Hafrannsóknastofnun leggur til að afli á komandi fiskveiðiári fari ekki yfir 2 550 tonn. Sá afli mun vera nálægt því nýtingarhlutfalli sem var á árunum 2002–2009 þegar stofninn stækkaði. Jafnframt leggur stofnunin til að þekktum hrygningarsvæðum suður af Vestmannaeyjum og á Fransmiðum verði áfram lokað á hrygningartíma.

2.18 Langa

Línguafli ársins 2014 var rúm 14 þús. tonn og hefur aflinn aukist nokkuð stöðugt frá árinu 2001. Vísitala veiðistofns hefur á árunum

2007–2015 verið há í sögulegu samhengi en nýliðunarvísitala verið lág síðastliðin þrjú ár. Niðurstöður stofnmats sýna að stofninn hefur stækkað mikið á undanförnum árum og fiskveiðidánartala lækkað mikið á sama tíma, og var hún við kjörsókn árið 2014. Lítil nýliðun mun í náinni framtíð leiða til minni stofnstærðar og afla. Hafrannsóknastofnun og ICES leggja til að lönguaflinn fiskveiðiárið 2015/2016 miðist við kjörsókn (F_{MSY}) og fari ekki yfir 16 200 tonn, að meðtöldum afla erlendra skipa sem að meðaltali hefur verið 1 500 tonn á undanförnum tveimur árum.

2.19 Keila

Keiluaflinn árið 2014 var um 6 000 tonn, að mestu veiddur á línu. Vísitala veiðistofns hækkaði umtalsvert á árunum 2001–2012, en hefur sveiflast undanfarin þrjú ár. Vísitala ungfisks lækkaði mikið frá 2007 til 2013 en virðist nú aftur fara hækkandi.

Hafrannsóknastofnun leggur til að heildaraflinn á fiskveiðiárinu 2015/2016 fari ekki yfir 3 440 tonn, að meðtöldum afla erlendra skipa, sem hefur að jafnaði verið um fjórðungur aflans á undanförnum árum. Ráðgjöfin miðar að því að hámarka afrakstur til lengri tíma litið. Jafnframt er lagt til áframhaldandi veiðibann á uppvaxtarsvæðum við Suðaustur- og Suðurland til verndar smákeilu.

2.20 Lýsa

Árið 2014 var lýsuafli um 900 tonn og hefur farið minnkandi síðustu þrjú ár. Lýsa var lengst af meðafli, en nokkur togskip hafa um árabil sótt beint í lýsu á hrygningarslóð hennar, síðla vetrar og á vorin. Vísitala veiðistofns hefur farið lækkandi síðan 2005. Nýliðunarvísitölur voru yfir meðallagi 2008 og 2015, en mjög lágar á árunum þar á milli. Hafrannsóknastofnun gerir ekki tillögu um hámarksafla lýsu fiskveiðiárið 2015/2016 en ljóst er að stofninn hefur farið minnkandi síðustu ár.

2.21 Skötuselur

Skötuselsaflinn árið 2014 var tæp 1 200 tonn og hefur farið minnkandi frá árinu 2009. Niðurstöður úr stofnmælingum og afli á sóknareiningu benda til að veiðistofninn hafi verið stór, enda nýliðun mjög góð, frá 1998–2007. Nýliðun undanfarinna sjö ára mælist verulega minni. Veiðistofn skötusels er enn nokkuð stór, en vegna slakrar nýliðunar má ætla að hann minnki á næstu árum. Hafrannsóknastofnun leggur til að hámarksafli skötusels fiskveiðiárið 2015/2016 verði 1 000 tonn.

2.22 Hrognkelsi

Á árinu 2014 veiddust ríflega 4 000 tonn af grásleppu við Ísland, sem er 1 500 tonnum minna en meðaltal áranna 1971–2014. Sókn hefur minnkað og leyfum hefur fækkað undanfarin tvö ár.

Grundvöllur ráðgjafar Hafrannsóknastofnunar er að halda vísitölu veiðihlutfalls innan við meðaltal viðmiðunartímabilsins 1985–2011. Ráðgjöfinni er tvískipt: Í þessari skýrslu er lagt til upphafsaflamark byggt á þyngdarvísitölu grásleppu í stofnmælingu í mars 2015, en lokatillaga um hámarksafla verður gefin út að lokinni stofnmælingu á sama tíma að ári og verður byggð á þyngdarvísitölum grásleppu 2015 og 2016.

Hafrannsóknastofnun leggur til upphafsaflamark á fiskveiðiárinu 2015/2016 verði 2 040 tonn. Þá leggur stofnunin til að áhersla verði lögð á skráningu meðafla og eftirlit með brottkasti við grásleppuveiðar.

2.23 Síld

Á vertíðinni 2014/2015 var afli úr stofni **íslensku sumargotssíldarinnar** um 95 þús. tonn, en úthlutað aflamark var 83 þús. tonn. Mismunurinn skýrist af tilfærslum á aflaheimildum milli ára. Meginhluti stofnsins hafði ekki lengur vetursetu í Breiðafirði heldur hélt sig djúpt í Kolluál. Hrygningarstofninn árið 2015 er metinn 342 þús. tonn eða töluvert minni en gert var ráð fyrir í úttekt ársins 2014. Mjög lítill 2011 árgangur sem er að ganga inn í hrygningarstofninn er megin ástæða lækkunar milli ára. Sem fyrr leggur Hafrannsóknastofnun til að aflinn verði miðaður við kjörsókn ($F_{0.1}$) og að hámarksafli fiskveiðiárið 2015/2016 verði 71 þús. tonn.

Árið 2014 veiddu Íslendingar tæp 59 þús. tonn úr **norsk-íslenska síldarstofninum** og heildarveiði allra þjóða er áætluð um 437 þús. tonn, sem er 18 þús. tonn umfram ráðgjöf ICES. Þar sem hrygningarstofninn árið 2015 er metinn undir gátmörkum skal skv. aflareglu lækka veiðihlutfallið. Fyrir árið 2015 hefur ICES því lagt til að hámarksafli verði 283 þús. tonn sem samsvarar fiskveiðidánartölu nálægt 0.08. Aflamark íslenskra skipa árið 2015 er um 41 þús. tonn, en ekki er samstaða allra strandríkja um skiptingu aflaheimilda og því líklegt að heildarafli árið 2015 verði umfram ráðgjöf ICES, líkt og síðustu tvö ár. ICES veitir ráðgjöf um hámarksafla fyrir árið 2016 í október 2015.

2.24 Loðna

Endanlegt aflamark loðnu vertíðina 2014/2015 var 580 þús. tonn. Heildaraflinn á vertíðinni var 517 þús. tonn en þar af veiddu íslensk skip 354 þús. tonn. Loðnuvertíðin 2015/2016 mun byggjast á árgöngunum frá 2012 og 2013. Um 60 milljarðar ókynþroska fiska af þessum árgöngum mældust haustið 2014. Hafrannsóknastofnun leggur samkvæmt nýrri aflareglu til að upphafsaflamark verði 54 þús. tonn. Ráðgjöfin verður endurskoðuð að loknum mælingum á stofninum haustið/veturinn 2015/2016. Hafrannsóknastofnun leggur jafnframt til að haustveiðar hefjist ekki fyrr en í október að loknum aðalvaxtartíma loðnunnar.

2.25 Kolmunni

Árið 2014 veiddu Íslendingar rúmlega 180 þús. tonn af kolmunna. Heildaraflinn í Norðaustur-Atlantshafi er talinn hafa verið um 1,2 milljónir tonna. Nýliðun var léleg úr árgöngunum frá 2005–2008 sem leiddi til minnkunar hrygningarstofns. Nýliðun hefur verið nálægt langtíma meðaltali síðan þá og hefur það ásamt minni sókn leitt til stækkunar hrygningarstofnsins. Hann er metinn um 5,7 milljónir tonna árið 2015, saman borið við 2,9 milljónir tonna árið 2009. ICES lagði til að hámarksaflinn árið 2015 yrði 840 þús. tonn. Ekki er samkomulag meðal strandríkja um nýtingarstefnu kolmunna og ákváðu þau að hámarksaflinn yrði 1 260 þús. tonn. ICES mun veita ráðgjöf um hámarksafla 2016 í október 2015.

2.26 Makríll

Undanfarin ár hefur makrílgengd aukist á miðunum austur, suður og vestur af landinu. Afli Íslendinga árið 2014 var 173 þús. tonn, en gert er ráð fyrir að heildarafli allra þjóða á árinu 2014 hafi verið 1,4 milljónir tonna sem er verulega umfram ráðgjöf. Samkvæmt stofnmati sem gert var í september 2014, var stofninn um 2 milljónir tonna á árunum 1994–2003 en fór svo vaxandi og var 4,3 milljónir tonna árið 2014. ICES lagði til að heildaraflinn árið 2015 yrði 906 þús. tonn. ICES veitir ráðgjöf um hámarksafla fyrir árið 2016 í október 2015.

2.27 Norræna gulldepla

Tilraunaveiðar með flotvörpu á norrænu gulldeplu hófust 2008 og mestur varð aflinn árið 2009, rúm 46 þús. tonn. Síðan þá hefur aflinn minnkað og var engum afla landað árin 2013 og 2014. Hafrannsóknastofnun leggur til að varlega verði farið í nýtingu stofnsins og hámarksafli fiskveiðiárið 2015/2016 verði 30 þús. tonn.

2.28 Gulllax

Aflinn 2014 var um 6 300 tonn, sem er umtalsverð minnkun frá árinu 2010 þegar aflinn var í sögulegu hámarki eða rúm 16 þús. tonn. Vísitala veiðistofns gulllax í stofnmælingu hækkaði mikið árið 2014, en þær breytingar eru líklega vegna breytinga á veiðanleika fremur en aukinnar stofnstærðar. Hafrannsóknastofnun leggur til að hámarksafli gulllax fiskveiðiárið 2015/2016 verði 8 000 tonn.

2.29 Humar

Humaraflinn árið 2014 var 1 965 tonn, samanborið við 1 724 tonn árið 2013. Stofnvísitala hefur farið lækkandi frá árinu 2008 og var vorið 2015 sú lægsta frá upphafi. Veiðistofn humars (6 ára og eldri) árið 2015 er nú metinn 10 700 tonn og hefur farið hratt minnkandi. Humarstofninn stækkaði mjög á árunum 1997–2007, sem rekja má til aukinnar nýliðunar og hóflegrar sóknar í stofninn. Samfara mjög litlum árgöngum undanfarin ár hefur veiðistofninn minnkað hratt og er nú metinn við sögulegt lágmark. Hins vegar er stofn stórhumars (10 ára og eldri) enn metinn yfir langtímameðaltali. Hafrannsóknastofnun leggur sem fyrr til að humaraflinn miðist við kjörsókn ($F_{0.1}$) og fari ekki yfir 1 500 tonn fiskveiðiárið 2015/2016.

2.30 Rækja

Á yfirstandandi fiskveiðiári voru rækjuveiðar á **grunnslóð** leyfðar í Arnarfirði, Ísafjarðardjúpi, við Eldey og Snæfellsnes. Hafrannsóknastofnun leggur til að rækjuafli fyrir veiðisvæðið við Snæfellsnes verði 700 tonn á tímabilinu frá 1. maí 2015 til 15. mars 2016 og 200 tonn við Eldey á yfirstandandi almanaksári. Hafrannsóknastofnun mun veita ráðgjöf um veiðar á öðrum svæðum á grunnslóð að loknum könnunum haustið 2015.

Rækjuafli á **djúpslóð** var 4 000 tonn árið 2014 en var mestur um 65 þús. tonn árið 1997. Stofnvísitala rækju var líkt og undanfarin ár nærri sögulegu lágmarki. Slök nýliðun rækju undanfarin 11 ár bendir til að stofnstærð úthafsrækju muni ekki aukast í bráð. Hafrannsóknastofnun leggur til að hámarksafli úthafsrækju fiskveiðiárið 2015/2016 verði 4 000 tonn.

2.31 Hörpudiskur

Hörpudisksveiðar í atvinnuskyni voru ekki heimilaðar fiskveiðiárið 2014/2015. Veiðistofninn í Breiðafirði minnkaði eftir árið 2000 og er nú í sögulegu lágmarki. Hnignun stofnsins má rekja til stóraukinna dauðsfalla hörpudisks vegna frumdýrasýkingar. Auk þess mælast árgangar 2004–2009 allir mjög slakir en yngri

árgangar eru greinanlegir. Hafrannsóknastofnun leggur til að veiðar á hörpudiski verði ekki heimilaðar á hefðbundnum veiðisvæðum fiskveiðiárið 2015/2016.

2.32 Kúfskel

Veiðar á kúfskel til manneldis hafa verið stundaðar með hléum síðan 1987 og hefur ársafli verið mjög breytilegur, en var mestur 14 400 tonn árið 2003. Árið 2009 lögðust allar hefðbundnar veiðar af og var landaður afli árið 2014 aðeins 18 tonn. Hafrannsóknastofnun leggur til að aflamark verði bundið við ákveðin veiðisvæði og að árlegur afli á tilteknu tímabili (4–7 ár) verði að jafnaði ekki meiri en 2,5% af áætlaðri stofnstærð eða samtals 32 500 tonn fiskveiðiárið 2015/2016 fyrir svæðið frá Garðskaga réttsælis að Ingólfshöfða.

2.33 Beitukóngur

Gildruveiðar á beitukóngi hófust í Breiðafirði árið 1996. Aflinn var 93 tonn árið 2014 samanborið við 89 tonn árið 2013. Samkvæmt stofnmælingu í Breiðafirði sumarið 2012 virðast veiðar undanfarinna 15 ára ekki hafa haft veruleg áhrif á stofnstærð. Hafrannsóknastofnun leggur til að afli í Breiðafirði fiskveiðiárið 2015/2016 verði að hámarki 750 tonn.

2.34 Sæbjúga

Tilraunaveiðar á sæbjúgum hófust 2003, en landaður afli var mjög lítill til ársins 2008, þegar hann var tæp 1 000 tonn. Árið 2014 var aflinn tæp 850 tonn. Frekar lítið er vitað um útbreiðslu og stofnstærð sæbjúgna við landið utan þekktra veiðisvæða. Hafrannsóknastofnun leggur til að afli fiskveiðiárið 2015/2016 fari ekki yfir 10% af áætlaðri stofnstærð á hverri þekktri veiðislóð.

2.35 Ígulker

Veiðar á ígulkerum hófust hér við land árið 1993 og náðu hámarki ári síðar er aflinn var tæp 1 500 tonn. Aðalveiðisvæðið hefur ávallt verið í Breiðafirði. Veiðar voru mjög litlar á árunum 1997–2006 en frá árinu 2007 hefur aflinn verið á bilinu 125–231 tonn, mestur árið 2014. Lítið er vitað um afrakstursgetu stofnsins og svæði með ígulkerum af viðunandi gæðum eru mjög takmörkuð að stærð. Því ber að fara varlega í nýtingu þeirra.

2.36 Hvalir

Eftir tveggja áratuga hlé á hvalveiðum í atvinnuskyni hófust veiðar á hrefnu og langreyði að nýju árið 2006. Alls voru 24 hrefnur og 137 langreyðar veiddar árið 2014.

Stofnstærð **hrefnu** við Ísland (Miðnorður-Atlantshafsstofn) er metin nálægt því sem hún er talin hafa verið áður en atvinnuveiðar hófust, samkvæmt úttektum vísindanefnda Alþjóðahvalveiðiráðsins (IWC) og Norður-Atlantshafs Sjávarspendýraráðsins (NAMMCO). Á grundvelli úttekta á vegum IWC og NAMMCO hefur Hafrannsóknastofnun á undanförnum árum ráðlagt veiðar á allt að 229 hrefnum á íslenska landgrunnssvæðinu. Unnið er að formlegri úttekt á ástandi hrefnustofna innan IWC og NAMMCO. Ráðgjöf fyrir árið 2016 verður veitt að lokinni úttekt NAMMCO haustið 2015.

Niðurstöður talninga á **langreyði** frá 2007 benda til að heildarstofninn á hafsvæðinu Austur-Grænland/Ísland/Jan Mayen sé um 20 600 dýr, sem er svipað niðurstöðum talninga frá 1995 og 2001. Á grundvelli úttekta á vegum IWC og NAMMCO hefur Hafrannsóknastofnun á undanförnum árum ráðlagt veiðar á allt að á 154 langreyðum á hefðbundnum hvalveiðimiðum vestan Íslands. Ráðgjöfin byggist á sjónarmiðum um sjálfbærni og varúðarnálgun. Stofnunin mun veita ráðgjöf fyrir árið 2016 í haust að aflokinni úttekt NAMMCO á ástandi langreyðar í N-Atlantshafi.

2.37 Selir

Samkvæmt stjórnunarmarkmiðum er stefnt að því að halda stofni **landsels** nálægt 12 þús. dýrum. Byggt á talningum árið 2011 var stofnstærð landsels metin um 11 þús. dýr sem er svipað og árin 2003 og 2006, en stofninn hefur minnkað verulega frá árinu 1980 er hann var metinn um 34 þús. dýr. Selatalning sumarið 2014 sýndi verulega fækkun, en heildarstofnstærð var ekki metin þar sem talningin náði aðeins til hluta stofnsvæðisins.

Samkvæmt stjórnunarmarkmiðum er stefnt að því að halda stofni **útsels** nálægt 4 100 dýrum. Byggt á talningum haustið 2012 var stofnstærð útsels metin um 4 200 dýr sem er talsvert minna en í talningum árin 2008 og 2009. Útselsstofninn hefur minnkað verulega á undanförnum áratugum, en hann var metinn um 12 þús. dýr árið 1990.

Gögn um selveiðar síðustu ára eru ekki talin áreiðanleg og mjög mikilvægt er að bæta skráningu allra selveiða til að betur sé hægt að leggja mat á veiðidánartölu, ástand og þróun stofnanna.

Tafla 1

Tillögur um hámarksafla fiskveiðiárin 2015/2016 og 2014/2015, ásamt aflamarki samkvæmt ákvörðun stjórnvalda fiskveiðiárið 2014/2015 (þús. tonn).

TAC recommended by the Marine Research Institute for the quota years 2015/2016 and 2014/2015, and national TAC for the quota year 2014/2015 (thous. tonnes).

Stofn *Stock*	Tillaga 2015/2016 *Recomm. TAC 2015/2016*	Tillaga 2014/2015 *Recomm. TAC 2014/2015*	Aflamark 2014/2015 *National TAC 2014/2015*
Þorskur *(Cod)* [1,2)]	239	218	216
Ýsa *(Haddock)* [1,2)]	36,4	30,4	30,4
Ufsi *(Saithe)* [1,2)]	55	58	58
Gullkarfi *(Golden redfish)* [1,2)]	51	48	45,6
Litli karfi *(Norway redfish)*	1,5	1,5	1,5
Djúpkarfi *(Deep sea redfish)*	10	10	10
Úthafskarfi *(Pelagic redfish)* [3,4,5)]	-	10	35 (2,9)
Grálúða *(Greenland halibut)* [3,5)]	22	25	25 (14,1)
Skarkoli *(Plaice)*	6,5	7	7
Sandkoli *(Dab)* [6)]	0,5	1	1
Langlúra *(Witch)*	1,1	1,1	1,1
Þykkvalúra *(Lemon sole)*	1,3	1,6	1,6
Steinbítur *(Atlantic wolffish)*	8,2	7,5	7,5
Hlýri *(Spotted wolffish)*	0,9	0,9	-
Íslensk sumargotssíld *(Herring)* [1)]	71	83	82,2
Norsk-ísl. síld *(Atlanto-Scandian herring)* [1,4,7)]	-	283	-
Loðna *(Capelin)* [1,5,8)]	54	580	580 (405)
Kolmunni *(Blue whiting)* [1,4,5)]	-	840	1260 (203)
Makríll *(Mackerel)* [1,4,7)]	-	906	-
Gulldepla *(Pearlside)*	30	30	-
Blálanga *(Blue ling)*	2,6	3,1	3,1
Langa *(Ling)*	16,2	14,3	13,8
Keila *(Tusk)*	3,4	4	3,7
Gulllax *(Greater silver smelt)*	8	8	8
Skötuselur *(Anglerfish)*	1	1	1
Hrognkelsi *(Lumpfish)* [9)]	2	6,2	-
Humar *(Nephrops)*	1,5	1,65	1,65
Rækja á grunnslóð *(Inshore shrimp)* [8)]	0,9	1,9	2,1
Rækja á djúpslóð *(Offshore shrimp)*	4	5	5
Hörpudiskur *(Iceland scallop)*	0	0	0
Kúfskel *(Ocean quahog)*	32,5	32,5	-
Beitukóngur *(Common whelk)*	0,75	0,75	-
Hrefna *(Common minke whale)* [4,10)]	-	229	229
Langreyður *(Fin whale)* [4,10)]	-	154	154

[1)] Ráðgjöf samkvæmt aflareglu. *Advice according to harvest control rule.*

[2)] Ráðgjöf og aflamark samkvæmt samþykktum stjórnunarmarkmiðum. *Advice and TAC according to agreed management plan.*

[3)] Aflamark á öllu útbreiðslusvæði stofns fyrir almanaksár. *TAC for the total area of distribution for calendar year.*

[4)] Ráðgjöf fyrir almanaksárið 2016 verður veitt haustið 2015. *Recommended TAC for calendar year 2016 will be given in autumn 2015.*

[5)] Samanlagt heildaraflamark allra veiðiþjóða og aflamark ákveðið fyrir Ísland (í sviga). *Total TAC and national TAC within parentheses.*

[6)] Tillaga um afla á skilgreindu aflamarkssvæði. *TAC recommendation for defined management area.*

[7)] Ósamkomulag á milli strandríkja, heildaraflamark 2015 óþekkt. *Disagreement among coastal states, total TAC for 2015 unknown.*

[8)] Upphafsafli fyrir fiskveiðiárið 2015/2016, ráðgjöf verður endurskoðuð haustið 2015. *Initial TAC for quota year 2015/2016, TAC will be revised in autum 2015.*

[9)] Samkvæmt ráðgjafarreglu fyrir vertíð 2016, verður endurskoðað vorið 2016. *According to advisory rule, inital TAC advice for 2016 season, will be revised in spring 2016.*

[10)] Fjöldi dýra innan íslenska landgrunnsins. *Number of animals within the Icelandic shelf area.*

Tafla 2

Aðrar tillögur Hafrannsóknastofnunar fyrir fiskveiðiárið 2015/2016.

Additional advice for the quota year 2015/2016.

Þorskur – Við úthlutun aflamarks til íslenskra skipa verði tekið mið af afla erlendra skipa og annars afla sem nú er utan aflamarks.

Lúða – Áframhaldandi bann við beinni sókn og reglugerð til verndunar lúðu verði áfram í gildi.

Loðna – Haustveiðar hefjist ekki fyrr en í október, að loknum aðalvaxtartíma loðnunar.

Skarkoli – Áframhaldandi friðun á hrygningarstöðvum á hrygningartíma.

Skrápflúra – Friðun helstu hrygningarsvæða á hrygningartíma.

Steinbítur – Áframhaldandi friðun á hrygningarsvæðum á Látragrunni á hrygningar- og klaktíma.

Blálanga – Þekktum hrygningarsvæðum verði áfram lokað á hrygningartíma.

Langa – Við úthlutun aflamarks til íslenskra skipa verði tekið mið af afla erlendra skipa.

Keila – Við úthlutun aflamarks til íslenskra skipa verði tekið mið af afla erlendra skipa. Áframhaldandi veiðibann á afmörkuðum uppvaxtarsvæðum til verndar smákeilu.

Hrognkelsi – Aukin áhersla á skráningu meðafla og eftirlit með brottkasti við grásleppuveiðar.

Kúfskel – Aflamarki verði úthlutað eftir svæðum með tilliti til stofnstærðar á hverju svæði.

Sæbjúga – Afli fari ekki yfir 10% af áætlaðri stofnstærð hverrar veiðislóðar.

Selir – Efla selatalningar og bæta skráningu selveiða til að hægt sé að leggja mat á ástand stofnanna.

Cod – *Expected catches by foreign fleets and other catches not subject to TAC should be subtracted from the TAC prior to allocation of quota to Icelandic vessels.*

Halibut – *Continued ban on directed halibut fishery and implemented conservation act for protection of the stock.*

Capelin – *Summer/autumn fishery should not open until October.*

Plaice – *Continued closure of spawning areas during spawning season.*

Long rough dab – *Closure of main spawning areas during spawning season.*

Atlantic wolffish – *Continued closure of spawning areas off the west coast of Iceland during spawning season.*

Blue ling – *Continued closure of known spawning areas during spawning time.*

Ling – *Subtract expected catches by foreign fleets from TAC before allocation of quota to Icelandic vessels.*

Tusk – *Subtract expected catches by foreign fleets from TAC before allocation of quota to Icelandic vessels. Continued ban on fishery in nursery areas in order to protect juveniles.*

Lumpfish – *Improve monitoring of bycatch and discards of other species from the female lumpfish fishery.*

Ocean quahog – *TAC should be divided by areas according to stock size in each area.*

Sea cucumber – *Annual catch not exceeding 10% of estimated biomass within each fishing area.*

Seals – *Survey seals regularly and improve collection of catch data to evaluate current population status.*

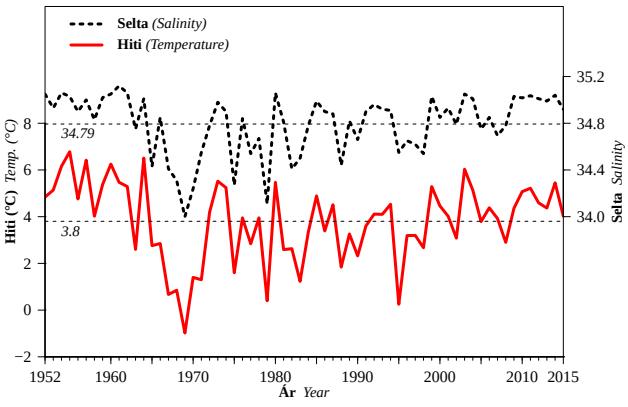
1 Environmental conditions

Evaluation of seasonal conditions in Icelandic waters has partly been based on data from the annual spring survey conducted in May/June (Figures 1.1 and 1.2). This survey collects data in all Icelandic waters to monitor oceanographic and planktonic conditions. Emphasis is placed on comparable data collection from year to year. Repeated sampling has been conducted on specific stations in other seasons, but for a shorter period.

Results show that conditions vary greatly from year to year. Studies in recent decades indicate that influx of warm water into northern seas supports increased overall production, but a complex combination of many environmental parameters affects the food web and the yield of fished stocks in Icelandic waters. This chapter provides a brief discussion of seasonal conditions in Icelandic waters in recent years. More detailed information is to be found in the MRI report, *Environmental Conditions in Icelandic Waters*, Marine Studies nr. 181 (2015).

1.1 Temperature and salinity in upper layers

Temperature and salinity have been measured each spring for more than 50 years off the coast of Siglunes (Fig. 1.1). These measurements provide a decent indication of marine conditions in Icelandic waters and the influx of warm saline Atlantic water into the region. Following a warm period in the North Atlantic, the so-called Sea Ice Years in 1965–1971 saw a strong influx of cold low salinity polar water into the Icelandic region. Since then annual temperatures have fluctuated, with coldest temperatures since the Sea Ice Years being in 1979 and 1995. Since 1998 temperature and salinity have been above average; they were especially high in 2010–2014.



Mynd 1.1. Hiti og selta að vori á 50 m dýpi á stöð 3, um 20 sjómílur norður af Siglunesi. Láréttu línurnar tákna meðaltöl fyrir tímabilið.

Figure 1.1. Temperature and salinity in spring at 50 m depth at station 3 on the Siglunes section. The horizontal lines indicate the means for the same period.

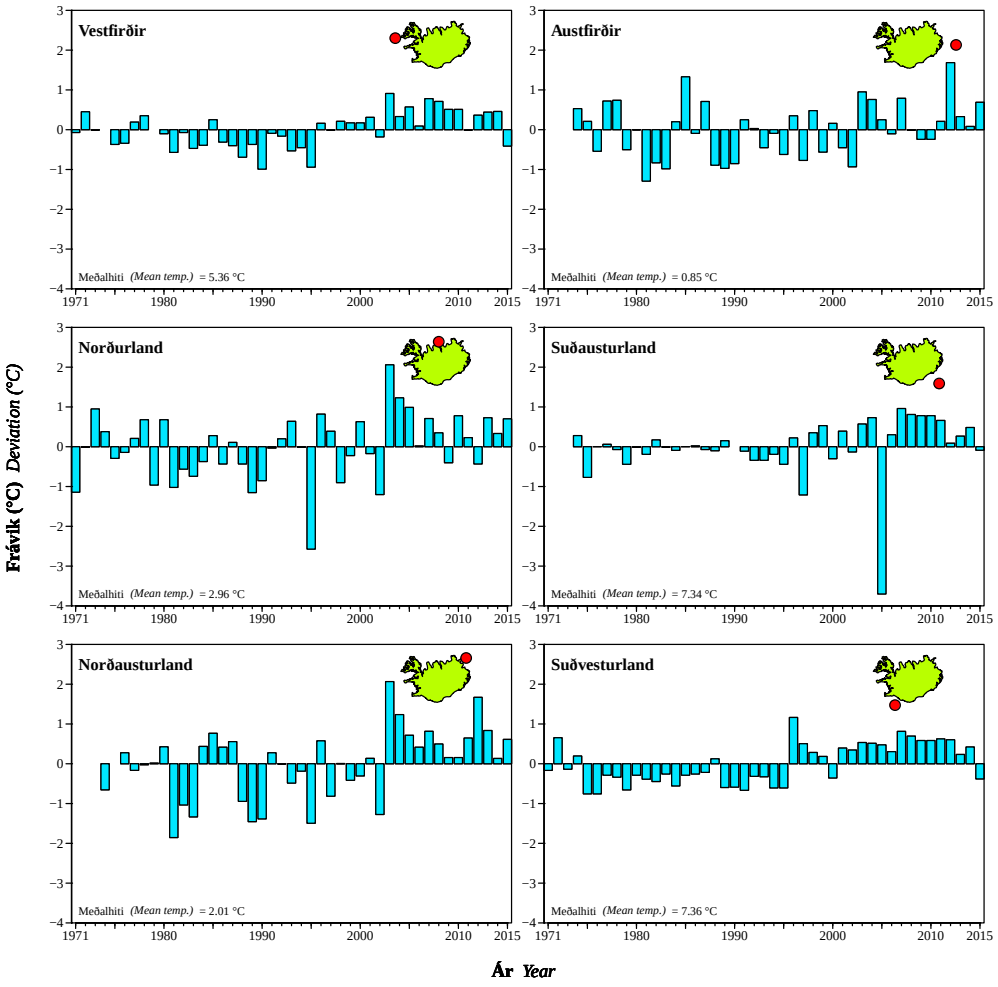
In the winter and spring of 2015 upper layers off the south and west coasts have cooled by 1–2°C. Temperature and salinity at great depths have most often been above average for more than a decade, which reflects the warmer and more saline water off the south and west coasts in recent years. However, the cooling trend is observable in benthic temperatures to the southeast, southwest, and in the West Fjords (Fig. 1.2).

1.2 Benthic temperature

Benthic temperatures reflect temperature distribution in upper layers. Usually, these are lower to the north and east of Iceland due to the influence of cold currents from the north, and higher to the south and west of the country as a result of warm water influx from

the south. Figure 1.2 shows trends in average temperature in the water column 50–100 m above the bottom in chosen locations in all Icelandic waters. Off the northern coast, the average is calculated using measurements from 150–300 m depth.

Benthic temperatures on the shelf are usually lowest in February–March and highest in August–September or later in the year. Annual variation is most in the shallowest waters and decreases with increasing depth. Beyond the shelf margin to the north and east of Iceland benthic temperature is generally below 0°C (Arctic deep sea water). Off the central northern coast (outside the mouth of Eyjafjord, depth as much as 700 m) cold deep sea polar water approaches land, splitting the northern coastal waters into west and east. On the slope to the south and west of Iceland benthic temperatures decrease with depth also, but rarely go below 4°C.



Mynd 1.2. Frávik frá meðalhita yfir botni (°C) á mismunandi svæðum umhverfis Ísland í maí/júní.

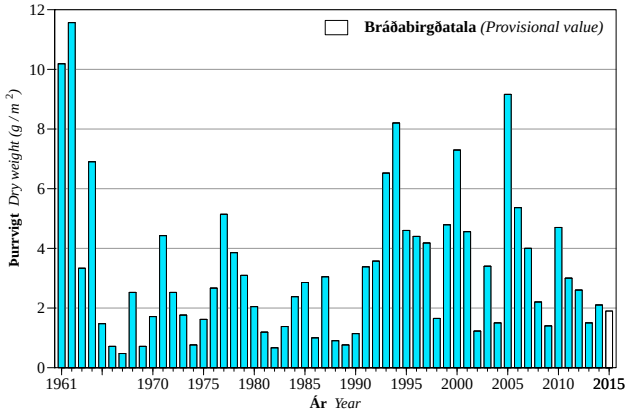
Figure 1.2. Temperature anomalies (°C) near bottom in Icelandic waters in May/June.

Benthic temperatures has been mostly above average in the last decade (Fig. 1.2) in Icelandic waters. The year 2005 was an exception to this when the boundary to the south-east shifted to the west for a short time. Measurements in the spring of 2015 show that temperature continues to be near or above the average for this season in the north and east. Benthic temperature off the south-east, south-west, and West Fjords has decreased and is now under the historical average.

1.3 Zooplankton

Krill are an important piece of the marine environment because not only are they the main food for pelagic fish, such as herring and capelin, they also support the larval and fry stages of all fish stocks. The abundance of krill is said to strongly affect the survivability of larval fish that have just begun to hunt for food. MRI studies have shown the correlation between the abundance of krill to the south-west in the spring and the number of cod fry in August and the recruitment of cod joining the stock. This connection is an example of the ecological connection of growth and development of organisms at the lowest stage of the food web with that of animals higher up the food chain.

Long-running studies of trends in krill abundance have been on-going since about 1960. Figure 1.3 shows krill abundance off the north coast (Siglunes transect), where the longest data series has been collected. In 2013 and 2014 krill abundance was well below the historical average and this trend seems to be continued in 2015, based on preliminary results.

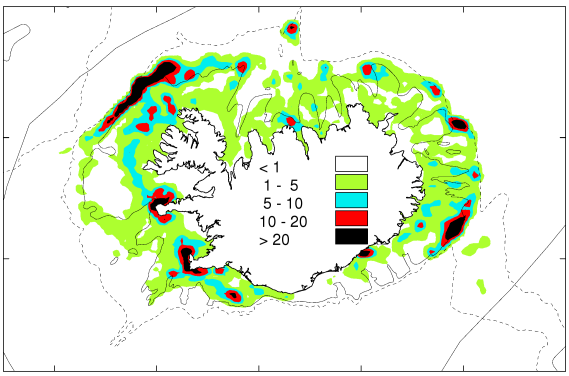


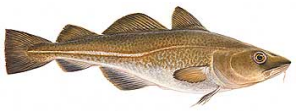
Mynd 1.3. Átumagn (g þurrvigt m^{-2}, 0–50 m) að vorlagi á Siglunessniði. Súlurnar sýna meðaltöl allra stöðva á sniðinu.

Figure 1.3. Zooplankton biomass (g dry weight m^{-2}, 0–50 m) in spring at Siglunes section. The columns show means for all stations at the section.

2 State of marine stocks

2.1 Cod *Gadus morhua*



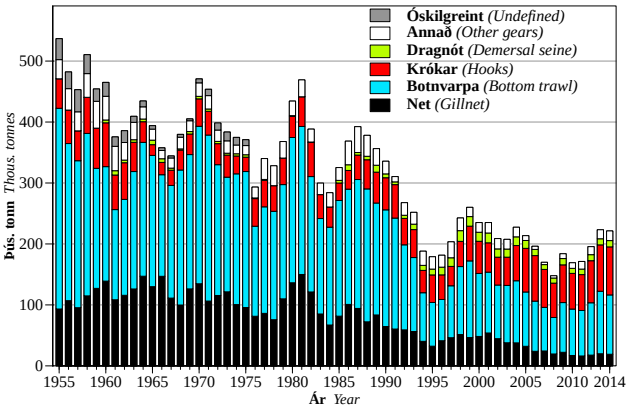


Þorskur. Veiðisvæði við Ísland árið 2014 (tonn/sjm^2). Veiðisvæði mismunandi veiðarfæra eru sýnd í viðauka 5.2.

Cod. *Fishing grounds in 2014 (tonnes/nmi^2). Information on fishing grounds by gear type is given in Appendix 5.2.*

2.1.1 Landings, effort and year classes

Total landings from the Icelandic cod stock in 2014 were 221 thous. tonnes, as compared to 223 thous. tonnes in 2013 (Fig. 2.1.1 and Table 3.1.1). TAC for quota year 2013/2014 according to the catch rule was 215 thou. tonnes but total landings were 227 thous. tonnes. Recommended TAC and landings are shown in Table 2.1.1.



Mynd 2.1.1. **Þorskur.** Landaður afli eftir veiðarfærum.

Figure 2.1.1. ***Cod.*** *Landings by gear type.*

In 2014 44% of landings came from the bottom trawl fishery, longlines provided 36%, gillnets were 8%, handliners landed 7% and 5% were landed by demersal seine (Fig. 2.1.1). The biggest change in fishing methods since the turn of the century is the increasing use of longlines and the concurrent decrease in gillnets (Appendix 5.2).

The age composition in the 2014 catch matched MRI projections (Fig. 2.1.2). Compared to annual data from the last decade, old fish represent a higher proportion of landings (Table 3.1.2).

CPUE was high in all favored gears in 2014 (Fig. 2.1.3). Using this data as an indication of the development of cod stock is difficult. Two factors that complicate the issue are improved fishing techniques and difficulties involved in trying to distinguish between direct targeting and cod landings from fisheries that try to minimize the amount of cod taken while fishing for other species.

2.1.2 Mean weight and maturity

Mean weight at age in landings (Table 3.1.3) has increased in recent years and was near the historical average (1955–2013). Based on weight data from the spring groundfish survey (SMB) weights in landings in 2015 are expected to be near or above average.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total catch*
1984	200	242	281	2.0	283
1985	200	263	323	3.0	326
1986	300	300	365	3.0	369
1987	300	330	390	2.0	392
1988	300	350	376	2.0	378
1989	300	325	354	2.0	356
1990	250	300	333	2.0	335
1991[1)]	240	245	243	2.0	244
1991/92	250	265	273	1.9	275
1992/93	190	205	240	0.8	241
1993/94	150	165	196	0.9	197
1994/95	130	155	164	0.7	165
1995/96	25% aflaregla	155	169	0.6	170
1996/97	25% aflaregla	186	201	0.4	202
1997/98	25% aflaregla	218	227	1.1	228
1998/99	25% aflaregla	250	253	1.4	254
1999/00	25% aflaregla	250	256	1.3	257
2000/01	25% aflaregla	220	222	1.3	223
2001/02	25% aflaregla	190[2)]	217	1.3	218
2002/03	25% aflaregla	179	197	7.1	204
2003/04	25% aflaregla	209	219	7.5	226
2004/05	25% aflaregla	205	207	5.6	214
2005/06	Lækka veiðihlutfall	198	202	2.9	205
2006/07	Lækka veiðihlutfall	193[2)]	187	3.7	191
2007/08	20% aflaregla (130)	130	138	3.0	141
2008/09	20% aflaregla (124)	160	168	1.1	169
2009/10	20% aflaregla (150)	155	166	1.5	168
2010/11	20% aflaregla (160)	160	167	2.0	169
2011/12	20% aflaregla (177)	177	183	2.0	185
2012/13	20% aflaregla (196)	195	210	1.7	212
2013/14	20% aflaregla (215)	215	225	1.7	227
2014/15	20% aflaregla (218)	218			
2015/16	20% aflaregla (239)				

[1)] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[2)] Aflareglu breytt. *Amended harvest control rule.*

Tafla 2.1.1. **Þorskur**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

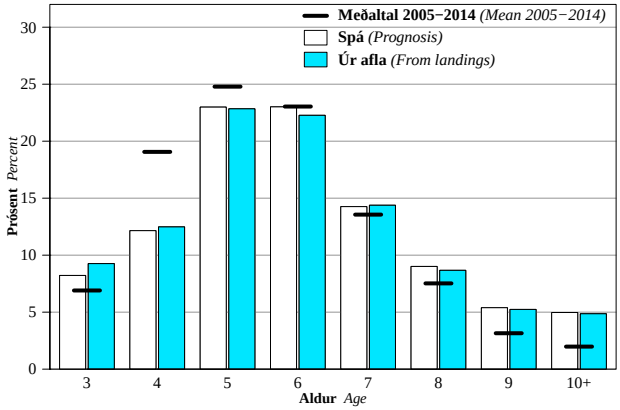
Table 2.1.1. ***Cod****. TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes).*

Maturity at age in fish younger than age 10 is estimated using data from the SMB (table 3.1.5). The proportion mature by age 4–6 has decreased for the last 15 years. Where the proportion mature was about 50% around the year 2000, it is now about 30%.

2.1.3 Biomass indices

Total biomass indices for cod in the spring groundfish survey (SMB) and fall groundfish survey (SMH) have increased in recent years (Fig. 2.1.4) and have been at an historical high for four years.

All year cohorts of cod are present in the surveys so the biomass indices for age 1–10 cod are used as an estimation of the development of the stock. Indices for the 2001–2008 cohorts from the SMB indicate that they have been near or under average from ages 1-4 and the older fish, ages 6–10, have been above average. This is mostly a result of lower fishing mortality in recent years. Initial sampling indicates that the 2014 cohort will likely be above average.



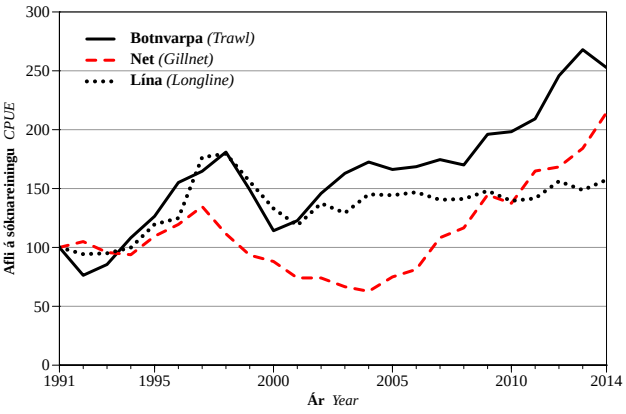
Mynd 2.1.2. **Þorskur.** Aldursdreifing afla (% af fjölda) árið 2014, ásamt spá frá í maí 2014. Meðalaldursdreifing síðustu tíu ára er jafnframt sýnd.

Figure 2.1.2. ***Cod.*** *Age distribution in the 2014 catch (% by number), compared to last year's prediction. Mean age distribution from the last ten years is also shown.*

2.1.4 Stock assessment and assumptions

Estimates of stock size are based on age distributed catch data (Table 3.1.2) and cohort indices from the SMB and SMH (Tables 3.1.6 and 3.1.7). A natural mortality of 0.2 is used for all cohorts age 3 and older. An ADCAM model is used for this estimate but other models are calculated with the same basis and different assumptions (see Appendix 5.1).Stock assessments have been conducted in this way since 2010. Early in 2015 ICES called a meeting to carefully review data and stock assessment methods. The conclusion was that changes in the method were not necessary.

Reference biomass (age 4 and older) has been used to calculate TAC in accordance with the catch rule, which is based on mean weight at age in landings. Mean weight at age in the spawning stock is based on data from the SMB describing fish age 7 and younger and data from landings for fish age 8 and older (Table 3.1.4).



Mynd 2.1.3. **Þorskur.** Hlutfallslegar breytingar í afla á sóknareiningu eftir veiðarfærum (miðað við 100 árið 1991).

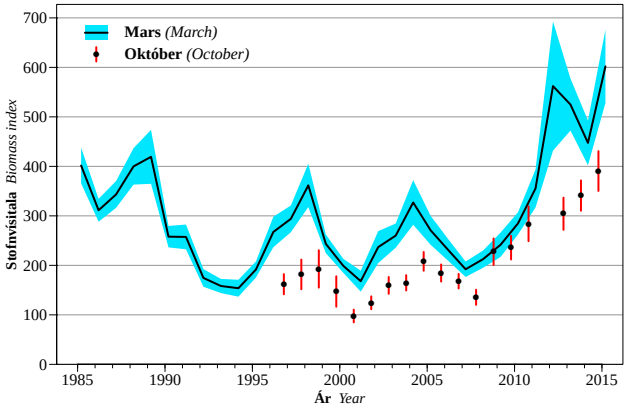
Figure 2.1.3. ***Cod.*** *Relative changes in CPUE by fishing gear (1991 set at 100).*

In 2010 the reference points $B_{trigger}$ and B_{lim} were defined for Icelandic cod and relate to the spawning stock. ($B_{trigger}$) is defined as 125 thous. tonnes–which is the historical minimum of the spawning stock–and B_{lim} is defined as 220 thous. tonnes and, according to the HCR, fishing mortality is decreased if the stock size goes below this number.

To calculate TAC for the coming year, the mean weight at age in catches in 2015 is estimated based on mean weight in the SMB 2015.

2.1.5 Status and projections

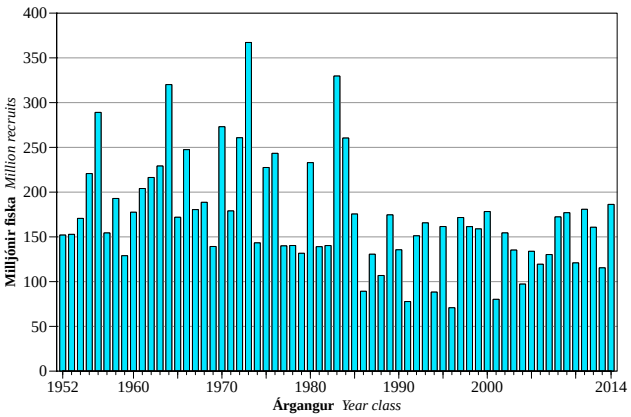
Mean size of cohorts from 2006–2011, which are now the bulk of the reference stock, is about 150 million age 3 recruits (Fig. 2.1.5 and Table 3.1.8), or 85% of the historical average (1955–2012) of 176 million. The 2010 cohort is weaker at over 120 million but the 2011 and 2012 cohorts are estimated at about 180 and 160 million. The 2013 cohort is



Mynd 2.1.4. **Þorskur.** Heildarvísitölur (þyngd) úr stofnmælingum í mars og október, ásamt staðalfráviki.

Figure 2.1.4. ***Cod.*** *Total biomass indices from the Icelandic groundfish surveys in March and October, along with the standard deviation.*

again estimated to be small, about 115 million, but the first estimate of the 2014 indicates that it is above average.

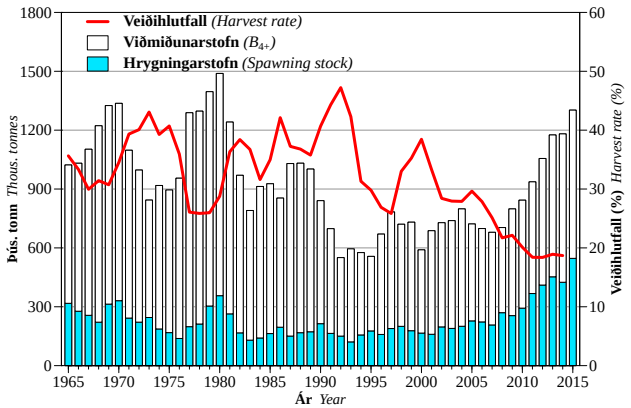


Mynd 2.1.5. **Þorskur.** Stærð árganga við þriggja ára aldur (í milljónum).

Figure 2.1.5. ***Cod.*** *Size of year classes at age 3 (in millions).*

The reference stock at the beginning of 2015 was estimated at 1302 thous. tonnes and the spawning stock was then 547 thous. tonnes (Fig. 2.1.6 and Table 3.1.8). The reference stock has increased by more than 50% in the last eight years and is now larger than at any time in the last three decades. The spawning stock is more than twice as big as it was for most of the last decade.

Harvest rate (landings as a proportion of the reference stock) and mean fishing mortality of fish ages 5–10 are indications of fishing pressure. Harvest rate represents total effort on the stock while fishing mortality indicates fishing pressure on older fish. When gillnetting is as uncommon as in recent years, it can be expected that fishing mortality is low in relation to harvest rate. In the last decade harvest rate has decreased from about 35–40% to under 20% (Fig. 2.1.6). Fishing mortality has decreased from 0.76 in 2000 to 0.28 in 2014 (Table 3.1.8) and is now at an historical minimum.



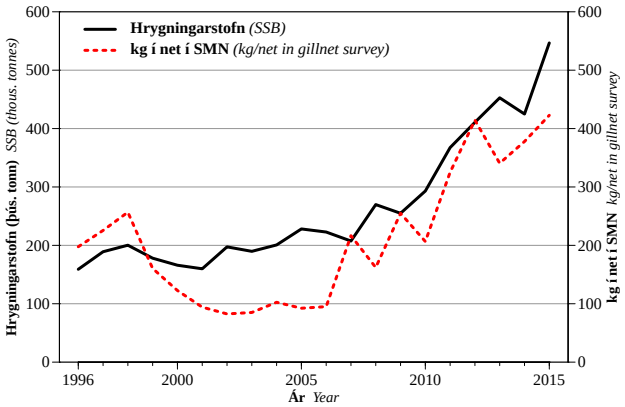
Mynd 2.1.6. **Þorskur.** Stærð viðmiðunarstofns (fjögurra ára og eldri) og hrygningarstofns ásamt veiðihlutfalli.

Figure 2.1.6. ***Cod.*** *Reference stock (ages 4+) and spawning stock biomass, along with the harvest rate.*

Since recruitment during the last decade has been below average, it is clear that the increase in stock is due to decreased effort. Less effort has led to cohorts remaining in the fishable stock longer. Consistent with this, the proportion of older fish in the stock is higher than in previous decades and the spawning stock has increased more than the reference biomass (Fig. 2.1.6).

In the stock assessment indices from both the SMB and SMH are used to calibrate the models. Estimates of the reference biomass in 2015 are over 100 thous. tonnes lower if only the SMB index is used and under 100 thous. tonnes higher if only the SMH index is used. If only age distributed landings data is used, the mortality is somewhat higher and stock increase is less than when both landing data and reference points are used together.

The gill net survey (SMN) has been conducted since 1996 and the index provided there should indicate trends in the size of the spawning stock, though it is not used in the assessment. Although the SMN indices are rather different from estimates of the spawning stock biomass, both have grown considerably over hte last decade (Fig. 2.1.7).

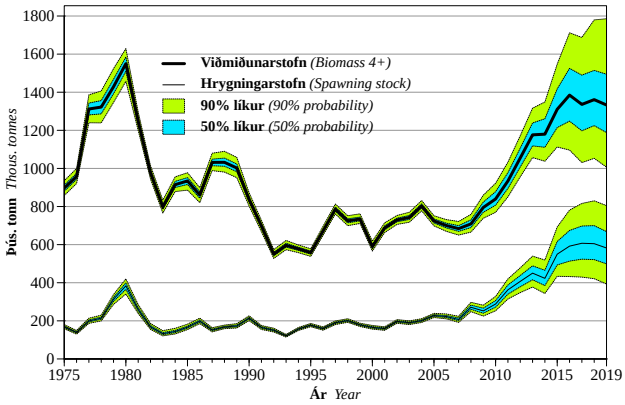


Mynd 2.1.7. **Þorskur.** Stærð hrygningarstofns og þróun aflabragða í stofnmælingu með netum.

Figure 2.1.7. ***Cod.*** *Spawning stock biomass and average catches in the gillnet survey.*

In projection of stock biomass (Fig. 2.1.8) there is some uncertainty in trends likely to occur in the mean weight and in size estimates of developing cohorts as well as other variables. Projections until 2019 are shown, and current biomass estimates describe the cohorts that will constitute the stock until that time.

Projections indicate that if the HCR is followed the stock should remain in its current condition (Fig. 2.1.8). There is still considerable uncertainty and the stock and landings might decrease. There is, however, little chance that the reference biomass will go below one million tonnes in the coming years.



Mynd 2.1.8. **Þorskur.** Stærð hrygningar- og viðmiðunarstofns ásamt framreikningum miðað við að afli verði samkvæmt aflareglu.

Figure 2.1.8. ***Cod.*** *Spawning and reference stock size and projection based on harvest control rule.*

2.1.6 Advice

Since the quota year 2008/2009, TAC for Icelandic cod has been set according to the HCR which dictates that TAC for the next year be the average of TAC from the previous

year and 20% of the reference stock in the current year. ICES committees reviewed the HCR in March, 2009 and January, 2015 and determined that it is in accordance with a precautionary approach and the prerequisite maximization of yield.

According to the current stock assessment, the HCR gives 239 thous. tonnes for the quota year 2015/2016. The Marine Research Institute emphasizes the necessity of considering expected landings that exceed the TAC. In the quota year 2013/2014 landings exceeding the TAC totalled about 12 thous. tonnes (5%).

Tafla 2.1.2. **Þorskur**. Áhrif á áætlaða stofnstærð (þús. tonn) miðað við veiðar samkvæmt aflareglu.

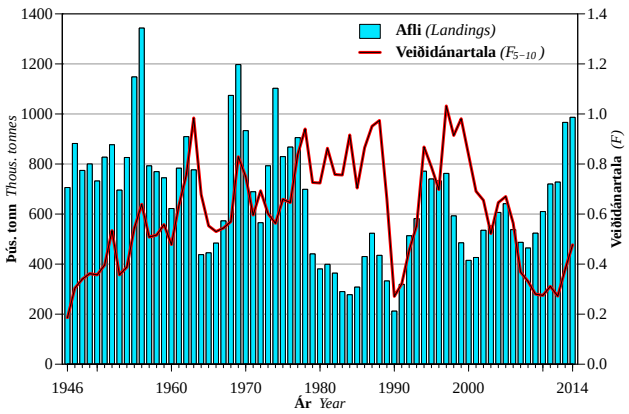
*Table 2.1.2. **Cod**. Projection of reference stock and spawning stock biomass (thous. tonnes) based on adopted harvest control rule.*

2015					2016			2017	
Áætl. afli *Pred. landings*	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*	F [1)]	Aflamark *TAC*	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*	F [1)]	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*
228	1302	547	0.26	239	1371	660	0.26	1350	623

[1)] Meðalveiðidánartala 5–10 ára þorsks. *Average fishing mortality of age groups 5–10.*

2.1.7 The Barents Sea cod stock

Landings of cod from the Barents Sea from WWII until 1980 averaged about 800 thous. tonnes (Fig. 2.1.9). In the 1980s landings averaged about 350 thous. tonnes despite intensive fishing. Since 2008 landings have doubled and were under one million tonnes in 2014. Icelanders fished for cod in the Barents Sea and around Svalbard early in the 20th century but ceased for a long period ending in 1993. From 1998–2014 Icelandic landings have increased from about 1 500 tonnes to 18 thous. tonnes.



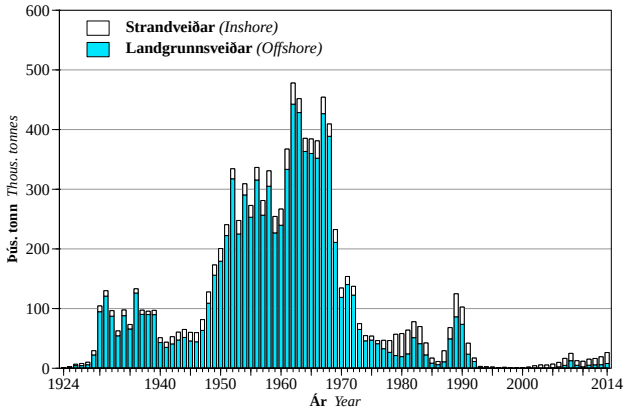
Mynd 2.1.9. **Þorskur í Barentshafi.** Landaður afli og veiðidánartölur 5–10 ára.

*Figure 2.1.9. **Northeast Arctic cod.** Landings and fishing mortality (F_{5-10}).*

Recruitment in Barents Sea cod stock has been near or above average for a decade, fishing mortality has decreased (Fig. 2.1.9) and stock biomass has increased considerably. The spawning stock has decreased somewhat in recent years and is now estimated at about 1.2 million tonnes. ICES recommends TAC be set according to the 2016 HCR, or 805 thous. tonnes.

2.1.8 Cod stock off Greenland

The cod fishery on the Greenlandic shelf began in earnest in 1925 and landings in 1931 were about 120 thous. tonnes (Fig. 2.1.10). Following a lull in 1940–1945 landings increased quickly, reaching about 450 thous. tonnes in 1962. Landings remained in a range of 350–430 thous. tonnes until 1968, then decreased rapidly to below 100 thous. tonnes in 1973. Since then, landings have been very small with the exception of the years surrounding 1980 and the period 1988–1990. Increases in landings in these years was mostly due to large cohorts from 1973, 1984 and 1985. From 1990 until 2001 landings were negligible, often less than 1 000 tonnes. After the turn of the century landings increased again and reached 26 thous. tonnes in 2014, 18 thous. tonnes of which were caught in fjord along the western coast.

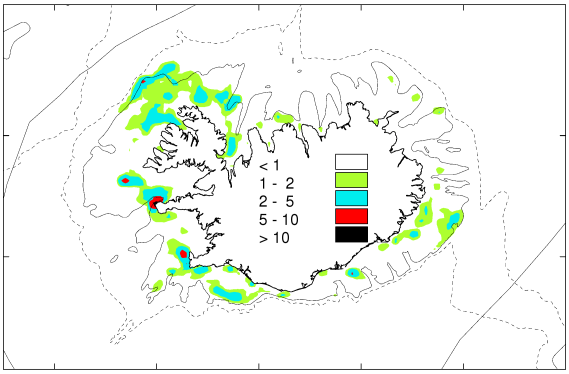


Mynd 2.1.10. **Þorskur við Grænland.** Landaður afli eftir veiðisvæðum.

Figure 2.1.10. ***Greenland cod.*** *Landings by area.*

In the assessment cod in Greenland waters are divided into three areas: within fjords, the western shelf and the eastern shelf. ICES recommends that TAC for 2016 not exceed 19 700 tonnes in these three areas, that is less than 9 000 tonnes from the eastern shelf, under 11 thous. tonnes in fjords and a closure of the fishery on the western shelf.

2.2 Haddock *Melanogrammus aeglefinus*



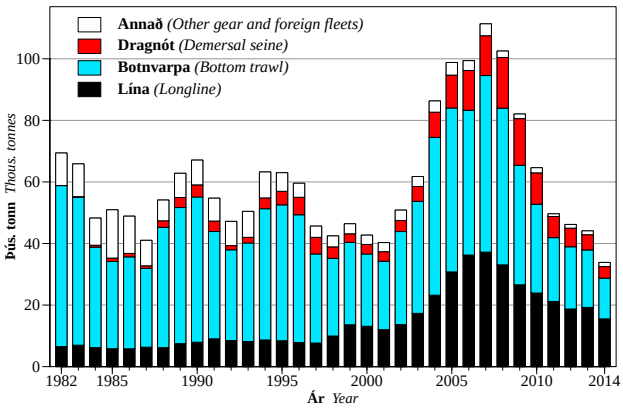
Ýsa. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Haddock. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.2.1 Landings and year classes

Haddock landings in 2014 were 34 thous. tonnes as compared to 44 thous. tonnes in 2013. TAC for the quota year 2014/2015, as determined by the HCR, was 30 400 tonnes (Table 2.2.1). In the first eight months of the current quota yearlandings were 25 thous. tonnes, but were about 32 thous. tonnes in the same period in the quota 2013/2014.

Figure 2.2.1 shows haddock landings by gear type since 1982 and landings since 1950 are described in Table 3.2.1. In the last two decades the proportion of haddock caught by longline and demersal seine increased while the proportion caught in bottom trawl has decreased at about the same rate. Proportion of haddock landings in various gears in 2014 were as follows: 48% longline, 39% bottom trawl, 11% demersal seine and 2% other gears. In recent years less than 1% of haddock landings were caught by gillnet, in contrast 10–25% of the haddock catch in 1982–1993 was caught with that gear.



Mynd 2.2.1. **Ýsa.** Landaður afli eftir veiðarfærum.

Figure 2.2.1. ***Haddock.*** *Landings by gear type.*

The age distribution in landings from 2014 is shown on Figure 2.2.2 and numbers by age are presented in Table 3.2.2. The 2007 cohort was the largest portion of the 2014 landings with 30% by number and 35% of the biomass. haddock age 9 and older were about 18% of landings by weight but averaged under 3.5% in 1979–2012. haddock age 5 and younger were only 22% of the biomass and have not been such a low proportion since 1983, except for the years 2009 and 2010 when the large 2003 cohort was dominant in landings.

The results of a study of haddock discards indicate that in 1991–1998 discards were 8–20% of the number of landed fish, 2–6% in 2001–2010 but less than 1% in 2011–2014 when there was less small haddock.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1984	55	60	47	1	48
1985	45	60	50	1	51
1986	50	60	47	1	48
1987	50	60	40	1	41
1988	60	65	53	1	54
1989	60	65	62	1	63
1990	60	65	66	1	67
1991[1)]	38	48	40	1	41
1991/92	50	50	47	1	48
1992/93	60	65	47	1	48
1993/94	65	65	56	1	57
1994/95	65	65	60	1	61
1995/96	55	60	53	1	54
1996/97	40	45	50	1	51
1997/98	40	45	37	1	38
1998/99	35	35	45	1	46
1999/00	35	35	41	1	40
2000/01	30	30	39	1	40
2001/02	30	41	44	1	45
2002/03	55	55	55	1	56
2003/04	75	75	78	1	79
2004/05	90	90	96	1	97
2005/06	105	105	97	1	98
2006/07	95	105	100	2	102
2007/08	95	100	110	1	111
2008/09	83	93	89	1	90
2009/10	57	63	68	1	69
2010/11	45	50	50	0	51
2011/12	37	45	49	0	50
2012/13	32	36	40	1	41
2013/14	38[2)]	38	39	1	40
2014/15	30.4[2)]	30.4			
2015/16	36.4[2)]				

[1)] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[2)] 40% aflaregla. *40% harvest control rule.*

Tafla 2.2.1. **Ýsa**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

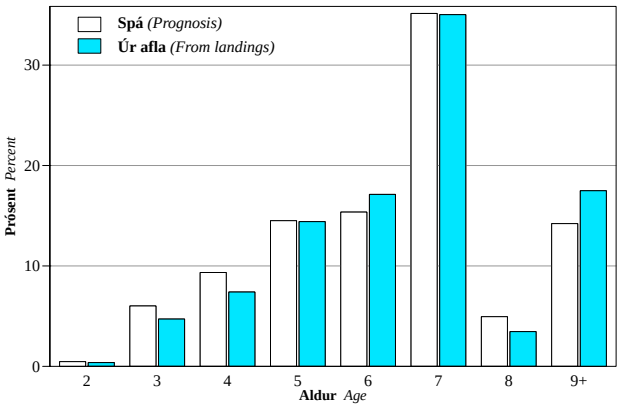
Table 2.2.1. ***Haddock****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

2.2.2 Mean weight and maturity

Mean weight at age (tafla 3.2.3) is calculated from SMB data. Mean weight was very low in 2004–2009 but increased considerably from 2010–2013. Mean weight of haddock in 2015 is near average among age 7 and older fish but above average for younger fish. mean weight in the haddock stock is somewhat variable and usually lower in large cohorts. The 2003 cohort was very large so biomass was relatively low. The youngest cohorts are rather small and their mean weight is higher than that observed in recent years. The low mean weight of large cohorts is evident at age 2 but after that age growth seems to be similar to that of smaller cohorts. In 2005–2009 growth of all cohorts was slow, but the haddock stock was very large. In 2010–2012 the growth rate increased considerably, but then decreased again in 2013. A dramatic increase in growth rate was observed in 2014, which caused mean weight at age in 2015 to be higher than expected in the last status report.

Mean weight by age in landings (Table 3.2.4) corresponds to mean weight in the survey rather well. Mean weight of the youngest cohorts is much higher than in surveys since fishing effort targets only fish of a given size.

Maturity by age is estimated from SMB data (Table 3.2.5). Proportion mature was low in 1985–1990, high in 1991–2002 and has decreased since then. This decrease seems to be a result of a higher proportion of the landings being from the north where proportion mature is much lower than in southern populations, though growth is similar.



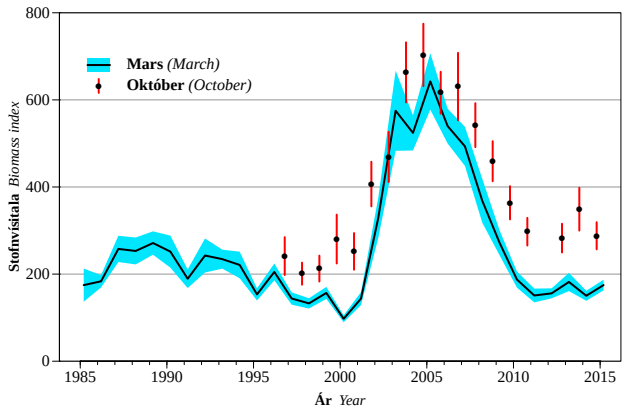
Mynd 2.2.2. **Ýsa.** Aldursdreifing í afla 2014 (% af þyngd). Spá frá maí 2014 og mat ári síðar byggt á gögnum úr afla.

Figure 2.2.2. ***Haddock.*** *Age distribution in the 2014 catch (% by biomass). Prognosis in May 2014 and estimate in 2015 based on samples from landings.*

2.2.3 Stock surveys

All age classes of haddock are well represented in the surveys, so a significant estimate can be made immediately at age 1.

Age disaggregated indices from surveys are shown in Tables 3.2.6 and 3.2.7. Large cohorts observed in the SMB were: 1998–2000, 2002, 2003, 2007 and 2014. Cohorts from 2001 and 2008–2013 were small and those from 2004–2006 were near average. The biomass indices from surveys (Fig. 2.2.3) increased considerably in 2001–2005 when the biomass of large cohorts from 1998–2000 quickly increased. Biomass indices were very high in 2004–2007 and proportional observational error was low due to the even distribution of haddock. The index declined rapidly in 2007–2010 and has remained steady since. The SMH biomass index has decreased less than that from the SMB, which indicates a better state of the haddock stock. Surveys indicate that the 2014 cohort is the first one since 2007 that is not small.



Mynd 2.2.3. **Ýsa.** Heildarvísitölur (þyngd) úr stofnmælingum í mars og október, ásamt staðalfráviki.

Figure 2.2.3. ***Haddock.*** *Total biomass indices from the Icelandic groundfish surveys in March and October, along with the standard deviation.*

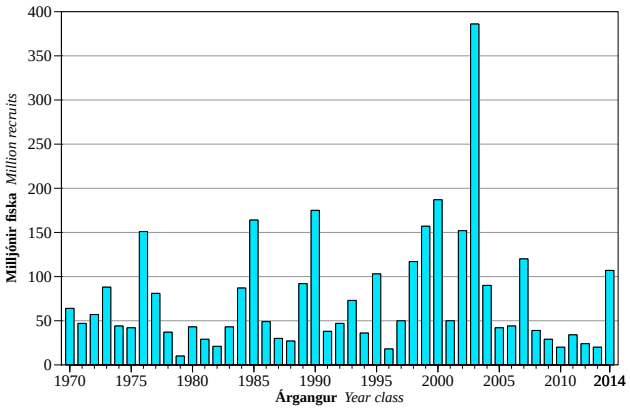
2.2.4 Stock assessment assumptions

A few models are used in the assessment of haddock stock but all are based on commercial catch at age and indices from the SMB and/or the SMH. It is assumed that mortality from other sources than fishing (that is, registered landings) is 0.2 for the period. In projections growth in 2015 is assumed to be the same as average growth of 2013 and 2014, that is 6% more than the mean growth of 1985–2012. Also, it is assumed that landings in the quota year 2014/2015 will be in accordance with allotted TAC.

2.2.5 Stock status and prognosis

The haddock stock declined rapidly in 2008–2013 when large cohorts from 1998–2003 left the stock and smaller cohorts succeeded them. All cohorts since 2005, except those from

2007 and 2014, are small and cohorts from 2008–2013 are very small (Fig. 2.2.4). In recent years the 2007 cohort has been the largest proportion of the fishable stock, comprising 43% of landings in 2013, 35% in 2014 and in 2015 is expected to be 23% of landings. The low fishing pressure in recent years has slowed the decline of the stock despite poor recruitment. A continued decrease in the stock is expected over the next two years until the 2007 cohort leaves the stock, after which time an increase is expected as the 2014 cohort enters the fishable stock.

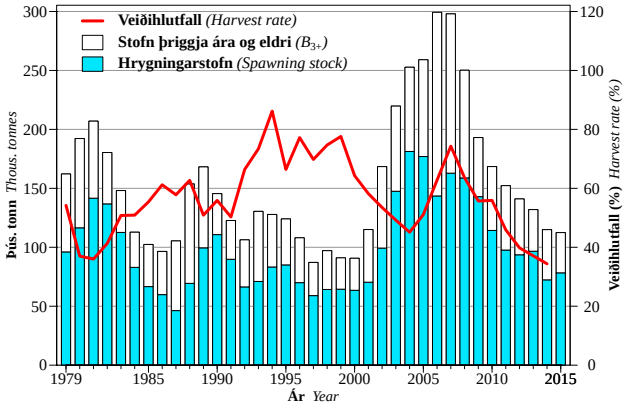


Mynd 2.2.4. **Ýsa.** Stærð árganga við tveggja ára aldur (í milljónum).

Figure 2.2.4. ***Haddock.*** *Size of year classes at age 2 (in millions).*

Although all models indicate continued decline over the next two years, there are differences in the results of models based on SMB data and those based on SMH data. Models based on the SMB suggest a smaller stock, as indices from that survey have decreased faster than those of the SMH. The final assessment is calculated using a model based on both surveys for the sake of calibration.

It is estimated that at the beginning of 2015 haddock age 3 and older are 112 thous. tonnes, and the spawning stock is 78 thous. tonnes (Fig. 2.2.5 and Table 3.2.8). the assessment indicates much better status of the stock than predicted by the 2014 assessment. Mean weight by age is higher than predicted and the number of fish is higher. In the last 3–4 years there has been a tendency to underestimate the size of the haddock stock. The harvest rate of haddock in (Fig. 2.2.5 and Table 3.2.8) is an estimated 35%, which is lower than the 40% of the reference stock required by the HCR.



Mynd 2.2.5. **Ýsa.** Stærð hrygningarstofns, stofnstærð þriggja ára og eldri ýsu og veiðihlutfall (afli/viðmiðunarstofn).

Figure 2.2.5. ***Haddock.*** *Spawning stock biomass, biomass of ages 3 and older, and harvest rate (catch/reference biomass).*

Cohorts from 2008–2013 are all very small (Fig. 2.2.4), averaging about 28 million age 2 recruits. This suggests about 24 thous. tonn TAC from each of them. There is a tendency to underestimate the size of small cohorts so the yield might actually be somewhat higher.

When the haddock stock was at a maximum estimates of growth was the strongest uncertainty in the assessment. There is some uncertainty about the growth in the coming years, but there is more regarding the size of cohorts, which is illustrated by the roughly 40% difference between assessment based on the SMB and that based on the SMH.

2.2.6 Advice

Table 2.2.1 shows MRI recommendations, national TAC, and haddock landings since 1984.

The Icelandic government adopted an HCR for haddock in 2013. According to this rule, TAC for the current year is 40% of the estimated biomass of 45 cm and arger fish (reference stock) in the beginning of the next calendar year, which is estimated at 91 thous. tonnes (Table 3.2.8). B_{lim} of the spawning stock is the historical minimum of 45 thous. tonnes. $B_{trigger}$ was the same. According to the HCR, the harvest rate is decreased if the spawning stock size goes below $B_{trigger}$.

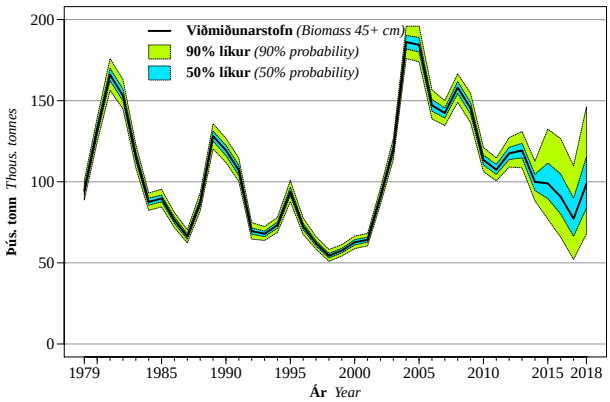
Tafla 2.2.2. **Ýsa**. Áhrif á áætlaða stofnstærð (í þús. tonna) miðað við veiðar samkvæmt aflareglu.

Table 2.2.2. ***Haddock****. Projection of stock and spawning stock biomass (thous. tonnes) based on adopted harvest control rule.*

2015					2016		2017	
Áætl. afli *Pred. landings*	Stofn 3+ B_{3+}	Hrygn. stofn *SSB*	$F^{1)}$	Afla-mark *TAC*	Stofn 3+ B_{3+}	Hrygn. stofn *SSB*	Stofn 3+ B_{3+}	Hrygn. stofn *SSB*
32	112	78	0.33	36.4	101	84	116	79

[1)] Meðalveiðidánartala 4–7 ára ýsu. *Mean fishing mortality of age groups 4–7.*

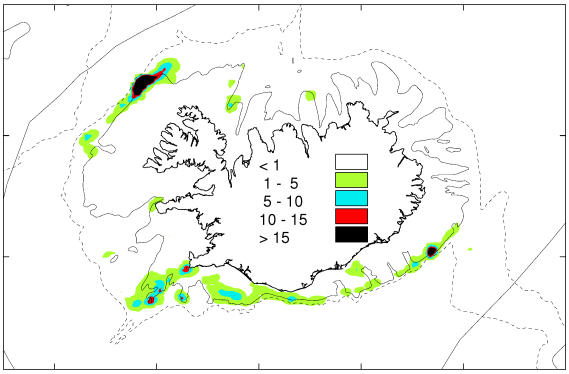
According to the current stock assessment, the 40% HCR sets the TAC at 36 400 tonnes in the quota year 2015/2016. The expected effects of this TAC on the development of haddock stock are shown in Table 2.2.2 and Figure 2.2.6 shows prognoses for the reference stock until 2018, assuming compliance with the HCR. the reference stock is expected to decrease in the next two years until the 2007 cohort leaves the stock, after which the stock should increase again when the 2014 cohort joins it. According to the prognosis, landings in the quota year 2016/2017 will be about 31 thous. tonnes and they will increase after that.



Mynd 2.2.6. **Ýsa.** Stærð viðmiðunarstofns ásamt framreikningum miðað við að afli verði samkvæmt aflareglu.

Figure 2.2.6. ***Haddock.*** *Reference biomass (45 cm and larger) and projection based on harvest control rule.*

2.3 Saithe *Pollachius virens*

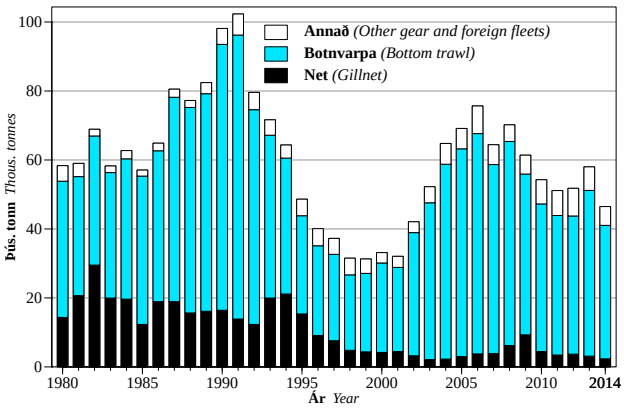


Ufsi. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mesta veiði (tonn/sjm^2).

Saithe. *Fishing grounds in 2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.3.1 Catch and cohorts

Saithe landings in 2014 were 46 thous. tonnes, compared to 58 thous. tonnes in 2013 (Fig. 2.3.1 and Table 3.3.1). This difference between calendar years is mostly related to how the landings were distributed between months, but the difference between quota years is smaller. TAC in the quota year 2013/2014 was 57 thous. tonnes and total landings were 55 thous. tonnes (Table 2.3.1).



Mynd 2.3.1. **Ufsi.** Landaður afli eftir veiðarfærum.

Figure 2.3.1. ***Saithe.*** *Landings by gear type.*

In 2014 proportional landings by gear were 83% in bottom trawl and 5% in gillnets, which is similar to the average since 2000. A distinct change in the catch composition by gear occurred around the turn of the century, as the proportion caught in gillnets was around 25% of the catch in 1980–2000, but less than 10% since then.

The age distribution of the 2014 catch is shown in Figure 2.3.2 along with predictions made in the spring of 2014, and the catch at age since 1980 is shown in Table 3.3.2. The proportion of ages 5 and 6 in the catch was above the historical average and the proportion of other ages was lower.

2.3.2 Mean weight and maturity

Mean weights of saithe ages 4–6 in landings have decreased in recent years, but mean weight of other year classes is close to the average (Table 3.3.3). There is a negative relationship between cohort size and mean weight. Furthermore, there are examples of mean weight of a cohort remaining the same or decreasing with age. Such trends have been explained as indications that a large number of slow-growing saithe have migrated into Icelandic waters from elsewhere. It is difficult to determine if density and environmental conditions restrict growth or if mean weight decreases due to migration of saithe from other areas.

Ár Year	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1984	65	70	60	2	63
1985	60	70	55	2	57
1986	60	70	64	1	65
1987	65	70	78	2	81
1988	75	80	74	3	77
1989	80	80	80	3	82
1990	90	90	95	3	98
1991[1)]	65	65	69	2	71
1991/92	70	75	86	2	88
1992/93	80	92	76	2	78
1993/94	75	85	67	2	69
1994/95	70	75	50	1	61
1995/96	65	70	40	1	41
1996/97	50	50	37	1	38
1997/98	30	30	32	1	33
1998/99	30	30	31	1	32
1999/00	25	30	30	0	30
2000/01	25	30	32	0	32
2001/02	25	37	36	0	36
2002/03	35	45	47	0	47
2003/04	50	50	56	0	56
2004/05	70	70	70	1	71
2005/06	80	80	78	0	78
2006/07	80	80	66	0	66
2007/08	60	75	68	0	68
2008/09	50	65	62	0	62
2009/10	35	50	58	0	58
2010/11	40	50	52	1	52
2011/12	45	52	50	1	51
2012/13	49	50	51	1	52
2013/14	57[2)]	57	54	1	55
2014/15	58[2)]	58			
2015/16	55[2)]				

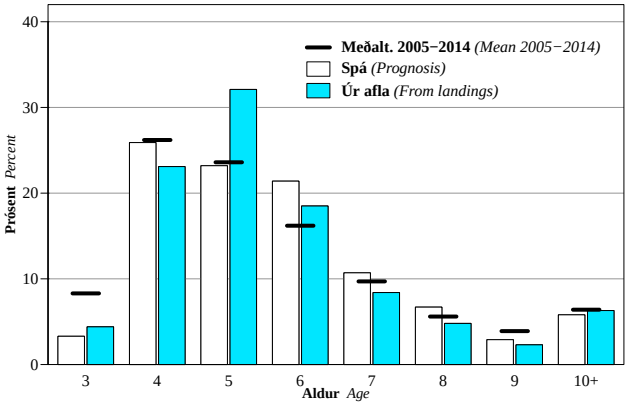
[1)] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[2)] 20% aflaregla. *20% harvest control rule.*

Tafla 2.3.1. **Ufsi**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

Table 2.3.1. ***Saithe****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

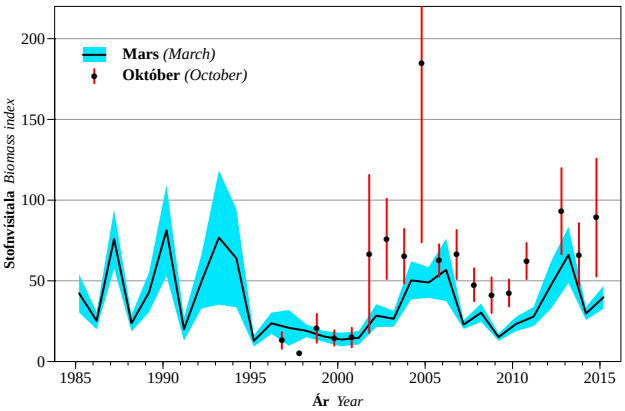
Mean weight of saithe in the spring survey (SMB) shows a similar trend as weights in the catch (Tables 3.3.3 and 3.3.4). There is much more variation in the survey weights than in the catch. The estimation of spawning stock and reference biomass is based on the catch weights.

Mean weights of ages 4–9 in the 2015 catch are predicted with a model based on the mean weight of the same cohorts in the previous year's catch and the mean weights in the survey. Mean weights of ages 3 and 10–14 are estimated from a three-year average. In projections for the coming years, it is assumed that the mean weights in the catch will be similar to 2015.



Mynd 2.3.2. **Ufsi.** Aldursdreifing í afla 2014 (% af fjölda) borin saman við spá frá maí 2014. Meðalaldursdreifing síðustu tíu ára er jafnframt sýnd.

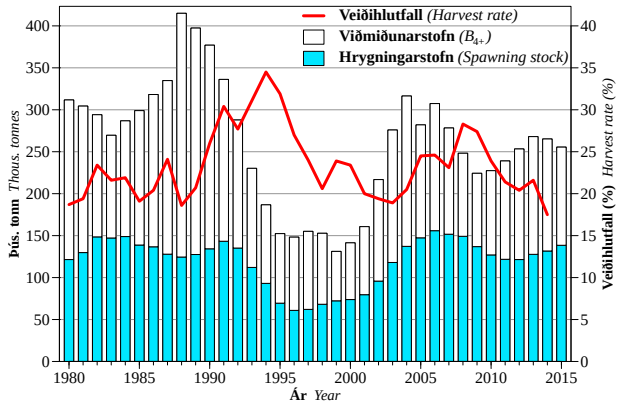
Figure 2.3.2. ***Saithe.*** *Age distribution in the 2014 catch (% by number) compared to last year's prediction. Mean age distribution from the last ten years is also shown.*



Mynd 2.3.3. **Ufsi.** Heildarvísitölur (þyngd) úr stofnmælingum í mars og október, ásamt staðalfráviki.

Figure 2.3.3. ***Saithe.*** *Total biomass indices from the Icelandic groundfish surveys in March and October, along with the standard deviation.*

Information about maturity at age comes from surveys, but there is considerable variation in proportion mature between years (Table 3.3.5) depending on where saithe were caught in each year's survey. For estimating the spawning stock size, maturity is estimated using a model based on SMB data and projections are based on the current year's model. The proportion mature of ages 4–9 saithe has decreased during the last decade and is currently around the average (Table 3.3.6).

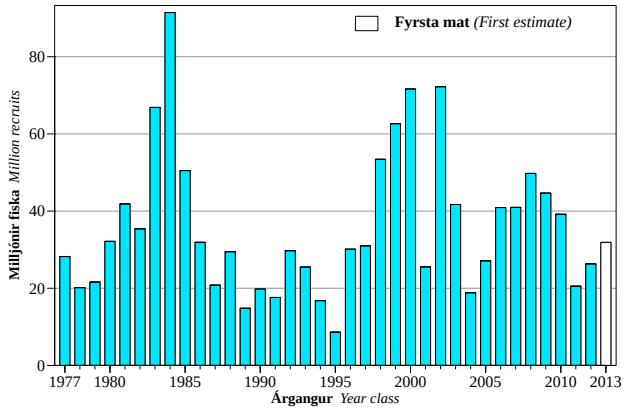


Mynd 2.3.4. **Ufsi.** Stærð hrygningarstofns og viðmiðunarstofns og veiðihlutfall (afli/viðmiðunarstofn).

Figure 2.3.4. ***Saithe.*** *Spawning stock biomass and reference biomass (ages 4+) and harvest rate (landings/reference biomass).*

2.3.3 Surveys

Saithe is poorly sampled in the SMB bottom trawl, as saithe is a schooling fish that is often distributed in the water column rather than on the bottom. This is reflected in the variation in indices between years, especially in the years before 1996 (Fig. 2.3.3). This variation in indices is the main source of uncertainty in the saithe stock assessment. Despite the poor sampling of saithe in the survey, comparison of previous years shows that the SMB indices are useful in the assessment (Table 3.3.7). Total biomass from the SMB was low in 2007–2011, increased in 2012–2013, and decreased again in 2014–2015 (Fig. 2.3.3). The autumn



Mynd 2.3.5. **Ufsi.** Stærð árganga við þriggja ára aldur (í milljónum).

Figure 2.3.5. ***Saithe.*** *Size of year classes at age 3 (in millions).*

survey (SMH) indicates an increase in the saithe stock in recent years, but is subject to considerable uncertainty.

2.3.4 Stock status and prognosis

A statistical catch-at-age model is used for the estimation of stock size based on commercial catch at age and survey abundance indices from the SMB. Selectivity is fixed within three periods: 1980–1996, 1997–2003, and from 2004 to the present. The beginning of the second period is the time when the proportion of landings caught by gillnet decreased in 1997. The third period is marked by a shift in the data of selectivity toward smaller fish.

The spawning stock at the beginning of 2015 is estimated 139 thous. tonnes and the reference stock (4 years and older) as 255 thous. tonnes (Fig. 2.3.4 and Table 3.3.8). The reference stock is close to the long-term average and has in the last decade been in the range of 220–310 thous. tonnes. Harvest rate (landings/reference biomass) in 2014 was 18% but 22% the year before. This variation in harvest rate between calendar years reflects that a high proportion of landings of the quota year 2013/2014 was caught in autumn 2013. On average, the harvest rate of saithe has been close to 20% in recent years.

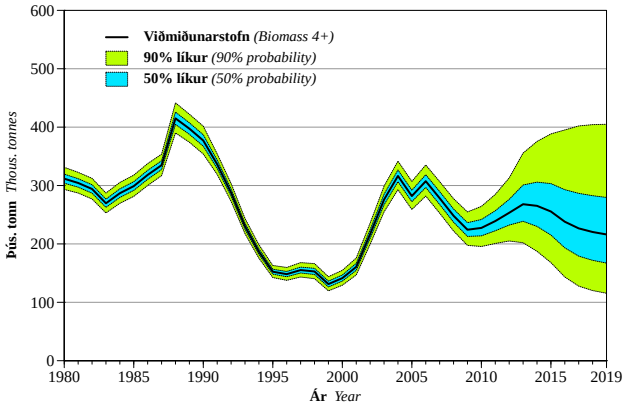
Tafla 2.3.2. **Ufsi**. Áhrif á áætlaða stofnstærð (þús. tonn) miðað við veiðar samkvæmt aflareglu.

Table 2.3.2. ***Saithe****. Projection of stock and spawning stock biomass (thous. tonnes) based on adopted harvest control rule.*

2015				2016		2017	
Áætl. afli *Pred. landings*	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*	Aflamark *TAC*	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*	Viðm. stofn B_{4+}	Hrygn. stofn *SSB*
57	255	139	55	238	138	227	130

Recruitment is estimated as the number of age 3 saithe. Cohorts from 2008 and 2009 are estimated to be larger than the average but recruitment has been low in recent years (Fig. 2.3.5). Good recruitment in 1998–2002 led to a rather large reference biomass in 2003–2007, landings in these years averaged 65 thous. tonnes at a harvest rate of 22%. As these cohorts were fished down, the annual landings were not decreased at the same rate, resulting in an increased harvest rate in 2008 and 2009, around 28%.

For the projections, it is assumed that landings in 2015 will be 57 thous. tonnes, based on the HCR. The projections indicate that the reference stock at the beginning of 2016 will be around 238 thous. tonnes and the spawning stock 138 thous. tonnes (Fig. 2.3.6).



Mynd 2.3.6. **Ufsi.** Stærð viðmiðunarstofns ásamt framreikningum miðað við að afli verði samkvæmt aflareglu.

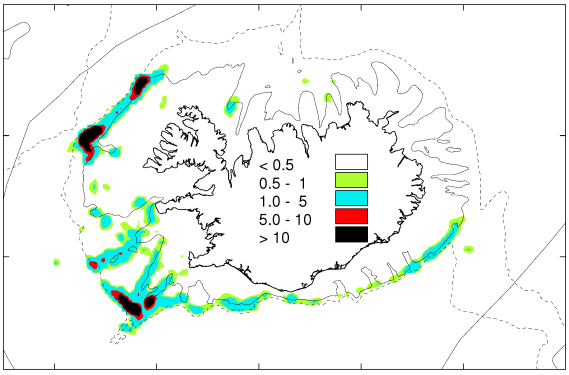
Figure 2.3.6. ***Saithe.*** *Reference biomass and projection based on harvest control rule.*

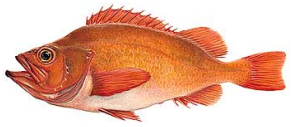
2.3.5 Advice

Table 2.3.1 shows TAC recommendations from the MRI, national TAC, and saithe landings since 1984.

In 2013 the Icelandic government adopted a formal management plan for the saithe fishery. This management plan is based on a HCR that sets the TAC of the coming quota year as the average of the previous year's TAC and 20% of the current reference biomass. If the spawning stock goes below $B_{trigger}$ (65 thous. tonnes) the harvest rate is decreased. Based on the current assessment, the HCR reuslts in a TAC of 55 thous. tonnes for the quota year 2015/2016. Projected effects of this TAC on the development of saithe stock are shown in Table 2.3.2.

2.4 Golden redfish *Sebastes norvegicus*





Gullkarfi. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mesta veiði (tonn/sjm^2).

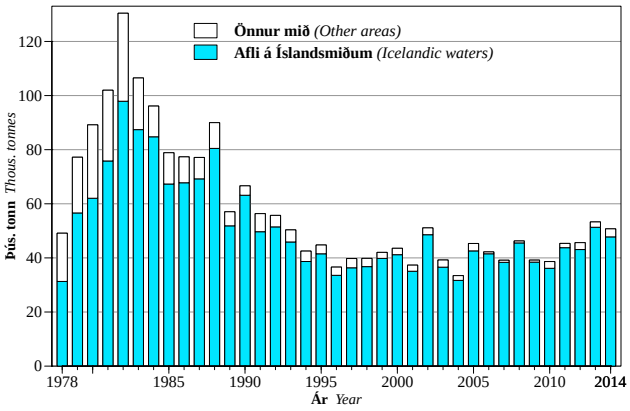
Golden redfish. *Fishing grounds in 2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.4.1 Landings and year classes

Golden redfish in the region including East Greenland, Iceland, and the Faroes are considered to form a single stock. Over the last two decades, 90–98% of total golden redfish landings in this region were caught in Icelandic waters (Table 3.4.1 and Fig. 2.4.1). Total landings were largest, 130 thous. tonnes, in 1982, after which year annual landings decreased evenly until 1996. In 1996–2013 landings were in the range of 33–53 thous. tonnes, highest in 2013. Total landings in 2014 were nearly 51 thous. tonnes, which is about 2 500 tonnes less than the previous year.

Golden redfish landings from Icelandic waters in 2014 were nearly 48 thous. tonnes which is 3 500 tonnes less than the previous year. The majority of golden redfish landings from Icelandic waters were caught by bottom trawl.

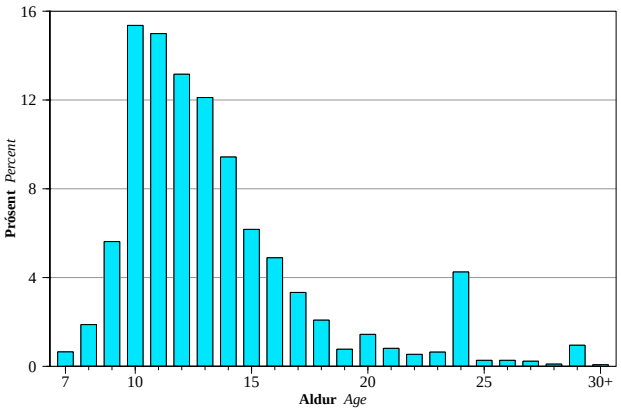
Annual landings from East Greenland increased from over 200 tonnes in 2009 to about 2 700 tonnes in 2014, which is the largest annual total since the beginning of the 1990s (Table 3.4.1). In the Faroes golden redfish landings have decreased considerably in recent years. Annual landings in 2000–2005 ranged from 1 000–2 500 tonnes but decreased to only 200 tonnes in 2014.



Mynd 2.4.1. **Gullkarfi.** Landaður afli á svæðinu A-Grænland/Ísland/Færeyjar.

Figure 2.4.1. ***Golden redfish.*** *Landings from East Greenland, Icelandic and Faroese waters.*

Cohorts from 2000–2004 (ages 10–14 redfish) comprised the majority of landings in 2014 (Fig. 2.4.2). Cohorts from 1996–1999 are disappearing from the fishable stock much more quickly than the strong cohorts from 1985 og 1990, which comprised the majority of landings in 1995–2007.



Mynd 2.4.2. **Gullkarfi.** Aldursdreifing í afla (% af fjölda) árið 2014.

Figure 2.4.2. ***Golden redfish.*** *Age distribution in the 2014 catch (% by number).*

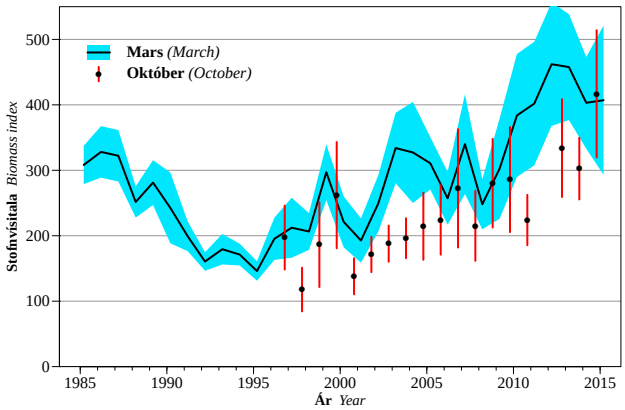
2.4.2 Surveys

Total golden redfish biomass in the SMB decreased rapidly from 1985 until 1995 (Fig. 2.4.3). Since 1996 the biomass index has increased and measurements in the last six years have been the highest since the commencement of surveys in 1985. In recent years not much small redfish, under 30 cm, have been present in the survey, which indicates poor recruitment.

Indices from the SMH do no cover the same period as the SMB. As in the SMB, SMH biomass indices have increased steadily since 2000 and indices from the last three years are the highest since 1996. Also like the SMB is the scarcity of redfish smaller than 30 cm in the survey.

The margins of error in estimation of indices based on SMB and SMH data have been wide compared to those of the previous decade. This is caused by the concentration of golden redfish samples in a relatively small number of stations. It can be difficult to explain changes in indices when the margin of error are wide, and changes in indices come from other causes than fluctuation in stock size.

Age disaggregated indices from the SMH indicate that cohorts from 1996–2004 are larger than average. Unlike the strong cohorts of 1985 and 1990, the cohorts from 1996–2004 are not strong as young fish in the stock, which suggests that stock increase is due to migration from other waters. Age disaggregated indices indicate that cohorts from 2008–2010 are small.



Mynd 2.4.3. **Gullkarfi.** Heildarvísitölur (í þyngd) úr stofnmælingum í mars og október, ásamt staðalfráviki.

Figure 2.4.3. ***Golden redfish.*** *Total biomass indices in the Icelandic groundfish surveys in March and October, along with the standard deviation.*

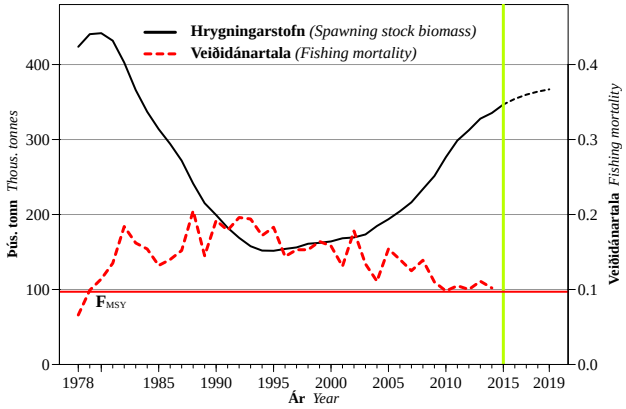
2.4.3 Stock assessment assumptions

The Gadget catch-at-age model is used to estimate golden redfish stock size in the East Greenland/Iceland/Faroe region (Gadget, sjá viðauka 5.1). The model uses length and age data from landings from throughout the region as well as stock surveys from East

Greenland and Iceland. It also takes into account changes in growth since 2000 because redfish grow faster and reach maturity sooner than before the turn of the century.

2.4.4 Stock status and projections

Figure 2.4.4 shows trends in the spawning stock and fishing mortality of golden redfish ages 9–19. Fishing mortality averaged 0.16 in 1980–2005, but it has decreased in recent years and was 0.10 in 2014, which is near the fishing mortality that will provide maximum yield.



Mynd 2.4.4. **Gullkarfi.** Stærð hrygningarstofns og veiðidánartala, ásamt framreikningum miðað við kjörsókn ($F_{MSY,9–19} = 0.097$).

Figure 2.4.4. ***Golden redfish.*** *Spawning stock biomass and fishing mortality, along with projected biomass based on* $F_{MSY,9–19} = 0.097$.

The spawning stock decreased rapidly in 1982–1995. From 1995–2005 it increased slowly, after which time, it has increased steadily and is now close to the size it was in the beginning of the 1990s.

Surveys in Icelandic waters and off East Greenland show poor recruitment in recent years. The SMH data indicates that the 2008–2010 cohorts are the smallest since surveys began in 1996. In recent years redfish under 30 cm have been scarce in surveys from Iceland and East Greenland, which indicate continued poor recruitment. Keep in mind, though, that surveys, especially near Greenland, do not cover the entire range of young redfish. For this reason, there is uncertainty in estimation s of the size of cohorts.

If the HCR is followed, the spawning stock will increase in the coming years unless recruitment is extremely poor. Projections that are seen on Figure 2.4.4 are based on average recruitment after 2006, though this assumption may be overly optimistic. The assumptions about recruitment have little effect on next year's TAC, which is set by the HCR.

2.4.5 Advice

Table 2.4.1 shows MRI recommendations for TAC, national TAC and total landings from Icelandic waters in the quota year 1994/1995.

At the request of the Minister of Fisheries, on behalf of Greenland, Iceland and the Faroes, the MRI completed a management plan and harvest control rule (HCR) for golden redfish in February 2014, under review by ICES. The HCR is in accordance with a precautionary approach and will lead to maximum sustainable yield. the HCR was officially adopted by the Icelandic government in March or 2014 but agreements have not been confirmed with Greenland and the Faroes.

A technical review of the assessment model for the golden redfish stock was conducted by ICES that defined B_{lim} and $B_{trigger}$. These reference points refer to spawning stock and are 160 thous. tonnes (which is the historical minimum of the spawning stock) and 220 thous. tonnes, respectively. The HCR aims at generating the maximum sustainable yield while maintaining a fishing mortality of $F_{MSY,9–19} = 0.097$, and fishing mortality will be decreased if the stock size goes below $B_{trigger}$.

Fisk-veiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark f. Ísl.mið *National TAC*	Afli á Ísl.miðum *Landings Icel. waters*	Afli á öðrum miðum[1] *Landings other areas*[1]	Heildarafli *Total landings*
1994/95	25	77[2]	40	3	43
1995/96	25	65[2]	37	2	39
1996/97	30	65[2]	36	3	39
1997/98	35	65[2]	35	3	38
1998/99	35	65[2]	41	1	42
1999/00	35	60[2]	37	2	39
2000/01	35	57[2]	37	2	39
2001/02	30	65[2]	46	2	48
2002/03	35	60[2]	42	2	44
2003/04	35	57[2]	30	1	31
2004/05	35	57[2]	40	3	43
2005/06	35	57[2]	38	1	39
2006/07	35	57[2]	42	1	43
2007/08	35	57[2]	35	1	36
2008/09	30	50[2]	44	1	45
2009/10	30	50[2]	36	2	38
2010/11	30	37.5	39	2	41
2011/12	40	40	44	2	46
2012/13	45	45	46	2	48
2013/14	52	52	52	3	55
2014/15	48[3]	45.6			
2015/16	51[3]				

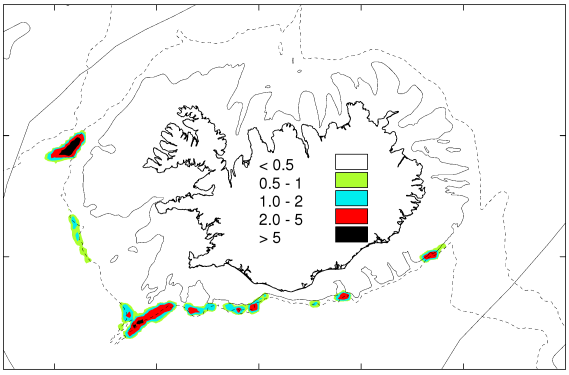
[1] Almanaksár. *Calendar year.*
[2] Sameiginlega fyrir gullkarfa og djúpkarfa.
Both golden redfish and demersal deep sea redfish.
[3] Aflaregla fyrir Austur-Grænland/Ísland/Færeyjar.
Harvest control rule for East-Greenland/Iceland/Faroes.

Tafla 2.4.1. **Gullkarfi**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

Table 2.4.1. ***Golden redfish****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

According to the current assessment, TAC is 51 thous. tonnes in the quota year 2015/2016 in the East Greenland/Iceland/Faroe region.

2.5 Beaked redfish *Sebastes mentella*



Djúpkarfi Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Demersal deep sea redfish *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.5.1 Population structure

Demersal deep sea redfish on the continental slopes of Greenland, Iceland and Faroes and pelagic redfish in the Greenland Sea and surrounding waters comprise a single species. The demersal deep sea redfish fishery began in the beginning of the 1950s but fishing for the pelagic stocks began in 1982. The international Council for the Exploration of the Sea (ICES) distinguishes three biologically separate stocks of beaked redfish:

1. Demersal deep sea redfish on the Icelandic slope
2. Shallow pelagic redfish in the Greenland Sea, above 500 m
3. Deep pelagic redfish in the Greenland Sea, below 500 m

Greenland's shelf and slope are considered the nursery for redfish in all three of the stocks described above.

Management of beaked redfish stock by depth is not feasible so recommendations are provided by region. ICES has recommended four management areas for demersal deep sea redfish:

1. Icelandic slope
2. Southwestern Greenland Sea
3. Northeastern Greenland Sea
4. Eastern Greenland waters

The region was divided in this way because the fishery in the northeast of the Greenland Sea is mostly below 500 m depth, while that in the southwest of the Greenland Sea is mostly above 500 m depth.

The fishery for pelagic redfish extends from within Greenland's national waters, into the international portion of the Greenland Sea as well as into Icelandic waters. The North East Atlantic Fisheries Commission (NEAFC) manages these areas with advice from ICES.

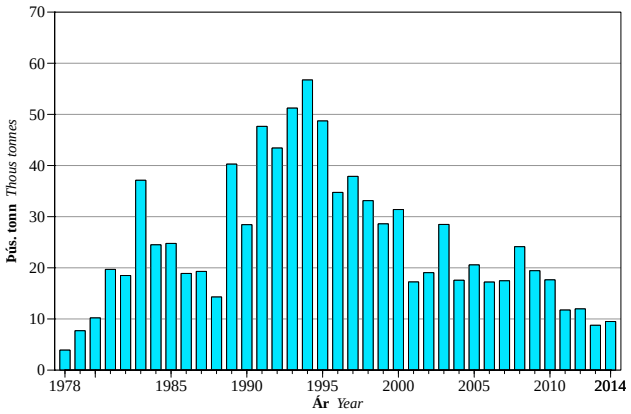
In this chapter, these three beaked stocks are discussed individually as demersal deep sea redfish, shallow pelagic redfish (above 500 m) and deep pelagic redfish (below 500 m).

2.5.2 Demersal deep sea redfish on the Icelandic slope

Demersal deep sea redfish on the Icelandic slope have been fished traditionally by bottom trawl. In the 1990s there was considerable pelagic trawl fishing but that has ceased. The most heavily fished areas are on the slope at about 450–600 m depth, from Víkuráll west of the West Fjords, south and east to the western slope of the Iceland-Faroe Ridge.

2.5.2.1 Landings

Demersal deep sea redfish landings in 2014 were 9 500 tonnes, which is about 700 tonnes more than the previous year. Landings in 2013 and 2014 were the smallest since 1980 (Table 3.5.1 and Fig. 2.5.1). Landings were highest in 1994 at about 57 thous. tonnes, but were between 29–38 thous. tonnes in 1996–2000 and 12–28 thous. tonnes in 2001–2012.

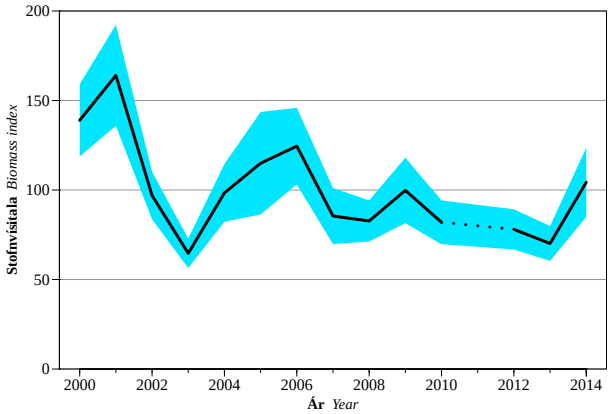


Mynd 2.5.1. **Djúpkarfi.** Landaður afli á Íslandsmiðum.

Figure 2.5.1. ***Demersal deep sea redfish.*** *Landings from Icelandic grounds.*

2.5.2.2 Stock status

The biomass indices from the autumn surveys (SMH) in 2000–2014 are shown in Figure 2.5.2. The demersal deep sea redfish biomass indices increased in 2014 as compared to that in 2013, but has slowly decreased since 2000. Small fish (less than 30 cm) have also decreased over this period, indicating poor recruitment in the fishable stock.



Mynd 2.5.2. **Djúpkarfi.** Heildarvísitala (þyngd) samkvæmt stofnmælingu botnfiska að hausti ásamt staðalfráviki. Ekki var farinn leiðangur árið 2011.

Figure 2.5.2. ***Demersal deep sea redfish.*** *Total biomass index from the Icelandic groundfish survey in October, along with the standard deviation. The survey was not conducted in 2011.*

The East Greenland shelf is thought to be the nursery for demersal deep sea redfish on the Icelandic slope, but also for demersal deep sea redfish off East Greenland and the pelagic stocks. It is unclear what proportion of the Icelandic fishable stock originates on this shelf.

German surveys on the shelf off East Greenland in 2003–2005 found a high density of small demersal deep sea redfish (20–30 cm). In 2006–2010 fish this size decreased and fish larger than 30 cm increased. Since then, these small fish have been scarcer than any time since surveys commenced in 1982. At the same time, demersal deep sea redfish 30 cm and larger have decreased considerably. In Greenlandic surveys off East Greenland, which sample deeper than the German surveys did, the demersal deep sea redfish biomass index increased from 2003 until 2010 and it has remained high since. It is likely that a large proportion of these redfish have shifted their range to deeper water. This increase along East Greenland led to the reopening of a fishery there in 2009, after a 15 year hiatus. Yearly

landings from the East Greenland demersal deep sea redfish in 2010–2013 were about 6 600 tonnes, but decreased to 4 600 tonnes in 2014.

2.5.2.3 Advice

Table 2.5.1 shows MRI recommended TAC (which applied to the East Greenland/Iceland/Faroe region until the quota year 2010/2011 when focus shifted exclusively to Icelandic waters), national TAC and landings from Icelandic waters since the quota year 1994/1995.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1994/95	40[1)]	77[2)]	52	1	53
1995/96	35[1)]	65[2)]	41	1	42
1996/97	35[1)]	65[2)]	38	1	39
1997/98	30[1)]	65[2)]	33	1	33
1998/99	30[1)]	65[2)]	32	1	33
1999/00	25[1)]	60[2)]	25	2	27
2000/01	22[1)]	57[2)]	22	2	24
2001/02	30[1)]	65[2)]	20	1	21
2002/03	25[1)]	60[2)]	23	2	25
2003/04	22[1)]	57[2)]	20	1	21
2004/05	22[1)]	57[2)]	21	1	22
2005/06	22[1)]	57[2)]	17	1	18
2006/07	22[1)]	57[2)]	18	1	19
2007/08	22[1)]	57[2)]	17	-	17
2008/09	10[1)]	50[2)]	22	-	22
2009/10	10	50[2)]	18	-	18
2010/11	10	12.5	12	-	12
2011/12	10	12	12	-	12
2012/13	10	10	10	-	10
2013/14	10	10	9.7	-	9.7
2014/15	10	10			
2015/16	10				

[1)] Tillögur um hámarksafla fyrir Austur-Grænland/Ísland/Færeyjar.
TAC recommendation applied to East Greenland/Iceland/Faroes.

[2)] Sameiginlega fyrir gullkarfa og djúpkarfa.
Both golden redfish and demersal deep sea redfish.

Tafla 2.5.1. **Djúpkarfi**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

Table 2.5.1. ***Demersal deep sea redfish****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

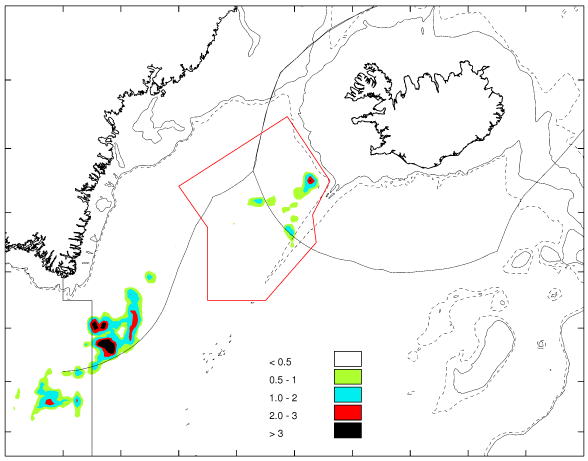
Demersal deep sea redfish is a long-lived, slow-growing species that reaches maturity at about age 12. Such species are particularly vulnerable to over-fishing and they require a long time to recover if they are over-fished. Furthermore, the harvest rate that leads to maximum sustainable yield is much lower than that of short-lived species. For this reason, more care is necessary in management of this stock.

Little is known about the potential yield of the stock and stock size is rather unclear. Since time series are short and little is known about the age distribution of demersal deep sea redfish in the region, a stock assessment based on age- and length-dependent models is not feasible. Therefore, the advice is based on stock trends in SMH data. according to the SMH data, the fishable stock is small in comparison to the size it was around the turn of the century. Despite a decrease in fishing pressure over the last decade, the stock is not growing. The MRI recommends a continuance of limited fishing so the landings in the quota year 2015/2016 remain below 10 thous. tonnes.

2.5.3 Shallow pelagic redfish

2.5.3.1 Landings

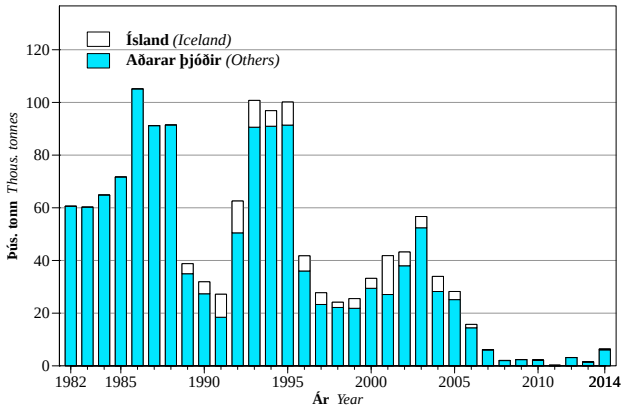
The shallow pelagic redfish (above 500 m depth) fishery, mostly located in the international waters of the Greenland Sea and in Greenlandic waters, is active from July until October.



Úthafskarfi, efri stofn. Veiðisvæði íslenskra skipa árin 2001–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2). Skilgreint veiðisvæði neðri stofnsins er afmarkað á myndinni.

Shallow pelagic redfish. *Fishing grounds of the Icelandic fleet in 2001–2014. Dark areas indicate highest catch (tonnes/nmi^2). The polygon indicates the region for the deep pelagic management unit.*

Figure 2.5.3 shows annual landings since 1982, Table 3.5.2 landings by area and Table 3.5.3 shows landings by nation. For the first five years landings ranged between 60–105 thous. tonnes but in 1989–1991 they decreased considerably due to a decrease in effort. Annual landings increased to about 100 thous. tonnes in 1993–1995. In 1996–2005 landings were 25–55 thous. tonnes in part due to increased effort for the deep pelagic redfish (see chapter 2.5.4). Since 2006 fishing effort has decreased considerably and landings were over 200 tonnes in 2011, which is the smallest annual catch since the fishery opened. Annual landings in 2012–2014 were 1 500–3 500 tonnes, mostly caught by Russians on the traditional grounds southeast and south of the Cape Farewell, Greenland.



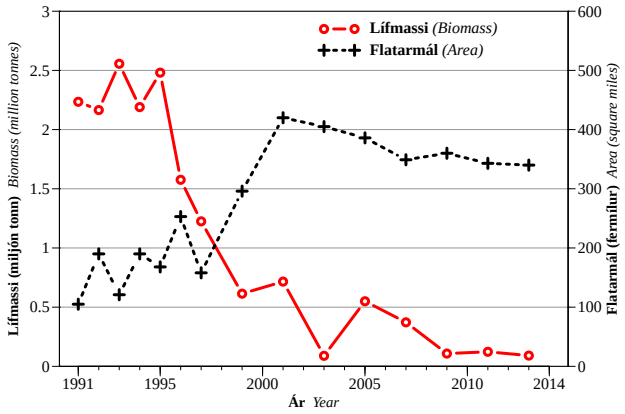
Mynd 2.5.3. **Úthafskarfi, efri stofn.** Landaður afli í Grænlandshafi.

Figure 2.5.3. ***Shallow pelagic redfish.*** *Landings from the Irminger Sea.*

Icelandic landings increased from under 4 thous. tonnes in 1989 to over 12 thous. tonnes in 1992 (Table 3.5.3 and Fig. 2.5.3). In 1997–2006 Icelandic landings were 1–15 thous. tonnes. After 2006 Icelanders have not fished the stock directly so annual landings have been less than 100 tonnes.

2.5.3.2 Stock status

Stock size of shallow pelagic redfish in the Greenland Sea was measured in the summer of 2013 by a collaboration between Iceland, Russia and Germany. Acoustic measurements indicated that the stock had decreased from 2.2 million tonnes in 1994 to about 91 thous. tonnes in 2013, which is the lowest observation since measurement began in 1991 (Figure 2.5.4). Highest density of the stock was found south and southwest of Cape Farewell, as in previous measurements. The next measurement was conducted in the summer of 2015 and results are pending.



Mynd 2.5.4. **Úthafskarfi, efri stofn.** Niðurstöður bergmálsmælinga úr alþjóðlegum karfaleiðangri í Grænlandshafi og flatarmál mælingasvæðis.

Figure 2.5.4. ***Shallow pelagic redfish.*** *Acoustic estimates from the international redfish survey in the Irminger Sea and adjacent waters, and size of the area surveyed.*

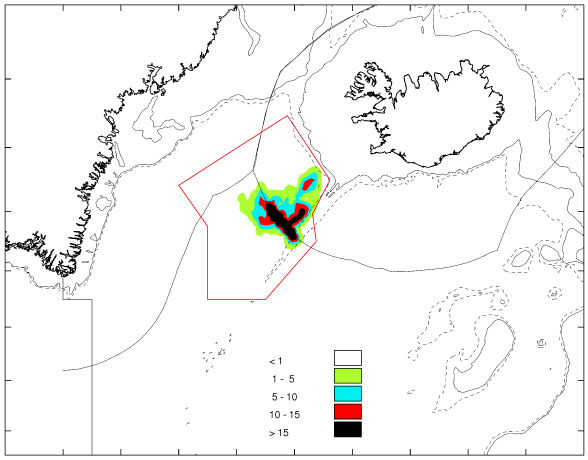
2.5.3.3 Advice

Table 2.5.2 shows ICES recommendations for combined TAC for both pelagic redfish stocks since 1989, national (Icelandic) TAC since 1996, Icelandic landings and total annual catch since 1989. Iceland has set separate TACs for the shallow and deep stocks, as recommended by ICES, since 2000.

Due to decline in the size of shallow pelagic redfish stock, ICES has recommended a closure of the fishery to directed effort since 2010. The ICES advisory committee will provide a TAC recommendation for 2016 in October of 2015. This recommendation will be based on the survey conducted in June–July of 2015 in the Greenland Sea and surroundings waters.

Since 2011, NEAFC has agreed that no direct targeting of the shallow stock should be allowed due to the poor status of the stock. Russia has contested this recommendation and has set an independent TAC for pelagic redfish of both shallow and deep stocks.

2.5.4 Deep pelagic redfish



Úthafskarfi, neðri stofn. Veiðisvæði íslenskra skipa árin 2004–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2). Skilgreint veiðisvæði neðri stofnsins er afmarkað á myndinni.

Deep pelagic redfish. *Fishing grounds of the Icelandic fleet in 2004–2014. Dark areas indicate highest catch (tonnes/nmi^2). The polygon indicates the region for the deep pelagic management unit.*

2.5.4.1 Afli

In 1992–1994 a trend appeared in the pelagic redfish fishery where an increasing proportion of landings were from the deep pelagic redfish stock, from more than 500 m depth, west of the Reykjanes Ridge in an area stretching from within Icelandic waters to the edge of Greenaland's EEZ. Fishing occurs mostly in maí–júlí. The catch consists mostly of redfish larger than 40 cm, which is larger than that from the shallow stock. The large part of Icelandic landings of pelagic redfish have been from this stock since 1996.

Table 3.5.2 and Figure 2.5.5 show total landings since 1991 and Table 3.5.4 shows significant national landings. Landings were in the range 75–140 thouss. tonnes in 1995–2004, peaking in 1996. Since 2005, landings have decreased dramatically and have been in the range of 30–67 thous. tonnes.

Tafla 2.5.2. **Úthafskarfi, efri og neðri stofnar**. Tillögur Aþjóðahafrannsóknaráðsins (ICES) um hámarksafla, heildaraflamark íslenskra skipa samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn).

Table 2.5.2. ***Shallow and deep pelagic redfish****. TAC recommended by ICES, national TAC, and landings (thous. tonnes).*

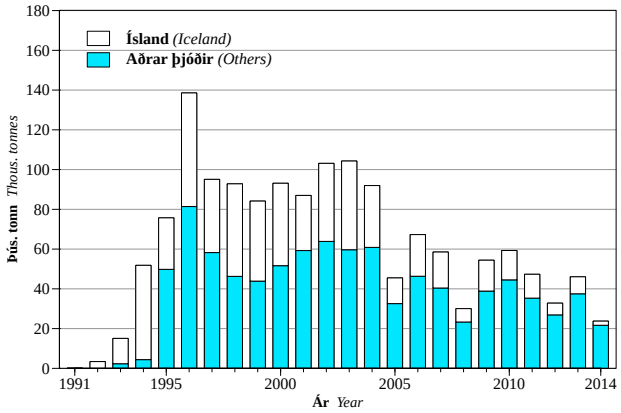
			Úthafskarfi, efri stofn *Shallow pelagic redfish*			Úthafskarfi, neðri stofn *Deep pelagic redfish*		
Ár	Tillaga	Aflamark fyrir Ísland	Afli Íslendinga	Afli annarra þjóða	Afli alls	Afli Íslendinga	Afli annarra þjóða	Afli alls
Year	*Rec. TAC*	*National TAC*	*Landings (Iceland)*	*Landings (others)*	*Total landings*	*Landings (Iceland)*	*Landings (others)*	*Total landings*
1989	90–100	-	3.8	35.0	38.8	0.0	0.0	0.0
1990	90–100	-	4.5	27.4	31.9	0.0	0.0	0.0
1991	66	-	8.7	18.5	27.2	0.1	0.0	0.1
1992	-	-	12.1	50.5	62.6	3.4	0.0	3.4
1993	50	-	10.2	90.6	100.8	12.7	2.3	15.1
1994	100	-	5.9	91.0	96.9	47.4	4.4	51.8
1995	100	-	8.7	91.4	100.1	25.9	49.8	75.7
1996	-	45.0	5.8	36.0	41.8	57.1	81.4	138.6
1997	-	45.0	4.4	23.3	27.7	36.8	58.2	95.1
1998	-	45.0	2.0	22.2	24.2	46.5	46.3	92.8
1999	-	45.0	3.7	21.8	25.5	40.3	43.9	84.2
2000	85	45.0 (13.0[2])	3.8	29.5	33.2	41.5	51.6	93.1
2001	85	45.0 (13.0[2])	14.7	27.1	41.8	27.7	59.3	87.0
2002	85	45.0 (10.0[2])	5.2	38.0	43.2	39.3	63.9	103.2
2003	119	55.0 (10.0[2])	4.3	52.4	56.7	44.6	59.7	104.3
2004	120	55.0 (10.0[2])	5.7	28.2	33.9	31.1	60.9	92.0
2005	41	34.5 (6.3[2])	3.1	25.1	28.2	12.9	32.6	45.5
2006	41	28.6 (5.2[2])	1.3	14.4	15.7	20.9	46.3	67.3
2007	0	21.1 (3.8[2])	0.1	6.1	6.1	18.1	40.4	58.5
2008	20	21.1 (7.4[2])	0.1	1.9	2.0	6.7	23.3	30.0
2009	20	21.1 (6.3[2])	0.0	2.4	2.4	15.1	38.9	54.0
2010	20[1)]	21.1 (6.3[2])	0.0	2.2	2.4	14.8	44.5	59.3
2011	20[1)]	11.8 (0[2])	0.1	0.2	0.3	12.0	35.3	47.3
2012	20[1)]	9.8 (0[2])	0.0	3.2	3.2	5.9	26.9	32.8
2013	20[1)]	8.1 (0[2])	0.0	1.5	1.5	8.5	37.5	46.0
2014	20[1)]	6.2 (0[2])	0.3	6.1	6.1	2.1	21.7	23.8
2015	10[1)]	2.9 (0[2])						

[1)] Tillaga ICES fyrir neðri stofn úthafskarfa. ICES lagði til veiðibann fyrir efri stofn úthafskarfa.
ICES advice for the deep pelagic stock. ICES recommended a moratorium for the shallow pelagic stock.

[2)] Úthlutað aflamark fyrir suðursvæði (efri stofn).
TAC for southern fishing area (shallow pelagic stock).

Estimated landings in 2014 totalled nearly 24 thous. tonnes, which is 22 thous. tonnes less than the previous year and thesmallest since 1993 when the fishery opened.

Icelandic landings increased from 3 000 tones in 1992 to 57 thous. tonnes in 1996 (Table 3.5.4 and Fig. 2.5.5). In 1997–2004 landings were from 28–47 thous. tonnes, but they have decreased considerably in recent years. The catch in 2014 was about 2 000 tonnes, the lowest it has ever been.



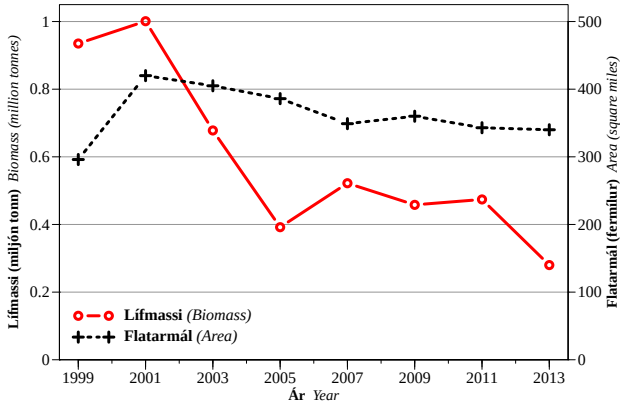
Mynd 2.5.5. **Úthafskarfi, neðri stofn.** Landaður afli í Grænlandshafi.

Figure 2.5.5. ***Deep pelagic redfish.*** *Landings from the Irminger Sea.*

2.5.4.2 Stock status

The size of the deep pelagic redfish stock was estimated in the Greenland Sea in the summer of 2013 during an multinational collaboration cruise between Iceland, Germany and Russia. This was the eighth such multinational survey since 1999. The trawl method is used in surveys because the acoustic method is not accurate. The surveys in 2005 and 2007 are not comparable to other surveys because of changes in method and in these years a portion of the stock could be from the shallow stock.

The smallest stock estimate, 280 thous. tonnes, was calculated in 2013. The stock peaked at one million tonnes in 2001 (Fig. 2.5.6).



Mynd 2.5.6. **Úthafskarfi, neðri stofn.** Heildarvísitölur úr alþjóðlegum karfaleiðangri í Grænlandshafi og flatarmál mælingasvæðis.

Figure 2.5.6. ***Deep pelagic redfish.*** *Total biomass index from the international redfish survey in the Irminger Sea and adjacent waters, and size of the area surveyed.*

2.5.4.3 Advice

Table 2.5.2 shows recommended TAC from ICES for both pelagic redfish stocks since 1989, Icelandic national TAC since 1996, Icelandic landings and total landings since 1989.

In 2011 NEAFC agreed to a decrease in effort and that in 2014 landings would be in accordance with ICES recommendations. Included in the agreement was the decision to split the total landings between those nations fishing the stock instead of letting them set their own TACs regardless of other nations. Iceland is granted over 31% of the total.

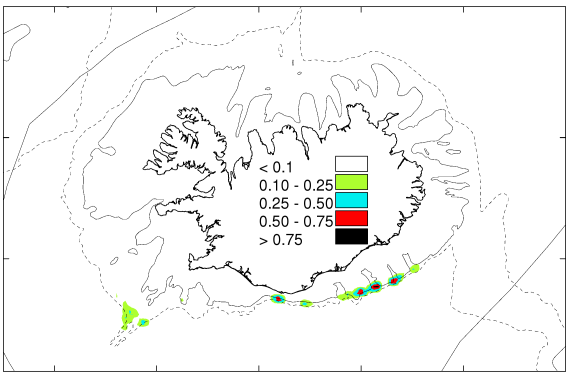
The ICES advisory committee recommended a considerable decrease in fishing effort targeting the deep pelagic redfish stock in 2015 and a TAC below 10 thous. tonnes. Considering the negative trend in biomass indices in recent years, the committee recommends a decrease in fishing effort because it has been far above the yield capacity of the stock. NEAFC agreed to a TAC for deep pelagic redfish of 10 thous. tonnes in 2015 and the Icelandic TAC is nearly 3 000 tonnes in 2015. Russia contested the agreement and continued the same independent TAC of over 27 thous. tonnes for Russian ships in 2015 that they

had in 2014. This Russian TAC does not distinguish between deep and pelagic stocks. So the total TAC for 2015 is about 35 thous. tonnes.

Little is known about the age distribution of the deep pelagic redfish stock and time series are short. For this reason, assessments based on age- and leght-dependent models is not feasible. Recommendations are based on trends observed in the multinational surveys that have been conducted every other year since 1999.

The ICES advisory committee will recommend TAC for the deep pelagic redfish stock in 2016 in October, 2015. This recommendation will be partially based on the data from the Icelandic/German survey of redfish in the Greenland Sea and surrounding waters conducted in June–July of 2015.

2.6 Norway redfish *Sebastes viviparus*



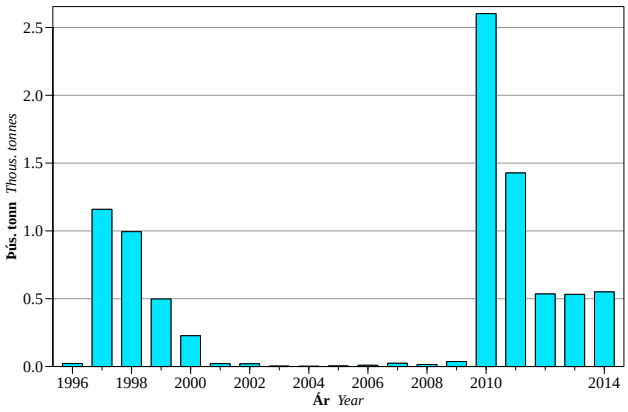
Litli karfi. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Norway redfish. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.6.1 Effort and landings

The Norway redfish is the smallest species of redfish in Icelandic waters, seldom reaching a length of 30 cm. It is only found south of Iceland. Little is known about the biology of the species, except that it grows slowly and can reach very old ages like other redfish species.

In 1997 a fishery opened targeting Norway redfish off the south coast with 1 200 tonnes landed that year. landings rapidly decreased in he following years and were just over 200 tonnes in 2000 (Fig. 2.6.1 and Table 3.6.1). Landings remained very small in 2001–2009 but in 2010 targeted fishing began anew, landing 2 600 tonnes, which is an historical peak. Since then, landings have been smaller, at just over 500 tonnes in the last three years. Norway redfish caught in 2014 were mostly from 18–30 cm.

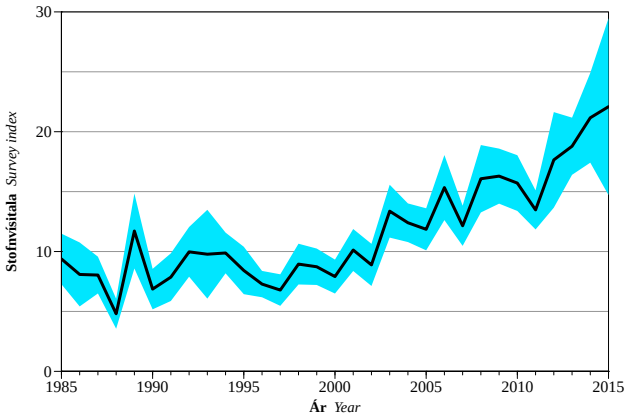


Mynd 2.6.1. **Litli karfi.** Landaður afli.

Figure 2.6.1. ***Norway redfish.*** *Landings.*

2.6.2 Stock survey

Norway redfish are caught in a wide area of the spring survey (SMB), mostly along the southern coast. The biomass index of Norway redfish was fairly steady in 1985–2000 but has since increased steadily (Fig. 2.6.2). The index in 2015 was the highest since surveys began and was twice as high as at the turn of the century. The margin of error in the estimation of a biomass index in 2015 is wide because of a large catch in each haul.



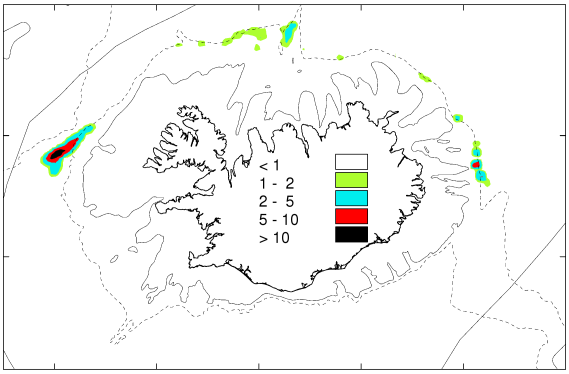
Mynd 2.6.2. **Litli karfi.** Heildarvísitala (þyngd) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.6.2. ***Norway redfish.*** *Total biomass index from the Icelandic groundfish survey in March, along with the standard deviation.*

2.6.3 Advice

Since fishing and research of Norway redfish have been limited, little is known about the size and of the stock size and sustainable catch levels. As with other redfish stocks in Icelandic waters, the Norway redfish is slow-growing and long-lived and thus it is important that effort be limited. In accordance with a precautionary approach to management, the MRI recommends that TAC in the quota year 2015/2016 should not exceed 1 500 tonnes.

2.7 Greenland halibut *Reinhardtius hippoglossoides*



Grálúða. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

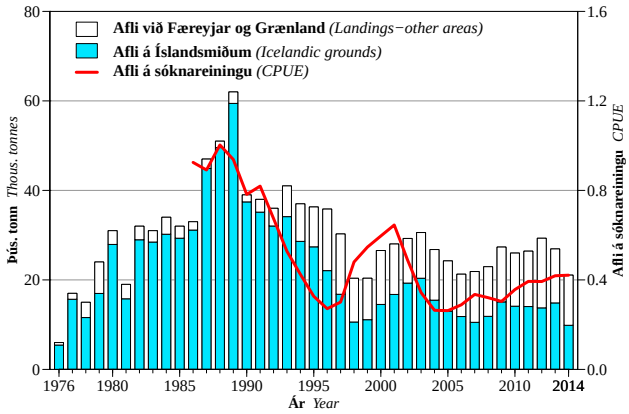
Greenland halibut. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.7.1 Stock structure

Greenland halibut off East Greenland, Iceland and the Faroes is considered a single stock and ICES and the MRI have recommended TAC accordingly.

2.7.2 Landings and effort

In 2014 the total catch of Greenland halibut from the East Greenland/Iceland/Faroe region was about 21 thous. tonnes (Fig. 2.7.1 and Table 3.7.1), of which nearly 10 thous. tonnes were from Icelandic waters. The proportion of landings from Icelandic waters was around and above 90% in 1982–1992, but decreased rapidly after that and in recent years has been around half. Icelandic TAC in the quota year 2013/2014 was 12 480 tonnes and the catch was just below 12 thous. tonnes (Table 2.7.1).



Mynd 2.7.1. **Grálúða.** Landaður afli við Ísland, Austur-Grænland og Færeyjar og afli á sóknareiningu hjá íslenska togaraflotanum.

Figure 2.7.1. ***Greenland halibut.*** *Landings from Iceland, East Greenland, and Faroese waters and CPUE of the Icelandic trawler fleet.*

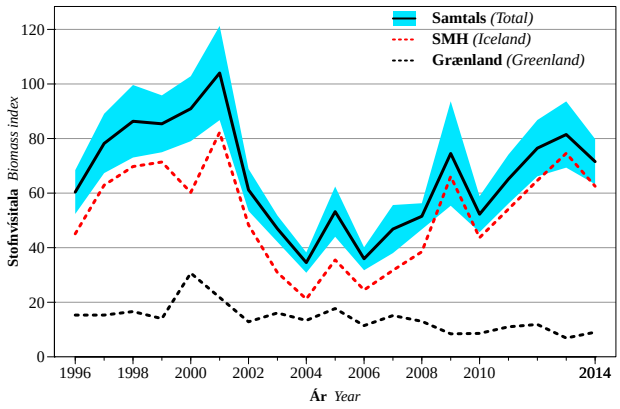
Icelandic CPUE has provided much of the basis for advice from ICES in recent years. At a benchmark meeting about Greenland halibut held by ICES in 2013 there was discussion of the serious limitations of this data in the estimation of changes in the stock size. These limitations are caused by changes in gears, distribution of effort and management of the fishery since 1986. ICES still relies heavily on these data, but the plan is to base the advice on surveys off Iceland and Greenland in the near future.

Icelandic CPUE was fairly steady in 1986–1989 but decreased annually after that, reaching a minimum in 1995–1997 (Fig. 2.7.1). In these three years, CPUE was under 30% of the mean in 1986–1989. CPUE has been increasing in recent years but is still only about 40% of what it was in 1986–1989.

According to logbooks from foreign ships fishing off East Greenland, CPUE has been rather steady since 2005.

2.7.3 Stock status

At the ICES benchmark meeting, experts presented a biomass index based on the Icelandic autumn survey (SMH) and a similar survey off Greenland. The fishable biomass index increased somewhat in 1996–2001 but then decreased rapidly to a minimum in 2004–2007 (Fig. 2.7.2). Then the index increased again until 2013 before decreasing in 2014 about 12%. The Greenlandic portion of the index decreased from around 40% in 2005 to around 14% in 2014.



Mynd 2.7.2. **Grálúða.** Vísitala veiðistofns (þyngd, fiskar stærri en 40 cm) úr stofnmælingu í október og stofnmælingu grálúðu við Austur-Grænland.

Figure 2.7.2. ***Greenland halibut.*** *Fishable biomass index (>40 cm) from the Icelandic autumn survey and Greenlandic survey.*

The ICES assessment uses a surplus production model based on total landings, the survey index described above and the Icelandic CPUE. The results indicate that in 2014 fishing mortality was close to F_{MSY} but that the stock is still near the historical minimum, though above $B_{trigger}$.

2.7.4 Advice

Table 2.7.1 shows recommended TAC, national TAC and Greenland halibut landings since 1984. Last year ICES recommended a TAC for the East Greenland/Iceland/Faroe region of 25 thous. tonnes, based on the results of the surplus production model. The Icelandic government set a TAC at 14 100 tonnes within Icelandic waters for the current quota year and Greenland's TAC was 9 400 tonnes for 2015. Fishing in the Faroes is managed by fishing days.

In May, 2014 Iceland and Greenland adopted a 5-year bilateral management plan for Greenland halibut. The two nations agreed to utilize the stock in accordance with the international precautionary approach and with the fishing mortality that ICES estimates will lead to maximum sustainable yield. In this agreement, Iceland will be allowed to land 56.4% of allotted TAC and Greenland will have rights to 37.6%. No agreement was reached with the Faroes and their fishing will be independent of the agreement. Faroese ships landed over 2 600 tonnes in 2013 and nearly 3 000 tonnes in 2014.

For the quota year 2015/2016, ICES and the MRI recommend a TAC for Greenland halibut in the East Greenland/Iceland/Faroe region of 22 thous. tonnes, based on the effort that leads to maximum sustainable yield, as estimated with the surplus production model.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark fyrir Ísland *National TAC in Icelandic waters*	Afli á Íslandsmiðum *Landings from Icelandic waters*	Afli á öðrum miðum[1)] *Landings from other areas*[1)]	Afli alls *Total landings*
1984	25	30	30.2	3.9	34.1
1985	25	30	29.2	2.9	32.2
1986	25	30	31.3	2.0	33.1
1987	25	30	44.9	1.9	46.8
1988	30	30	49.6	1.7	51.3
1989	30	30	59.4	2.1	61.1
1990	30	30	37.4	2.0	39.4
1991[2)]	27	33	31.2	2.5	33.7
1991/92	25	25	30.3	3.5	33.8
1992/93	30	30	34.5	6.7	41.3
1993/94	25	30	29.5	8.4	37.6
1994/95	30[3)]	30	26.4	8.9	35.3
1995/96	20[3)]	20	22.3	13.8	36.1
1996/97	15[3)]	15	17.7	13.3	31.0
1997/98	10[3)]	10	11.0	9.8	20.8
1998/99	10[3)]	10	11.2	9.3	20.5
1999/00	10[3)]	10	11.5	12.0	23.5
2000/01	20[3)]	20	20.0	11.3	31.3
2001/02	20[3)]	20	19.2	9.9	29.1
2002/03	23[3)]	23	20.3	10.2	30.5
2003/04	20[3)]	23	15.8	11.3	27.1
2004/05	15[3)]	15	13.0	11.0	24.0
2005/06	15[3)]	15	12.7	9.5	22.2
2006/07	15[3)]	15	9.6	11.3	20.9
2007/08	15[3)]	15	9.7	11.1	20.8
2008/09	5[3)]	15	15.6	11.6	27.2
2009/10	5[3)]	12	14.1	11.6	25.7
2010/11	5[3)]	13	12.2	13.1	25.3
2011/12	12[3)]	13	13.2	15.6	28.8
2012/13	20[3)]	14.7	14.1	12.0	26.9
2013/14	20[3)]	12.5	11.9	11.2	21.1
2014/15	25[3)]	14.1			
2015/16	22[3)]				

[1)] Almanaksár. *Calendar year.*

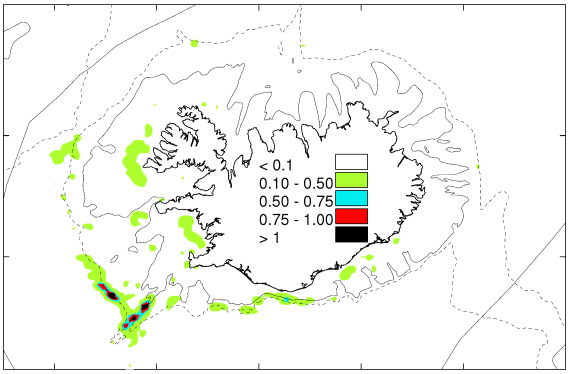
[2)] Tímabilið janúar–ágúst 1991. *January–August 1991.*

[3)] Tillögur um aflamark fyrir A-Grænland/Ísland/Færeyjar. *TAC recommendation applied to East Greenland/Iceland/Faroes.*

Tafla 2.7.1. **Grálúða**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um heildaraflamark og afli (þús. tonna).

Table 2.7.1. ***Greenland halibut****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

2.8 Halibut *Hippoglossus hippoglossus*

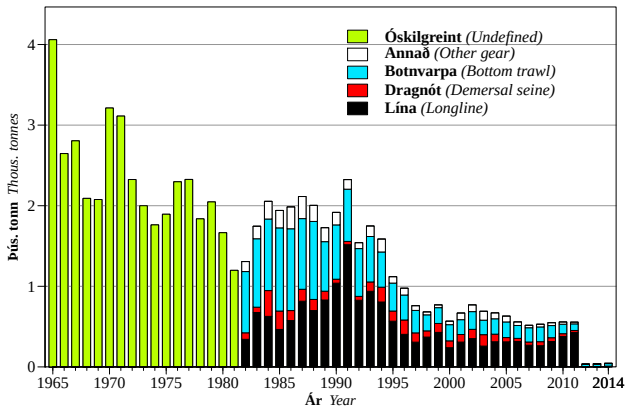


Lúða. Veiðisvæði við Ísland árin 2000–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Halibut. *Fishing grounds in 2000–2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.8.1 landings and effort

A the beginning of 2012 the Atlantic halibut fishery in Icelandic waters was closed and fishermen were required to release all halibut bycatch that could survive. Landings decreased considerably after this closure took effect (Fig. 2.8.1). Total landings in 2014 were 45 tonnes, caught by bottom trawl (31 tonnes), longline (6 tonnes) and demersal seine (4 tonnes).



Mynd 2.8.1. **Lúða.** Landaður afli eftir veiðarfærum.

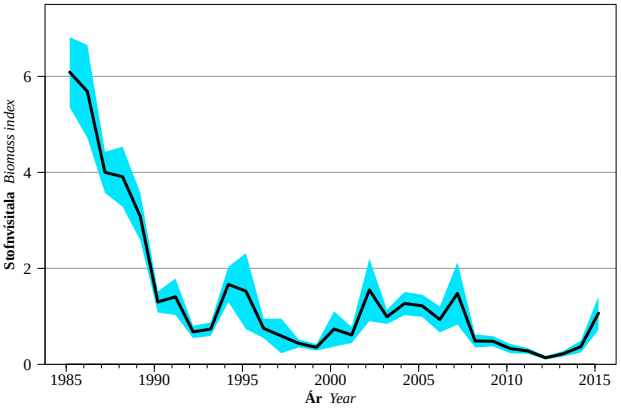
Figure 2.8.1. ***Halibut.*** *Landings by gear type.*

Annual halibut landings are shown in Figure 2.8.1 and in Table 3.8.1. In 1996–2011 halibut landings from Icelandic waters were under 1 000 tonnes. Halibut landings data dating back to 1905 indicate that landings have never been this low, with the exception of the period during World War II.

Bottom trawl landings decreased steadily from over 1 000 tonnes in 1985 and 1986 to about 200 tonnes in 1998. They were in the range 110–220 tonnes until 2011, when only 80 tonnes were landed. Longline landings were about 1 100 tonnes in 1991, but decreased rapidly to about 200 tonnes in 1997. Landings remained near 200 tonnes until 2008, when it increased due to a directed fishery using a special halibut longline (haukalóð) and was around 400 tonnes in 2011. In the last years before the closure, 70–90% of Icelandic landings were caught in the two types of longlines.

2.8.2 Stock status

The halibut biomass indices from the spring survey (SMB) in 1985–2015 show a similar trend as that of trawl data. The index decreased quickly in the first half of this period and has remained at a minimum since 1992 (Fig. 2.8.2). These results confirm that the stock declined rapidly in 1985–1992 and that the stock status remains very low.



Mynd 2.8.2. **Lúða.** Vísitala veiðistofns (þyngd) í stofnmælingu í mars, ásamt staðalfráviki.

Figure 2.8.2. ***Halibut.*** *Fishable biomass index in the Icelandic groundfish survey in March, along with the standard deviation.*

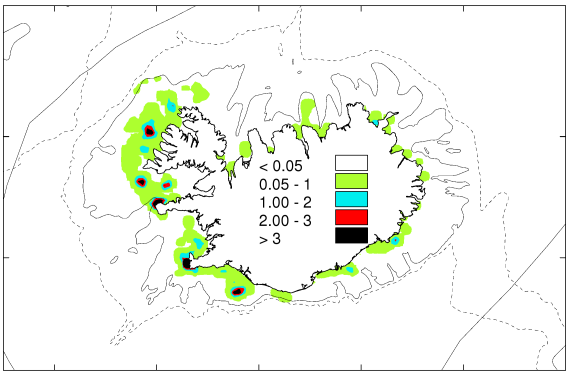
The majority of halibut caught in the SMB is three to five year old immature fish. The abundance of this age group has been very low for two decades, a clear indication of a recruitment failure in the stock. This trend has persisted long enough that it is foreseeable that the stock status will remain low in the near future.

2.8.3 Advice

Due to the poor state of the stock, the Minister of Fisheries appointed a working group tasked with finding ways to protect the stock, and this working group formulated recommendations in January 2011. The working group's conclusion was that the most effective approach would be to ban directed fishing for halibut. To follow up, the MRI evaluated alternative approaches to conserve the halibut stock. Furthermore, experienced skippers were consulted to discuss ways to rebuild the stock. It was concluded that the only practical approach would be to release all halibut bycatch in those fisheries where it is technically feasible, as the halibut is believed to survive such handling. In the beginning of 2012, the Ministry of Fisheries and Agriculture introduced a policy in accordance with the above MRI recommendation. Increasing the halibut stock is a long-term project and it is unlikely to observe significant progress until after some years, since the halibut is a slow-growing species that reaches maturity late in life.

The MRI recommends a continued effort to conserve the halibut stock in Icelandic waters and that the management policy described above remain until significant recovery of the stock is observed.

2.9 Plaice *Pleuronectes platessa*

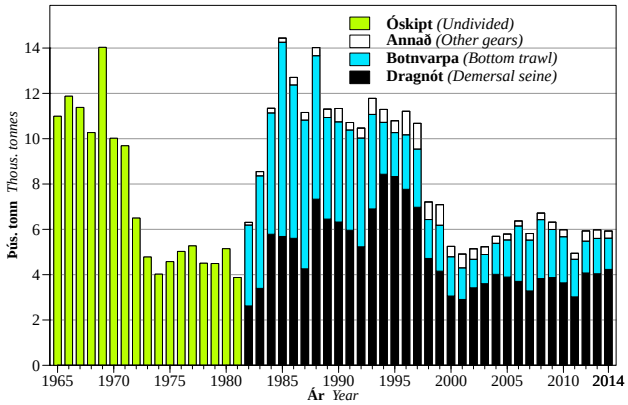


Skarkoli. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Plaice. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.9.1 Landings

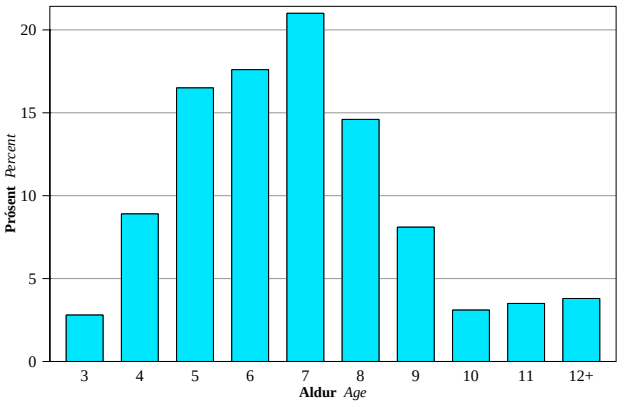
Plaice landings in 2014 were about 6 000 tonnes (Fig. 2.9.1 and Table 3.9.1). Since 1950, landings from Icelandic waters peaked at 14 500 tonnes in 1985, at 10–14 thous. tonnes in 1986–1997 and at 4 900–7 100 tonnes since then.



Mynd 2.9.1. **Skarkoli.** Landaður afli eftir veiðarfærum.

Figure 2.9.1. ***Plaice.*** *Landings by gear type.*

The largest proportion of landings in recent years were caught by demersal seine. In 1992 this gear caught approximately half of all landings but the proportion decreased below 20% in 1995. Since 1996 demersal seine has accounted for 24–38% of annual landings. Last year all other gears, including gillnet, accounted for about 5% of the total catch.



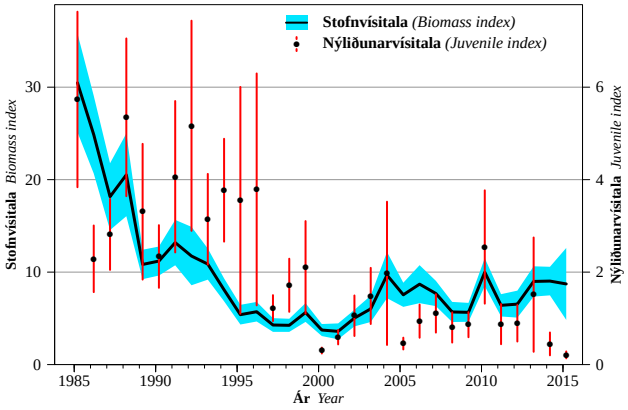
Mynd 2.9.2. **Skarkoli.** Aldursdreifing í afla 2014 (% af fjölda).

Figure 2.9.2. ***Plaice.*** *Age distribution in the 2014 catch (% by numbers).*

2.9.2 Age distribution, biomass indices and CPUE

Age distribution in landings in 2014 shows the proportion of plaice age 5–8 was unusually even, about 15–21% of the catch by number and age (Fig. 2.9.2).

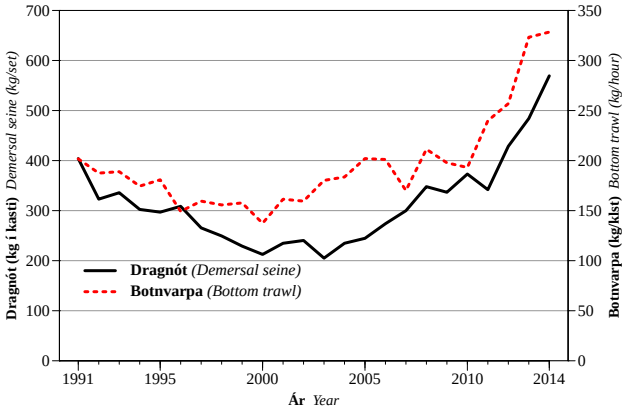
Biomass indices from the spring survey (SMB) indicate that the plaice fishable stock decreased considerably in 1985–2001 (Fig. 2.9.3). Indices increased somewhat for three years following that period and have remained rather steady since, in the last three years being at about 43% of the mean in 1985–1989.



Mynd 2.9.3. **Skarkoli.** Vísitölur veiðistofns (þyngd, fiskar 30 cm og stærri) og nýliðunar (fjöldi, minni en 30 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.9.3. ***Plaice.*** *Fishable biomass index (≥30 cm) and juvenile abundance index (<30 cm) from the groundfish survey in March, along with the standard deviation.*

CPUE in demersal seine (kg/set) on the traditional grounds from Stokksnes west and north to Horn is calculated as the mean weight in sets in which plaice was more than 10% of the catch. According to logbooks, plaice CPUE decreased in the aforementioned area in 1991–2000 from about 400 kg to about 210 kg, but has since increased and was about 570 kg last year (Fig. 2.9.4).



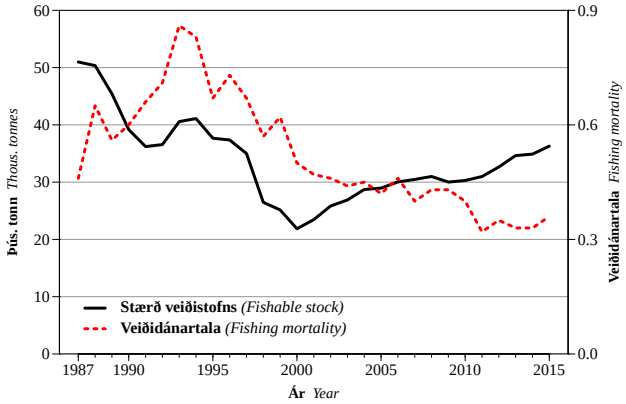
Mynd 2.9.4. **Skarkoli.** Afli á sóknareiningu með dragnót (kg í kasti) og botnvörpu (kg/klst).

Figure 2.9.4. ***Plaice.*** *CPUE from demersal seine (kg/set) and bottom trawl (kg/hour).*

CPUE of bottom trawl (kg/klst), in hauls where plaice is more than 25% of the catch, decreased by about one third in 1991–2000, from 200 to 140 kg/hr (Fig. 2.9.4). Since then, CPUE has been increasing.

2.9.3 Stock status

Calculations of stock trends, based on age-catch analysis, show that the stock decreased by more than half in 1993–2000 and reached an historical minimum in 2000, following a period of high harvest rate and poor recruitment (Fig. 2.9.5). In the last decade recruitment (calculated as the number of age 3 fish) has been poor. However, fishing mortality was decreased by nearly half in the same period and is also near an historical minimum. Concurrent to the decrease in fishing pressure, the fishable stock has increased since 2000 and is now estimated over 36 thous. tonnes.



Mynd 2.9.5. **Skarkoli.** Stærð veiðistofns (4 ára og eldri) og veiðidánartala.

Figure 2.9.5. ***Plaice.*** *Fishable stock (ages 4+) and fishing mortality.*

2.9.4 Advice

Table 2.9.1 shows TAC recommendations from the MRI, national TAC and plaice landings since the quota year 1991/1992.

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1991/92	10 000	11 000	10 200
1992/93	10 000	13 000	12 400
1993/94	10 000	13 000	12 300
1994/95	10 000	13 000	11 100
1995/96	10 000	13 000	11 000
1996/97	10 000	12 000	10 300
1997/98	9 000	9 000	8 100
1998/99	7 000	7 000	7 500
1999/00	4 000	4 000	4 900
2000/01	4 000	4 000	4 900
2001/02	4 000	5 000	4 400
2002/03	4 000	5 000	5 400
2003/04	4 000	4 500	5 800
2004/05	4 000	5 000	6 200
2005/06	4 000	5 000	5 700
2006/07	5 000	6 000	6 100
2007/08	5 000	6 500	6 600
2008/09	5 000	6 500	6 400
2009/10	5 000	6 500	6 400
2010/11	6 500	6 500	4 800
2011/12	6 500	6 500	5 800
2012/13	6 500	6 500	5 900
2013/14	6 500	6 500	6 000
2014/15	7 000	7 000	
2015/16	6 500		

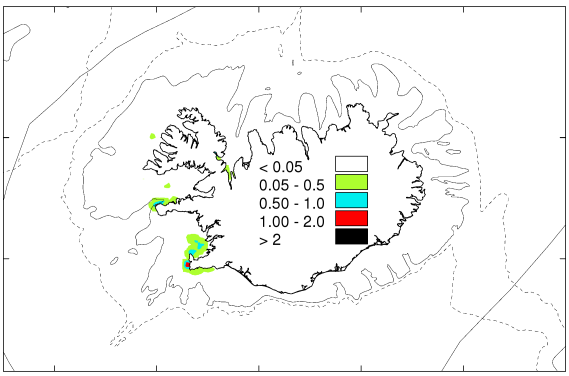
Tafla 2.9.1. **Skarkoli**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.9.1. ***Plaice****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

The MRI recommends a TAC in the quota year 2015/2016 of 6 500 tonnes. Assuming recruitment as remains poor as it has recently been, this TAC would maintain a fishing mortality that would provide maximum sustainable yield.

Furthermore, a closure of the plaice spawning grounds during spawning season is recommended to conserve the stock, as has been done since 2002.

2.10 Dab *Limanda limanda*

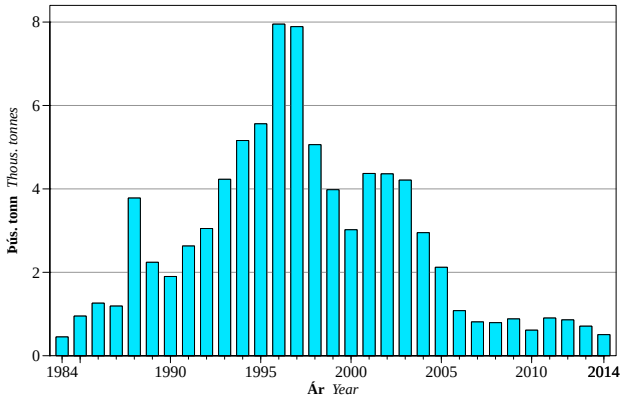


Sandkoli. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Dab. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.10.1 landings and effort

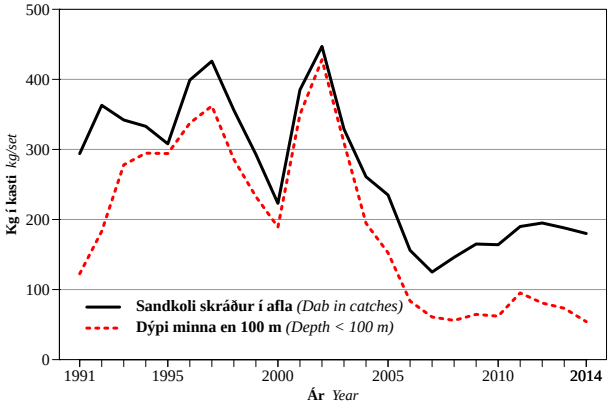
Dab landings in 2014 were over 500 tonnes. Until 1984 dab was mostly bycatch in other fisheries and, as such, discarded. In 1984 dab landings began to increase steadily and reached a peak in 1996–1997 of nearly 8 000 tonnes (Fig. 2.10.1 and Table 3.10.1). In the quota year 2013/2014 landings were about 590 tonnes, of which about 400 tonnes were from the traditional grounds between Snæfellsnes in the north and Stokksnes in the south.



Mynd 2.10.1. **Sandkoli.** Landaður afli.

Figure 2.10.1. ***Dab.*** *Landings.*

The dab fishery is mostly located in Faxaflói, along Reykjanes and on the southern coast to Stokksnes. Over 95% of the landings are caught by demersal seine. Dab as bycatch in this area decreased by half in 1997–2000 (Fig. 2.10.2) but increased again in 2001–2002. landings have decreased since then and have remained small since 2006.

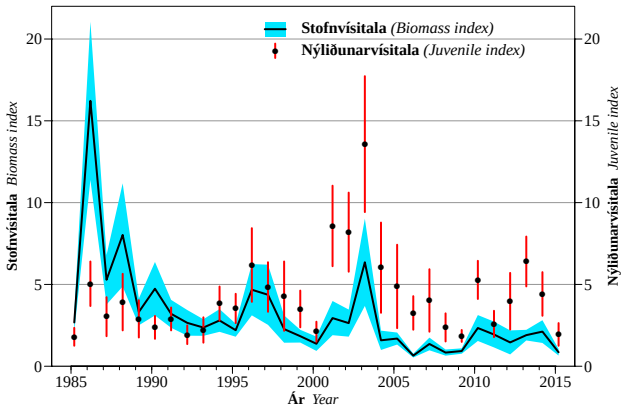


Mynd 2.10.2. **Sandkoli.** Afli á sóknareiningu (kg í kasti) hjá dragnótabátum úr öllum köstum þar sem sandkolaafli er skráður og á dýpi minna en 100 m.

Figure 2.10.2. ***Dab.*** *CPUE (kg per set) from demersal seine sets where dab is recorded in the catch and where depth is less than 100 m.*

2.10.2 Stock status

The biomass indices for dab from the spring surveys (SMB) were very low in 2006–2009 but much higher stable in 2010–2014. However, the index in 2015 was low (Fig. 2.10.3).



Mynd 2.10.3. **Sandkoli.** Vísitölur veiðistofns (þyngd, fiskar 30 cm og stærri) og nýliðunar (fjöldi, minni en 30 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.10.3. ***Dab.*** *Fishable biomass index (≥30 cm) and juvenile abundance index (<30 cm) from the groundfish survey in March, along with the standard deviation.*

Catch at age from the dab fishery has been collected since 1993–2014. Assessments based on these data show that cohorts leave the fishable stock quickly and that fishing mortality has been very high in recent years. Landings were primarily age 4–6 dab in cohorts from 2008–2010.

The estimate of fishable stock biomass in the beginning of 2015 contains potential for error because the size of cohorts from 2010 and 2011 is poorly understood and these will be the majority of fishable stock this year. Analysis of samples from landings in 2014 indicate that cohorts dominating landings in that year were small.

2.10.3 Advice

Table 2.10.1 shows MRI recommendations for TAC, national TAC and total dab landings since the quota year 1995/1996.

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1995/96	7 000	-	6 800
1996/97	7 000	-	8 200
1997/98	7 000	7 000	6 000
1998/99	7 000	7 000	4 300
1999/00	7 000	7 000	2 700
2000/01	4 000	5 500	2 300
2001/02	4 000	4 000	3 800
2002/03	7 000	7 000	4 300
2003/04	7 000	7 000	3 600
2004/05	5 000	5 000	2 600
2005/06	2 500	4 000	1 200
2006/07	1 000	2 000	800
2007/08	500	1 500	600
2008/09	500[1)]	1 000	700
2009/10	500[1)]	1 000	570
2010/11	500[1)]	900	600
2011/12	500[1)]	900	700
2012/13	500[1)]	800	590
2013/14	500[1)]	500	400
2014/15	1 000	1 000	
2015/16	500		

[1)] Engar beinar veiðar. Aflamark sem nemi áætluðum aukaafla við aðrar veiðar. *No directed fishery. TAC set no higher than would result from dab bycatch in other fisheries.*

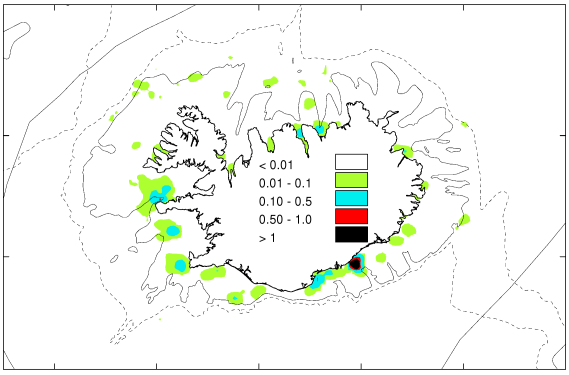
Tafla 2.10.1. **Sandkoli**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn) á aflamarkssvæðinu.

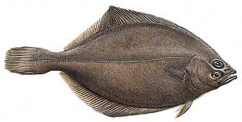
Table 2.10.1. ***Dab****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes) from the quota area.*

Biomass indices in the last survey were very low; there were no indications of improved recruitment last year in the 2015 data and CPUE is still low. For these reasons, the status

of the stock is thought to be worse than expected in the 2014 assessment. In light of these facts, the MRI recommends a TAC in the quota year 2015/2016 of 500 tonnes from the traditional grounds from Snæfellsnes extending south and east to Stokksnes.

2.11 Long rough dab *Hippoglossoides platessoides*



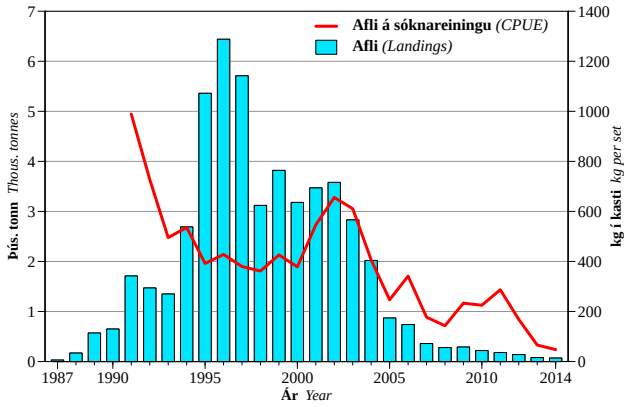


Skrápflúra. Veiðisvæði við Ísland árin 2009–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Long rough dab. *Fishing grounds in 2009–2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.11.1 Landings and effort

Until 1987 long rough dab was only bycatch in other fisheries and was discarded. In the first years after landing of the species began, the annual catch remained below 2 000 tonnes. In 1995–1997 landings were about 6 000 tonnes, but they have decreased since then and were only about 70 tonnes in 2014 (Fig. 2.11.1 and Table 3.11.1). About 70–90% of long rough dab landings in 1995–2010 was caught in the traditional grounds from Snæfellsnes south and east to Stokksnes, but landings from this area decreased in proportion and were only 10% of landings in 2014.



Mynd 2.11.1. **Skrápflúra.** Landaður afli og afli á sóknareiningu (kg í kasti) hjá dragnótabátum.

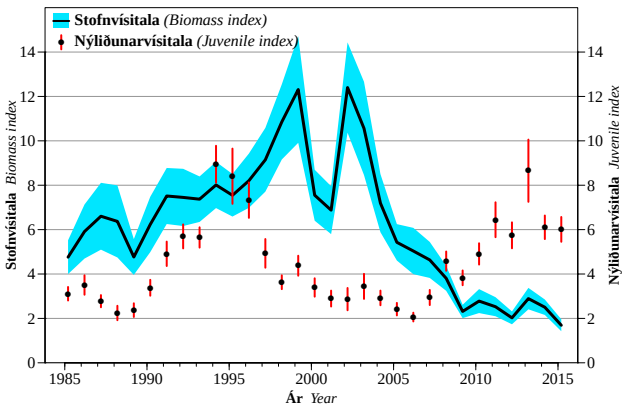
Figure 2.11.1. ***Long rough dab.*** *Landings and CPUE (kg per set) from seiners.*

CPUE in demersal seine on traditional grounds, in all sets where long rough dab was registered, decreased in 1991–1997 from 990 kg to 380 kg (Fig. 2.11.1). After an increase in 2000–2002 CPUE has decreased and was only about 50 kg in 2014.

Long rough dab is distributed on all coasts around Iceland, but the traditional fishing grounds are small and bound to spawning grounds. The main portion of the catch is older fish and, due to the size difference of the genders, almost entirely female. In those years that effort was directed at the species, the catch was mostly females full of roe off the south and southwestern coast in February–April. Mean length of females in landings was 35–36 cm but very little of the catch was fish under 30 cm. In this area about half of the females reach maturity by the time they are 18 cm in length and all have reached maturity by the time they are 25 cm long. Fishing selects only the largest and oldest fish in the spawning stock.

2.11.2 Stock status

Effort and landings increased rapidly near the end of the last century and CPUE decreased by half in the same period. In 2002–2003 CPUE was proportionally high, but in recent years it has been at an historical minimum. Much of the landings in 1995–2002 seems correlated to an increase in the stock size because biomass indices from the spring survey (SMB) indicate that the stock was large in these years (Fig. 2.11.2). The biomass index has been decreasing since 2003 and was at an historical minimum in the last few years.



Mynd 2.11.2. **Skrápflúra.** Vísitölur veiðistofns (þyngd, fiskar 30 cm og stærri) og nýliðunar (fjöldi, minni en 20 cm) á suðursvæði (Eystrahorn að Látrabjargi) í stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.11.2. ***Long rough dab.*** *Fishable biomass index (≥30 cm) and juvenile abundance index (<20 cm) on the southern grounds in the groundfish survey in March, along with the standard deviation.*

The biomass index of young fish in the SMB increased from 1989 to a peak in 1994, which indicates good recruitment. The recruitment index decreased after this until 2006, but it has increased in recent years and is now above the average of 1985–2014.

CPUE and the biomass index suggest that the stock has decreased rapidly in 2003–2008, at the same time, landings were well below TAC. It is unlikely that this decreased has been caused only by fishing pressure. There are indications of improved recruitment so the sock should grow in the coming years, but it is obvious that the fishable stock is still depleted.

2.11.3 Advice

Table 2.11.1 shows MRI recommendations for TAC, national TAC and total landings from the area between Snæfellsnes and Stokksnes since the quota year 1995/1996.

Long rough dab is a widely distributed species in Icelandic waters. However, the species is so dispersed across this range that fishing for them has proven infeasible, except during the spawning season. The majority of landed fish in the quota year 2013/2014 was caught outside the managed area and only about 5% of the adopted TAC was landed.

Considering that long rough dab are mainly caught as bycatch and that landings remain small, the MRI does not recommend a TAC for the quota year 2015/2016. due to the poor status of the stock, the MRI recommends a closure of the spawning grounds during spawning season..

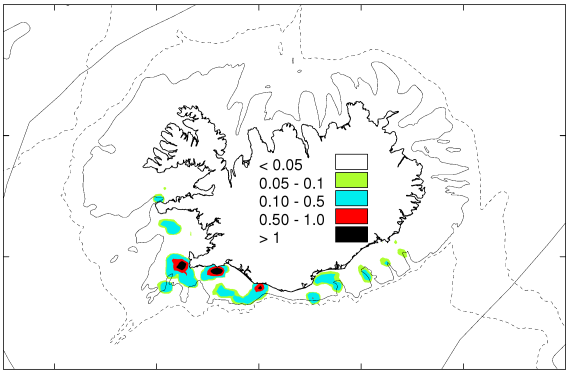
Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1995/96	5 000	-	5 300
1996/97	5 000	-	4 400
1997/98	5 000	5 000	3 400
1998/99	5 000	5 000	3 300
1999/00	5 000	5 000	2 800
2000/01	5 000	5 500	2 800
2001/02	5 000	5 000	2 500
2002/03	5 000	5 000	2 100
2003/04	5 000	5 000	1 600
2004/05	5 000	5 000	800
2005/06	2 000	3 500	600
2006/07	500	1 500	260
2007/08	500	1 000	210
2008/09	250[1)]	1 000	210
2009/10	200[1)]	1 000	130
2010/11	200[1)]	200	110
2011/12	200[1)]	200	80
2012/13	200[1)]	200	10
2013/14	200[1)]	200	9
2014/15	-	-	
2015/16	-		

[1)] Engar beinar veiðar. Aflamark sem nemi áætluðum aukaafla við aðrar veiðar. *No directed fishery. TAC set no higher than would result from dab bycatch in other fisheries.*

Tafla 2.11.1. **Skrápflúra**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn) á aflamarkssvæðinu.

Table 2.11.1. ***Long rough dab****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes) from the quota area.*

2.12 Witch *Glyptocephalus cynoglossus*



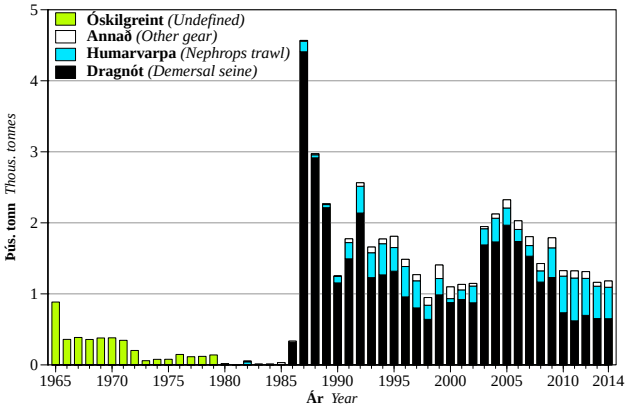
Langlúra. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Witch. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.12.1 Landings, effort and age distribution

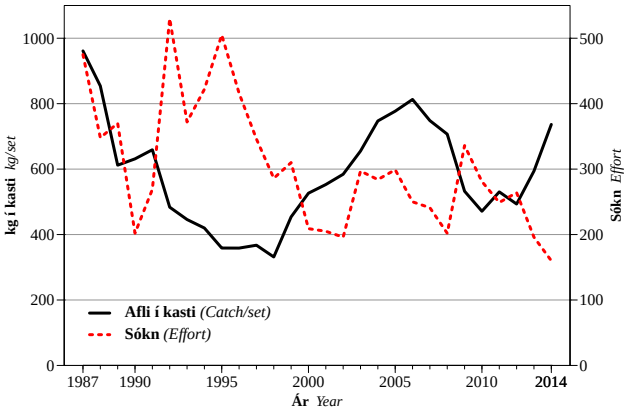
In 1950–1965 annual witch landings from Icelandic waters were 600–1 400 tonnes with more than half of that caught by foreign ships (Table 3.12.1). Over the next two decades annual landings were less than 400 tonnes but in 1987 about ten seiners began fishing for witch and total landings were nearly 4 600 tonnes (Fig. 2.12.1 and Table 3.12.1). From 1988 until 1996 annual landings ranged from 1 300–3 000 tonnes. In the quota year 1996/1997 TAC was adopted for witch for the first time and since then, landings have been near recommendations (Table 2.12.1). In 2014 landings were under 1 200 tonnes.

The majority of Icelandic witch landings are caught by demersal seine, but landed bycatch in the *Nephrops* fishery as a proportion of landings grew from 10% in 2008 to nearly half in the last 5 years. Witch is common bycatch in the *Nephrops* fishery and



Mynd 2.12.1. **Langlúra.** Landaður afli eftir veiðarfærum.

Figure 2.12.1. ***Witch.*** *Landings by gear type.*



Mynd 2.12.2. **Langlúra.** Sókn og afli á sóknareiningu (kg í kasti) hjá dragnótabátum.

Figure 2.12.2. ***Witch.*** *Effort and CPUE (kg per set) from demersal seine.*

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1994/95	1 500	-	1 760
1995/96	1 400	-	1 660
1996/97	1 200	1 200	1 260
1997/98	1 100	1 100	960
1998/99	1 100	1 100	1 160
1999/00	1 100	1 100	1 110
2000/01	1 100	1 100	1 160
2001/02	1 350	1 350	1 220
2002/03	1 500	1 500	1 530
2003/04	1 500	1 500	2 000
2004/05	2 000	2 000	2 250
2005/06	2 200	2 400	2 190
2006/07	2 000	2 400	2 200
2007/08	2 000	2 400	1 540
2008/09	1 600	2 200	1 700
2009/10	1 600	2 200	1 300
2010/11	1 300	1 300	1 220
2011/12	1 100	1 300	1 450
2012/13	1 100	1 100	1 180
2013/14	1 100	1 100	1 170
2014/15	1 100	1 100	
2015/16	1 100		

Tafla 2.12.1. **Langlúra**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.12.1. ***Witch****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

comparison of witch size data from the MRI *Nephrops* survey and size data from landings by *Nephrops* boats suggests that discards are considerable.

CPUE in demersal seines (catch per set where witch is a majority of the catch) was nearly 1 000 kg in 1987, but it decreased until 1998 when it was 330 kg (Fig. 2.12.2). From 1998 until 2006 CPUE increased to over 800 kg but decreased again until 2010. Since then, CPUE has increased and was almost 740 kg in 2014. Direct fishing for witch was heavy in 1992–1995 but then decreased until the turn of the century. Since then there has been little change in effort, despite a decrease in the last two years.

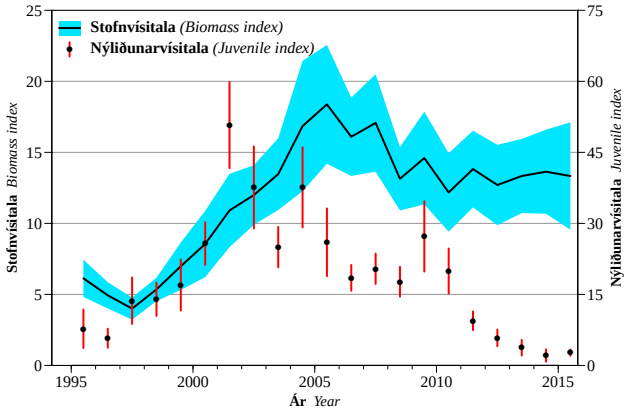
The age distribution of witch in landings indicates that the cohorts from 1998–2001 were big. CPUE was high in 2003–2008 when these cohorts were in the fishable stock. Cohorts from 2004–2007 were most important in landings last year, as in 2013.

2.12.2 Biomass indices

Biomass indices of witch in the *Nephrops* survey tripled in 1995–2005 (Fig. 2.12.3) and the same index in the (SMB) and the survey in October (SMH) showed similar trends. The index decreased in 2006–2008 but have not changed much since then.

The young fish index in the *Nephrops* survey increased significantly in 1996–2001 but has decreased since then (Fig. 2.12.3). In the last five years this index has been small and in the last three years it have been at an historical minimum.

Witch enters the fishable stock at about age 3–4 and is most common in landings at age



Mynd 2.12.3. **Langlúra.** Vísitölur veiðistofns (þyngd, fiskar 30 cm og stærri) og nýliðunar (fjöldi, minni en 30 cm) úr humarleiðangri.

Figure 2.12.3. ***Witch.*** *Fishable biomass index (≥30 cm) and juvenile abundance index (<30 cm) from Nephrops surveys.*

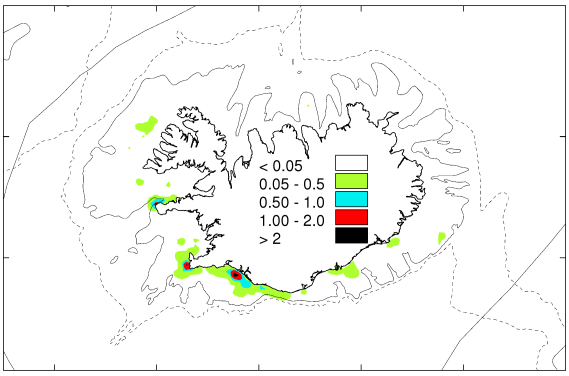
5–9. Data from the *Nephrops* survey of May, 2015 verify that the 2007 and 2008 cohorts are stronger than first measurements suggested. Cohorts from 2009–2012, on the other hand, are weak, which agrees with the decreasing recruitment index in the SMB and SMH. So, poor recruitment is expected in the coming years.

2.12.3 Advice

Table 2.12.1 shows MRI recommendations for TAC, national TAC and witch landings since the quota year 1994/1995.

Measurements in the *Nephrops* survey indicate that the fishable stock declined in 2005–2008 but has been steady since. Recruitment has been very poor in recent years, however, and the small cohorts from 2009–2012 will probably mean further decrease in the fishable stock in the coming years. The MRI recommends a TAC for witch in the quota year 2015/2016 of 1 100 tonnes.

2.13 Lemon sole *Microstomus kitt*

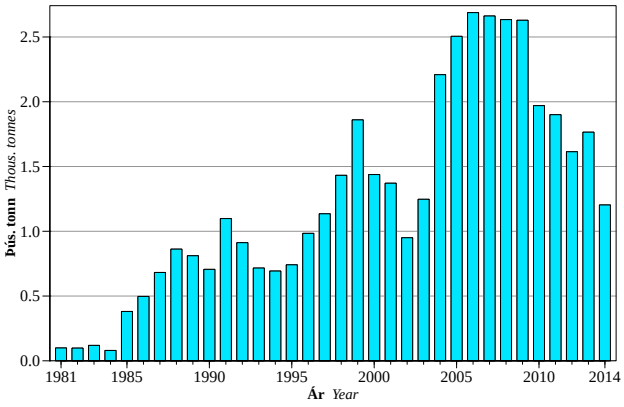


Þykkvalúra. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Lemon sole. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.13.1 Landings, effort, and biomass indices

In 1951–1965 annual landings of lemon sole from Icelandic waters were 1 300–2 900 tonnes, with foreign ships usually taking most of the catch (Table 3.13.1). Starting in 1966 landings decreased and were negligible in 1977–1984. In 1985 the fishery opened again with nearly 400 tonnes (Fig. 2.13.1). After that landings increased in stages and peaked at 2 700 tonnes in 2006, which is the largest annual catch from Icelandic waters since 1963. Landings in 2014 were about 1 200 tonnes.



Mynd 2.13.1. **Þykkvalúra.** Landaður afli.

Figure 2.13.1. ***Lemon sole.*** *Landings.*

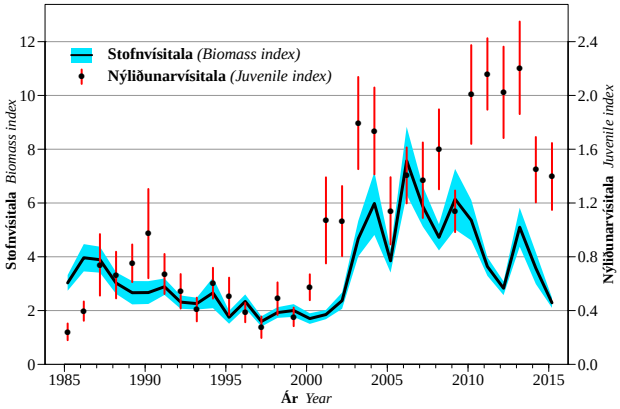
Lemon sole is mostly caught in bottom trawl and demersal seine. On the traditional grounds off the south and southwest coast, CPUE in demersal seine (sets where lemon sole was at least 25% of the catch) decreased from 350–400 kg in 1991–1992 to about 200 kg in 1993–1998. In 1999–2000 CPUE in this area was about 280 kg but it has increased considerably since then and was about 600 kg last year.

According to biomass indices from the spring survey (SMB), the lemon sole fishable stock decreased by about half from 1987 until 2000. The fhishable stock biomass index was high in 2003–2010, but it has decreased in recent years. Furthermore, recruitment has been good since 2001 (Fig. 2.13.2).

2.13.2 Advice

Table 2.13.1 shows MRI recommendations for TAC, national TAC and landings since the quota year 1999/2000.

The potential yield of the stock is unknown. In recent years, the biomass index of the fishable stock in the SMB has been decreasing and in 2015 the index was the lowest in



Mynd 2.13.2. **Þykkvalúra.** Vísitölur veiðistofns (þyngd, fiskar 30 cm og stærri) og nýliðunar (fjöldi, minni en 20 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.13.2. ***Lemon sole.*** *Fishable biomass index (≥30 cm) and juvenile abundance index (<20 cm) from the groundfish survey in March, along with the standard deviation.*

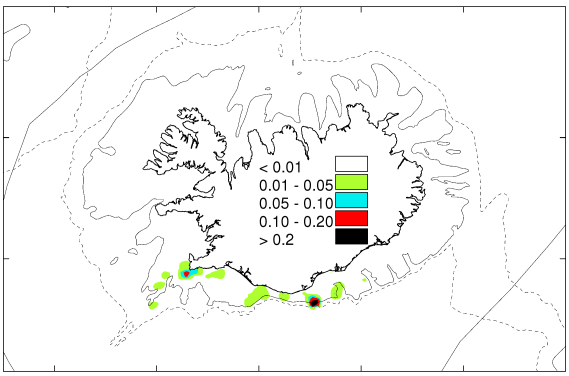
13 years. CPUE and recruitment have nevertheless, been good in more than a decade. Catch-at-age analysis shows that fishing mortality is too high. Considering these facts, the MRI recommends a TAC for lemon sole in the quota year 2015/2016 of no more than 1 300 tonnes.

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1999/00	1 400	1 400	1 400
2000/01	1 400	1 400	1 400
2001/02	1 400	1 400	1 000
2002/03	1 600	1 600	1 100
2003/04	1 600	1 600	2 100
2004/05	1 600	1 600	2 600
2005/06	1 600	1 800	2 500
2006/07	1 600	2 000	2 900
2007/08	1 600	2 200	2 600
2008/09	1 600	2 200	2 700
2009/10	1 800	2 200	2 000
2010/11	1 800	1 800	1 740
2011/12	1 800	1 800	1 800
2012/13	1 400	1 400	1 460
2013/14	1 600	1 600	1 430
2014/15	1 600	1 600	
2015/16	1 300		

Tafla 2.13.1. **Þykkvalúra**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.13.1. ***Lemon sole****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

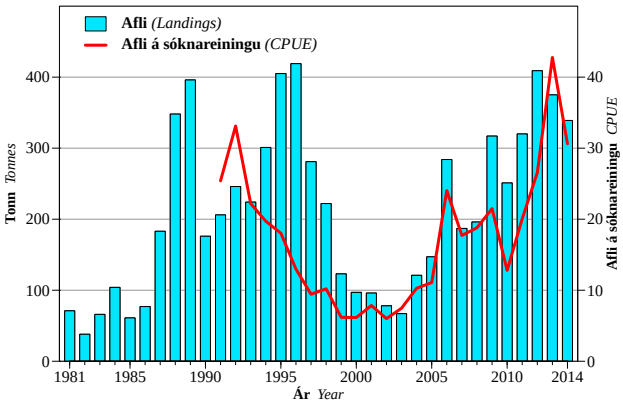
2.14 Megrim *Lepidorhombus whiffiagonis*



Stórkjafta. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Megrim. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

In 1951–1973 annual megrim landings were in the range of 400–700 tonnes and foreign vessels took the majority of the catch (Table 3.14.1). Starting in 1974 landings decreased and were only 40–100 tonnes in 1981–1986 (Fig. 2.14.1 and Table 3.14.1). Since 1986 landings have been very variable; the peak was 420 tonnes in 1996 and the low point was 67 tonnes in 2003. Landings in 2014 were 340 tonnes.



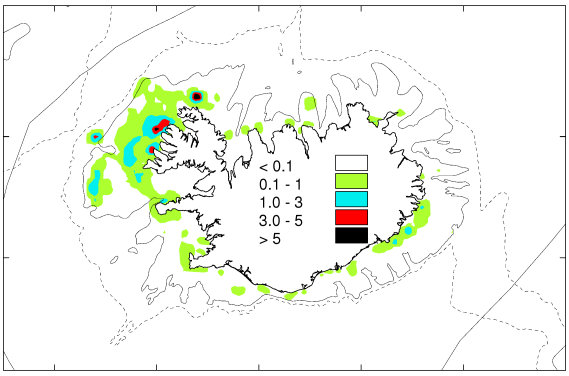
Mynd 2.14.1. **Stórkjafta.** Landaður afli og afli á sóknareiningu í dragnót (kg í kasti).

Figure 2.14.1. ***Megrim.*** *Landings and CPUE (kg per set) from seiners.*

Megrim is mostly caught by demersal seine and *Nephrops* gear, but also in bottom trawl. CPUE in demersal seine (all sets deeper than 100 m and megrim landings from the traditional grounds from Snæfellsnes south and east to Stokksnes) decreased from 1992 until 1999, then remained steady until 2003. Since then, CPUE has increased considerably (Fig. 2.14.1). The size, fishing pressure, and potential yield of the stock are unkown.

The MRI does not propose a TAC recommendation for the quota year 2015/2016.

2.15 Atlantic wolffish *Anarhichas lupus*

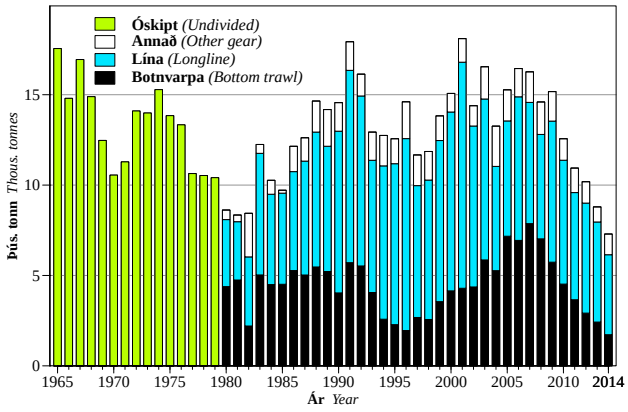


Steinbítur. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Atlantic wolffish. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.15.1 Landings and effort

Landings of Atlantic wolffish in 2014 were over 7 300 tonnes, about 1 500 tonnes less than in 2013 therefore, the lowest since before 1950 (Figure 2.15.1 and Table 3.15.). Longlines have accounted for roughly half of landings and bottom trawl landings have been about 20–50%.



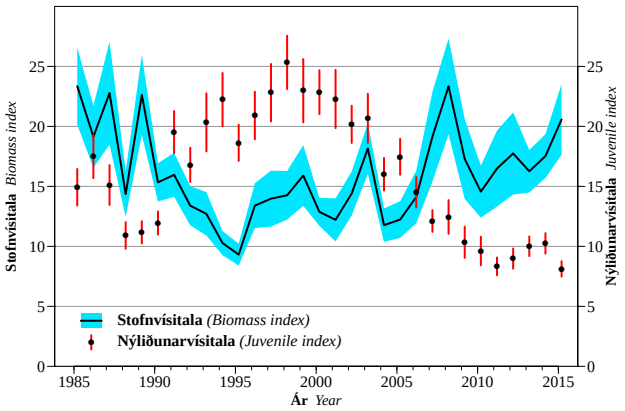
Mynd 2.15.1. **Steinbítur.** Landaður afli eftir veiðarfærum.

Figure 2.15.1. ***Atlantic wolffish.*** *Landings by gear type.*

Longline targeting of wolffish increased from 1998, climaxed in 2001 and has decreased since then. Longline CPUE changed little in these years. Bottom trawl for wolffish increased from 1998, climaxed in 2008 and has decreased steadily since. Bottom trawl CPUE remained rather constant in this period, except for an increase from 2003–2005.

2.15.2 Groundfish survey

Distribution of wolffish in the spring groundfish survey (SMB) is rather uniform across the surveyed area, though it is most abundant off the south and west coasts. Wolffish enter the groundfish survey at age 1, seven years before it enters the fishable stock. Figure 2.15.2 shows indices for the fishable stock and recruitment according to the SMB. The recruitment index is based on the number of 20–40 cm (age 3–8) wolffish, the fishable stock index is based on the weight of fish 60 cm and larger. According to the SMB results, the fishable stock biomass decreased by more than half in 1985–1995 but has increased since then, despite some fluctuation between years. This year the index is above average. According to SMB results, recruitment was good from 1991–1998, but has decreased since and was at an historical low this year. Increases in fishable stock indices from 1995–2008 correspond to the high recruitment indices in earlier years.

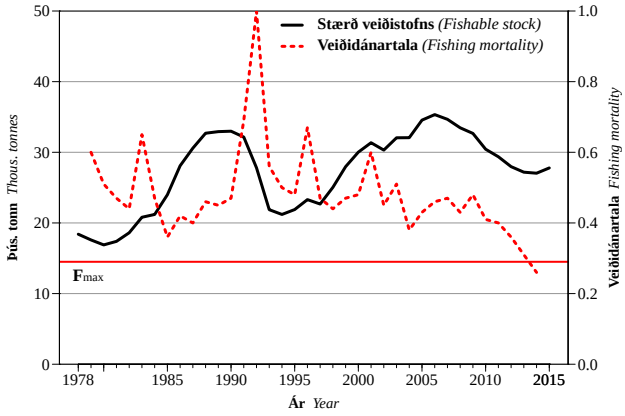


Mynd 2.15.2. **Steinbítur.** Vísitölur veiðistofns (þyngd, fiskar 60 cm og stærri) og nýliðunar (fjöldi, 20–40 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.15.2. ***Atlantic wolffish.*** *Fishable biomass index (≥60 cm) and juvenile abundance index (20–40 cm) from the groundfish survey in March, along with the standard deviation.*

2.15.3 Stock status

The estimation of wolffish stock size is based on a age-length based model (Gadget, see Appendix 5.1) with an ADAPT model and time series analysis for comparison. The results of these analyses are similar. Figure 2.15.3 shows trends in the fishable stock and fishing mortality of adult wolffish. The estimated fishing mortality index has been above that which gives maximum sustainable yield ($F_{max} = 0.29$) since 1978, except in 2014 when it was 0.26. The fishable stock has decreased by roughly one third since 2006 and is currently near average. Due to very poor recruitment in recent years (Figure 2.15.2), the fishable stock will probably not increase much in coming years.



Mynd 2.15.3. **Steinbítur.** Stærð veiðistofns og veiðidánartala 70 cm og stærri steinbíts samkvæmt Gadget líkani.

Figure 2.15.3. ***Atlantic wolffish.*** *Fishable stock size and fishing mortality (≥70 cm) based on the Gadget model.*

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1996/97	13 000	13 000	11 523
1997/98	13 000	13 000	11 689
1998/99	13 000	13 000	13 051
1999/00	13 000	13 000	14 906
2000/01	13 000	13 000	18 094
2001/02	13 000	16 100	13 667
2002/03	15 000	15 000	16 953
2003/04	15 000	16 000	13 253
2004/05	13 000	16 000	14 208
2005/06	13 000	13 000	16 473
2006/07	12 000	13 000	15 796
2007/08	11 000	12 500	15 159
2008/09	12 000	13 000	15 430
2009/10	10 000	12 000	13 128
2010/11	8 500	12 000	12 122
2011/12	7 500	10 500	10 597
2012/13	7 500	8 500	8 957
2013/14	7 500	7 500	7 929
2014/15	7 500	7 500	
2015/16	8 200		

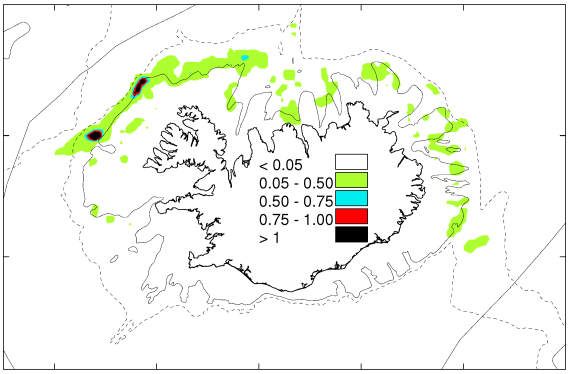
Tafla 2.15.1. **Steinbítur**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.15.1. ***Atlantic wolffish***. *TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.15.4 Advice

Table 2.15.1 shows MRI recommendations and TAC since 1996/1997. Wolffish landings have declined in recent years and the fishing mortality also decreased. Fishing mortality in 2014 is near the maximum sustainable yield, but in recent decades fishing mortality has been much higher. It is not likely that the potential yield will increase in the coming years as small cohorts are entering the fishable stock. MRI recommends that fishing mortality be kept close to that which provides MSY ($F_{max} = 0.29$), specifically, a TAC of 8 200 tonnes in 2015/2016. In addition, MRI recommends continued closure of the spawning grounds off Látragrunn during the spawning and hatching period.

2.16 Spotted wolffish *Anarhichas minor*

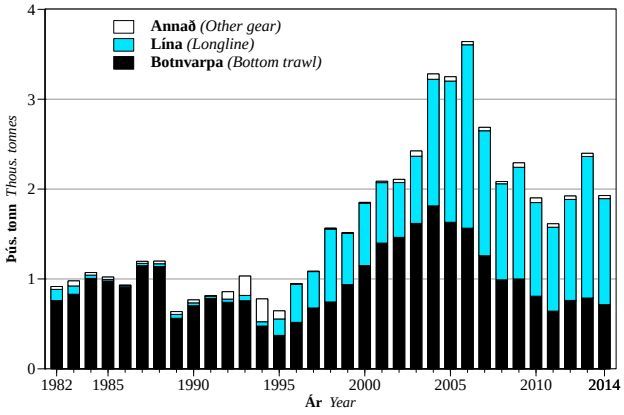


Hlýri. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Spotted wolffish. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.16.1 Landings and effort

Spotted wolffsh landings in 2014 exceeded 1 900 tonnes, about 500 tonnes less than in 2013 (Fig. 2.16.1 and Table 3.16.1). In 1982–1997 mean landings were over 900 tonnes, mostly caught by bottom trawl. After that period, landings increased steadily and peaked at nearly 3 700 tonnes in 2006, after which they decreased again. Since 1995 longline has increased in popularity; in the last few years this gear has caught more than half of landed spotted wolffish, as opposed to less than half being caught in bottom trawl. Spotted wolffish is mostly bycatch in these two gears.



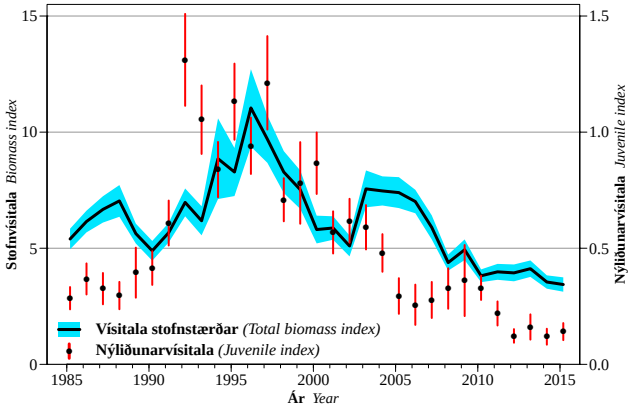
Mynd 2.16.1. **Hlýri.** Landaður afli eftir veiðarfærum.

Figure 2.16.1. ***Spotted wolffish.*** *Landings by gear type.*

2.16.2 Surveys

In the spring survey (SMB) most of the spotted wolffish caught are off the West Fjords and the East Fjords, though a considerable number also come from waters off the north coast. These wolffish first appear in the SMB at one year of age, about four years before they enter the fishable stock.

Figure 2.16.2 shows biomass and recruitment indices according to the SMB. The recruitment index (calculated as the number of spotted wolffish 20–40 cm, about age 2–4) was high in 1992–2000, but has been very low in recent years. The biomass index was high in 1994–1998 but has been decreasing since. In Figure 2.16.3 the fishable stock biomass index is shown, calculated as the weight of spotted wolffish more than 60 cm. Trends in the fishable stock are similar to those in the total stock. All three of these indices were at an historical minimum in 2015.

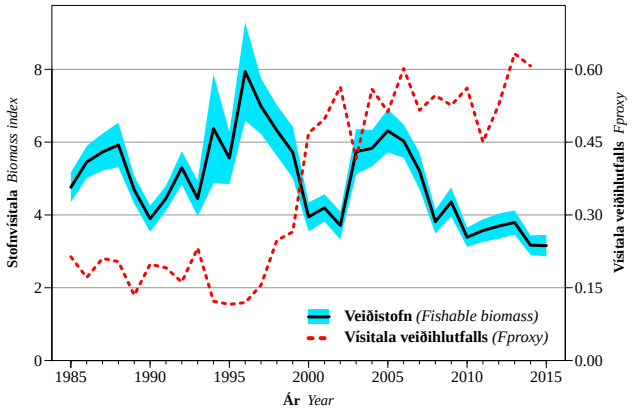


Mynd 2.16.2. **Hlýri.** Heildarvísitölur (þyngd) og nýliðunarvísitölur (fjöldi, fiskar 20–40 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.16.2. ***Spotted wolffish.*** *Total biomass index and juvenile abundance index (20–40 cm) from the groundfish survey in March, along with the standard deviation.*

2.16.3 Stock status

According to surveys, stock size and recruitment are at an historical minimum. In 1985–1997 landings averaged over 900 tonnes, but in this period stock size was rather steady and then increased, according to the SMB. Landings in 1998–2014 ranged from 1 500–3 700 tonnes, on average nearly 2 300 tonnes per year, and F_{proxy} (landings/biomass index) has been very high compared to that of 1985–1997 (Fig. 2.16.3).



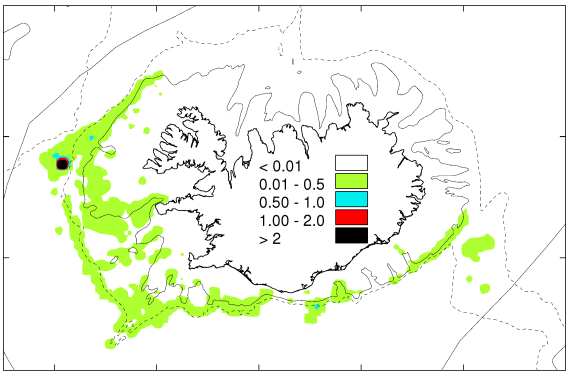
Mynd 2.16.3. **Hlýri.** Vísitala veiðistofns (þyngd, fiskar 60 cm og stærri) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki, og vísitala veiðihlutfalls (afli/stofnvísitölu).

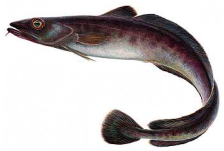
Figure 2.16.3. ***Spotted wolffish.*** *Fishable biomass index (≥60 cm) from the groundfish survey in March, along with the standard deviation, and F_{proxy} (landings/biomass index).*

2.16.4 Advice

The potential yield of spotted wolffish is poorly understood and research on the species is limited. However, it is clear that landings since 1998 have exceeded the yield capacity of the stock. The MRI recommends that effort be decreased considerably and that TAC for spotted wolffish in the quota year 2015/2016 should be no more than 900 tonnes. The aim of this recommendation is to decrease the harvest rate to half of the average from 2000–2013.

2.17 Blue ling *Molva dipterygia*



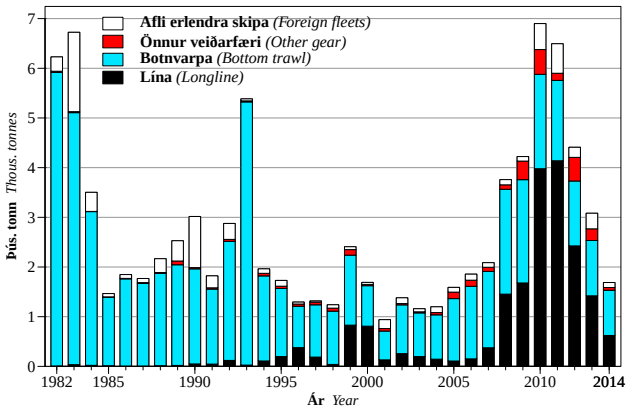


Blálanga. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Blue ling. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.17.1 Landings and effort

Blue ling landings have been between 1 000 and 3 000 tonnes since 1985, with the exception of 1993 and 2008–2012 (Fig. 2.17.1, Tables 2.17.1 and 3.17.1). the catch in 2010 was 6 900 tonnes, which is the largest since 1981. Over the last four years landings have decreased and in 2014 about 1 700 tonnes were landed, of which about 1 600 tonnes (94%) were from Icelandic vessels.



Mynd 2.17.1. **Blálanga.** Landaður afli eftir veiðarfærum.

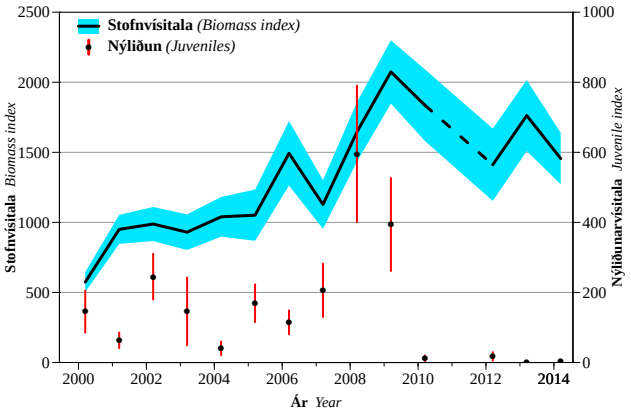
Figure 2.17.1. ***Blue ling.*** *Landings by gear type.*

Fishing of spawning blue ling was conducted south of the Westman Islands in 1980–1984 and again in 1993 on the Franshóll near the eastern edge of the Icelandic EEZ to the east of the Reykjaness Ridge. This pressure on the spawning stock seems to have been well beyond the potential yield of the stock. From 1993 until 2007 landed blue ling was mostly bycatch in bottom trawls of other fisheries. In 2008–2010 longlining became more prominent in blue ling landings and in 2011 comprised about 70% of the catch. Since then, longlining has become less common and provided only about 40% of landings in 2014. The popularity of longlines in 2008–2012 indicates the direct targeting of blue ling during the summer months. Blue ling is increasingly caught as bycatch in the redfish and Greenland halibut fisheries off the West Fjords, which reflects the ongoing northwestern shift in the species' distribution in surveys.

2.17.2 Surveys

The autumn survey (SMH) is considered to show the status of the stock better than the spring survey (SMB) because the SMH sampling grid covers the range of blue ling more efficiently.

According to SMH data, blue ling biomass increased after 2006 and peaked in 2009. The SMH biomass index shows a decrease of approximately one quarter from 2009 to 2014. The recruitment index from SMH data in 2014 is the lowest ever and this index has been very low since 2010 (Fig. 2.17.2).



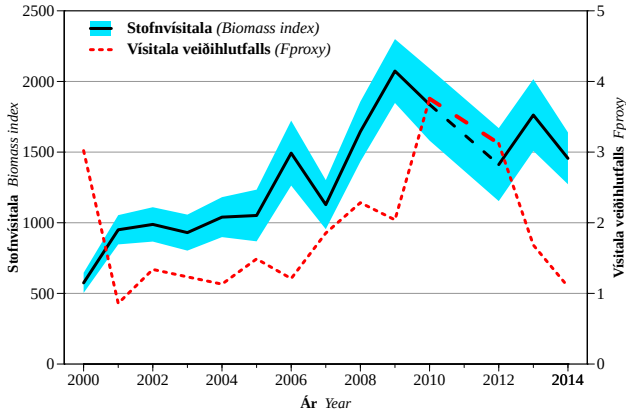
Mynd 2.17.2. **Blálanga.** Vísitölur veiðistofns (þyngd, fiskar 40 cm og stærri) og nýliðunar (fjöldi, minni en 40 cm) úr stofnmælingu botnfiska að hausti, ásamt staðalfráviki.

Figure 2.17.2. ***Blue ling.*** *Fishable biomass index (≥40 cm) and juvenile abundance index (<40 cm) from the groundfish survey in autumn, along with the standard deviation.*

2.17.3 Stock status

The fishable stock increased considerably in 2006–2010 but effort also increased in this period. The F_{proxy} increased rapidly after 2009 (Fig. 2.17.3), as a result of targeting of ling by longline vessels. However, the F_{proxy} has decreased since 2012 and in 2014 it was below the 2002–2009 average when the stock increased. The mean harvest rate in 2002–2009 is the basis for advice from both ICES and the MRI.

If recruitment in the coming years is similar to that predicted by the assessment, a considerable decrease in fishable stock in two to three years is expected.



Mynd 2.17.3. **Blálanga.** Vísitala veiðistofns (þyngd, fiskar 40 cm og stærri) úr stofnmælingu að hausti, ásamt staðalfráviki, og vísitala veiðihlutfalls (afli/stofnvísitölu).

Figure 2.17.3. ***Blue ling.*** *Fishable biomass index (≥40 cm) from the groundfish survey in autumn, along with the standard deviation, and F_{proxy} (landings/biomass index).*

2.17.4 Advice

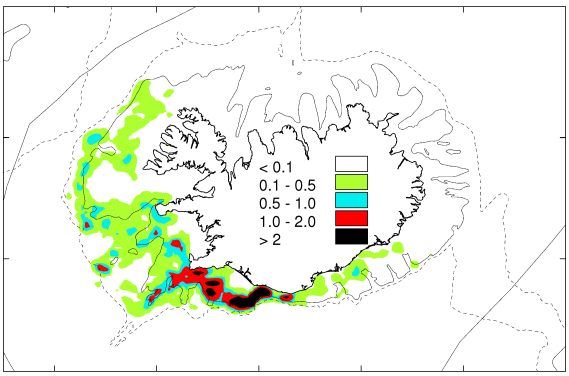
Since the yield potential of blue ling is poorly understood and research on the species is limited, caution must be taken in fishing the stock. The MRI considers that the increase of fishing pressure what occurred in 2008–2012 to be far above the yield potential of the stock; so the MRI recommends a TAC not larger than 2 500 tonnes in the quota year 2015/2016. This TAC would mean a harvest rate similar to that in 2002–2009 when the stock increased. In addition, a closure is recommended on known spawning grounds south of the Westman Islands and on the Franshóll during spawning season from 15. February until 30. April, as has been done in recent years.

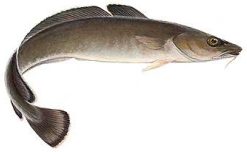
Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
2001/02	-	-	1 113	179	1 292
2002/03	-	-	963	116	1 079
2003/04	-	-	1 157	62	1 219
2004/05	-	-	1 380	116	1 496
2005/06	-	-	1 496	95	1 591
2006/07	-	-	2 078	121	2 199
2007/08	-	-	2 849	92	2 941
2008/09	-	-	4 075	109	4 184
2009/10	-	-	6 495	183	6 678
2010/11	-	-	6 464	528	6 992
2011/12	4 000	-	4 238	799	5 037
2012/13	3 100	-	2 996	203	3 199
2013/14	2 400	2 400	1 653	101	1 754
2014/15	3 100	3 100			
2015/16	2 550				

Tafla 2.17.1. **Blálanga**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.17.1. ***Blue ling****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.18 Ling *Molva molva*



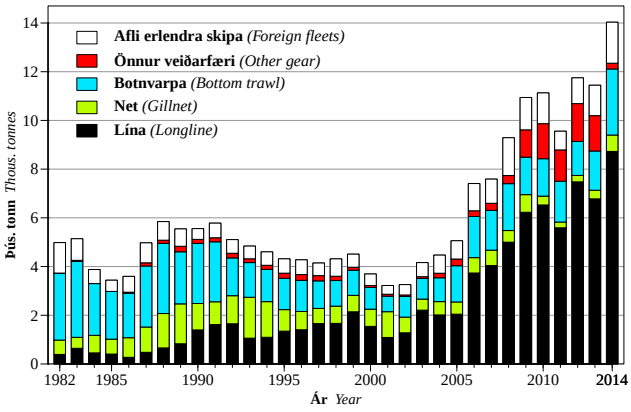


Langa. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Ling. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.18.1 Landings and effort

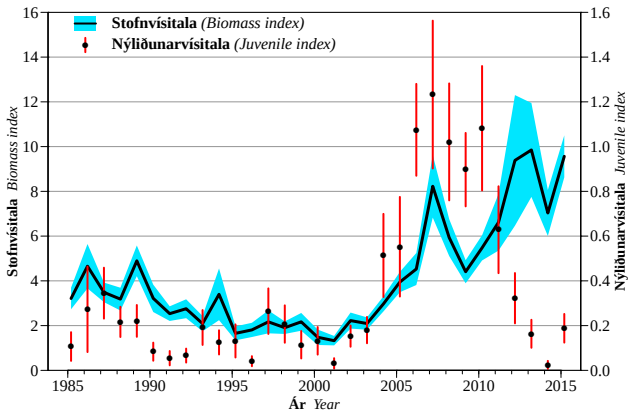
Ling landings from Icelandic waters peaked in 1971 at over 15 thous. tonnes (Table 3.18.1). In 1982–2005 landings were in a range of 3 200–5 900 tonnes but have increased since then, exceeding 14 thous. tonnes in 2014 (Fig. 2.18.1). Icelandic vessels landed nearly 12 thous. tonnes. of that total. In the last three decades Icelanders have caught about 85–90% of the ling landed from Icelandic waters, but before that time foreign ships accounted for a larger portion of landings (Table 3.18.1).



Mynd 2.18.1. **Langa.** Landaður afli eftir veiðarfærum.

Figure 2.18.1. ***Ling.*** *Landings by gear type.*

The catch composition by gear used has changed considerably in recent years; the proportion of landings caught by longline has increased from 11% in 1982–1989 to 75% in 2014. Conversely, the proportions of landings from bottom trawl and gillnet have decreased at the same time.

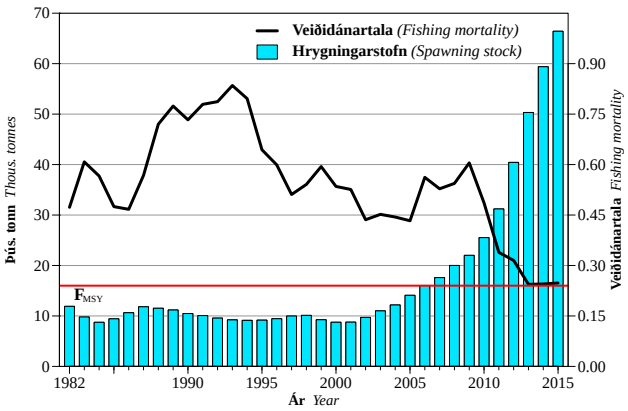


Mynd 2.18.2. **Langa.** Vísitölur veiðistofns (þyngd, fiskar 40 cm og stærri) og nýliðunar (fjöldi, minni en 40 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.18.2. ***Ling.*** *Fishable biomass index (≥40 cm) and juvenile abundance index (<40 cm) from the groundfish survey in March, along with the standard deviation.*

2.18.2 Stock status

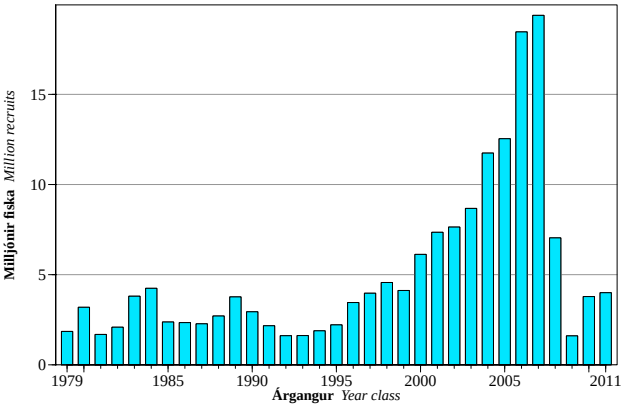
Ling biomass indices from the spring survey (SMB) declined by more than half in 1985–2001. Since 2005 this index increased rapidly and was near its highest value ever in 2015 (Fig. 2.18.2). The recruitment index has decreased considerably since the high values in 2004–2010.



Mynd 2.18.3. **Langa.** Stærð hrygningarstofns og veiðidánartölur (15–19 ára).

Figure 2.18.3. ***Ling.*** *Spawning stock biomass and fishing mortality ($F_{15–19}$).*

As a result of a review meeting in February of 2014, ICES adopted the Gadget stock model for advice concerning the ling in Icelandic waters. Ideal effort (F_{MSY}) was defined as 0.24 as was a threshold for the spawning stock size ($B_{trigger} = 9\,500$ t). According to stock assessments, the spawning stock has increased in recent years (Fig. 2.18.3). Recruitment increased from 2000–2010 but has been very poor since 2012 (Fig. 2.18.4). Fishing mortality was high until 2010, but has rapidly decreased with increasing stock size and is now near F_{MSY} (Fig. 2.18.3). Projections show that the stock is likely to decrease considerably in the coming years due to poor recruitment, thus causing landings to fall under 10 thous. tonnes.



Mynd 2.18.4. **Langa.** Stærð árganga við þriggja ára aldur (í milljónum)

Figure 2.18.4. ***Ling.*** *Size of year classes at age 3 (in millions).*

2.18.3 Advice

Table 2.18.1 shows MRI recommended TAC and national TAC since the quota year 2001/2002, and annual landings since the quota year 1999/2000.

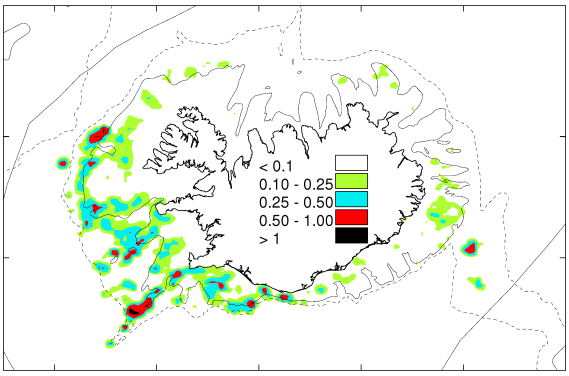
The assessment indicates that the stock has increased rapidly since the turn of the century and is now larger than at any time since 1982. The MRI recommends that TAC for ling in the quota year 2015/2016 aim to reach F_{MSY} and therefore not exceed 16 200 tonnes, including landings by foreign vessels which averaged about 1 500 tonnes in the last two years.

Fiskveiði-ár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1999/00	-	-	3 496	475	3 961
2000/01	-	-	3 182	359	3 451
2001/02	3 000	3 000	2 542	426	2 968
2002/03	3 000	3 000	3 137	578	3 715
2003/04	3 000	3 000	3 864	744	4 608
2004/05	4 000	4 000	4 488	750	5 238
2005/06	4 500	5 000	5 842	1 119	6 961
2006/07	5 000	5 000	6 625	992	7 617
2007/08	6 000	7 000	7 008	1 552	8 560
2008/09	6 000	7 000	9 160	1 329	10 489
2009/10	6 000	7 000	9 450	1 263	10 713
2010/11	7 500	7 500	9 327	768	10 095
2011/12	8 800	9 000	10 074	1 059	11 133
2012/13	12 000	11 500	11 196	1 249	12 445
2013/14	14 000	13 500	13 300	1 683	14 983
2014/15	14 300	13 800			
2015/16	16 200				

Tafla 2.18.1. **Langa**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.18.1. ***Ling****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.19 Tusk *Brosme brosme*

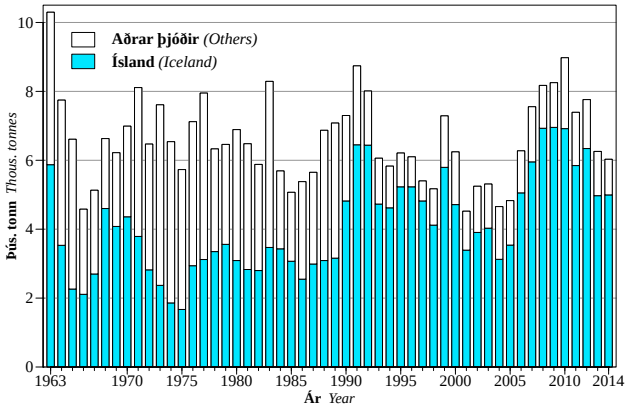


Keila. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Tusk. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.19.1 Landings and effort

Tusk landings from Icelandic waters since 1963 are shown in Figure 2.19.1 and in Table 3.19.1. In 1963 landings exceeded 10 thous. tonnes, but since then have ranged between 5 000–8 000 tonnes. In 2014 the catch was about 6 000 tonnes, which is nearly 1 800 tonnes less than in 2012. Since 1991, Icelandic vessels have caught 75–80% of landings and another 20–25% were caught by Faroese ships. In 2004–2010 Icelandic landings doubled and were about 7 000 tonnes in 2008–2010, which is the largest annual catch in history. Icelandic landings were nearly 5 000 tonnes in 2014. In recent years, the vast majority of tusk landings (more than 95%) were caught by longline.



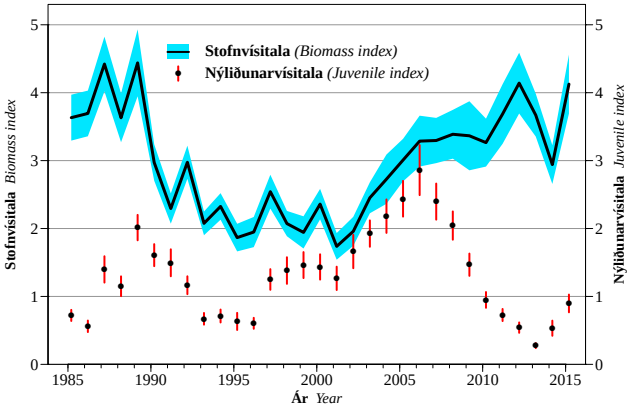
Mynd 2.19.1. **Keila.** Landaður afli á Íslandsmiðum.

Figure 2.19.1. ***Tusk.*** *Landings from Icelandic waters.*

2.19.2 Stock survey

Tusk is found at roughly half of the sampling stations in the spring survey (SMB). Tusk distribution is fairly even and there is usually little variation between the results of the SMB and those of the autumn survey (SMH), though less biomass is observed in the SMH. In the SMB tusk has only been found off the west and southeast coasts.

The fishable stock biomass index in the SMB decreased by half from 1989 until 1995 and remained low until 2001 (Fig. 2.19.2). In 2002–2006 the biomass index increased rapidly and then remained steady until 2010. Since then, it has fluctuated, decreasing in 2014 and increasing in 2015. The recruitment index increased from 1996 until 2006 when it reached an historical peak. In 2007–2013 the index decreased rapidly and was at an historical low in 2012 and 2013. increased recruitment has been observed for the past two years, though the indices are still low.



Mynd 2.19.2. **Keila.** Vísitölur veiðistofns (þyngd, fiskar 40 cm og stærri) og nýliðunar (fjöldi, minni en 40 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

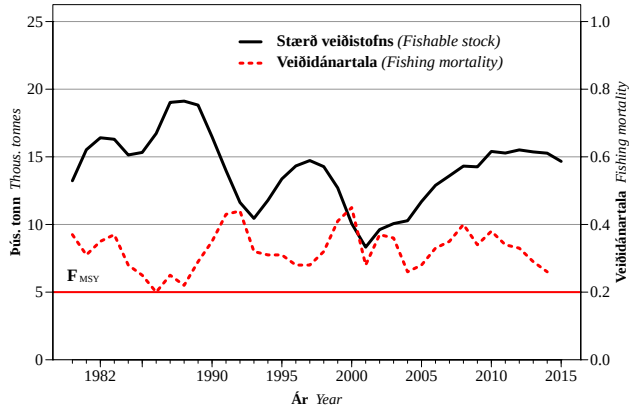
Figure 2.19.2. ***Tusk.*** *Fishable biomass indices (≥40 cm) and juvenile abundance indices (<40 cm) from the groundfish survey in March, along with the standard deviation.*

2.19.3 Stock status

Recommendations from ICES and the MRI are based on the results of an age-length model (Gadget, see Appendix 5.1).

At a meeting of the ICES deep-sea fish committee in 2014 assumptions and data used in the Gadget model were reviewed. Desired levels of fishing pressure were re-evaluated and decreased from 0.24 (F_{max}) to 0.20 (F_{MSY}), since fishing mortality has always been above this mark since 1982. Figure 2.19.3 shows trends in the fishable stock and fishing mortality of tusk that has fully entered the fishable stock. Fishing mortality in 2014 was an estimated 0.26.

The current estimate of fishable stock is smaller than last year. The decrease is attributable to poor recruitment in the fishable stock.



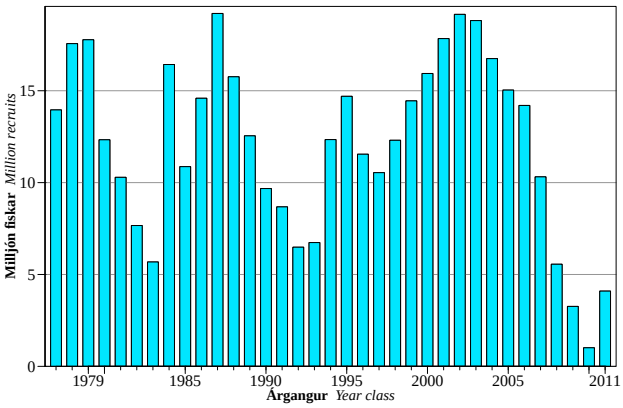
Mynd 2.19.3. **Keila.** Stærð veiðistofns og veiðidánartala.

Figure 2.19.3. ***Tusk.*** *Fishable stock size and fishing mortality.*

The fishable stock was 15–19 thous. tonnes in 1980–1988, then decreased in the 1990s and was about 8 000 tonnes at the turn of the century. In 2002–2010 the fishable stock doubled in size and has been about 15 thous. tonnes since.

The assessment shows that recruitment (age 3 fish) was very good from the 1999–2006 cohorts but poor from younger year classes, and that cohorts from 2008–2010 are the smallest since measurement began (Fig. 2.19.4). This is supported by the results of the stock surveys. For this reason, it is expected that both the fishable and spawning stocks will continue to shrink in the coming years.

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, though they are not mature until they are about 55 cm long. That means that about 3–5 years elapse from the time they enter the fishable stock and they reach maturity. Heavy fishing pressure can lead to a low number of fish being able to spawn.



Mynd 2.19.4. **Keila.** Stærð árganga við þriggja ára aldur (í milljónum).

Figure 2.19.4. ***Tusk.*** *Size of year classes at age 3 (in millions).*

2.19.4 Advice

Table 2.19.1 shows MRI recommended TAC, national TAC and tusk landings since the quota year 2001/2002. In most years, total landings have been far above TAC because of foreign vessels in Icelandic waters and species conversions within the management system.

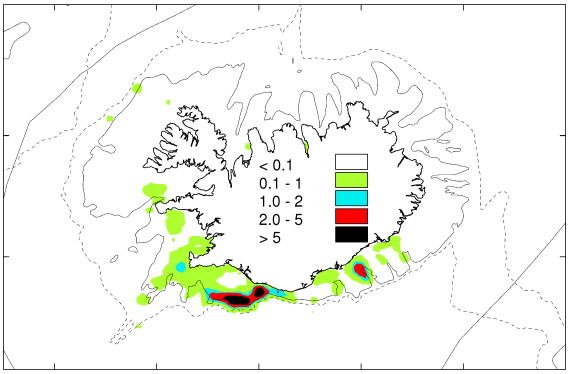
The MRI recommends that TAC for tusk in the quota year 2015/2016 aim to reach F_{MSY} by not exceeding 3 440 tonnes, including landings from foreign ships in Icelandic waters. In addition, continued closure of the known nursery areas off the southeast and southern coast is recommended.

Fisk-veiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
2001/02	-	-	3 534	1 342	4 876
2002/03	3 500	3 500	3 762	1 284	5 046
2003/04	3 500	3 500	3 428	1 530	4 958
2004/05	3 500	3 500	3 616	1 285	4 901
2005/06	3 500	3 500	4 387	1 541	5 928
2006/07	5 000	5 000	6 336	1 606	7 942
2007/08	5 000	5 500	6 351	1 243	7 594
2008/09	5 000	5 500	6 865	1 297	8 162
2009/10	5 000	5 500	6 325	2 057	8 382
2010/11	6 000	6 000	6 223	1 545	7 777
2011/12	6 900	7 000	5 981	1 420	7 401
2012/13	6 700	6 400	5 549	1 284	6 833
2013/14	6 300	5 900	4 847	1 034	5 881
2014/15	4 000	3 700			
2015/16	3 440				

Tafla 2.19.1. **Keila**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.19.1. ***Tusk****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.20 Whiting *Merlangius merlangus*

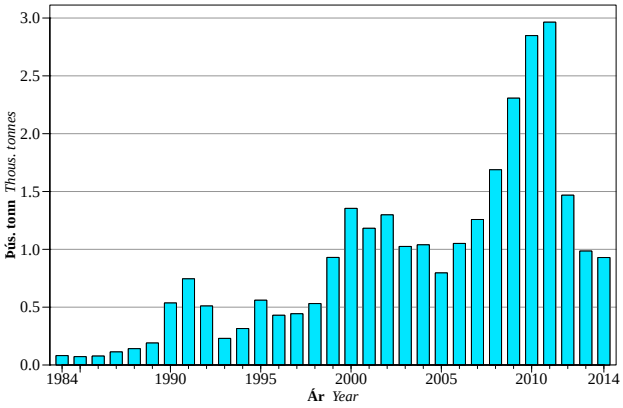


Lýsa. Veiðisvæði við ísland árin 2010–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Whiting. *Fishing grounds in 2010–2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.20.1 landings and effort

In 1984–2014 whiting landings from Icelandic waters ranged from 100–3 000 tonnes (Fig. 2.20.1 and Table 3.20.1). Landings in 2014 exceeded 900 tonnes, though annual catch has decreased from the peak of nearly 3 000 tonnes in 2011.



Mynd 2.20.1. **Lýsa.** Landaður afli.

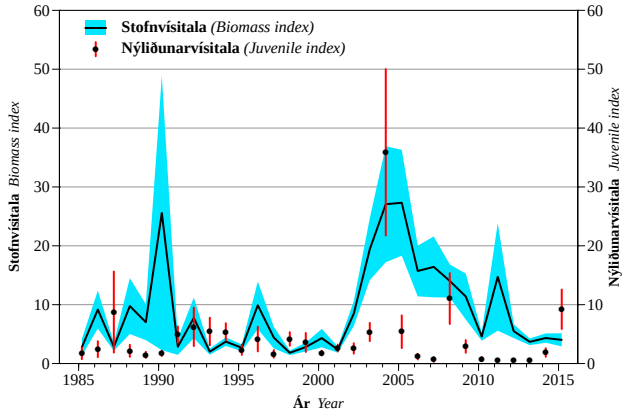
Figure 2.20.1. ***Whiting.*** *Landings.*

Whiting was not used much for a long time, though it came up as bycatch in other fisheries. Landings increased considerably in the years following 2005. to a peak of nearly 3 000 tonnes in 2011 (Fig. 2.20.1). Whiting is caught over a wide area off southern and western Iceland, especially around the Westman Islands. Mostly, whiting is caught in bottom trawls but is also common on longlines and demersal seines.

Some trawlers have targeted whiting in the spring and, according to logbooks, targeting of the species with bottom trawls increased in 2009–2011, but in the last three years targeting of whiting has decreased. In 2013–2014 effort was similar to that in 1999–2008. A similar trend exists for CPUE in bottom trawls, but the increased landings in 2009–2011 are mostly due to increased effort in that period.

2.20.2 Stock status

According to indices from the spring survey (SMB) changes in the recruiting and fishable stocks have been similar to those of haddock stock. The cohorts from 2003 and 2007 were well above average (Fig. 2.20.2). The fishable stock biomass index increased considerably in 2003–2005 but has been decreasing since, with the exception of a brief increase in 2011, apparently caused by the entrance of the 2007 cohort into the fishable stock (Fig. 2.20.2). In the last four years the fishable stock biomass index has been low and recruitment has been poor, however, the 2015 SMB shows that the 2014 cohort is larger than average.

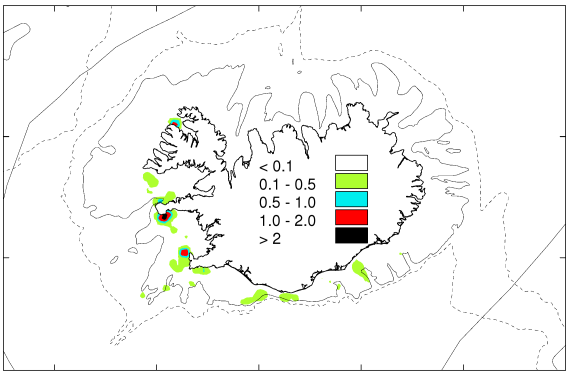


Mynd 2.20.2. **Lýsa.** Vísitölur veiðistofns (þyngd, fiskar 40 cm og stærri) og nýliðunar (fjöldi, minni en 20 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.20.2. ***Whiting.*** *Fishable biomass indices (≥40 cm) and juvenile abundance indices (<20 cm) from the groundfish survey in March, along with the standard deviation.*

Stock size and potential yield of the whiting stock is unknown. The MRI does not propose a recommendation for TAC of whiting but in light of the assessment, it is obvious that the stock is at a minimum.

2.21 Anglerfish *Lophius piscatorius*

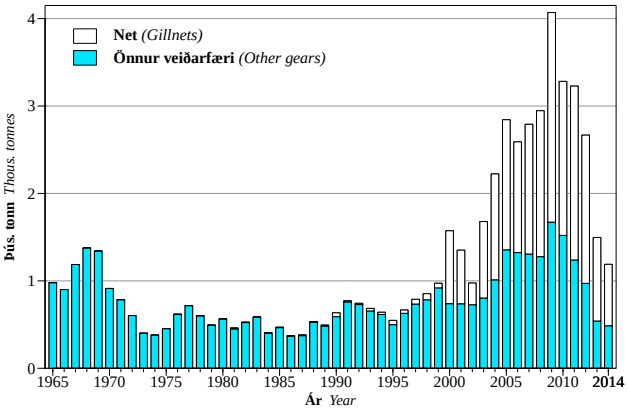


Skötuselur. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Anglerfish. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.21.1 Landings, effort and distribution

In 2014 anglerfish landings were nearly 1 200 tonnes, having decreased steadily since peaking in 2009 at 4 100 tonnes (Table 3.21.1 and Fig. 2.21.1). Landings in the quota year 2013/2014 were about 1 400 tonnes and in the first seven months of the quota year 2014/2015 are 19% smaller than in the same period the previous quota year. In 2000–2010 about half of landings were caught by gillnet and the other half mostly in demersal seine and trawls, but in 2011–2014 gillnets usually caught 63%.



Mynd 2.21.1. **Skötuselur.** Landaður afli.

Figure 2.21.1. ***Anglerfish.*** *Landings.*

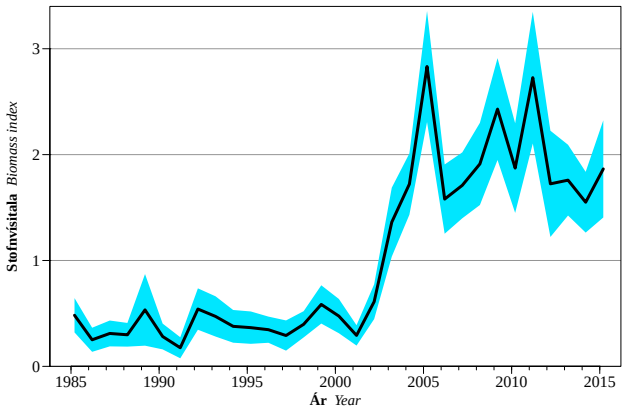
Since 2001 CPUE has been increasing and 2014 was a good year as well, though CPUE in demersal seine and trawls has decreased in the last two to three years. Effort has decreased in all gears.

When anglerfish recruitment was good young fish were prevalent in bycatch in other gears than gillnets, especially in the *Nephrops* fishery. The proportion of young anglerfish in landings has declined rapidly in recent years.

Traditional fishing grounds for anglerfish were mostly off the middle and eastern portion of the south coast. In recent years, more of the landings come from off Iceland's western coast, with more than half of landings being caught in gillnets in a rather small area off Snæfellsnes. Spring survey (SMB) data show the same trend in distribution. This change in the anglerfish's distribution is likely due to increasing ocean temperatures in recent years.

2.21.2 Stock status

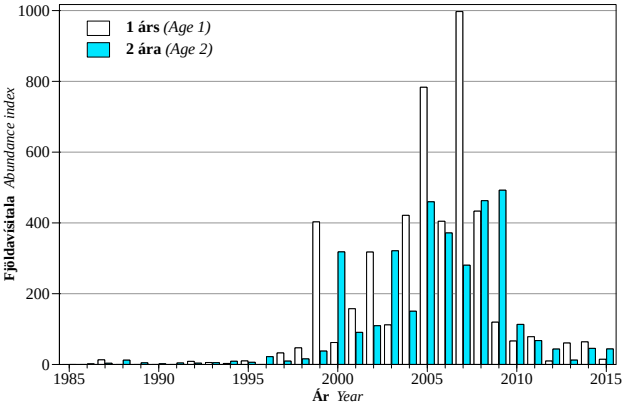
Anglerfish grow quickly in the first 4–5 years of life and the biomass indices show that the fishable stock increased rapidly in 2001–2005 (Fig. 2.21.2) due to good recruitment (Fig. 2.21.3). Since then, the fishable biomass index has remained high compared to previous



Mynd 2.21.2. **Skötuselur.** Vísitölur veiðistofns (þyngd, fiskar 60 cm og stærri) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.21.2. ***Anglerfish.*** *Fishable biomass indices (≥60 cm) from the groundfish survey in March, along with the standard deviation.*

years. After 2011 the index decreased and has remained stable since then. Recruitment has been poor in recent years. Biomass indices of one and two year old anglerfish (Fig. 2.21.3) indicate that cohorts from 2013 and 2014 are small, like all other cohorts since that of 2008.



Mynd 2.21.3. **Skötuselur.** Vísitölur ungfisks (fjöldi eins og tveggja ára) úr stofnmælingu botnfiska í mars.

Figure 2.21.3. ***Anglerfish.*** *Abundance indices for age 1 and 2 from the groundfish survey in March.*

2.21.3 Advice

Table 2.21.1 shows MRI recommended TAC, national TAC and anglerfish landings from the beginning of quota year 2001/2002.

Analysis of survey data and CPUE indicate that while the fishable stock is still rather large, it is smaller than it was in 2009–2011. All cohorts from 2008 until 2014 are small, so further decrease in the fishable stock is expected in the coming years. Recruitment in the last seven years has been more than before the turn of the century when anglerfish landings were roughly 500–700 tonnes.

Therefore, the MRI recommends a TAC for anglerfish in the quota year 2015/2016 of 1 000 tonnes.

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
2001/02	-	1 500	1 001
2002/03	Óbreytt sókn	1 500	1 363
2003/04	1 500	2 000	1 903
2004/05	1 500	2 000	2 420
2005/06	2 200	3 000	2 832
2006/07	2 200	3 000	2 672
2007/08	2 200	2 500	2 962
2008/09	2 500	3 000	3 436
2009/10	2 500	3 200	3 598
2010/11	2 500	3 000	3 376
2011/12	2 500	2 850	3 006
2012/13	1 500	1 800	1 930
2013/14	1 500	1 500	1 398
2014/15	1 000	1 000	
2015/16	1 000		

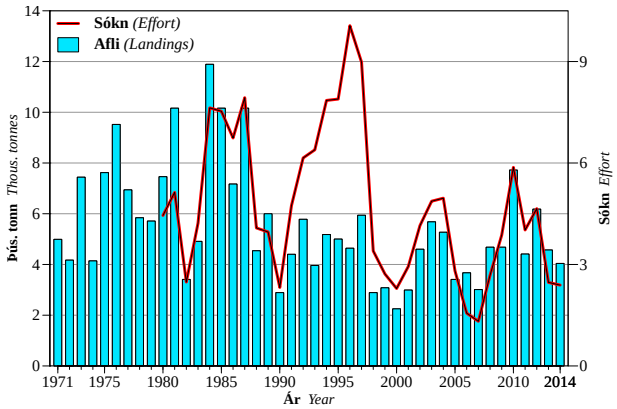
Tafla 2.21.1. **Skötuselur**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.21.1. ***Anglerfish****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.22 Lumpfish *Cyclopterus lumpus*

2.22.1 Landings and effort

In 2014 landings of female lumpfish from Icelandic waters exceeded 4 000 tonnes (Fig. 2.22.1 and Table 3.22.1). In 1973–1987 average annual landings were about 7 500 tonnes and in 1988–2012 this average was about 4 500 tonnes. In 2014 male lumpfish landings were about 29 tonnes, considerably below the 48 ton average from 2002–2014.



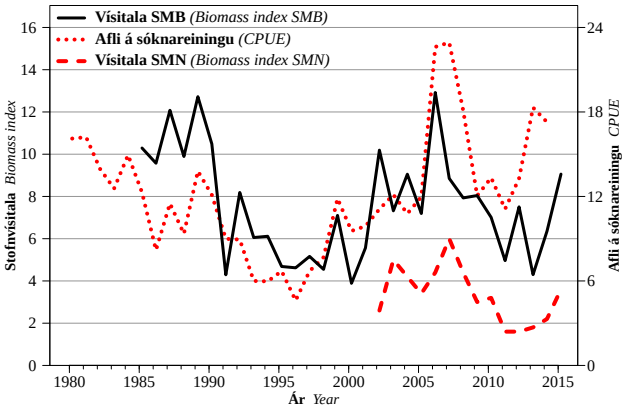
Mynd 2.22.1. **Hrognkelsi.** Grásleppuafli og sókn.

Figure 2.22.1. ***Lumpfish.*** *Landings of females and effort.*

Records of landings of female lumpfish weighed before gutting in 1971–2007 have been revised since the last report, based on the number of barrels of salted roe from the National Association of Small Boat Owners (NASBO) and logbooks. The revised data are shown in Figure 2.22.1 and Table 3.22.1.

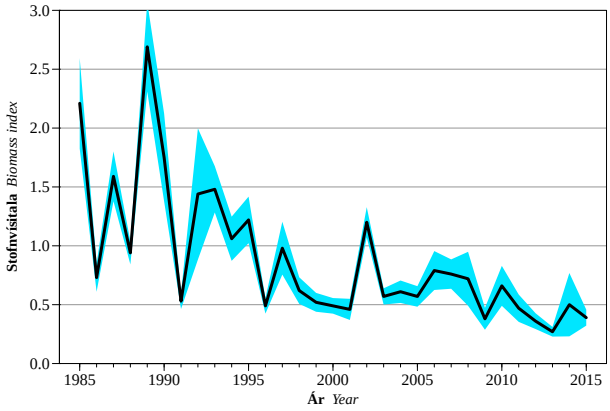
Fishing for female lumpfish is managed through effort control. Each boat is allotted a limited number of days of operation each year. In 2011 and 2012 fishing was allowed for 50 days and the period was only 32 days in 2013–2015. The number of boats that participate varies from year to year, due in part to the state of the roe market, and this affects total landings. In 2005–2014 from 144 to 369 boats were operating each year. Fewer boats have fished for female lumpfish each year since 2011 and in 2014 there were 223 boats operating.

CPUE indices have also been revised and is now based on 10.5 inch nets, as this is by far the most common mesh size. Furthermore, in the current assessment weight of female lumpfish before gutting is used instead of the number caught, as has been used in previous assessments, because the majority of these fish are landed before gutting. CPUE usually reflects the biomass index from the spring survey (SMB). Fishing pressure also affects



Mynd 2.22.2. **Hrognkelsi.** Heildarvísitölur grásleppu í þyngd úr stofnmælingu botnfiska í mars (SMB) og stofnmælingu með þorskanetum (SMN), ásamt afla grásleppubáta á sóknareiningu.

Figure 2.22.2. ***Lumpfish.*** *Female biomass indices from the groundfish survey in March (SMB) and the gillnet survey (SMN), along with CPUE from the female fishery.*



Mynd 2.22.3. **Hrognkelsi.** Heildarvísitölur rauðmaga (þyngd) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Figure 2.22.3. ***Lumpfish.*** *Biomass indices of males from the groundfish survey in March, along with the standard deviation.*

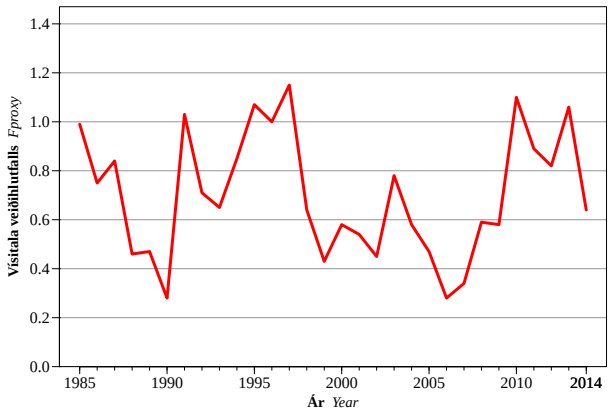
CPUE so the high CPUE in recent years is partly due to low fishing pressure (Table 3.22.1 and Fig. 2.22.2).

Logbook data, which provide information about effort as well as landings, are available going back to 1980. Effort (calculated as total landings divided by mean CPUE) peaked between 1994 and 1997 and was lowest in 2007 (Fig. 2.22.1 and Table 3.22.1).

2.22.2 Survey and status of the stock

The biomass index in the SMB was highest in 1985–1990, decreased in 1991 and remained low until 2002, after which there was a steady increase to an historical peak in 2006. From 2006 until 2013 the index decreased each year but there was an increase in 2014 and 2015. The results of the gillnet surveys (SMN) in 2002–2015 show a similar trend as the SMB indices. The biomass index of male lumpfish in the SMB in 2015 is hardly different than last year (Fig. 2.22.3), but the index from the SMN increased a little bit from 2013 until 2015.

F_{proxy} (landings/biomass index, see Appendix 5.1) decreased from 2013 until 2014 and was below average for the reference period 1985–2011 (Fig. 2.22.4).



Mynd 2.22.4. **Hrognkelsi.** Vísitala veiðihlutfalls grásleppu (afli/stofnvísitölu).

Figure 2.22.4. ***Lumpfish.*** *Relative fishing mortality (landings/biomass index, or F_{proxy}) for females.*

2.22.3 Basis of advice

The advice of the MRI assumes that the harvest rate will not exceed the average from 1985–2011. The lumpfish biomass index fluctuates considerably between years, therefore, landings each year must be considered along with the index from the same year rather than that of the previous year. In order to compensate for uncertainty in the measurements, we take into account the previous year's index, weighted 30% against a new measurement, weighted 70%, when estimating the recommended TAC.

So advice from the MRI is twofold: For the 2016 season, preliminary TAC is calculated as the SMB (2015) biomass index times 0.225. To this is added the biomass index from the SMB (2016) times 0.525. Recommendations for a final TAC are delivered after the SMB is completed, no later than April 1.

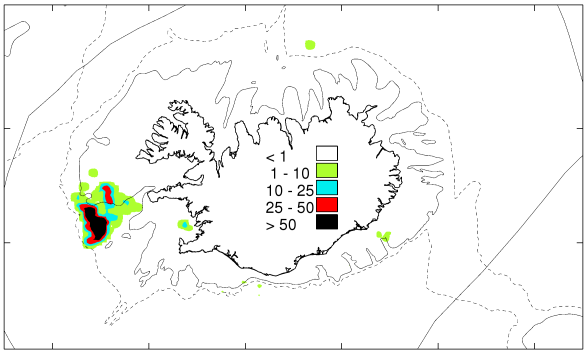
In accordance with the described management strategy, the MRI recommended a 1 400 ton preliminary TAC for the current season. The final TAC recommendation for the quota year 2014/2015 of 6 200 tonnes was delivered on March 26, 2015.

2.22.4 Advice

Advice aims at holding the female lumpfish stock above the historical minimum. In accordance with the management strategy used since 2012, the MRI recommends a preliminary TAC for female lumpfish in the quota year 2015/2016 no larger than 2 040 tonnes, based on the SMB biomass index from 2015. The MRI will deliver a recommendation for the final TAC in the quota year 2015/2016 at the end of the SMB no later than April 1, 2016.

Given that effort will be managed in the same way as before, the MRI recommends that the number of days allotted should be correlated to the umber of boats planning to fish for lumpfish. In addition, the MRI recommends that more emphases be placed on registration of bycatch and monitoring of discards in the lumpfish fishery.

2.23 Herring *Clupea harengus*

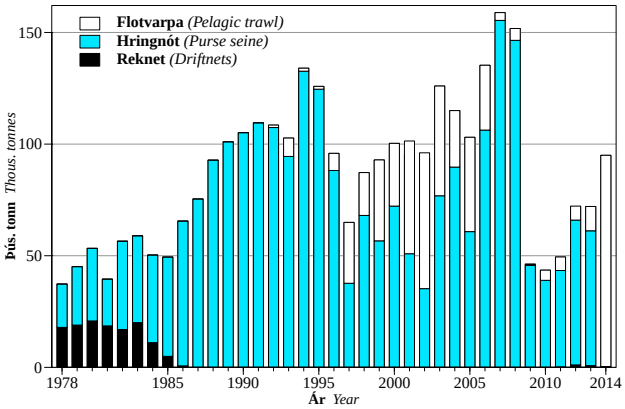


Sumargotssíld. Veiðisvæði við Ísland vertíðina 2014/2015. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Summer-spawning herring. *Fishing grounds in fishing season 2014/2015. Dark areas indicate highest catch (tonnes/nmi^2).*

2.23.1 Summer-spawning herring

Herring landings since 1978 are shown in Figure 2.23.1 and landings since 1951 are shown in Table 3.23.1. Table 2.23.1 shows MRI recommended TAC, national TAC and landings since the quota year 1990/1991.



Mynd 2.23.1. **Sumargotssíld.** Landaður afli eftir veiðarfærum frá árinu 1978 (afli fiskveiðiárs frá 1991).

Figure 2.23.1. ***Summer-spawning herring.*** *Landings by gear type since 1978 (quota year since 1991).*

Landings in the 2014/2015 season, including bycatch from the mackerel fishery and Norwegian-Icelandic herring in the summer and autumn of 2014, was about 95 thous. tonnes. The MRI recommended TAC and the national TAC were 83 thous. tonnes. The difference is caused by the transference of quota allotments between years.

Fishing in the autumn season of 2014 began in the second week of October in Kolluáll west of Iceland and progressed nearer to shore as autumn passed. Most of the fishable stock passed the winter in Kolluáll and over 82 thous. tonnes were caught there by January. The rest of the landed herring, nearly 13 thous. tonnes, was bycatch in the mackerel and Norwegian-Icelandic herring fisheries. About 99,6% of landings were caught by pelagic trawl which is an unusually high proportion, in previous years the majority of the stock has over-wintered in Breiðafjörður and most of it was caught via purse seine.

2.23.1.1 Catch at age and mean weight

Landings in numbers by age is shown in Table 3.23.2. The 2008 cohort was by far the largest part of the catch (23% by weight), followed by the 2009 and 2010 cohorts (15% each).

Mean weight in landings was high for all year classes last season, as has been the case for the last ten seasons with the exception of 2007/2008 (Table 3.23.3). Weight by length

Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings (Iceland)*
1990/91	80	110	105
1991/92	80	110	109
1992/93	90	110	107
1993/94	90	100	103
1994/95	120	120	132
1995/96	110	110	126
1996/97	100	100	96
1997/98	100	100	64
1998/99	90	70[1)]	87
1999/00	100	100	93
2000/01	110	110	100
2001/02	125	125	95
2002/03	105	105	94
2003/04	110	110	126
2004/05	110	110	115
2005/06	110	110	103
2006/07	130	130	135
2007/08	130	150	159
2008/09	131	150	152
2009/10	40	47	46
2010/11	40	40	44
2011/12	40	45	49
2012/13	67	68.5	72
2013/14	87	87	72
2014/15	83	82.2	95
2015/16	71		

[1)] Sjávarútvegsráðuneytið úthlutaði 70 þús. tonnum en samtals urðu veiðiheimildir um 90 þús. tonn þar sem 20 þús. tonn voru færð frá vertíðinni 1997/98.*Allocated TAC was 70 thous. tonnes but because of transfers from the previous quota year the national TAC became 90 thous. tonnes.*

Tafla 2.23.1. **Sumargotssíld**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

Table 2.23.1. ***Summer-spawning herring****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

has also been high. Table 3.23.4 shows the estimated proportion mature by age and the assumed natural mortality since 1987. As in the last two years, high natural mortality indices were used in 2009–2010 due to an *Ichthyophonus* infection in the stock. In the years following this, the infection proportion remained high but is not thought to have significantly increased natural mortality in those years. In estimation of the spawning stock the proportion mature is uniform for the period because the annual estimates based on available data is considered unreliable.

2.23.1.2 Acoustic surveys

Since 1973, the stock size of Icelandic summer-spawning herring has been surveyed annually with acoustic. These surveys are usually conducted in November–December and/or at the end of the season in January. The survey in the 2014/2015 season was conducted from late November through early December. In Kolluáll there were 346 thous. tonnes, 87 thous. tonnes in Breiðamerkurdjúp and a total of 17 thous. tonnes around the Westman Islands, in Kolgrafafjörður and in Breiðafjörður. In other locations, biomass was insignificant. In all about 450 thous. tonnes of adult herring (>26 cm) were observed. Herring age 3 and older were mostly of the 2010 cohort, which was about 22% of the total number of fish. The cohorts from 2008 and 2009 were each about 17% of herring numbers, but the 2011 cohort that will be the largest part of the 2015 spawning stock was only 6%.

Acoustic surveys of young herring were conducted from Faxaflói, north and east to Norðfjarðaflói in November. The survey concluded that the 2013 cohort is just below average size. This cohort was mostly found in Jökuldjúp in Faxaflói (86%), which is not the usual area, and also in Eyjafjörður (14%). Elsewhere the herring were not significantly abundant.

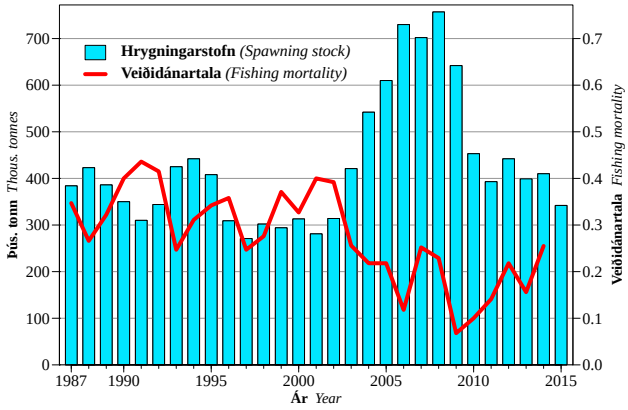
The *Ichthyophonus* infection is disappearing from the older cohorts in the stock. Therefore, the infected proportion is high (about 41%) in cohorts from 2003–2006, which have

had the highest proportion in all years since the outbreak began. As before, cohorts seven years old and younger had a sickness rate of (0–6%). The infection has been in the stock for seven years and has been well monitored. The main result is that the infection has caused fewer mortalities in the stock than expected when it was first discovered.

2.23.1.3 Stock status and projections

Assessment of the summer-spawning herring stock was conducted with an NFT-ADAPT model that is based on age disaggregated indices from the acoustic surveys from 1987–2015. The results of this model were used as a basis for assessment and projections, as in previous years.

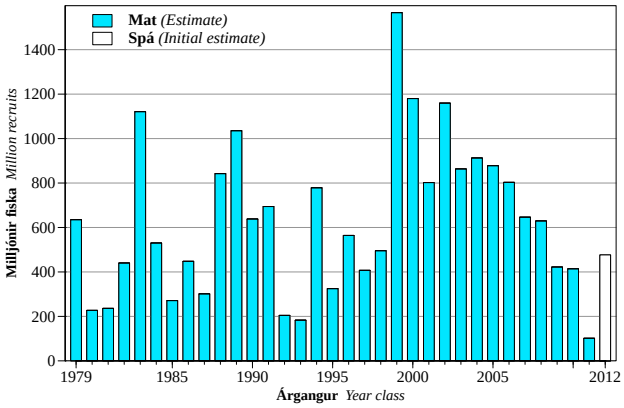
The spawning stock biomass in 2015 is an estimated 342 thous. tonnes (Fig. 2.23.2 and Table 3.23.5). The fishing mortality index in the last season (2014/2015) is 0.26. According to the assessment, the 2015 spawning stock is comprised of cohorts from 2008 (22% of biomass), 2009 and 2010 (about 19%), 2011 and 2012 (about 5% each) and 2002–2007 (1–9%)



Mynd 2.23.2. **Sumargotssíld.** Stærð hrygningarstofns á hrygningartíma og vegin meðalveiðidánartala (5–10 ára).

Figure 2.23.2. ***Summer-spawning herring.*** *Spawning stock biomass at spawning time and weighted mean fishing mortality (F_{5-10}).*

The most important reason that the spawning stock is decreasing is 2011 cohort the smallest cohort in 30 years and it will join the stock in 2015 (Fig. 2.23.3). That assessment is based on the proportion this stock represented both both landings and and in the 2014 survey.



Mynd 2.23.3. **Sumargotssíld.** Stærð árganga við þriggja ára aldur (í milljónum).

Figure 2.23.3. ***Summer-spawning herring.*** *Size of year classes at age 3 (in millions).*

2.23.1.4 Advice

As mentioned above, the decrease in stock size is caused by the 2011 cohort being well below average in size, by all measurements. The MRI recommends a continued effort to maintain a fishing mortality of ($F_{0.1} = 0.22$) and that TAC in the quota year 2015/2016 should be 71 thous. tonnes.

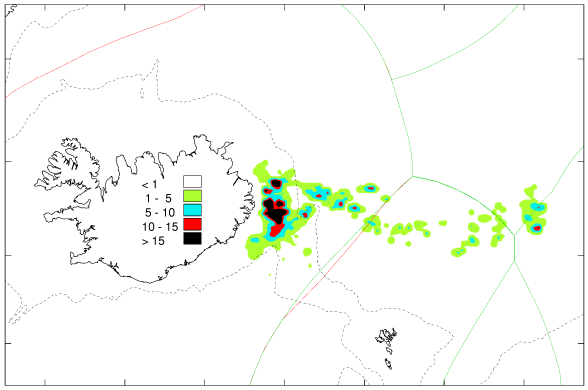
2015				2016		
$F^{1)}$	Afli *Catch*	Hrygn. stofn *SSB*	Aflamark *TAC*	$F^{1)}$	Hrygn. stofn *SSB*	Stofn 3+ B_{3+}
0.25	95	342	60	0.18	337	428
			71	0.22	327	417
			80	0.25	319	409
			90	0.29	310	399

[1)] Vegin dánartala (F) fyrir 5–10 ára. F við kjörsókn = 0.22.
Weighted fishing mortality (F) of age groups 5–10. $F_{0.1} = 0.22$.

Tafla 2.23.2. **Sumargotssíld.** Áhrif mismunandi aflamarks á áætlaða stærð hrygningarstofns (þús. tonn) á næsta ári.

Table 2.23.2. ***Summer-spawning herring.*** *Projection of next year's spawning stock biomass (thous. tonnes) for different management strategies.*

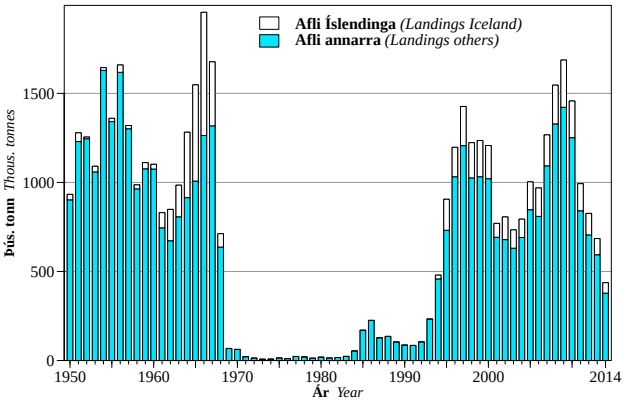
2.23.2 Norwegian-Icelandic spring-spawning herring



Norsk-íslensk vorgotssíld. Veiðisvæði íslenskra skipa árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Norwegian spring-spawning herring. *Fishing grounds of the Icelandic fleet in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

Total landings and Icelandic landings of Norwegian-Icelandic spring-spawning herring in 1950–2014 are shown in Figure 2.23.4 and Table 3.23.6. starting in 2002 effort was limited so fishing mortality would not exceed 0.125, in accordance with a 2001 multi-national agreement between Norway, Russia, Iceland, the Faroes and the European Union. The agreement states that from 2007 Iceland has rights to 14,51% of the total landings. In 2014 ICES recommended that total landings not exceed 419 thous. tonnes, so the Icelandic TAC was nearly 61 thous. tonnes. Estimated total landings in 2014 was, however, 437 thous. tonnes, which is 18 thous. tonnes beyond the ICES recommendation because the Faroes cancelled the agreement.



Mynd 2.23.4. **Norsk-íslensk vorgotssíld.** Heildarafli og afli Íslendinga.

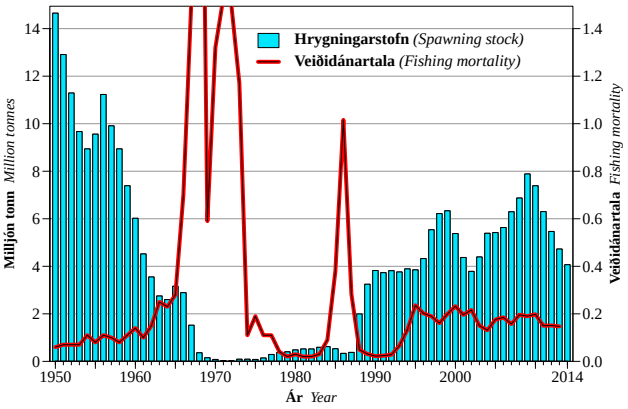
Figure 2.23.4. ***Norwegian spring-spawning herring.*** *Total landings and Icelandic landings.*

Icelandic landings in 2014 were nearly 59 thous. tonnes. About 46 thous. tonnes were landed from Icelandic waters from June–November. From September–December nearly 7 thous. tonnes were landed from Faroese waters and over 5 thous. tonnes were landed from international waters between Iceland and Norway.

2.23.2.1 Acoustic surveys

Since 1996, the Norwegian-Icelandic herring stock has been measured by acoustic methods on a multinational survey in May in the area between Iceland, Norway and the Faroes. The biomass index from this survey is important in the ICES assessment of the stock. The survey results from 2014 were comparable to previous years. Herring were found on the majority of the area surveyed, but abundance was rather low near the national boundary between Iceland and the Faroes. Herring entered well into Icelandic waters, but biomass and density increase with increasing surface temperatures and later in the summer. This is clear in the results of acoustic measurements in the mackerel survey as well as trends in landings by herring boats.

The results of the multi-national survey in 2015 will be available in June. According to the Icelandic surveys, Norwegian-Icelandic herring were present in a large area in Austurdjúp. The highest density of herring was at the eastern edge of the Icelandic EEZ off the east coast. Distribution of the fish within Icelandic waters was similar as that in 2014, though density and biomass were lower. That is, herring were present in the southern-most part of the cold East Icelandic Current to 4°W and north of 66°N the cold water limited the distribution to the west. The herring were rather evenly distributed from 200–400 m depth, but they were found shallower at night.



Mynd 2.23.5. **Norsk-íslensk vorgotssíld.** Stærð hrygningarstofns og vegin meðalveiðidánartala 5–14 ára.

Figure 2.23.5. ***Norwegian spring-spawning herring.*** *Spawning stock size and weighted mean fishing mortality (F_{5-14}).*

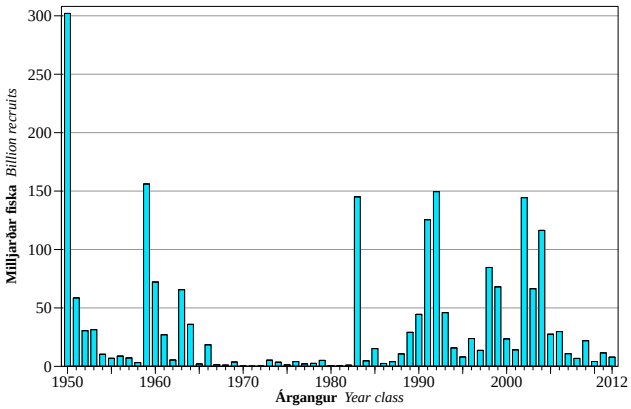
2.23.2.2 Stock status and projections

According to the survey in the autumn of 2014, the spawning stock was approximately 4,1 million tonnes in that year (Fig. 2.23.5) and about 3,5 million tonnes in 2015, based on landings of 437 thous. tonnes in 2014. Cohorts from 2005–2013 are all small (Fig. 2.23.6) and the spawning stock is expected to decrease in the coming years despite moderate control of fishing effort. Of these small cohorts, that from 2009 is the largest.

An ecological survey conducted by Norway and Russia in the Barents Sea in September of 2014 indicated that the 2013 cohort is small.

2.23.2.3 Advice

According to the current HCR harvest rate must be decreased if the spawning stock of Norwegian-Icelandic herring goes below 5 million tonnes. Since this stock is estimated at about 3,5 million tonnes in 2015, ICES recommended a decrease in the fishing mortality index in 2015 from F = 0.10 to F = 0.08 and that TAC based on that index should provide 283 thous. tonnes. Iceland received a TAC of about 41 thous. tonnes in accordance with the aforementioned agreement ratified in 2007. Consensus could not be reached about TAC among the impacted countries, so it is likely that total landings in 2015 will exceed ICES recommendations, as they have for the last two years.

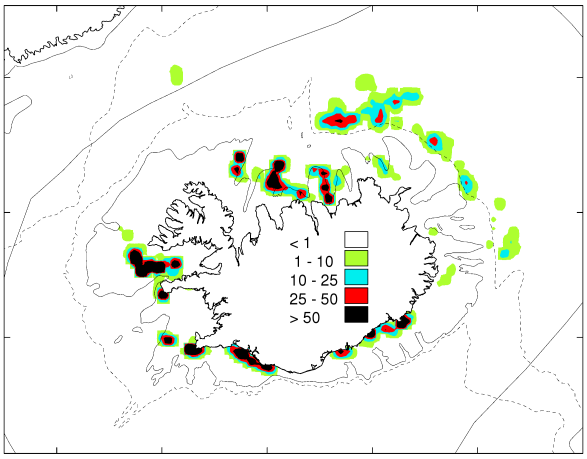


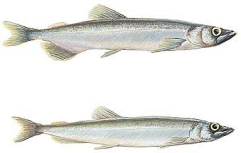
Mynd 2.23.6. **Norsk-íslensk vorgotssíld.** Stærð árganga við eins árs aldur (í milljörðum).

Figure 2.23.6. ***Norwegian spring-spawning herring.*** *Size of year classes at age 1 (in billions).*

The ICES pelagic fisheries working group convenes in the autumn, therefore, the new estimate of stock biomass and recommendations for TAC will become available in October of 2015.

2.24 Capelin *Mallotus villosus*



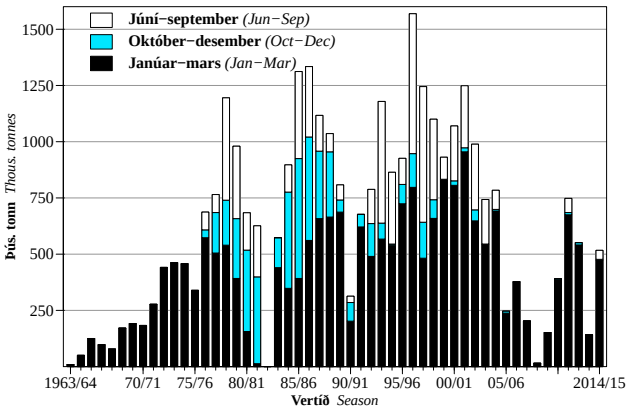


Loðna. Veiðisvæði við Ísland vertíðina 2014/2015. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Capelin. *Icelandic fishing grounds in 2014/2015 fishing season. Dark areas indicate highest catch (tonnes/nmi^2).*

2.24.1 Landings and effort

Based on the measurement of young capelin in September–October 2013, a preliminary TAC of 225 thous. tonnes was set in June 2014. Upon conclusion of the acoustic survey in September–October 2014, and following MRI recommendations, the government increased the TAC to 260 thous. tonnes. The final TAC of 580 thous. tonnes was announced after acoustic analysis of capelin was completed at the end of January 2015.



Mynd 2.24.1. **Loðna.** Landaður afli, skipt á tímabil innan hverrar vertíðar.

Figure 2.24.1. ***Capelin.*** *Landings by fishing season split between summer, autumn and winter.*

In total, landings were 517 thous. tonnes in the quota year 2014/2015. In July, 2014 Norwegians landed 30 thous. tonnes and Danes 10 thous. tonnes in Greenlandic waters. In the autumn, Greenland's catch was about 5 thous. tonnes in the Greenland Strait near the national boundary with Iceland, though in recent years there has been little or no fishing in the autumn (Fig. 2.24.1 and Table 3.24.1).

Winter fishing was slow to start, but by the second to fourth week in January capelin vessels were catching rather dispersed schools far off the northeastern coast. At the same time, a considerable amount of capelin was found to the west. In the next three weeks, effort was mostly concentrated in shallower waters on the shelf off the north coast, with some vessels still operating off the east coast. This is an usual pattern because usually by this time effort has concentrated on the traditional spawning grounds near the east and south coasts. it was not until the end of February that effort had shifted to the grounds off the southeastern coast.

For the next two weeks, the fleet followed the capelin as they quickly migrated westward along the south coast. Fishing was intermittent due to inclement weather, so it is unknown whether the capelin caught outside Breiðafjörður in weeks 11-13 had arrive from their traditional southern migration or if they were a continuation of the westerly migrating fish seen earlier in the year. In all, 417 thous. tonnes were caught in January–March 2015.

TAC by quota year, which is from June until April of the following year, and capelin landings from the Iceland/Greenland/Jan Mayen region are shown in Table 2.24.1 and Figure 2.24.1. Total landings were 517 thous. tonnes, so they did not reach TAC. Icelanders landed 354 thous. tonnes.

In the quota year 2014/2015 the cohort from 2012 was about 77% of landed fish by number (Table 3.24.2) and the 2011 cohort was about 21%.

Vertíðir *Seasons*	Tillaga *Rec. TAC*	Aflamark *TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1984/85	920	920	774	123	897
1985/86	1 280	1 280	987	325	1 312
1986/87	1 290	1 290	1 053	380	1 333
1987/88	1 115	1 115	912	204	1 116
1988/89	1 065	1 065	921	116	1 037
1989/90	900	900	666	142	808
1990/91	250	312	284	27	311
1991/92	740	740	635	47	682
1992/93	900	900	655	95	793
1993/94	1 250	1 250	1 001	178	1 179
1994/95	850	850	750	114	864
1995/96	1 150	1 150	883	46	929
1996/97	1 600	1 600	1 249	322	1 571
1997/98	1 265	1 265	940	260	1 245
1998/99	1 200	1 200	899	201	1 100
1999/00	1 000	1 000	844	90	934
2000/01	1 110	1 110	894	177	1 071
2001/02	1 300	1 300	1 051	198	1 249
2002/03	1 000	1 000	765	223	988
2003/04	875	875	575	167	742
2004/05	985	985	640	144	784
2005/06	215	238	193	45	238
2006/07	370	385	307	70	377
2007/08	207	207	149	54	203
2008/09	0	15	15	0	15
2009/10	150	150	111	40	151
2010/11	390	390	322	68	390
2011/12	765	765	585	162	747
2012/13	570	570	464	87	551
2013/14	160	160	111	31	142
2014/15	580	580	354	163	517

Tafla 2.24.1. **Loðna**. Endanlegar tillögur um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).

Table 2.24.1. ***Capelin****. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).*

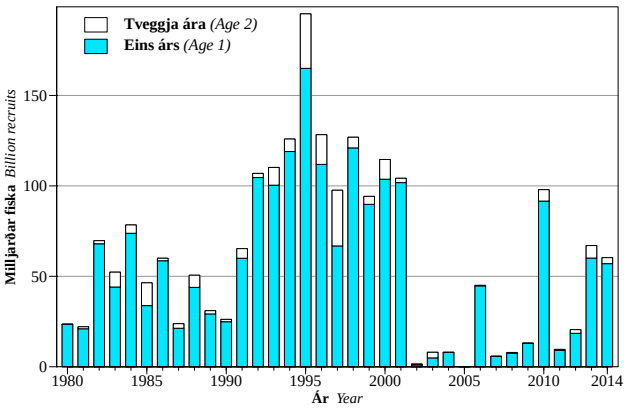
2.24.2 Surveys

Since 1978 acoustic surveys are conducted annually to study the distribution and biomass of capelin. Surveys in September–October have been able to measure both mature and immature fish. Results from these surveys have been used in calculation of preliminary TAC for the next quota year as well as being used in review of the TAC for the current quota year. Surveys of the spawning stock are usually conducted in the winter from January through February. The purpose of these surveys is to estimate the size of fishable stock and decide final TAC recommendation for the current quota year.

2.24.2.1 Autumn survey 2014

The acoustic surveys of capelin in autumn 2014 were conducted from September 16 until October 10. They followed the margin of East Greenland from 73°30'N south into the

Greenland Strait and from the Icelandic margin east to Sléttugrunn. No ice floes were present but weather was bad enough to delay the survey considerably. Immature age 1 and 2 fish exceeded 60 billion individuals (Fig. 2.24.2). More than 38 billion mature individuals were observed, in all 696 thous. tonnes. Of those, about 30 billion were age 2 capelin and about 8 billion were age 3. based on these surveys, the MRI recommended a TAC for capelin in the quota year 2014/2015 of 260 thous. tonnes.



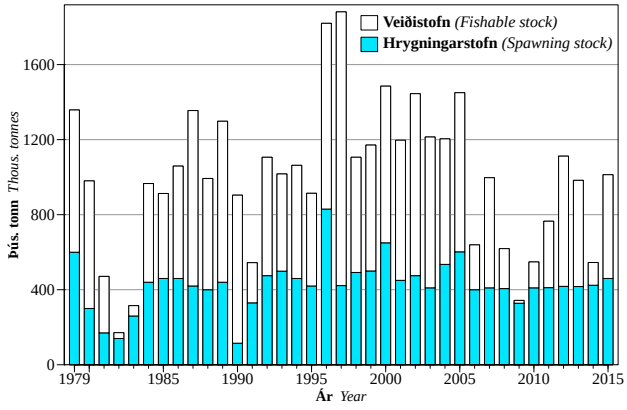
Mynd 2.24.2. **Loðna.** Mældur fjöldi ókynþroska eins og tveggja ára loðnu að hausti frá árinu 1980.

Figure 2.24.2. ***Capelin.*** *Acoustic measurements of immature age 1 and 2 capelin in autumn since 1980.*

2.24.2.2 Winter survey 2015

Acoustic surveys of capelin were conducted in 5–30 January, 2015. The survey went west to 27°26'W in the Greenland Strait and from there to the east along the Icelandic margin to 10°W. Due to bad weather continual sampling was not achieved until 17–29 January. Capelin had not concentrated along the margin as they normally do by this time, instead they were dispersed over a much wider area and more time was required to cover the entire distribution area. At the time of the survey, the capelin were not migrating rapidly.

The majority of mature fish were found off the shelf from the Greenland Strait in the west to Kolbeinsey Ridge in the east, though in the most western part of this range immature capelin were mixed in. In addition, a small quantity of capelin were found east of Langanes.



Mynd 2.24.3. **Loðna.** Stærð veiðistofns 1. janúar og stærð hrygningarstofns (þús. tonna) á hrygningartíma að loknum veiðum.

Figure 2.24.3. ***Capelin.*** *Abundance of the fishable stock 1 January and the remaining spawning stock biomass at the end of each season (thous. tonnes).*

The total biomass surveyed was 1071 thous. tonnes, of which about 970 thous. tonnes had reached maturity. based on these measurements and the HCR, the MRI recommended a final TAC for capelin in the quota year 2014/2015 of 580 thous. tonnes.

This was the third time since 2010 that mature capelin were measured both in the autumn survey and the winter survey, though in 2010 the autumn survey was delayed until mid-September. There was a 47% difference in fishable stock biomass estimates from the autumn and winter surveys in 2014/2015, which is considerable compared to 14% in 2010/2011 and 9% in 2012/2013.

2.24.3 Stock status

The mature portion of the capelin stock is estimated at about 970 thous. tonnes in the acoustic survey of January, 2015. Table 3.24.4 shows the stock size in numbers and weight, bot by age and maturity. Since landings were less than TAC, it is assumed that about 460 thous. tonnes spawned in the spring of 2015 (Fig. 2.24.3). According to the 2014 autumn survey immature capelin biomass was near the average from 1980–2013 (Table 3.24.3). Recruitment in the last 11 years has been much worse than in the 20 years previous.

2.24.4 Harvest control rule

The current HCR, which aims to leave a spawning stock of 400 thous. tonnes, has been in place since 1983, but has been criticized by ICES. The main criticism was that uncertainty was not evaluated for the acoustic measurements nor was this uncertainty taken into account in the advised TAC. In addition, projections based on measurements of young capelin were criticized, in part because the assumed natural mortality rate was considered low. In 2009, ICES concluded that the HCR was not in accordance with a precautionary approach to fisheries management.

In January 2015, ICES reviewed a proposal for a new HCR. The conclusion was that this new HCR satisfied the precautionary approach to fisheries management. This HCR is largely based on the methodology behind the HCR for Barents Sea capelin. Measurement error in acoustic surveys is taken into account and predation on capelin from the survey until spawning is estimated. Iceland, Norway, and Greenland have adopted this HCR to set the TAC.

The advisory process using the HCR is divided into three stages. First, a preliminary TAC is set, based on the young capelin survey conducted 16–18 months prior to spawning (surveys in September–October). Second, the preliminary TAC is reviewed based on surveys of the spawning stock a year later. Third, a final TAC is set for the quota year after acoustic measurement of the fishable stock is completed in January of the year when the capelin will spawn.

The preliminary TAC is calculated from the relationship between the index of immature capelin from the autumn survey and the fishable stock biomass. Furthermore, uncertainty is considered and a precautionary approach is used to improve the odds that the preliminary TAC will not be higher than the final TAC. The final TAC according to the HCR, whether calculated from the autumn or winter survey, is the catch that leads to a less than 5% probability that the spawning stock will be less than 150 thous. tonnes, which is considered the minimum spawning stock (B_{lim}) necessary to ensure good recruitment.

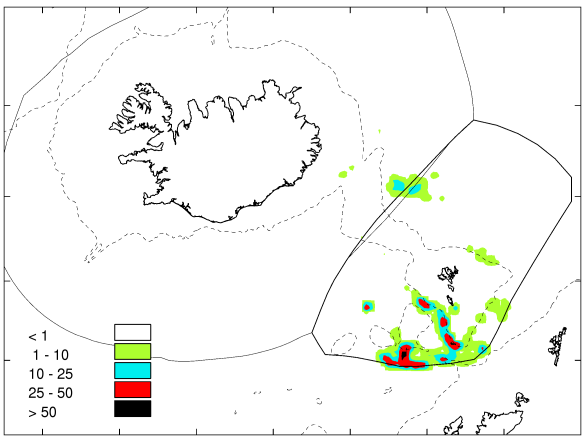
2.24.5 Advice

The capelin season in 2015/2016 will consist mainly of the 2012 and 2013 cohorts. More than 60 billion immature age 1 and 2 capelin were observed in the 2014 autumn survey (Fig. 2.24.2 and Table 3.24.3).

According to the new HCR, the 2015/2016 season's preliminary TAC is 54 thous. tonnes. This will be reviewed after the 2015 autumn survey of fishable stock.

The final TAC advice for the 2015/2016 season will be released after the survey of the fishable stock in the beginning of 2016.

2.25 Blue whiting *Micromesistius poutassou*

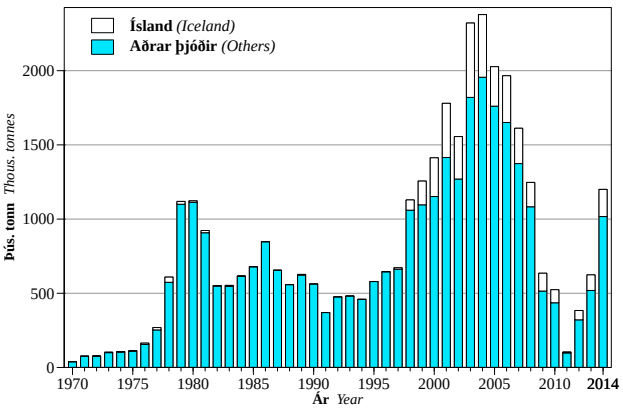


Kolmunni. Veiðisvæði íslenskra skipa árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Blue whiting. *Fishing grounds of the Icelandic fleet in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.25.1 Landings and age distribution

Total landings and Icelandic landings of blue whiting since 1970 are shown in Figure 2.25.1 and Table 3.25.1. The International Council for the Exploration of the Sea (ICES) recommended a TAC of 949 thous. tonnes in 2014, but this was based on a harvest control rule from 2005. There is currently no international management agreement and total TAC of all nations combined in 2014 was 1.2 million tonnes. Icelandic TAC was nearly 195 thous. tonnes, though their estimated landings in 2014 are 183 thous. tonnes. As in previous years, the majority (over 155 thous. tonnes) of blue whiting landed comes from Faroese waters, 132 thous. tonnes of which were caught in April–May. Nearly 16 thous. tonnes of the total landings were caught in Icelandic waters. In 1997–2005 about 61% of Icelandic landings were caught in Icelandic waters, but about 12% in 2006–2013.



Mynd 2.25.1. **Kolmunni.** Heildarafli og afli Íslendinga.

Figure 2.25.1. ***Blue whiting.*** *Total landings and Icelandic landings.*

In 2013 cohorts from 2009 and 2010 were about 40% of landings by number, as in the previous year. Catch at age from 2014 are not available at this time.

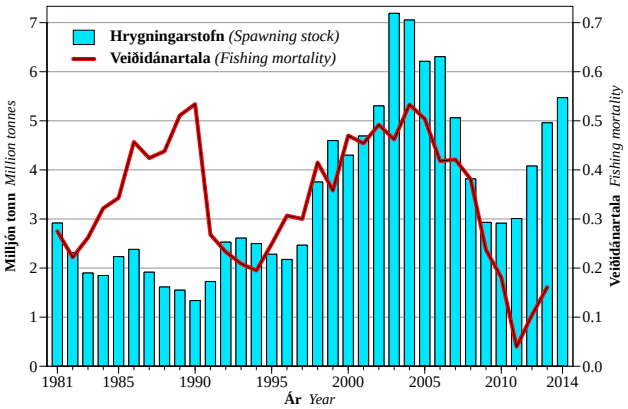
2.25.2 Stock surveys

Since 1983 Norway and Russia have estimated the size of the blue whiting spawning stock with annual acoustic surveys in March–April, to the west of the British Isles and south of the Faroes. Since 2004 the Faroese and the European Union have also participated. Spawning stock indices from these surveys are used by ICES in estimation of the stock size. Preliminary results from the 2015 survey indicate that stock is much smaller than

expected and that applies to all cohorts age 4 and older. Younger cohorts are large, as was the case last year.

2.25.3 Stock status and projections

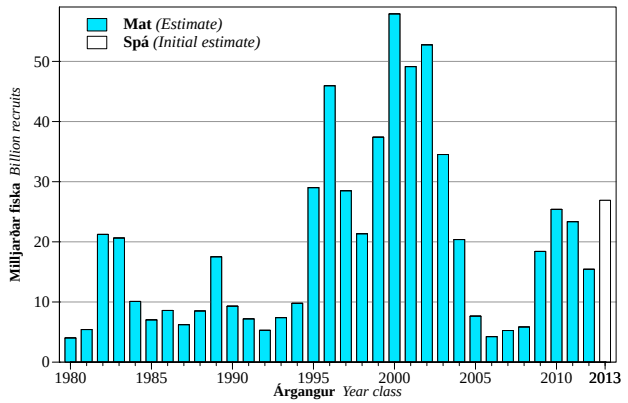
The newest estimate of stock size is from October, 2014. According to this estimate, spawning stock has increased from 2.9 million tonnes in 2010 to about 5.5 million tonnes in 2014 (Fig. 2.25.2). If landings total 1.2 million tonnes in 2014, the spawning stock should be 5.7 million tonnes in 2015. This increase in the spawning stock is mostly due to decreased fishing pressure and improved recruitment since 2010 (Fig. 2.25.3).



Mynd 2.25.2. **Kolmunni.** Stærð hrygningarstofns og veiðidánartala (3–7 ára).

Figure 2.25.2. ***Blue whiting.*** *Spawning stock biomass and fishing mortality (F_{3-7}).*

The cohorts from 2005–2008 are estimated to be the smallest since the beginning of monitoring and this caused the decrease of spawning stock until 2011. Cohorts from 2009–2013 are near the long-term average, though the size of cohorts from 2012 and 2013 is still unknown. Young blue whiting is measured during and international survey in the Northeast Atlantic in May (more detail is provided in the Norwegian-Icelandic herring chapter). In the 2014 survey the biomass index of the 2012 and 2013 cohorts was near the historical mean. In the Icelandic portion of the 2014 survey, much more young whiting were observed off the south and west coasts than the previous year. In the latest survey much less whiting was observed than in 2014. The results from the international survey in May, 2015 will be available at the end of June.



Mynd 2.25.3. **Kolmunni.** Stærð árganga við 1 árs aldur (í milljörðum).

Figure 2.25.3. ***Blue whiting.*** *Size of year classes at age 1 (in billions).*

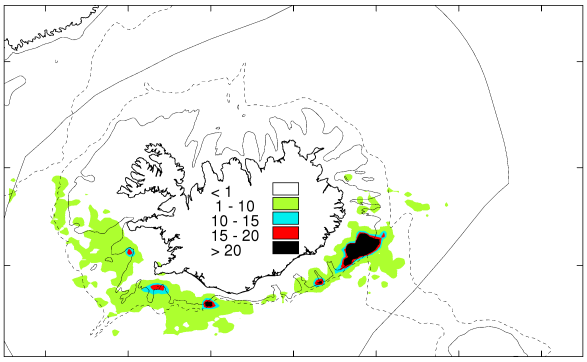
2.25.4 Advice

ICES recommended that no more than 840 thous. tonnes of whiting should be taken in 2015, in accordance with the international management plan from 2005. There is no longer a valid international management plan and TAC was set at 1 260 thous. tonnes in 2015.

Icelandic vessels were allowed 203 thous. tonnes. Participating countries have requested that ICES review new suggestions for a management plan.

ICES will provide a TAC recommendation for 2016 in October, 2015 at the end of the autumn advisory board meeting.

2.26 Mackerel *Scomber scombrus*

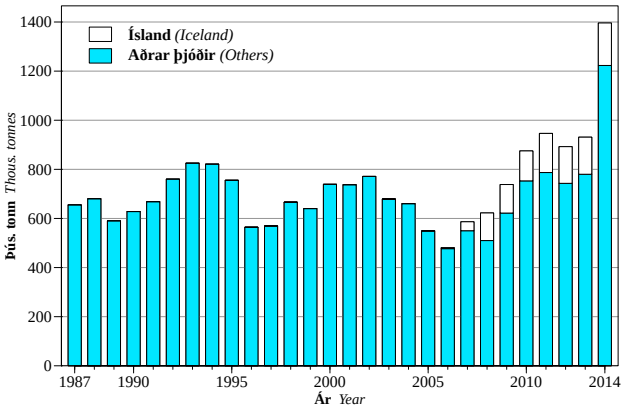


Makríll. Veiðisvæði íslenskra skipa árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Mackerel. *Fishing grounds of the Icelandic fleet in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.26.1 Landings, effort and age distribution

Total mackerel landings in the Northeast Atlantic since 1987 are shown in Figure 2.26.1 and Table 3.26.1. Landings have increased considerably in the last seven years and the estimated landings in 2014 are around 1.4 million tonnes.



Mynd 2.26.1. **Makríll.** Afli í Norðaustur-Atlantshafi.

Figure 2.26.1. ***Mackerel.*** *Catches from the Northeast Atlantic.*

The major grounds for mackerel during the last decades are in the North Sea and around the British Isles. In that area, the main fishing takes place in the autumn and into the spring.

In recent years, mackerel migrations have increased into Icelandic waters, west to the Greenland Sea to the west and into the northern Norwegian Sea during the summer and early autumn. Increasing migrations into these areas are believed to be related to an overall increase in the stock size, warming of the ocean, and changes in food distribution in the traditional feeding grounds. In 2006, mackerel began appearing as bycatch in the herring fishery using pelagic trawls off eastern Iceland and in that year landings of mackerel were roughly 4 000 tonnes. A directed mackerel fishery began in 2007 with nearly 37 thous. tonnes landed. In 2008–2013, landings increased from 112 to 159 thous. tonnes, mostly in the directed fishery. Icelandic landings in 2014 were 173 thous. tonnes (Fig. 2.26.1 and Table 3.26.1). The main fishing grounds in Icelandic waters has been east and southeast of Iceland, but catches off the southwest and west coast have been increasing since 2010. Around 13 thous. tonnes of the 2014 catch came from Greenlandic waters and roughly 3 thous. tonnes were caught east of Iceland in international waters.

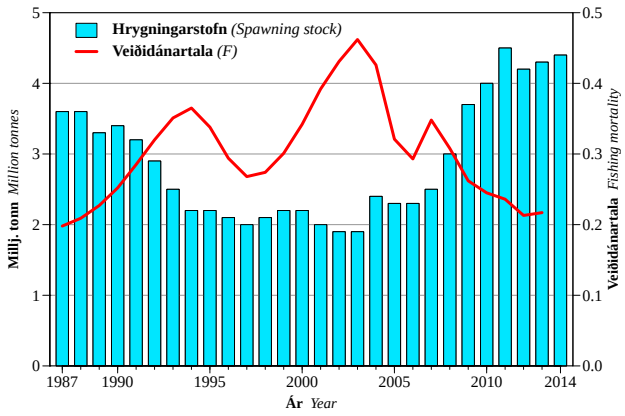
The 2014 catch and age distribution is not available yet, but in 2013 each of the cohorts from 2006–2010 were 13–17% of the catch by number, or a total of 75%. About 9% of the catch were from the two-year-old 2011 cohort.

2.26.2 Surveys

Since 1977 the amount of mackerel eggs has been measured every third year in an international survey extending from January to July. The MRI participated in this survey in 2010 and 2013. The surveys show that the main spawning of mackerel takes place in the traditional region west of the British Isles, but the spawning now extends much further north than before. In 2013, mackerel eggs were observed across a relatively large area southeast and south of Iceland, within the EEZ. In the last four survey years (2004, 2007, 2010 and 2013) the egg production of both the western and southern populations, and thus the overall spawning stock, has increased. The next egg survey is planned in summer 2016.

In July/August 2014, MRI participated for the sixth time in an international survey to study the ecology, distribution and abundance of pelagic fish in the waters around Iceland, Faroes, and the Norwegian Sea. The distribution of mackerel in the Greenland Sea was also investigated in cooperation with Greenlanders. The amount of mackerel and the geographic distribution have increased steadily since 2010, from 4.8 million tonnes to 9 million tonnes in 2014. In addition, the results indicate that strong cohorts from 2010 and 2011 have entered the spawning stock.

The results of these two surveys and older tagging data (prior to 2005) are used for tuning the ICES stock assessment model. Furthermore, the recruitment index from an international groundfish survey off the European coast is used as a tuning series, but this index indicates continued good recruitment from the 2012 and 2013 cohorts.

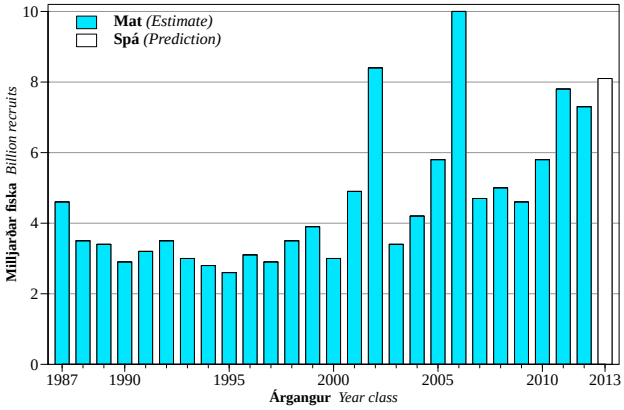


Mynd 2.26.2. **Makríll.** Stærð hrygningarstofns og veiðidánartala (4–8 ára).

Figure 2.26.2. ***Mackerel.*** *Spawning stock biomass and fishing mortality (F_{4-8}).*

2.26.3 Stock status and advice

Mackerel assessments by ICES are conducted in the autumn, where the advice has been based on a harvest control rule and the assessment model results. In autumn 2014, the stock size was estimated using a new population model that incorporates more data than before. According to the assessment, the spawning stock status was low in 1994–2003 or around 2 million tonnes, but has since increased to 4.3 million tonnes in 2014 (Fig. 2.26.2). After a considerable increase in 1998–2003, the fishing mortality has decreased considerably (Fig. 2.26.2), and in 2012 and 2013 it was just under the recommended level ($F = 0.22$). Recruitment into the stock has been good in recent years. All cohorts from 2005–2013 were above the long-term average from 1980–2013, except for the 2009 cohort which was average (Fig. 2.26.3).



Mynd 2.26.3. **Makríll.** Stærð árganga á fyrsta ári (í milljörðum).

Figure 2.26.3. ***Mackerel.*** *Size of year classes at age 0 (in billions).*

Over the last year, ICES has been evaluating a new harvest control rule and B_{lim} for mackerel. The main conclusion was that the same target fishing mortality $F = 0.22$ should be used as the basis of advice, and the TAC for 2015 was therefore 906 thous. tonnes. If this advice is followed, the spawning stock is estimated to be 4.3 million tonnes in 2016.

An agreement has not been reached between the countries participating in the fishery about partitioning the landings. The ICES recommended TAC will be presented in October 2015.

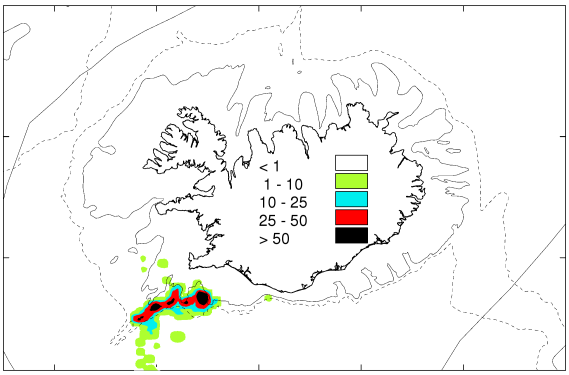
Ár *Year*	Tillaga *Rec. TAC*	Aflamark allra þjóða *Sum of national TAC*	Afli Catches[2)]
1998	498	549	667
1999	437	562	640
2000	642	612	739
2001	665	670	737
2002	694	683	771
2003	542	583	679
2004	545	532	660
2005	320–420	422	549
2006	373–487	444	481
2007	390–509	502	586
2008	349–456	458	622
2009	443–578	749[1)]	738
2010	527–572	885[1)]	875
2011	529–672	959[1)]	947
2012	586–639	927[1)]	893
2013	497–542	906[1)]	895
2014	927–1 011	1 401[1)]	1 396[3)]
2015	906		

[1)] Ekkert samkomulag um skiptingu. *No agreement on sharing.*
[2)] Með áætluðu brottkasti. *Including estimated discards*
[3)] Bráðabirgðatölur. *Provisional figures.*

Tafla 2.26.1. **Makríll**. Tillögur Alþjóðahafrannsóknaráðsins um hámarksafla, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn).

Table 2.26.1. ***Mackerel****. TAC recommended by ICES, sum of national TAC, and landings (thous. tonnes).*

2.27 Pearlside *Maurolicus muelleri*



Norræna gulldepla. Veiðisvæði við Ísland árin 2009–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Pearlside. *Fishing grounds in 2009–2011. Dark areas indicate highest catch (tonnes/nmi^2).*

2.27.1 Fishing and biology

Experimental fishing for pearlside with pelagic trawl began in December, 2008 with a few tonnes landed. Landings in 2009 exceeded 46 thous. tonnes, but they decreased rapidly in the following years and were over 9 000 tonnes in. Only 9 tonnes were landed in 2012 and there were no recorded landings in 2013 and 2014.

The pearlside is a very small species of the *Sternoptychidae* family. Maturity is reached at after the first year and the fish is then about 2.5 cm long, but maximum age is 5 years and maximum length is 9 cm. The pearlside is widely distributed west and south of Iceland. Spawning occurs in the spring and summer in the northern extent of its range, which includes Icelandic waters, but spawning occurs all year round farther south. Little is known about the distribution and abundance of pearlside,as is the case with many other mesopelagic species of fish, but the northern distribution seems to be limited by the northern extent of warm ocean water.

2.27.2 Stock status

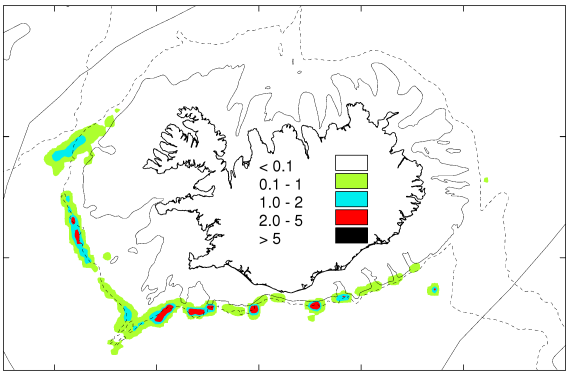
Pearlside have not been studied much since 2010 when the MRI conducted a survey to map the distribution and biomass of pearlside in Icelandic waters with acoustic techniques.

The survey showed that pearlside are distributed from the West Fjords south and east to the East Fjords. The highest densities were found in the areas where the fishing fleet was located at the time, near Grindavíkurdjúp. In order to estimate the biomass of pearlside with the desired accuracy, further studies are needed to determine the reflection coefficient of the species because this has not been done in the Atlantic ocean. Such studies of a related species in the Pacific Ocean have been conducted. When the reflection coefficient of the Pacific species is applied to Atlantic pearlside, biomass observed in the 2010 survey was less than 250 thous. tonnes, of which about 140 thous. tonnes was in the area where effort was concentrated. According to the length distribution data, it is likely that two cohorts comprise the majority of the landings, the older cohort was more prevalent on the fishing grounds and the younger one to the west of Iceland.

2.27.3 Advice

Since stock the biomass, yield capacity, and importance of pearlside as food for other species in Icelandic waters are poorly understood, the MRI recommends a precautionary approach to harvest control. If the species is targeted, landings should not exceed the average from the period 2009–2010, which is about 30 thous. tonnes.

2.28 Greater silver smelt *Argentina silus*

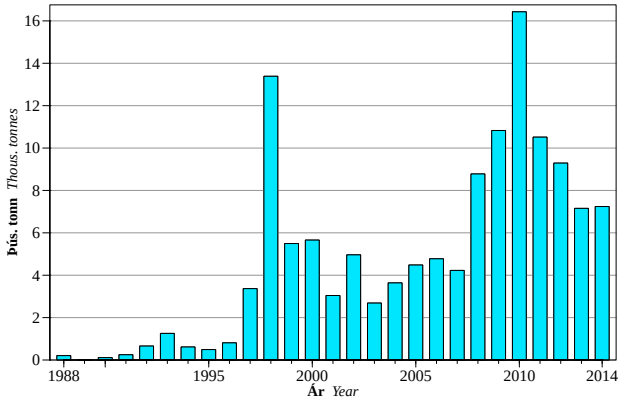


Gulllax. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Greater silver smelt. *Fishing grounds in 2014. Dark areas indicate highest catch (tonnes/nmi^2).*

2.28.1 Landings and effort

Greater silver smelt has been bycatch in bottom trawls in the redfish fishery in Icelandic waters for many years, and usually was discarded. In 1997 interest in a smelt fishery grew and landings increased from over 800 tonnes in 1996 to over 13 thous. tonnes in 1998 (Fig. 2.28.1 and Table 3.28.1). In 2000–2007 landings were in the range of 2 500–4 800 tonnes. Considerable increase in the fishery occurred in 2008–2010 until landings peaked at about 16 thous. tonnes in 2010. Since then, landings have decreased due in part to management decisions, and the 2014 catch was about 6 300 tonnes.



Mynd 2.28.1. **Gulllax.** Landaður afli.

Figure 2.28.1. ***Greater silver smelt.*** *Landings.*

2.28.2 Survey

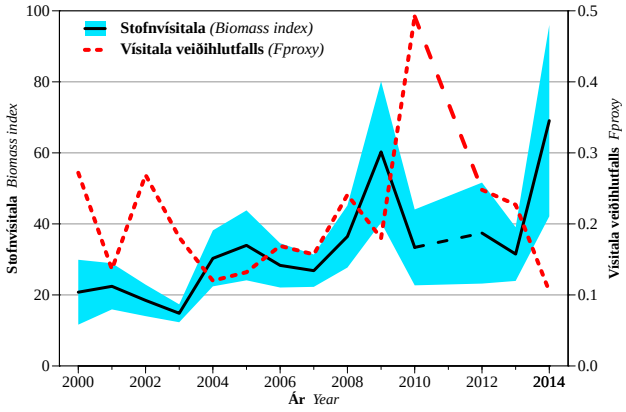
Greater silver smelt is a slow-growing species and the yield capacity of the stock is thought to be low. The size and status of smelt stock in Icelandic waters is poorly understood, as is the connection to silver smelt in nearby waters. Silver smelt is caught over much of the area covered by the autumn survey (SMH), though mostly in the warm waters off the southeast and the West Fjords. There is much uncertainty in biomass indices of silver smelt because it is a schooling fish that often remains some distance above the bottom in the water column. However, since 2010 the biomass index of smelt below 400 m depth has been the basis of recommendations.

The fishable stock biomass, silver smelt from below 400 m, more than doubled from 2008 to 2009 but decreased again in 2010. The silver smelt biomass index greatly between 2013 and 2014, but the likely explanation of this is a change in fishability as described above. At a working meeting of the ICES deep-sea fish committee last winter the decision was made to recalculate the biomass index in order to decrease the weight of the large hauls from the survey. Despite that, the recalculated index (mynd 2.28.2) shows an increase in the stock observed in 2014 of more than double that in 2013.

2.28.3 Stock status

Age distribution in smelt landings has varied greatly in recent years. In 1998 the average age in landings was about 16 years, in 2008–2013 it was younger than 10 years, and decreased to just over 9 years in 2014.

F_{proxy} increased considerably in 2010 but has declined rapidly in recent years (Fig. 2.28.2). As a basis for recommendations, ICES aims to bring F_{proxy} close to the average from the period 2002–2007 (0.17). Considering the uncertainty in the survey, annual changes in indices should not be expected to change by more than 20%.



Mynd 2.28.2. **Gulllax.** Vísitölur veiðistofns (þyngd, fiskar >30 cm og dýpi >400 m) úr stofnmælingu botnfiska í október ásamt staðalfráviki, og vísitala veiðihlutfalls (afli/stofnvísitölu).

Figure 2.28.2. ***Greater silver smelt.*** *Fishable biomass index (>30 cm and depth >400 m) from the groundfish survey in October along with the standard deviation, and F_{proxy} (landings/biomass index).*

It is clear that there is much uncertainty about the size of the silver smelt stock in Icelandic waters, so the deep-sea fish committee of ICES proposed the organization of a meeting to review the assessment of the species. The meeting will be held early in 2017.

2.28.4 Advice

ICES concludes that the considerable increase in effort targeting silver smelt in recent years is probably not in accordance with a precautionary approach to fisheries management. For this reason, ICES recommends that TAC for the quota year 2015/2016 should not exceed 6 500 tonnes. This recommendation is based on keeping F_{proxy} close to the average of 2002–2007 and the 20% increase in fishable stock biomass observed in 2014.

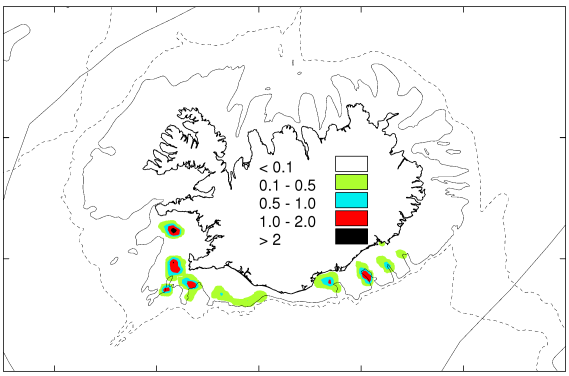
Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
2001/02	12 000	-	5 257
2002/03	12 000	-	2 427
2003/04	12 000	-	3 708
2004/05	12 000	-	4 210
2005/06	12 000	-	4 787
2006/07	Varúð	-	5 052
2007/08	Varúð	-	5 064
2008/09	Varúð	-	8 797
2009/10	8 000	-	15 960
2010/11	8 000	-	12 091
2011/12	6 000	-	8 497
2012/13	8 000	-	11 217
2013/14	8 000	8 000	7 242
2014/15	8 000	8 000	
2015/16	8 000		

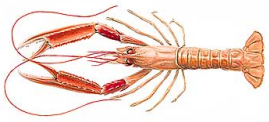
Tafla 2.28.1. **Gulllax**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.28.1. ***Greater silver smelt.*** *TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

MRI recommends that in the quota year 2015/2016 TAC should be, at most, 8 000 tonnes. This recommendation remains unchanged from the previous season since the observed increase in biomass index from 2013 to 2014 is probably not because of an increase in the stock size.

2.29 Nephrops *Nephrops norvegicus*



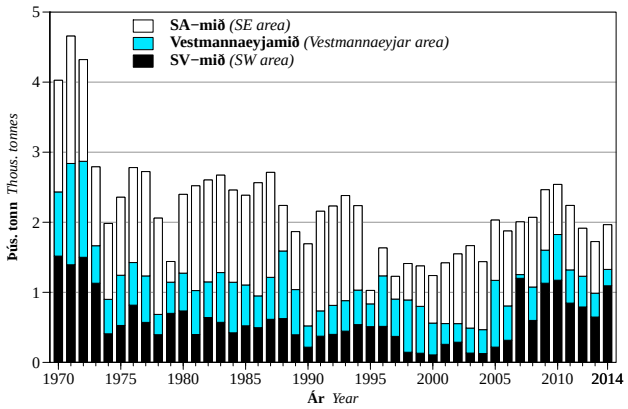


Humar. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Nephrops. *Fishing grounds in 2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.29.1 Landings and effort

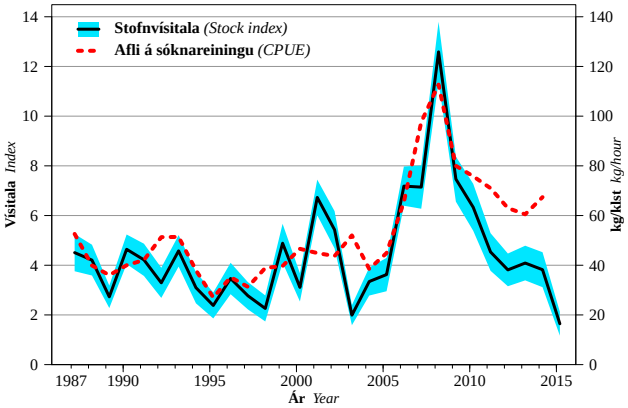
Nephrops landings were 1 965 tonnes in 2014, compared to 1 724 tonnes in 2013 (Fig 2.29.1 and Table 3.29.1). Landings from the southwest grounds were 1 093 tonnes, 234 tonnes were taken from the grounds around the Westman Islands and landings from the southeast grounds were 638 tonnes. Landings from the southeast and the Westman Islands was less than in 2014, but those from the southwest were considerably larger.



Mynd 2.29.1. **Humar.** Landaður afli eftir veiðisvæðum.

Figure 2.29.1. ***Nephrops.*** *Landings by fishing grounds.*

CPUE (during May–August, standardised by one trawl) was 67 kg in 2014, which is similar to the previous three years (Table 3.29.2). Overall, CPUE was rather high, but it was considerably lower than in the peak years 2007–2008 (Fig. 2.29.2).



Mynd 2.29.2. **Humar.** Heildarvísitala humars (þyngd) úr humarleiðöngrum 1987–2015 og staðlaður afli á sóknareiningu 1987–2014.

Figure 2.29.2. ***Nephrops.*** *Total biomass indices from the Nephrops survey 1987–2015 and standardized CPUE 1987–2014.*

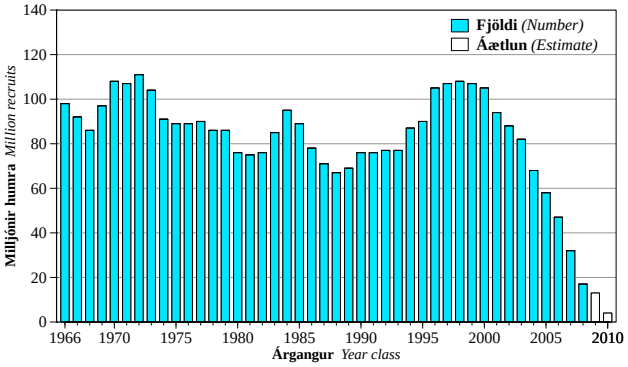
2.29.2 Survey

The *Nephrops* biomass index in May has been decreasing since 2008 (Fig. 2.29.2) and now is at an historical minimum. The biomass index has usually reflected the CPUE rather well, but it has decreased proportionally more since 2009. In large part, the low biomass index can be explained by the low fishability in most areas of the survey. In the trawl survey, fishability of the species is variable from year to year, due to variations in light penetration (as a result of algal bloom) and the abundance of fish on the sampling grounds, which was high this year. When the water column is clear and light penetration is good the *Nephrops* keeps to their holes and are difficult to catch.

According to the May, 2015 survey, *Nephrops* with a carapace length of 53–58 mm (ages 11–13) were most abundant in relation to number. The proportion of age 14 and older (60 mm and larger) was very high, but never has the abundance of *Nephrops* under 40 mm been as low as this year. As in the last three years, recruitment was only observed north of Eldey and in Skerjadjúp.

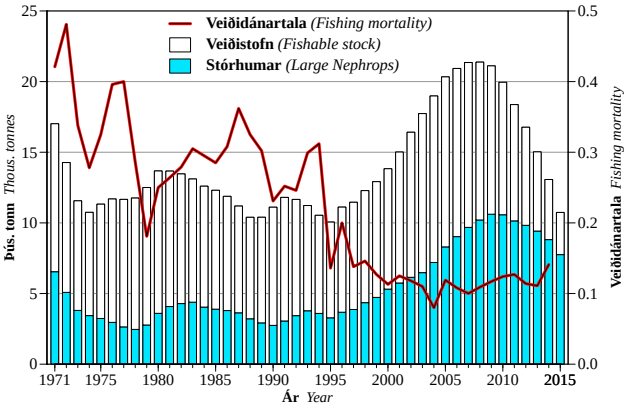
2.29.3 Stock assessment and projections

According to stock estimates from catch-at-age analysis, cohorts from 1996–2000 are large (Fig. 2.29.3). Around 1995 the *Nephrops* stock declined to a minimum and fishing became difficult, but then effort decreased dramatically and recruitment began anew. In 2007–2010 CPUE and estimated stock size rose to an historical peak. However, cohorts from 2005–2010 are all at an historical minimum, as shown in the survey.



Mynd 2.29.3. **Humar.** Stærð árganga við fimm ára aldur (í milljónum).

Figure 2.29.3. ***Nephrops.*** *Size of year classes at age 5 (in millions).*



Mynd 2.29.4. **Humar.** Stærð veiðistofns (6 ára og eldri), hluti stórhumars (10 ára og eldri) og veiðidánartala (6–13 ára).

Figure 2.29.4. ***Nephrops.*** *Fishable biomass (age 6+), large category biomass (age 10+), and fishing mortality (F_{6-13}).*

The fishable stock is about 10 700 tonnes and it has started to decrease rapidly (Fig. 2.29.4 and table 3.29.4). Estimated biomass of large *Nephrops*, age 10 and older, has also been decreasing but is still above the long-term average.

Harvest rates since 1971 are shown on Figure 2.29.4. Since 1995 management has aimed at keeping fishing near $F_{0.1} = 0.15$. Even though policies have succeeded somewhat in this

goal, variations in stock size and/or conditions in different areas have led to temporary periods of overly heavy fishing in certain areas.

In projections of biomass to the year 2016, it is assumed that landings in 2015 will be 1 650 tonnes and the fishable stock in the beginning of 2016 will be about 8 600 tonnes. Recently, a Gadget population model (see Appendix 5.1) has been under development for *Nephrops*. The Gadget model shows a similar trend in stock biomass as the catch-at-age analysis.

2.29.4 Advice

Table 2.29.1 shows MRI recommendations for TAC, national TAC and annual *Nephrops* landings since 1984. The *Nephrops* stock increased greatly in 1998–2005, ostly because of good recruitment and moderate effort. The fishable stock has decreased rapidly in recent years due to poor recruitment and more decrease is expected in the coming years. The MRI recommends that fishing pressure be maintained at $F_{0.1} = 0.15$ and that TAC in the quota year 2015/2016 should not exceed 1 500 tonnes.

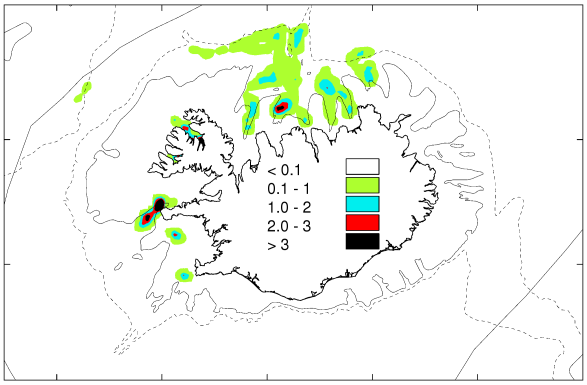
Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1984	2 400	2 600	2 500
1985	2 300	2 400	2 400
1986	2 500	2 500	2 600
1987	2 700	2 800	2 700
1988	2 600	2 600	2 200
1989	2 100	2 100	1 900
1990	2 100	2 000	1 700
1991[1)]	2 100	2 100	2 200
1991/92	2 100	2 100	2 200
1992/93	2 200	2 400	2 400
1993/94	2 200	2 400	2 200
1994/95	2 200	2 200	1 000
1995/96	1 500	1 500	1 600
1996/97	1 500	1 500	1 200
1997/98	1 500	1 200	1 400
1998/99	1 200	1 200	1 400
1999/00	1 200	1 200	1 300
2000/01	1 400	1 400	1 400
2001/02	1 500	1 500	1 577
2002/03	1 600	1 600	1 687
2003/04	1 600	1 600	1 437
2004/05	1 500	1 500	2 035
2005/06	1 600	1 800	1 946
2006/07	1 700	1 800	1 946
2007/08	1 900	1 900	2 000
2008/09	2 200	2 200	1 999
2009/10	2 200	2 200	2 456
2010/11	2 100	2 100	2 259
2011/12	2 000	2 100	2 130
2012/13	1 900	1 900	1 965
2013/14	1 750	1 750	1 983
2014/15	1 650	1 650	
2015/16	1 500		

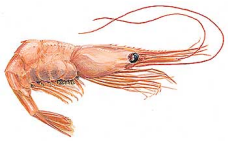
[1)] Tímabilið janúar–ágúst. *January–August 1991.*

Tafla 2.29.1. **Humar**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.29.1. ***Nephrops****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

2.30 Northern shrimp *Pandalus borealis*



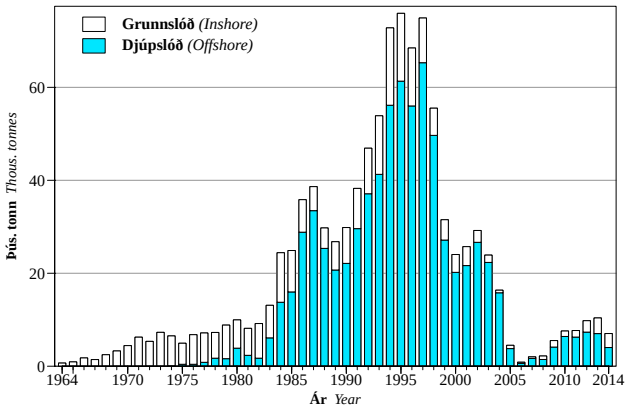


Rækja. Veiðisvæði við Ísland árið 2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Northern shrimp. *Fishing grounds in 2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.30.1 Landings and effort

The shrimp fishery in Iceland began in the 1930s and for years limited shrimp fishing was conducted near shore. The offshore fishery began in the mid 1970s and quickly became larger than the inshore fishery (Figure 2.30.1 and Table 3.30.1).



Mynd 2.30.1. **Rækja.** Landaður afli á grunnslóð og djúpslóð.

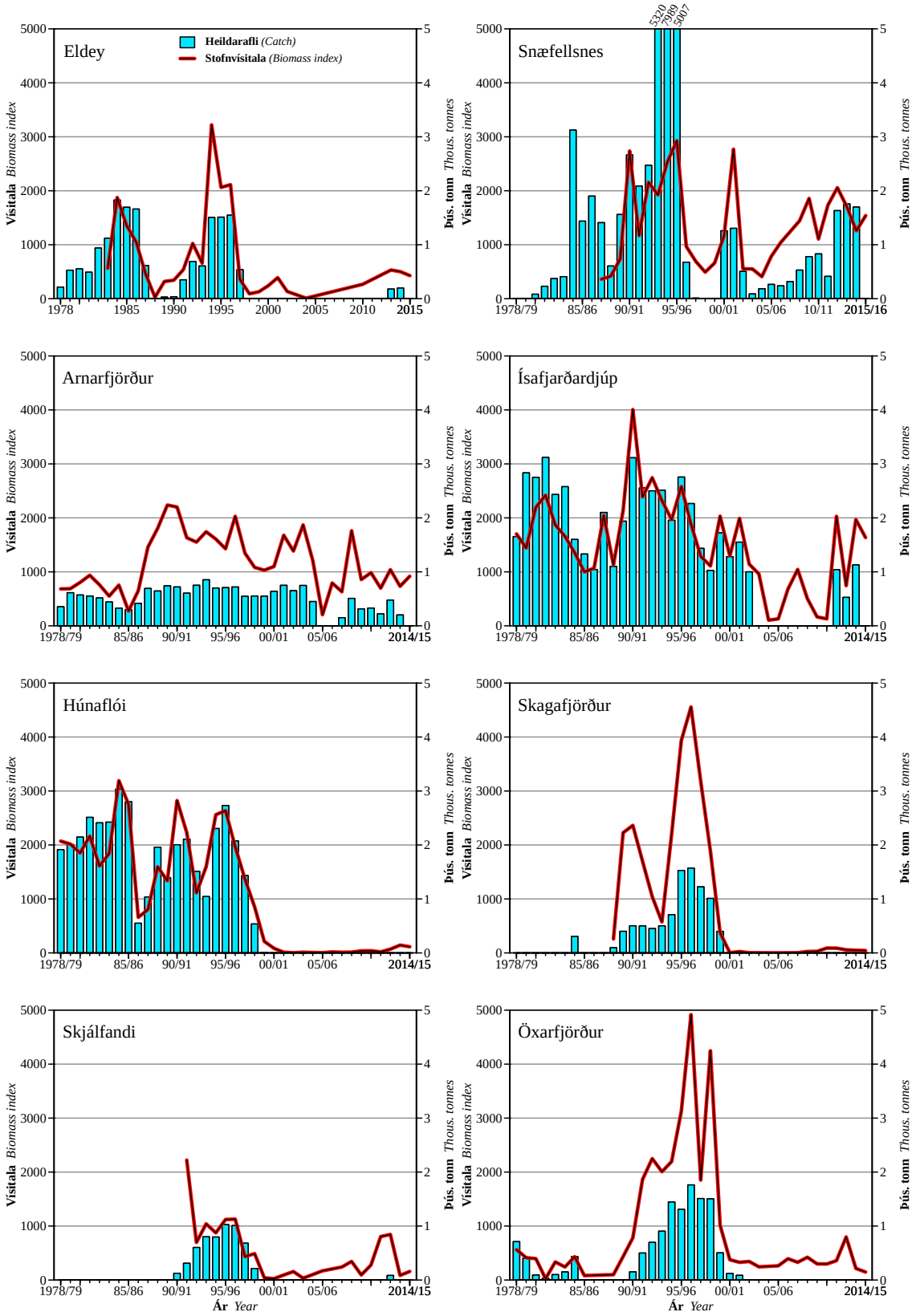
Figure 2.30.1. ***Northern shrimp.*** *Landings from inshore and offshore areas.*

The fishery peaked in 1994–1997 when annual landings exceeded 70 thous. tonnes. Since 1997 landings have decreased significantly, reaching a minimum of 860 tonnes in 2006. Since then, landings have slowly increased and were 10 700 tonnes in 2013 and 7 000 tonnes in 2014.

2.30.2 Inshore northern shrimp

2.30.2.1 Stock status and advice

Figure 2.30.2 and Table 3.30.2 show inshore shrimp landings by area. In recent years, the inshore fishery has been mostly limited to areas near Snæfellsnes and Eldey, and in Arnarfjörður and Ísafjarðardjúp. The total catch of the inshore fishery in 2013/2014 was 3 200 tonnes. The shrimp stock along the north coast collapsed in 1997–2000, as shown by the stock indices and landings (Figure 2.30.2). This happened in Ísafjarðardjúp in the period 2002–2004 and in Arnarfjörður 2005–2007. In all areas, predation by cod and haddock played a large part in the collapse.



Mynd 2.30.2. **Rækja á grunnslóð.** Landaður afli (súlur) og vísitala stofnstærðar (línur).

Figure 2.30.2. ***Northern shrimp, inshore.*** *Landings (bars) and biomass indices (lines).*

Table 2.30.1 shows MRI TAC recommendations, national TAC and total landings of inshore shrimp since 1990/1991, and Table 3.30.3 shows recommendations for individual management areas.

	Grunnslóðasvæði fyrir utan Snæfellsnes *Inshore areas except Snæfellsnes area*		Snæfellsnes *Snæfellsnes area*		Öll grunnslóð *All inshore areas*
Fiskveiðiár *Quota year*	Tillaga *Rec. TAC*	Aflamark *TAC*	Tillaga *Rec. TAC*	Aflamark *TAC*	Afli *Landings*
1990/91	6 880	6 880	-	-	8 400
1991/92	7 200	7 200	-	-	9 200
1992/93	7 100	7 100	-	-	12 400
1993/94	8 050	8 050	-	-	13 000
1994/95	9 500	9 500	-	-	15 850
1995/96	11 370	11 370	-	-	14 300
1996/97	9 900	9 900	-	-	10 350
1997/98	6 870	6 870	-	-	6 950
1998/99	4 930	4 930	-	-	4 950
1999/00	3 310	3 310	-	-	3 300
2000/01	2 130	2 130	-	-	4 400
2001/02	2 450	2 450	-	-	2 900
2002/03	1 650	1 650	300	-	1 700
2003/04	750	750	200	-	950
2004/05	450	450	200	-	700
2005/06	0	0	200	-	250
2006/07	0	0	200	-	300
2007/08	150	150	400	-	700
2008/09	500	500	400	-	1 300
2009/10	300	300	900	-	1 150
2010/11	400	400	450	-	750
2011/12	1 200	1 200	850	-	2 900
2012/13	1 350	1 350	1 000	-	3 000
2013/14	1 550	1 550	950	-	3 000
2014/15	1 300	1 500	600	600	
2015/16	200[1)]		700		

[1)] Aðeins Eldeyjarsvæði, ráðgjöf fyrir önnur svæði gefin haustið 2015.
Eldey area only, TAC advice for other areas given in autumn 2015.

Tafla 2.30.1. **Rækja á grunnslóð**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.30.1. ***Northern shrimp, inshore****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

Estimation of the inshore stock status is based on the survey in April (at Snæfellsnes), May (at Eldey) and September/October (off the north and northwest coast). At this point, MRI makes a recommendation only for the areas at Snæfellsnes and Eldey but recommendations for other areas will be given following the 2015 autumn survey.

Landings from **Snæfellsnes** have increased steadily in recent years (Table 3.30.2 and Figure 2.30.2). Landings in Breiðafjörður were 174 tonnes in 2013 and 238 tonnes in 2014. In Kolluáll landings were 1 369 tonnes in 2013 and 1 319 tonnes in 2014. Landings from Jökuldjúp have been insignificant except in 2000 when they were 1 100 tonnes. In 2014 landings from Jökuldjúp totalled 141 tonnes. Recently, MRI suggested a change in the management of shrimp fishing in the Snæfellsnes area such that the quota year would start on 1 May each year until 15 March. The recommended TAC is 700 tonnes for the period from 1 May 2015 to 15 March 2016.

The fishery at **Eldey** was closed after the collapse in 1997 until 2013 (Figure 2.30.2). According to a survey conducted in spring 2013, the stock had increased significantly since 2010 and the biomass index was close to the historical average. As a result, the fishery was reopened which led to landings of 179 tonnes in 2013. The stock was estimated below average in the spring of 2015 and MRI recommends a TAC of 200 tonnes in the calendar year 2015.

According to the 2014/2015 winter survey of shrimp, the stock in **Arnarfjörður** is below average (Figure 2.30.2). Abundance was high in Borgarfjörður so the autumn distribution is similar to that since 2004. Cod were more abundant than they were in the autumn of 2013 but haddock abundance was similar between years. A recommendation of 250 tonnes in Arnarfjörður for the quota year 2014/2015 was raised to 350 tonnes after a survey in February 2015.

According to the shrimp survey in September 2014, the stock in **Ísafjarðardjúp** was about average. As was the case in other inshore areas, cod were abundant in 2003–2005. This abundance of fish explains the decrease in shrimp stocks from 2004. In the autumn of 2014 cod and haddock were abundant, but their numbers were declining. In October 2014, a TAC of 750 tonnes of shrimp was recommended for the quota year 2014/2015.

In **Skjálfandi** the biomass index was very low in the 2014 autumn survey, but in the autumn of 2011 the biomass index had been considerably higher than in previous years. The shrimp fishery in the area was closed in the quota years 1998/1999–2011/2012. A TAC of 400 tonnes was recommended for the quota year 2012/2013 but only 85 tonnes were landed. In recent years, the abundance of cod and haddock has been decreasing. A closure of the shrimp fishery in Skjálfandi was recommended for the quota year 2014/2015.

The shrimp survey in September 2014 indicated a similar biomass as previous years in **Húnaflói**, **Öxarfjörður** and **Skagafjörður** (Figure 2.30.2). Shrimp stocks in these areas have been low and fisheries there have been closed since the turn of the century. The collapse of these shrimp stocks was linked to an increase in fish abundance. Haddock had decreased in abundance in these areas by autumn 2014. Cod increased in abundance in Húnaflói but decreased in Skagafjörður and Öxarfjörður.

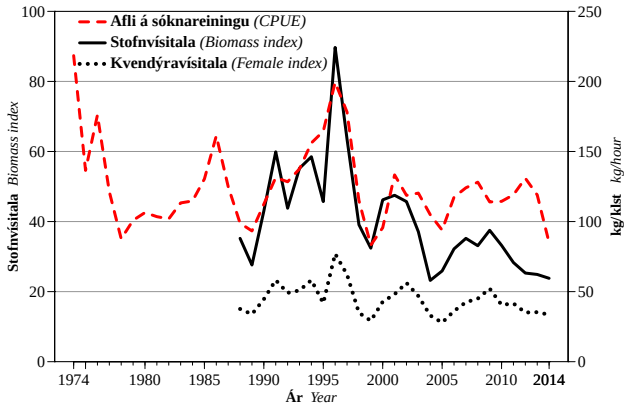
The average size of shrimp (individuals/kg) by area is shown in Table 3.30.4. The smallest shrimp were observed in 2013 in Skagafjörður (449 per kg) and in Skjálfandi (442 per kg) whereas the largest shrimp were found in Breiðafjörður (184 per kg).

2.30.3 Offshore northern shrimp

2.30.3.1 Trends in effort and landings

The offshore shrimp fishery opened in the 1970s and remained limited until 1984, when it increased annually until reaching a peak in 1997 at which time 65 thous. tonnes were landed. In 1998–1999 landings decreased from 49 thous. tonnes to 27 thous. tonnes and remained between 20–27 thous. tonnes until 2003. From 2004–2005 landings decreased further to about 600 tonnes in 2006 (Table 3.30.5). Landings have been increasing since 2006 and exceeded 7 000 tonnes in 2012 and 2013. Landings decreased again and totalled 4 000 tonnes in 2014. Offshore shrimp landings by area are shown in Table 3.30.5.

CPUE (standardized with 1600 mesh trawl) has shown high variability since the fishery was opened. It peaked at 200 kg/hour in 1996, but quickly declined to 83 kg/hour in 1999. In 2001–2003 CPUE increased again, but decreased in 2004 and 2005 to about 100 kg/hour (Figure 2.30.3). In 2006–2013 CPUE was between 119–131 but decreased to about 85 kg/hour in 2014, which is one of the lowest since the beginning of the fishery.



Mynd 2.30.3. **Úthafsrækja.** Heildarstofnvísitala og kvendýravísitala úr stofnmælingu, ásamt afla á sóknareiningu (kg/klst).

Figure 2.30.3. ***Northern shrimp, offshore.*** *Total biomass index and female index from survey and commercial CPUE.*

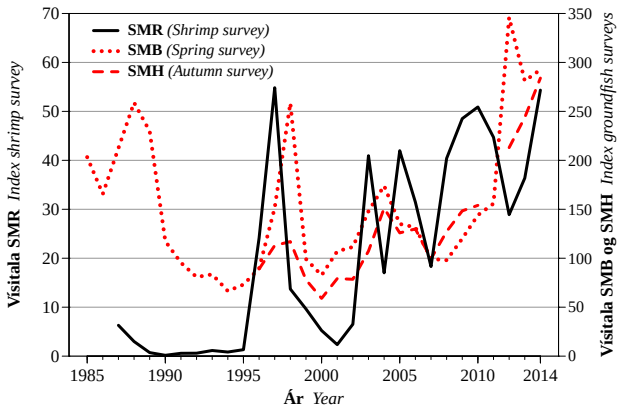
Average size of offshore shrimp by area is shown in Table 3.30.6. In 2014 the smallest shrimp were found in Héraðsdjúp (309 per kg) and the largest were in Norðurkantur (171 per kg). The average size varies mainly due to the size of cohorts in each area.

Rauða Torgið (Red Square) and **Hali** are outside the traditional stock assessment area. The shrimp landings have peaked in the Red Square area at 1 400 tonnes and 2 000 tonnes at Hali. Almost no shrimp fishery has been reported in Red Square area since 2005. The fishery at Hali has been increasing, amounting to 455 tonnes in 2013 and 179 tonnes in 2014 (Table 3.30.5).

A sorting grid is mandatory in the offshore shrimp fishery, which keeps bycatch to a minimum, although it is also allowed to use a cover bag with greater mesh size and land the bycatch that is caught. These measures have improved the ecological sustainability of the offshore shrimp fishery.

2.30.3.2 Connections between cod and northern shrimp

Predation by cod is thought to have a considerable effect on shrimp populations, but to evaluate the extent of this predation an estimated cod abundance on the shrimp grounds is required. Figure 2.30.4 shows cod biomass indices from the spring groundfish survey (SMB 1985–2014), the autumn groundfish survey (SMH 1996–2014) and offshore shrimp survey in July–August (SMR 1987–2014). Biomass indices from the SMB and SMH describe cod abundance across the north and east coasts (from Norðurkantur to Berufjörður) in winter and spring. SMR indices show the abundance of cod in the deep areas to the north and east where shrimp are distributed during summer.



Mynd 2.30.4. **Þorskur á úthafsrækjusvæðum.** Þorskvísitölur á rækjusvæðum fyrir Norður- og Austurlandi.

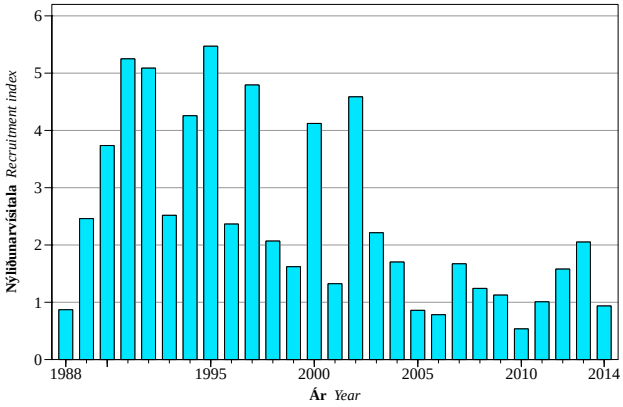
Figure 2.30.4. ***Cod on offshore grounds.*** *Cod indices in shrimp areas north and east of Iceland.*

Indices from the SMR and SMB show very different distributions of cod on the shrimp grounds. According to the SMR cod were more abundant in 1996–2014 than 1987–1995. In the years 1989–1995 almost no cod was caught, and in that time shrimp landings peaked. Cod indices from all surveys have increased in recent years.

2.30.3.3 Stock status

The total stock biomass index of offshore shrimp in 2014 was 23.8, similar to 2011–2013 and close to the historical minimum in 2004 (Figure 2.30.3). The female index was 13.4 and reflects the spawning stock biomass, which is below the average from 1998–2013 and the previous years. A reference point U_{lim} for the offshore shrimp spawning stock biomass index has not been calculated, but the Northwest Atlantic Fisheries Organization (NAFO) recommends that U_{lim} be set at 15% of the highest measurement. Such an approach would lead to a U_{lim} of 4.6 and the female index from 2014 is well above that.

The recruitment index has been low in recent years and cohorts from 2002–2012 are all below average (Figure 2.30.5). Recruitment was higher in 2012 and 2013 than in previous years.



Mynd 2.30.5. **Úthafsrækja.** Nýliðunarvísitala tveggja ára rækju (í fjölda) úr stofnmælingu.

Figure 2.30.5. ***Northern shrimp, offshore.*** *Recruitment indices of 2 year old shrimp in from survey.*

2.30.3.4 Advice

Table 2.30.2 shows MRI recommendations, national TAC, and shrimp landings since 1987. Effort has been increasing in recent years, but despite the offshore shrimp fishery being unlimited since 2010, the recommended TAC was not caught until the quota year 2011/2012. Shrimp landings in Norðurkantur have been very small recently, and that is the area where the largest shrimp are found and historically supported one of the main shrimp fisheries. In 2011–2013 most of the landed shrimp came from the Grímsey area, where shrimp are smaller. Landings from Grímsey decreased considerably in 2014.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli *Landings*
1987	30 000	30 000	33 400
1988	30 000	30 000	24 500
1989	20 000	20 900	20 900
1990	22 000	24 600	24 400
1991	28 000	-	30 700
1991/92	35 000	40 000	34 200
1992/93	35 000	40 000	41 800
1993/94	40 000	52 000	53 200
1994/95	60 000	62 000	61 200
1995/96	40 000	63 000	65 000
1996/97	55 000	60 000	57 300
1997/98	70 000	75 000	60 900
1998/99	40 000	40 000	30 700
1999/00	20 000	20 000	20 700
2000/01	25 000	25 000	22 100
2001/02	35 000	35 000	27 400
2002/03	30 000	30 000	24 300
2003/04	20 000	20 000	18 000
2004/05	15 000[1)]	10 000	5 100
2005/06	10 000	10 000	800
2006/07	7 000	7 000	1 600
2007/08	7 000	7 000	1 300
2008/09	7 000	7 000	3 200
2009/10	7 000	7 000	6 300
2010/11	7 000	-	6 300
2011/12	7 000	-	7 300
2012/13	5 000	-	7 400
2013/14	5 000	-	5 100
2014/15	5 000	5 000	
2015/16	4 000		

[1)] Engin tillaga um hámarksafla en áætlað að óbreytt sókn leiði af sér 15 þús. tonna afla. *No recommended TAC but unchanged effort estimated to yield 15 thous. tonnes.*

Tafla 2.30.2. **Úthafsrækja**. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og afli (tonn).

Table 2.30.2. ***Northern shrimp, offshore****. TAC recommended by the Marine Research Institute, national TAC, and landings (tonnes).*

The results of SMR in 2014 indicate that the stock is small, predation by cod is high, and recruitment remains below average as it has been in recent years. In addition, CPUE has decreased considerably in 2014 and is now near the historical minimum.

In light of the above, MRI recommends that TAC for offshore shrimp in quota year 2015/2016 be 4 000 tonnes.

2.30.3.5 Other shrimp fisheries

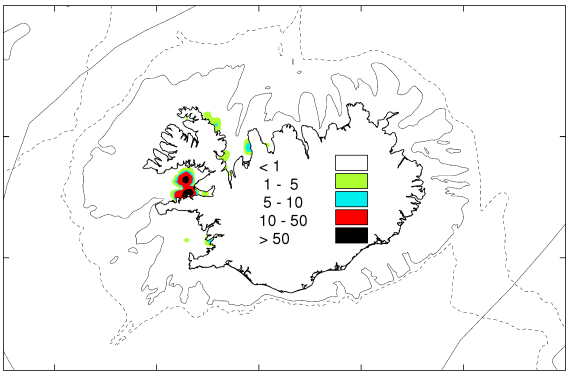
The majority of offshore shrimp on the **Dohrn Bank** and along East Greenland is thought to be distributed to the west of the boundary between Icelandic and Greenlandic waters, but the line lies across the northernmost shrimp grounds on the Dohrn Bank. Landings of all nations off East Greenland exceeded 12 thous. tonnes on average in 1994–2003, but has since decreased to 600 tonnes in 2014. Icelandic landings from the Dohrn Bank have always been variable (Table 3.30.1) as ice often closes the area. These landings were highest at 2 900 tonnes in 1997. In 2006–2012 Icelanders fished a negligible amount on the Dohrn Bank and in 2014 landings totalled 29 tonnes. The shrimp biomass index in the area has decreased considerably since 2009. NAFO recommends that landings from the entire East Greenland region remain under 2 000 tonnes in 2014.

In 1993 fishing began on the **Flemish Cap**, a region of international waters off the eastern coast of Canada. Since 2006 Icelandic ships have not fished the region. The fishery there remains closed due to the poor status of shrimp stock.

Shrimp fishing began on the **Grand Banks** in 1993. Icelandic ships began fishing there in 2000, landing at most 226 tonnes in 2006 (Table 3.30.1). In 2012 and 2014 there were no registered shrimp landings but 92 tonnes were landed in 2013. The stock has decreased steadily since 2007, and because of poor recruitment and increased fishing mortality it is expected to decrease further.

A shrimp fishery began in the **Barents Sea** in 1970. Part of the area is international waters and Icelanders began fishing there in 1997. The peak Icelandic landings exceeded 2 000 tonnes in 1998 (Table 3.30.1). In 2001–2010 Icelandic landings were negligible but since 2011 annual landings have been 22–730 tonnes. In the last decade the total annual landings of all countries has been 18–43 thous. tonnes, which is within the recommended limit of 60 thous. tonnes.

2.31 Iceland scallop *Chlamys islandica*

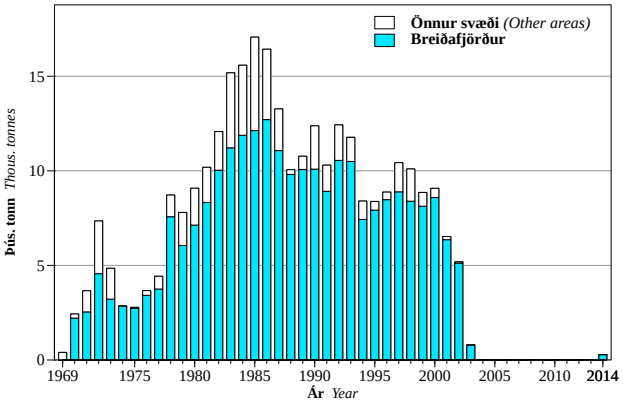


Hörpudiskur. Veiðisvæði við Ísland árin 1995–2003. Dekkstu svæðin sýna mesta veiði (tonn/sjm^2).

Iceland scallop. *Fishing grounds in 1995–2003. The dark areas indicate highest catch (tonnes/nmi^2).*

2.31.1 Landings and effort

The Icelandic scallop fishery was closed in the quota year 2014/2015. Some experimental fishing was conducted in autumn, 2014 in Breiðasund, in the southern part of Breiðafjörður, and landings were 280 tonnes. Total landings were usually 9 500 tonnes in 1996–2000, of which 8 500 tonnes came from Breiðafjörður (Fig. 2.31.1 and Table 3.31.1). In 1996–1999 average CPUE (catch per haul-hour with a single dredge) in Breiðafjörður was approximately 1 600 kg but it decreased to 709 kg in 2003 before the fishery closed (Fig. 2.31.2).



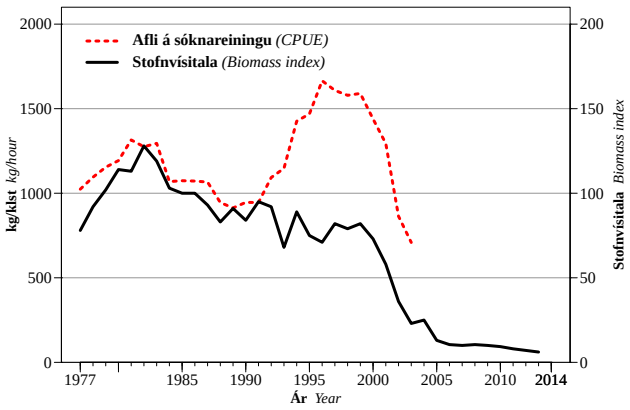
Mynd 2.31.1. **Hörpudiskur.** Landaður afli.

Figure 2.31.1. ***Iceland scallop.*** *Landings.*

2.31.2 Stock status

The fishable stock biomass index for Iceland scallops on traditional grounds in Breiðafjörður has been at a minimum in recent surveys. In the 2014 survey areas of Hvammsfjörður and south of Skálmarnes to Flateyjarsund were investigated in addition to the traditional grounds. Scallops of fishable size were present in these areas. Exsperimental fishing is planned in these areas this autumn in order to determine the long-term effects of varied levels of fishing pressure.

An obvious decrease of the biomass index began in the survey of Breiðafjörður in April, 2001 when the fishable stock biomass index was about 27% lower than normal in 1993–2000 (Fig. 2.31.2). This trend continued until 2006, since when the index has slowly decreased (the biomass index in 2013 is based on surveys from 2012 and 2013). The most considerable change in recent years is in the increase in the proportion of 65 mm and larger shells, which is now about 80 mm and larger shells. Younger scallops are continue to decrease in abundance and cohorts from 2004–2009 are all below long-term averages.



Mynd 2.31.2. **Hörpudiskur.** Stofnvísitala í Breiðafirði og afli á sóknareiningu hjá skelbátum á sama svæði.

Figure 2.31.2. ***Iceland scallop.*** *Survey biomass index in Breiðafjörður and CPUE from scallop boats in the same area.*

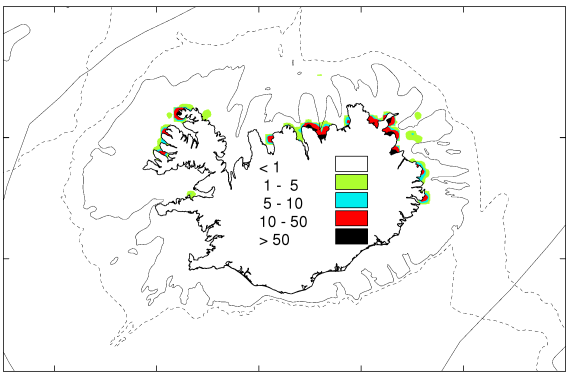
According to the results from larval captures in the autumn of 2010 in Breiðafjörður, a considerable increase of age two scallops was expected in various locations in the autumn 2012 survey. Small scallops were observed in a wide area of northern Breiðafjörður. Most of these were estimated at age 1, so they could enter the fishable stock in 2018–2019.

Concurrent to the decline of the stock, scallop distribution decreased and natural mortality rose sharply. Studies showed a correlation between decline in the stock and mortality independent of fishing. The likely cause of mortality was a protozoan infestation causing a alteration of adductor muscle tissue in the scallops. The infestation also inhibited development of reproductive glands which, in combination with a small spawning stock, led to poor recruitment. Mortality rate increased with size/age, so it affected mostly the fishable stock (>60 mm). The increase in the proportion of the stock that is large in 2007–2014 seems to indicate decreased infestation and mortality in the stock. Scallop muscle mass has also increased in recent years.

2.31.3 Advice

The scallop stock decreased rapidly after the year 2000 and is currently at an historical minimum. Cohorts from 2004–2009 are all very small so projections do not expect the fishable stock to increase much in the coming years. The MRI recommends a continued closure of the scallop fishery in the quota year 2015/2016.

2.32 Ocean quahog *Arctica islandica*

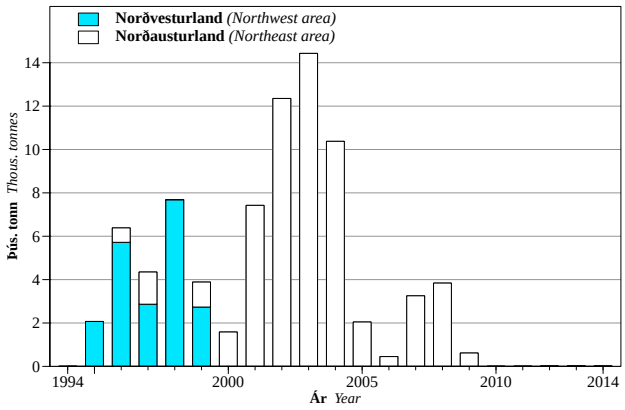


Kúfskel. Veiðisvæði við Ísland árin 1998–2014. Dekkstu svæðin sýna mesta veiði (tonn/sjm^2).

Ocean quahog. *Fishing grounds in 1998–2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.32.1 Landings and effort

Ocean quahogs were fished for human consumption off and on from 1988 until 1999 on grounds from Breiðafjörður to Skagatá. Landings were from 1 100 to 7 700 tonnes (Table 3.32.1). Fishing from Skagatá east to Ingólfshöfði commenced in 1996 and annual landings until 2005 ranged from 700 to 14 400 tonnes (Fig. 2.32.1 and Table 3.32.1). Effort has been negligible since 2005 due to poor market conditions and in 2014 landings totalled only 18 tonnes (Table 3.32.1). CPUE according to logbooks remained steady in 2001–2008, in the range of 7–10 tonnes/hr though effort varied. In 2009 hydraulic dredge fishing ceased, being replaced by dry dredge.



Mynd 2.32.1. **Kúfskel.** Landaður afli eftir svæðum.

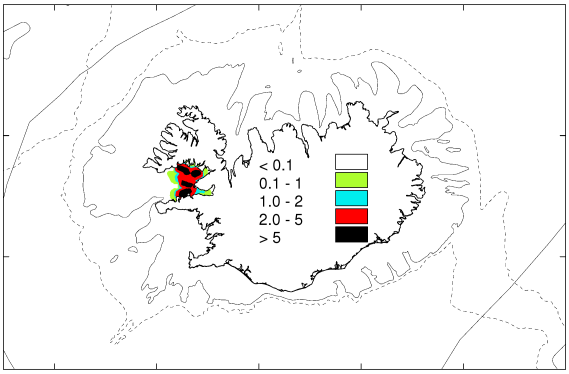
Figure 2.32.1. ***Ocean quahog.*** *Landings from Icelandic fishing grounds.*

2.32.2 Stock status and advice

Studies show the ocean quahogs are long-lived and slow-growing. The majority of the fishable stock is large old quahogs. Density of quahogs at 5–50 m depth has been studied from Garðskagi clockwise to Ingólfshöfði and the stock in the region is estimated at 1.3 million tonnes.

While the fishery was active, TAC was not regionally restricted. The MRI recommends that a regionally restricted TAC be adopted and a temporary harvest control rule be set for 4–7 years in which landings should not exceed 2,5% of the estimated stock biomass, which provides for a TAC of 32 500 tonnes in the quota year 2015/2016 for the region clockwise from Garðskagi to Ingólfshöfði.

2.33 Common whelk *Buccinum undatum*



Beitukóngur. Veiðisvæði við Ísland árin 2000–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Common whelk. *Fishing grounds in 2000–2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.33.1 Landings and effort

Exploratory fishing of common whelk began in Breiðafjörður in 1996, landing 500 tonnes. Since then, landings have been variable due to market conditions, peaking at 1 300 tonnes in 1997 and at a minimum in 1998 and 2002 (Table 3.33.1). Landings in 2014 were 93 tonnes, which is similar to those in 2013.

CPUE in 2014 was 2.2 kg compared to 1.1 kg in 2013. This is below the long-term average CPUE from 1996–2005 which was 3.6 kg. Since the fishery opened, CPUE has been between 1.1–4.8 kg (Table 3.33.1). CPUE varies by season and area, as well as annual variations in where and when effort is concentrated.

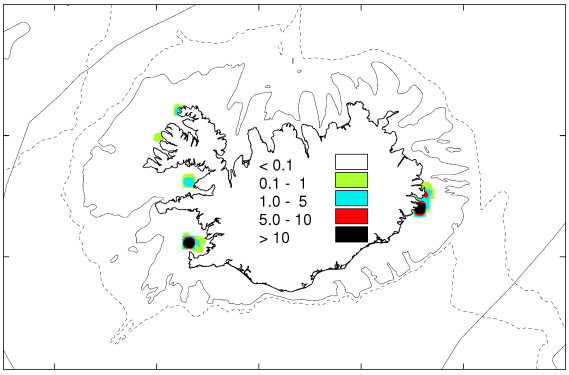
2.33.2 Stock status

According to the survey conducted in Breiðafjörður in the autumn of 2012, the whelk biomass index (23.7) was lower than in similar surveys in the early years of the fishery (1997–1998), when the index was 26.9. However, he index decreased the most south of Brjánslækur where no fishing has been conducted. When areas are compared, there is little variation in the index, though there is skew in the measurements. Fishing in Breiðafjörður in the last 15 years has not had a strong effect on the stock biomass.

2.33.3 Advice

The MRI recommended in 2012 that TAC should be similar to the mean of landings in southern Breiðafjörður the last decade, which means total landings from that area of no more than 450 tonnes and total landings from Breiðafjörður of no more than 750 tonnes. The southern portion of Breiðafjörður is south of 65°15' N and west of 22°30' W. In light of the results of the 2012 survey and reduced effort, the MRI recommends the same TAC in Breiðafjörður for the quota year 2015/2016.

2.34 Sea cucumber *Cucumaria frondosa*

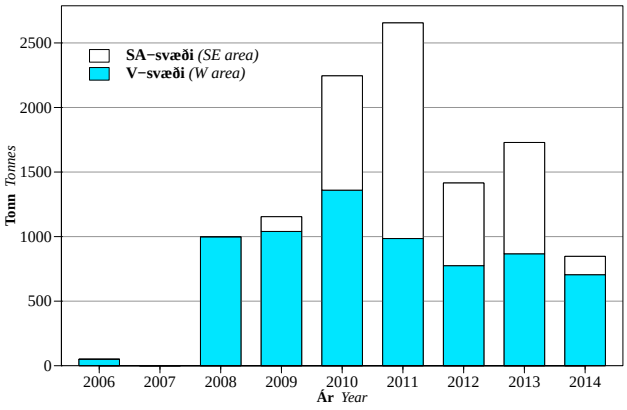


Sæbjúga. Veiðisvæði við Ísland árin 2008–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Sea cucumber. *Fishing grounds in 2008–2014. The dark areas indicate highest catch (tonnes/nmi^2).*

2.34.1 Landings and effort

Fishing of sea cucumbers in Breiðafjörður began in 2003 and landings were small until 2008, when they reached 1 000 tonnes (Fig. 2.34.1). Since then, landings have increased, peaking in 2011 at 2 700 tonnes, and reaching 847 tonnes in 2014. main grounds in 2014 were in Faxaflói (705 tonnes) and off the east coast (142 tonnes). CPUE in 2014 averaged about 790 kg/hr, which is similar to the previous year (Table 3.34.1).



Mynd 2.34.1. **Sæbjúga.** Landaður afli eftir svæðum.

Figure 2.34.1. ***Sea cucumber.*** *Landings by areas.*

The three demarcated fishing grounds are:

1. Western area: Reykjanesviti–Skagatá
2. Northern area: Skagatá–Glettinganes
3. Southern and eastern area: Glettinganes–Reykjanesviti

Three vessels have permits in each area. No fishing is allowed in May–June in Faxaflói and June–July in other areas due to spawning.

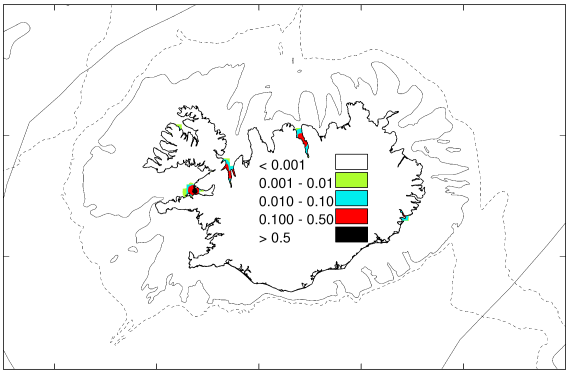
2.34.2 Stock status

The distribution and abundance of sea cucumbers around Iceland is poorly understood, but distribution is considered to be very patchy.Biomass surveys have been conducted on three fishing grounds within two of the three areas: at the mouth of Aðalvík (1 700 tonnes),in Faxaflói (10 300 tonnes) and off eastern coast (14 000 tonnes). The efficiency of the dredges used in harvesting is not fully understood but in the stock survey it is assumed to be 100% efficient.

2.34.3 Advice

The MRI recommendation for the quota year 2015/2016 is that landings not exceed 10% of the estimated stock biomass in each area. Therefore, the MRI recommends a TAC of 1 000 tonnes in Faxaflói, 1 400 tonnes in the east and 170 tonnes in Aðalvík. The number of fishing grounds within each area is increasing and the MRI will continue to work toward estimating the stock biomass on new grounds in cooperation with fishing companies.

2.35 Sea urchin *Strongylocentrotus droebachiensis*



Ígulker. Veiðisvæði við Ísland árin 1995–2014. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

Sea urchin. *Fishing grounds in 1995–2014. The dark areas indicate highest catch (tonnes/nmi^2).*

The green sea urchin fishery in Icelandic waters opened in 1993 and peaked in 1994 at about 1 500 tonnes. Landings in the following year were nearly 1 000 tonnes and about 500 tonnes in 1996. The majority of landings were from Breiðafjörður: about 800 tonnes in 1994–1995 and nearly 350 tonnes in 1996. The fishery was mostly closed in 1997–2003. Although the decrease was mostly due to a poor market, many of the best harvest grounds were damaged by the harvesting process in the first years.

Harvesting began anew in Breiðafjörður in 2004 when landings totalled 40 tonnes. In 2007 landings were 134 tonnes and have remained steady, until 2014 when landings increased to 231 tonnes (Table 3.35.1). CPUE in Breiðafjörður was 447 kg in 2014 but has fluctuated in the range of 365–483 kg since 2006.

In harvesting this stock, it is important to keep in mind that the places with marketable quality sea urchins are limited in size so it is easy to overfish them. Very little is known about the sustainable yield of the green sea urchin in Icelandic waters and for this reason harvesting needs to be conducted and managed with caution.

2.36 Whales *Cetacea*

2.36.1 Whaling in Icelandic waters

Whaling has been conducted in Icelandic waters since 1883. After 1947, it was limited to the operation of a single whaling station in Hvalfjörður which supported four vessels each whaling season (June–September). In 1948–1985 the average catch was 234 fin whales and 68 sei whales annually, and 82 sperm whales in 1948–1982 (protected in the North Atlantic from 1983).

Minke whales were caught by small motor boats in Iceland for most of last century. The harvest was mostly on a small scale, catching a few dozen whales per year. In 1977–1985 the International Whaling Commission (IWC) set the annual TAC for the East Greenland/Iceland/Jan Mayen area, and in most years around 200 whales were allocated to Iceland (Table 3.36.1).

In 1986 the IWC declared a temporary moratorium on commercial whaling. In accordance with the International Whaling Convention, a limited number of fin and sei whales were caught for research purposes in 1986–1989. Also, a total of 200 minke whales were caught for research purposes from 2003–2007.

In 2006 Icelanders resumed commercial whaling, catching minke and fin whales. In December 2013 Iceland adopted a management plan that sets the annual TAC of minke and fin whales until 2018 in accordance with Marine Research Institute (MRI) recommendations.

In 2014 Icelanders caught 137 fin whales and the harvest took place mostly off the south coast, unlike in previous years. Only 24 minke whales were caught, which is the lowest number since minke whaling resumed in 2003 (Table 3.36.1).

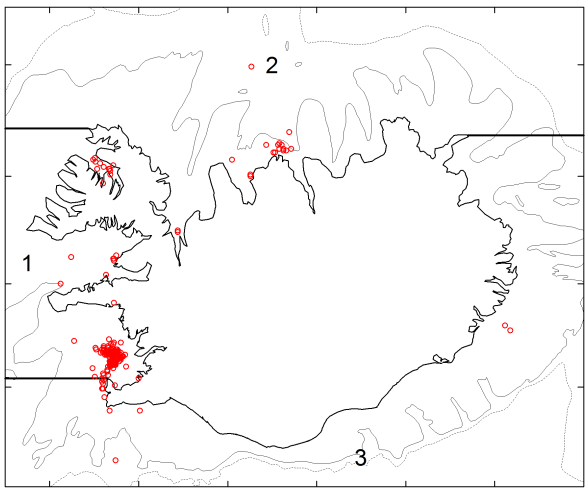
2.36.2 Whale surveys

MRI has, in cooperation with neighbouring countries in the North Atlantic, conducted whale surveys in 1987, 1989, 1995, 2001, and 2007. The survey design and analysis were overseen by the scientific committe of the North Atlantic Marine Mammal Commission (NAMMCO) and the results have been presented to the scientific committee of the IWC. These surveys have been the basis for stock assessments of minke and fin whales in Icelandic waters conducted by the scientific committees of NAMMCO and IWC. The abundance of fin whales has increased considerably since 1987, especially west of Iceland. The survey results also show a significant increase in the abundance of humpback whales. The abundance of minke whales, on the other hand, has declined considerably on the shelf in recent years. The next whale survey is planned in summer 2015.

2.36.3 Stock status and recommendations

2.36.3.1 Minke whale (*Balaenoptera acutorostrata*)

According to the IWC management system, there are three minke populations in the North Atlantic with summer distributions along West Greenland/Canada, East Greenland/Iceland/Jan Mayen (Central North Atlantic population), and Norway (Northeast Atlantic population). According to the assessment of the NAMMCO scientific committee, the stock size of the Mid-Atlantic population of minke whales is close to pre-exploitation levels. Thus, the whaling conducted last century seem to have had little impact on the stock size.

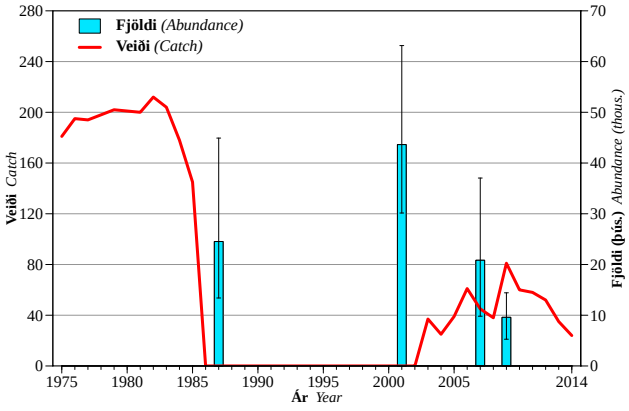


Hrefna. Veiðisvæði við Ísland 2006–2014 og skipting íslenska landgrunnsins í þrjú undirsvæði.

Minke whale. *Hunting grounds in 2006–2014, and division of the Icelandic continental shelf into three subareas.*

Since regular aerial surveys over the Icelandic shelf began in 1987, there have been considerable fluctuations in the estimated abundance of minke whales (Fig. 2.36.1). Based on the last survey in 2009, the estimated abundance of minke whales was 9 600 individuals (95% confidence interval 5 300–14 400). This is the lowest estimate since the surveys commenced in 1987, but it is important to note that aerial survey covers only a small part of the population area. The NAMMCO scientific committee discussed these findings in their annual meetings in 2008–2010 and concluded that this was most likely a temporary change in the distribution of minkes caused by changes in food availability rather than a massive decline in the stock. Furthermore, the scientific committee concluded that the limited whaling practised in Iceland could not account for such a dramatic change in the population.

In 2010–2011 the NAMMCO scientific committee investigated the status and sustainable yield of minke stocks in Icelandic waters. The assessment was based on the Revised Management Procedure (RMP) developed by the IWC and incorporated, among other data, the results of the surveys from 1987, 2001, 2007 and 2009. According to this assessment, annual catches of 229 minke whales are sustainable and consistent with a precautionary approach. Similarly, an annual catch of up to 121 minke whales is considered sustainable in the subarea around Jan Mayen (CM), partly within the Icelandic EEZ. If whaling is conducted in that subarea, whaling activities of all nations will have to be taken into account. This recommendation is consistent with that of the NAMMCO scientific committee.



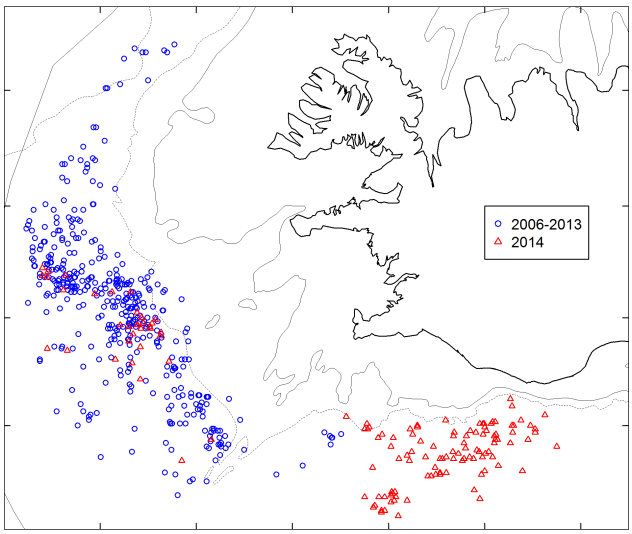
Mynd 2.36.1. **Hrefna.** Hrefnuveiðar og fjöldi hrefna á landgrunnssvæði Íslands, ásamt 95% öryggismörkum.

Figure 2.36.1. ***Minke whale.*** *Whaling and abundance of minke whales in the Icelandic continental shelf area, with 95% confidence intervals.*

Minke whale landings have been less than one third of the TAC in recent years. Based on the assessments described above, the MRI adviced recommended that the annual catch in 2014 and 2015 should be no more than 229 minke whales in the Icelandic shelf area and

121 minkes in the CM area. Formal assessments from the scientific committees of IWC and NAMMCO are planned in autumn 2015. The MRI will base its recommendations for 2016 on the results of these assessments.

2.36.3.2 Fin whale (*Balaenoptera physalus*)

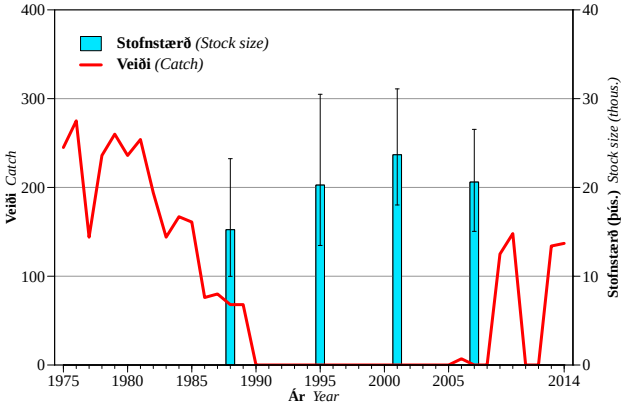


Langreyður. Veiðisvæði við Ísland 2006–2014.

Fin whale. *Hunting grounds in 2006–2014.*

The management of fin whaling in the North Atlantic has traditionally been based on seven management areas: 1) Nova Scotia, 2) Newfoundland/Labrador, 3) West Greenland, 4) East Greenland/Iceland (EGI), 5) Northern Norway, 6) Western Norway/Faroes, and 7) British Isles/Spain/Portugal.

Since the commencement of regular Icelandic whale surveys in 1987, the fin whale population has increased, especially west of Iceland (Fig. 2.36.2). In 1987–2001 the estimated stock size increased by 4% annually in the total EGI region, but 10% annually in the area between Iceland and Greenland.



Mynd 2.36.2. **Langreyður.** Langreyðaveiðar og stofnstærð (Austur-Grænlands–Íslands stofn) langreyðar, ásamt 95% öryggismörkum.

Figure 2.36.2. ***Fin whale.*** *Whaling and stock size (East Greenland–Iceland stock) of fin whales, with 95% confidence intervals.*

The 2007 survey results indicate an abundance of 20 600 fin whales (95% confidence interval 15 100–26 500) in the EGI region. This estimate is not significantly different than that of 2001. In 2007–2009 the IWC scientific committee conducted a formal assessment of the fin whale populations in the North Atlantic according to the RMP. Due to uncertainty about the population structure the committee opted for a precautionary approach and formulated their advice on the basis of a distinct subpopulation in the traditional whaling area west and south of Iceland. The results of this assessment agree with older assessments, that the EGI population is near the size it was before whaling began in the region.

A special working group within the IWC discussed the status and sustainable yield of the fin whale population in Icelandic waters in 2010 and the NAMMCO scientific committee conducted an assessment of the population in April 2010. The estimate of sustainable yield is partly based on the surveys from 1987, 1989, 1995, 2001 and 2007. According to the assessment, annual whaling of up to 154 fin whales is sustainable and in accordance with a precautionary approach on the traditional whaling grounds west of Iceland.

The scientific committees of NAMMCO and the IWC plan to complete their stock assessment for fin whales in the North Atlantic later this year and the MRI will present advice for 2016 based on that assessment.

2.36.3.3 Sei whale (*Balaenoptera borealis*)

According to the 1995 survey there were about 9 200 sei whales in the survey area in the North Atlantic, thereof, about 8 800 in the Icelandic area. Due to the southerly distribution of the species the 1989 survey is thought to have covered a larger proportion of the population, estimating about 10 500 sei whales to the west and southwest of Iceland.

For many decades until 1988 sei whales of the Central North Atlantic population were caught only in Iceland. It is likely that the population sustained this harvest, consisting of only about 0.6% of the estimated population. The sustainable yield of the population has not been formally estimated nor have harvest control rules been developed for allocating a TAC. Such an assessment is on the agenda of the IWC scientific committee.

2.37 Seals *Phocidae*

2.37.1 Seal hunting

Only harbor seals and grey seals are permanent inhabitants of Icelandic waters. In addition, there are a few migratory species that come regularly into Icelandic waters.

Seals are hunted around the country, in addition to a good number that are caught accidentally in fishing nets (Table 3.37.1). Historically, hunting targeted mostly pups for their skins, but older seals and migratory seals were sometimes hunted. The seal hunt decreased sharply in the late 1970s following a crash in the foreign market for seal skins. After the formation of the Ring Worm Committee in 1982, which paid a bounty for seals, hunting increased again, as did the proportion of older seals hunted. At first, bounties were paid for all seals, but after 1989 only grey seal hunters got the bounty. Hunting of mature harbor seals declined rapidly as a result.

Beginning in 1986 seal hunting decreased and in 2002–2012 registered carcasses (including from bycatch) numbered less than 1 000 animals. Records are imperfect, however, since they are not required by law. While it is known that seals are hunted by the owners of salmon rivers, the number of animals caught are unknown.

In seal data from past years there is no distinction made between hunted seals and those caught as bycatch. Most seal data has covered only animals that had been sold or otherwise paid for directly. Information about catches for personal use are, therefore, not usually recorded.

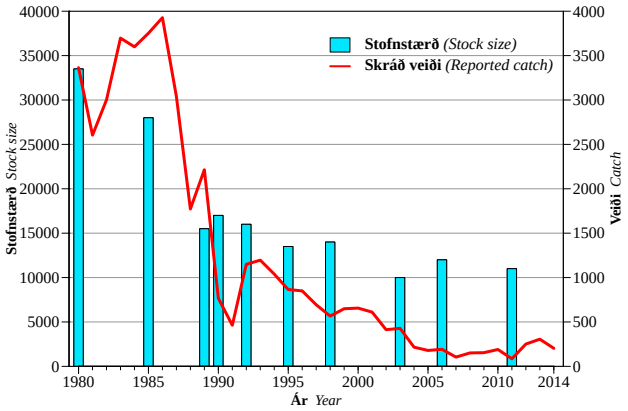
All marine mammals caught as bycatch must be recorded in logbooks. Since 2002, there has been an emphasis on recording of these data on gillnet boats because 2–7% of them report catching seals each year. In 2014 the Icelandic Marine Research Institute (MRI) conducted an evaluation of the amount of marine mammals and seabirds in bycatch which found that bycatch of this sort consisted of 705 harbor seals and 140 grey seals in 2013. Since gillnetting has decreased in the last decade, it is expected that bycatch was much greater in the past.

Seal research in Iceland is conducted by the Icelandic Seal Centre in Hvammstangi and the MRI is the formal advisory body for the government. This arrangement has caused difficulties for the MRI in its advisory role. Data from recent years is not dependable and it is very important that all seals caught (directly and indirectly) be recorded in order that a proper hunting mortality rate, the status and trends in the population can be monitored. A good first step to this end would be the enactment of a legal requirement to record all seal catches.

2.37.2 Status and yield capacity of Icelandic seals

2.37.2.1 Harbor seal (*Phoca vitulina*)

Harbor seals were last counted in July–September of 2011 with an improved method in which the researcher flies over large haul-outs three times and small haul-outs twice. This method is thought to give a more accurate count of harbor seals. The population was estimated at 11 000 animals (95% confidence interval 8–15 thous.) which is the same as in counts in the summer of 2003 and 2006 (Fig. 2.37.1). The population was estimated approximately 34 000 animals in 1980 and decreased annually on average by about 4% until 2003. The largest decrease in harbor seal numbers occurred, however, in the later part of the 1980s when the population declined by about 10 000 animals.



Mynd 2.37.1. **Landselur.** Skráð veiði og áætluð stofnstærð.

Figure 2.37.1. ***Harbour seal.*** *Reported catch and estimated stock size.*

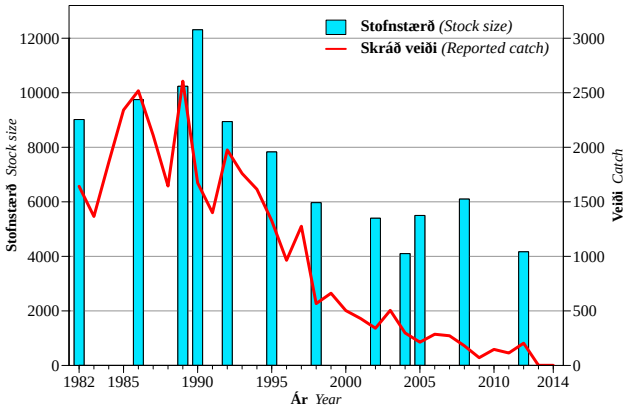
In the 1990s the decline slowed a the same time as hunting decreased. Unintended deaths (bycatch in nets) remain substantial despite decreasing in number over the last decade. In 2014 a survey of known haul-outs was conducted, though funding was not approved for a full count. The survey revealed a decrease of as much as 30%. Since unintentional deaths are believed to have decreased recently and hunting has also declined, the likely cause of the observed decline is either unrecorded catches or unfavorable environmental changes.

In 2010 a management plan was drafted for the harbor seal population in Iceland. The decision was made to keep the population at or above the size it was in 2006 when it was estimated at 12 000 animals. If the population decreases considerably strict measures will be taken to curb the decline and encourage increase. The government does not provide a definition of a considerable decrease. If, for example, a decrease of one fourth is considerable, there is a 15% chance that the population was below that mark at the time of the last count. The partial count in 2014 indicates that this likelihood has increased since then.

A total count is planned for the summer of 2015. It is important to monitor Icelandic harbor seal populations but it is also important to improve the recording of all seal deaths. The MRI does not have enough data to assess whether or not the current population is in accordance with the governmental management plan of 2010.

2.37.2.2 Grey seal (*Halichoerus grypus*)

Grey seal pups were surveyed by aerial count in autumn, 2012 and estimated to be 990 (95% confidence interval 900–1 070), which means a population estimate of 4 200 (95% confidence interval 3 400–5 000). In counts conducted in 2008 and 2009 grey seal pups were estimated at 1 540 (95% confidence interval 1 480–1 580) and the estimated population was 6 100 (95% confidence interval 4 600–7 600). The population has, therefore decreased considerably since 2008/2009 and has decreased since 1990 when it was estimated at 12 000 animals (Fig. 2.37.2).



Mynd 2.37.2. **Útselur.** Skráð veiði og áætluð stofnstærð.

Figure 2.37.2. ***Grey seal.*** *Reported catch and estimated stock size.*

The survey method was improved in 2005 by counting rookeries more than once and correlating results with development stage of pups. This change needs to be kept in mind during data analysis. While it is clear that hunting pressure in the 1990s exceeded the yield capacity of the species, it has decreased significantly in recent years (Fig. 2.37.2). The population in 2012 was the smallest since 2004, though the change since 2000 is not statistically significant. It is not clear what caused this decrease but poaching by fishing vessels is likely and reporting of such catches needs to be improved.

In 2005 the government adopted a management plan for the grey seal in Icelandic waters that aims to maintain the population size of about 4 100 animals from 2004. If the population decreases significantly measures will be taken to reverse the trend. The population is currently just above the described threshold. There is a 0.1% chance that the population has decreased by more than 25% below this threshold in 2012 (that is, below 3 075 animals).

The MRI reiterates the necessity of monitoring the grey seal population in the coming years, with regular total counts and improvements to logbook records of seal catches. If such monitoring is not conducted, the MRI cannot evaluate whether the stock status is in compliance with the 2005 management plan.

3 Töflur *Tables*

TAFLA 3.1.1
Þorskur. Afli á Íslandsmiðum (í tonnum).
Cod. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*	Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1905	44 775	47 355	92 130	1960	295 668	169 355	465 023
1906	48 302	58 441	106 743	1961	233 874	141 042	374 916
1907	53 868	62 838	116 706	1962	221 820	165 056	386 876
1908	58 259	66 704	124 963	1963	232 839	177 211	410 050
1909	56 670	58 831	115 501	1964	273 584	160 021	433 605
1910	71 007	62 595	133 602	1965	233 483	160 153	393 636
1911	75 114	77 762	152 876	1966	223 974	132 781	356 755
1912	75 499	79 477	154 976	1967	193 449	151 573	345 022
1913	79 870	95 110	174 980	1968	227 594	153 476	381 070
1914	53 473	135 025	188 498	1969	281 680	124 731	406 411
1915	66 030	70 069	136 099	1970	302 875	167 882	470 757
1916	68 848	43 975	112 823	1971	250 324	202 728	453 052
1917	61 413	23 305	84 718	1972	225 354	173 174	398 528
1918	62 093	41 073	103 156	1973	238 898	144 548	383 446
1919	76 766	79 967	156 733	1974	238 066	136 704	374 770
1920	82 766	127 972	210 738	1975	264 975	106 016	370 991
1921	90 632	128 735	219 367	1976	280 831	67 018	347 849
1922	103 436	175 568	279 004	1977	329 676	10 374	340 050
1923	127 320	116 328	243 648	1978	319 648	10 742	330 390
1924	161 797	158 004	319 801	1979	360 080	7 984	368 064
1925	166 538	165 698	332 236	1980	428 344	6 000	434 344
1926	126 890	174 304	301 194	1981	460 579	8 080	468 659
1927	164 783	178 295	343 078	1982	382 297	6 090	388 387
1928	177 328	186 943	364 271	1983	293 890	6 166	300 056
1929	201 074	197 738	398 812	1984	281 481	2 341	283 822
1930	261 278	237 157	498 435	1985	322 810	2 457	325 267
1931	224 504	258 898	483 402	1986	365 852	2 781	368 633
1932	208 081	277 207	485 288	1987	389 808	2 445	392 257
1933	247 329	270 946	518 275	1988	375 741	2 335	378 076
1934	223 729	214 840	438 569	1989	353 630	2 324	355 954
1935	182 926	218 965	401 891	1990	333 348	2 042	335 390
1936	102 354	181 232	283 586	1991	306 689	1 871	308 560
1937	111 285	186 531	297 816	1992	266 662	1 105	267 767
1938	131 965	179 351	311 316	1993	251 170	809	251 979
1939	136 782	61 569	198 351	1994	177 919	890	178 809
1940	147 347	0	147 347	1995	168 685	739	169 424
1941	156 242	0	156 242	1996	181 052	606	181 658
1942	173 146	0	173 146	1997	202 745	408	203 153
1943	186 017	0	186 017	1998	241 545	1 087	242 632
1944	216 677	0	216 677	1999	258 658	1 394	260 052
1945	211 849	4 098	215 947	2000	234 362	1 325	235 687
1946	199 165	38 772	237 937	2001	234 085	1 289	235 374
1947	200 242	45 955	246 197	2002	207 466	1 311	208 777
1948	213 177	80 157	293 334	2003	200 443	7 108	207 551
1949	221 419	93 135	314 554	2004	220 057	7 532	227 589
1950	197 433	152 922	350 355	2005	207 972	5 612	213 584
1951	183 252	165 230	348 482	2006	193 413	2 863	196 276
1952	237 314	162 629	399 943	2007	166 912	3 710	170 622
1953	263 516	262 545	526 061	2008	143 785	2 794	146 579
1954	306 191	241 339	547 530	2009	181 309	1 112	182 421
1955	315 438	222 692	538 130	2010	167 632	1 521	169 153
1956	292 586	188 123	480 709	2011	169 638	2 062	171 700
1957	247 087	204 822	451 909	2012	193 846	1 980	195 826
1958	284 407	224 276	508 683	2013	221 569	1 705	223 274
1959	284 259	168 245	452 504	2014	219 682	1 661	221 343

http://data.hafro.is/assmt/2015/cod/landings.csv

TAFLA 3.1.2
Þorskur. Skipting aflans í fjölda eftir aldri (í milljónum).
Cod. *Catch in numbers at age (in millions).*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1955	4.790	25.164	46.566	28.287	10.541	5.224	2.467	25.182	2.101	1.202	1.668	0.665
1956	6.709	17.265	31.030	27.793	14.389	4.261	3.429	2.128	16.820	1.552	1.522	1.545
1957	13.240	21.278	17.515	24.569	17.634	12.296	3.568	2.169	1.171	6.822	0.512	1.089
1958	25.237	30.742	14.298	10.859	15.997	15.822	12.021	2.003	2.125	0.771	3.508	0.723
1959	18.394	37.650	23.901	7.682	5.883	8.791	13.003	7.683	0.914	0.990	0.218	1.287
1960	14.830	28.642	27.968	14.120	8.387	6.089	6.393	11.600	3.526	0.692	0.183	0.510
1961	16.507	21.808	19.488	15.034	7.900	6.925	3.969	3.211	6.756	1.202	0.089	0.425
1962	13.514	28.526	18.924	14.650	12.045	4.276	8.809	2.664	1.883	2.988	0.405	0.324
1963	18.507	28.466	19.664	11.314	15.682	7.704	2.724	6.508	1.657	1.030	1.372	0.246
1964	19.287	28.845	18.712	11.620	7.936	18.032	5.040	1.437	2.670	0.655	0.370	1.025
1965	21.658	29.586	24.783	11.706	9.334	6.394	11.122	1.477	0.823	0.489	0.118	0.489
1966	17.910	30.649	20.006	13.872	5.942	7.586	2.320	5.583	0.407	0.363	0.299	0.311
1967	25.945	27.941	24.322	11.320	8.751	2.595	5.490	1.392	1.998	0.109	0.030	0.106
1968	11.933	47.311	22.344	16.277	15.590	7.059	1.571	2.506	0.512	0.659	0.047	0.098
1969	11.149	23.925	45.445	17.397	12.559	14.811	1.590	0.475	0.340	0.064	0.024	0.021
1970	9.876	47.210	23.607	25.451	15.196	12.261	14.469	0.567	0.207	0.147	0.035	0.050
1971	13.060	35.856	45.577	21.135	17.340	10.924	6.001	4.210	0.237	0.069	0.038	0.020
1972	8.973	29.574	30.918	22.855	11.097	9.784	10.538	3.938	1.242	0.119	0.031	0.001
1973	36.538	25.542	27.391	17.045	12.721	3.685	4.718	5.809	1.134	0.282	0.007	0.001
1974	14.846	61.826	21.824	14.413	8.974	6.216	1.647	2.530	1.765	0.334	0.062	0.028
1975	29.301	29.489	44.138	12.088	9.628	3.691	2.051	0.752	0.891	0.416	0.060	0.046
1976	23.578	39.790	21.092	24.395	5.803	5.343	1.297	0.633	0.205	0.155	0.065	0.029
1977	2.614	42.659	32.465	12.162	13.017	2.809	1.773	0.421	0.086	0.024	0.006	0.002
1978	5.999	16.287	43.931	17.626	8.729	4.119	0.978	0.348	0.119	0.048	0.015	0.027
1979	7.186	28.427	13.772	34.443	14.130	4.426	1.432	0.350	0.168	0.043	0.024	0.004
1980	4.348	28.530	32.500	15.119	27.090	7.847	2.228	0.646	0.246	0.099	0.025	0.004
1981	2.118	13.297	39.195	23.247	12.710	26.455	4.804	1.677	0.582	0.228	0.053	0.068
1982	3.285	20.812	24.462	28.351	14.012	7.666	11.517	1.912	0.327	0.094	0.043	0.011
1983	3.554	10.910	24.305	18.944	17.382	8.381	2.054	2.733	0.514	0.215	0.064	0.037
1984	6.750	31.553	19.420	15.326	8.082	7.336	2.680	0.512	0.538	0.195	0.090	0.036
1985	6.457	24.552	35.392	18.267	8.711	4.201	2.264	1.063	0.217	0.233	0.102	0.038
1986	20.642	20.330	26.644	30.839	11.413	4.441	1.771	0.805	0.392	0.103	0.076	0.044
1987	11.002	62.130	27.192	15.127	15.695	4.159	1.463	0.592	0.253	0.142	0.046	0.058
1988	6.713	39.323	55.895	18.663	6.399	5.877	1.345	0.455	0.305	0.157	0.114	0.025
1989	2.605	27.983	50.059	31.455	6.010	1.915	0.881	0.225	0.107	0.086	0.038	0.005
1990	5.785	12.313	27.179	44.534	17.037	2.573	0.609	0.322	0.118	0.050	0.015	0.020
1991	8.554	25.131	15.491	21.514	25.038	6.364	0.903	0.243	0.125	0.063	0.011	0.012
1992	12.217	21.708	26.524	11.413	10.073	8.304	2.006	0.257	0.046	0.032	0.009	0.008
1993	20.500	33.078	15.195	13.281	3.583	2.785	2.707	1.181	0.180	0.034	0.011	0.013
1994	6.160	24.142	19.666	6.968	4.393	1.257	0.599	0.508	0.283	0.049	0.018	0.006
1995	10.770	9.103	16.829	13.066	4.115	1.596	0.313	0.184	0.156	0.141	0.029	0.008
1996	5.356	14.886	7.372	12.307	9.429	2.157	0.837	0.208	0.076	0.065	0.055	0.005
1997	1.722	16.442	17.298	6.711	7.379	5.958	1.147	0.493	0.126	0.028	0.037	0.021
1998	3.458	7.707	25.394	20.167	5.893	3.856	2.951	0.500	0.196	0.055	0.033	0.013
1999	2.525	19.554	15.226	24.622	12.966	2.795	1.489	0.748	0.140	0.046	0.010	0.005
2000	10.493	6.581	29.080	11.227	11.390	5.714	1.104	0.567	0.314	0.074	0.022	0.006
2001	11.338	25.040	9.311	19.471	5.620	3.929	2.017	0.452	0.202	0.118	0.013	0.009
2002	5.934	18.482	24.297	6.874	8.943	2.227	1.353	0.689	0.123	0.040	0.041	0.002
2003	3.950	16.160	21.874	18.145	5.063	4.419	1.124	0.401	0.172	0.034	0.020	0.015
2004	1.778	19.184	25.003	17.384	9.926	2.734	2.023	0.481	0.126	0.062	0.014	0.005
2005	5.102	5.125	26.749	16.980	8.339	4.682	1.292	0.913	0.203	0.089	0.025	0.002
2006	3.258	12.884	8.438	22.041	10.418	4.523	2.194	0.497	0.336	0.067	0.027	0.002
2007	2.074	11.961	15.948	8.280	9.593	5.428	2.205	1.229	0.366	0.198	0.053	0.010
2008	2.616	4.850	12.585	11.973	5.238	4.582	2.040	0.831	0.308	0.053	0.037	0.004
2009	3.660	8.150	9.480	17.330	10.060	3.910	2.290	0.770	0.310	0.090	0.020	0.010
2010	3.174	7.219	9.385	8.692	10.695	5.588	1.599	1.095	0.337	0.197	0.071	0.016
2011	4.780	7.257	9.284	10.735	6.032	6.152	2.361	0.666	0.459	0.151	0.041	0.010
2012	3.839	10.010	10.400	9.435	8.866	4.834	3.206	1.269	0.369	0.218	0.101	0.030
2013	5.141	12.299	14.846	11.212	7.358	5.643	2.688	1.930	0.675	0.289	0.156	0.052
2014	5.263	7.371	13.304	12.984	8.831	4.829	3.112	1.570	1.027	0.360	0.100	0.089

TAFLA 3.1.3
Þorskur. Meðalþyngd eftir aldri (g) í afla.
Cod. *Weight at age (g) from commercial catches.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1955	827	1 307	2 157	3 617	4 638	5 657	6 635	6 168	8 746	8 829	10 086	14 584
1956	1 080	1 600	2 190	3 280	4 650	5 630	6 180	6 970	6 830	9 290	10 965	12 954
1957	1 140	1 710	2 520	3 200	4 560	5 960	7 170	7 260	8 300	8 290	10 350	13 174
1958	1 210	1 810	3 120	4 510	5 000	5 940	6 640	8 290	8 510	8 840	9 360	13 097
1959	1 110	1 950	2 930	4 520	5 520	6 170	6 610	7 130	8 510	8 670	9 980	11 276
1960	1 060	1 720	2 920	4 640	5 660	6 550	6 910	7 140	7 970	10 240	10 100	12 871
1961	1 020	1 670	2 700	4 330	5 530	6 310	6 930	7 310	7 500	8 510	9 840	14 550
1962	990	1 610	2 610	3 900	5 720	6 660	6 750	7 060	7 540	8 280	10 900	12 826
1963	1 250	1 650	2 640	3 800	5 110	6 920	7 840	7 610	8 230	9 100	9 920	11 553
1964	1 210	1 750	2 640	4 020	5 450	6 460	8 000	9 940	9 210	10 940	12 670	15 900
1965	1 020	1 530	2 570	4 090	5 410	6 400	7 120	8 600	12 310	10 460	10 190	17 220
1966	1 170	1 680	2 590	4 180	5 730	6 900	7 830	8 580	9 090	14 230	14 090	17 924
1967	1 120	1 820	2 660	4 067	5 560	7 790	7 840	8 430	9 090	10 090	14 240	16 412
1968	1 170	1 590	2 680	3 930	5 040	5 910	7 510	8 480	10 750	11 580	14 640	16 011
1969	1 100	1 810	2 480	3 770	5 040	5 860	7 000	8 350	8 720	10 080	11 430	13 144
1970	990	1 450	2 440	3 770	4 860	5 590	6 260	8 370	10 490	12 310	14 590	21 777
1971	1 090	1 570	2 310	2 980	4 930	5 150	5 580	6 300	8 530	11 240	14 740	17 130
1972	980	1 460	2 210	3 250	4 330	5 610	6 040	6 100	6 870	8 950	11 720	16 000
1973	1 030	1 420	2 470	3 600	4 900	6 110	6 670	6 750	7 430	7 950	10 170	17 000
1974	1 050	1 710	2 430	3 820	5 240	6 660	7 150	7 760	8 190	9 780	12 380	14 700
1975	1 100	1 770	2 780	3 760	5 450	6 690	7 570	8 580	8 810	9 780	10 090	11 000
1976	1 350	1 780	2 650	4 100	5 070	6 730	8 250	9 610	11 540	11 430	14 060	16 180
1977	1 259	1 911	2 856	4 069	5 777	6 636	7 685	9 730	11 703	14 394	17 456	24 116
1978	1 289	1 833	2 929	3 955	5 726	6 806	9 041	10 865	13 068	11 982	19 062	21 284
1979	1 408	1 956	2 642	3 999	5 548	6 754	8 299	9 312	13 130	13 418	13 540	20 072
1980	1 392	1 862	2 733	3 768	5 259	6 981	8 037	10 731	12 301	17 281	14 893	19 069
1981	1 180	1 651	2 260	3 293	4 483	5 821	7 739	9 422	11 374	12 784	12 514	19 069
1982	1 006	1 550	2 246	3 104	4 258	5 386	6 682	9 141	11 963	14 226	17 287	16 590
1983	1 095	1 599	2 275	3 021	4 096	5 481	7 049	8 128	11 009	13 972	15 882	18 498
1984	1 288	1 725	2 596	3 581	4 371	5 798	7 456	9 851	11 052	14 338	15 273	16 660
1985	1 407	1 971	2 576	3 650	4 976	6 372	8 207	10 320	12 197	14 683	16 175	19 050
1986	1 459	1 961	2 844	3 593	4 635	6 155	7 503	9 084	10 356	15 283	14 540	15 017
1987	1 316	1 956	2 686	3 894	4 716	6 257	7 368	9 243	10 697	10 622	15 894	12 592
1988	1 438	1 805	2 576	3 519	4 930	6 001	7 144	8 822	9 977	11 732	14 156	13 042
1989	1 186	1 813	2 590	3 915	5 210	6 892	8 035	9 831	11 986	10 003	12 611	16 045
1990	1 290	1 704	2 383	3 034	4 624	6 521	8 888	10 592	10 993	14 570	15 732	17 290
1991	1 309	1 899	2 475	3 159	3 792	5 680	7 242	9 804	9 754	14 344	14 172	20 200
1992	1 289	1 768	2 469	3 292	4 394	5 582	6 830	8 127	12 679	13 410	15 715	11 267
1993	1 392	1 887	2 772	3 762	4 930	6 054	7 450	8 641	10 901	12 517	14 742	16 874
1994	1 443	2 063	2 562	3 659	5 117	6 262	7 719	8 896	10 847	12 874	14 742	17 470
1995	1 348	1 959	2 920	3 625	5 176	6 416	7 916	10 273	11 022	11 407	13 098	15 182
1996	1 457	1 930	3 132	4 141	4 922	6 009	7 406	9 772	10 539	13 503	13 689	16 194
1997	1 484	1 877	2 878	4 028	5 402	6 386	7 344	8 537	10 797	11 533	10 428	12 788
1998	1 230	1 750	2 458	3 559	5 213	7 737	7 837	9 304	10 759	14 903	16 651	18 666
1999	1 241	1 716	2 426	3 443	4 720	6 352	8 730	9 946	11 088	12 535	14 995	15 151
2000	1 308	1 782	2 330	3 252	4 690	5 894	7 809	9 203	10 240	11 172	13 172	17 442
2001	1 499	2 050	2 649	3 413	4 766	6 508	7 520	9 055	8 769	9 526	11 210	13 874
2002	1 294	1 926	2 656	3 680	4 720	6 369	7 808	9 002	10 422	13 402	9 008	16 893
2003	1 265	1 790	2 424	3 505	4 455	5 037	5 980	7 819	8 802	10 712	12 152	13 797
2004	1 257	1 771	2 323	3 312	4 269	5 394	5 872	7 397	10 808	11 569	13 767	12 955
2005	1 194	1 712	2 374	3 435	4 392	5 201	6 200	5 495	7 211	9 909	12 944	18 151
2006	1 070	1 614	2 185	3 052	4 347	5 177	5 382	5 769	6 258	5 688	7 301	15 412
2007	1 083	1 556	2 144	2 754	3 920	5 255	6 272	6 481	7 142	6 530	9 724	10 143
2008	1 162	1 627	2 318	3 120	3 846	5 367	6 771	7 648	8 282	11 181	14 266	17 320
2009	1 109	1 680	2 204	3 206	4 098	4 884	6 744	8 505	10 126	12 108	12 471	15 264
2010	1 131	1 769	2 334	3 161	4 422	5 498	6 552	7 945	8 913	10 090	10 417	13 489
2011	1 163	1 795	2 615	3 471	4 469	5 850	6 742	7 850	8 810	9 797	13 534	13 033
2012	1 256	1 667	2 448	3 728	4 713	5 894	7 616	8 358	9 543	10 916	10 884	11 758
2013	1 245	1 721	2 477	3 557	4 930	6 161	7 517	8 412	9 332	9 923	11 194	12 687
2014	1 222	1 790	2 535	3 431	4 565	6 043	7 544	9 178	9 713	10 513	11 437	12 979
2015[1)]	1 421	1 814	2 757	3 542	4 673	6 039	8 145	9 187	9 722	10 523	11 448	12 992

[1)] Áætlað. *Estimated.*

TAFLA 3.1.4

Þorskur. Meðalþyngd eftir aldri (g) í hrygningarstofni. Mat á meðalþyngd kynþroska þorsks 4–7 ára er byggt á stofnmælingu botnfiska í mars en fyrir 8 ára og eldri er stuðst við gögn úr afla.

Cod. *Weight at age (g) in the spawning stock. The estimate for ages 4–7 is based on data from the groundfish survey in March, but age 8 and older are based on commercial catch data.*

Ár	Aldur *Age*										
Year	4	5	6	7	8	9	10	11	12	13	14
1955	1 019	1 833	3 183	4 128	5 657	6 635	6 168	8 746	8 829	10 086	14 584
1956	1 248	1 862	2 886	4 138	5 630	6 180	6 970	6 830	9 290	10 965	12 954
1957	1 334	2 142	2 816	4 058	5 960	7 170	7 260	8 300	8 290	10 350	13 174
1958	1 412	2 652	3 969	4 450	5 940	6 640	8 290	8 510	8 840	9 360	13 097
1959	1 521	2 490	3 978	4 913	6 170	6 610	7 130	8 510	8 670	9 980	11 276
1960	1 342	2 482	4 083	5 037	6 550	6 910	7 140	7 970	10 240	10 100	12 871
1961	1 303	2 295	3 810	4 922	6 310	6 930	7 310	750	8 510	9 840	14 550
1962	1 256	2 218	3 432	5 091	6 660	6 750	7 060	7 540	8 280	10 900	12 826
1963	1 287	2 244	3 344	4 548	6 920	7 840	7 610	8 230	9 100	9 920	11 553
1964	1 365	2 244	3 538	4 850	6 460	8 000	9 940	9 210	10 940	12 670	15 900
1965	1 193	2 184	3 599	4 815	6 400	7 120	8 600	12 310	10 460	10 190	17 220
1966	1 310	2 202	3 678	5 100	6 900	7 830	8 580	9 090	14 230	14 090	17 924
1967	1 420	2 261	3 579	4 948	7 790	7 840	8 430	9 090	10 090	14 240	16 412
1968	1 240	2 278	3 458	4 486	5 910	7 510	8 480	10 750	11 580	14 640	16 011
1969	1 412	2 108	3 318	4 486	5 860	7 000	8 350	8 720	10 080	11 430	13 144
1970	1 131	2 074	3 318	4 325	5 590	6 260	8 370	10 490	12 310	14 590	21 777
1971	1 225	1 964	2 622	4 388	5 150	5 580	6 300	8 530	11 240	14 740	17 130
1972	1 139	1 878	2 860	3 854	5 610	6 040	6 100	6 870	8 950	11 720	16 000
1973	1 108	2 100	3 168	4 361	6 110	6 670	6 750	7 430	7 950	10 170	17 000
1974	1 334	2 066	3 362	4 664	6 660	7 150	7 760	8 190	9 780	12 380	14 700
1975	1 381	2 363	3 309	4 850	6 690	7 570	8 580	8 810	9 780	10 090	11 000
1976	1 388	2 252	3 608	4 512	6 730	8 250	9 610	11 540	11 430	14 060	16 180
1977	1 491	2 428	3 581	5 142	6 636	7 685	9 730	11 703	14 394	17 456	24 116
1978	1 430	2 490	3 480	5 096	6 806	9 041	10 865	13 068	11 982	19 062	21 284
1979	1 526	2 246	3 519	4 938	6 754	8 299	9 312	13 130	13 418	13 540	20 072
1980	1 452	2 323	3 316	4 681	6 981	8 037	10 731	12 301	17 281	14 893	19 069
1981	1 288	1 921	2 898	3 990	5 821	7 739	9 422	11 374	12 784	12 514	19 069
1982	1 209	1 909	2 732	3 790	5 386	6 682	9 141	11 963	14 226	17 287	16 590
1983	1 247	1 934	2 658	3 645	5 481	7 049	8 128	11 009	13 972	15 882	18 498
1984	1 346	2 207	3 151	3 890	5 798	7 456	9 851	11 052	14 338	15 273	16 660
1985	1 382	1 752	2 710	3 443	4 675	7 220	10 320	12 197	14 683	16 175	19 050
1986	1 604	2 892	3 234	4 572	5 805	7 247	9 084	10 356	15 283	14 540	15 017
1987	1 589	2 426	3 516	4 879	6 459	7 656	9 243	10 697	10 622	15 894	12 592
1988	1 480	2 263	3 273	4 387	4 566	8 275	8 822	9 977	11 732	14 156	13 042
1989	1 501	2 346	3 428	4 676	7 388	8 506	9 831	11 986	10 003	12 611	16 045
1990	1 043	2 179	2 809	4 421	6 359	9 230	10 592	10 993	14 570	15 732	17 290
1991	1 286	2 042	2 752	3 404	6 091	9 152	9 804	9 754	14 344	14 172	20 200
1992	1 344	2 096	3 029	3 755	5 143	7 562	8 127	12 679	13 410	15 715	11 267
1993	1 363	2 309	3 236	4 111	5 710	6 352	8 641	10 901	12 517	14 742	16 874
1994	1 728	2 253	3 341	4 515	6 535	10 039	8 896	10 847	12 874	14 742	17 470
1995	1 636	2 346	3 186	4 488	5 528	8 620	10 273	11 022	11 407	13 098	15 182
1996	1 754	2 491	3 534	4 254	5 634	8 300	9 772	10 539	13 503	13 689	16 193
1997	1 347	2 267	3 746	5 426	5 972	6 958	8 537	10 797	11 533	10 428	12 788
1998	1 821	2 261	3 263	4 468	5 784	6 812	9 304	10 759	14 903	16 651	18 666
1999	1 467	1 933	2 997	3 961	5 120	6 494	9 946	11 088	12 535	14 995	15 151
2000	1 355	1 916	2 881	4 318	5 580	8 497	9 203	10 240	11 172	13 172	17 442
2001	1 583	2 108	2 700	4 086	6 202	6 907	9 055	8 769	9 526	11 210	13 874
2002	1 590	2 259	3 120	3 985	5 958	9 234	9 002	10 422	13 402	9 008	16 893
2003	1 324	2 239	3 052	4 231	5 057	6 838	7 819	8 802	10 712	12 152	13 797
2004	1 430	2 099	3 049	3 743	5 319	5 682	7 397	10 808	11 569	13 767	12 955
2005	1 120	1 898	2 962	3 875	4 806	7 281	5 495	7 211	9 909	12 944	18 151
2006	1 384	1 999	2 907	4 384	5 122	6 536	5 769	6 258	5 688	7 301	15 412
2007	1 264	2 022	2 582	4 081	5 725	6 736	6 481	7 142	6 530	9 724	10 143
2008	1 842	2 232	2 925	3 915	5 462	7 075	7 648	8 282	11 181	14 266	17 320
2009	1 441	2 028	2 873	3 913	4 919	7 046	8 505	10 126	12 108	12 471	15 264
2010	1 588	2 153	3 131	4 173	5 197	6 356	7 945	8 913	10 090	10 417	13 489
2011	2 377	2 651	3 203	4 517	6 000	6 866	7 850	8 810	9 797	13 534	13 033
2012	1 698	2 594	3 683	4 483	5 921	7 988	8 358	9 543	10 916	10 884	11 758
2013	2 282	2 983	3 827	5 206	6 543	8 298	8 415	9 336	9 926	11 195	12 691
2014	1 333	2 539	3 307	4 460	6 424	8 225	8 413	9 713	10 513	11 437	12 979
2015[1)]	1 047	3 311	3 833	4 902	6 240	8 728	9 705	9 722	10 523	11 448	12 992

[1)] Áætlað. *Estimated.*

TAFLA 3.1.5
Þorskur. Hlutfall kynþroska eftir aldri í stofnmælingu botnfiska í mars.
Cod. *Maturity at age in the groundfish survey in March.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1985	0.00	0.02	0.18	0.41	0.50	0.74	0.57	1.00	1.00	1.00	1.00	1.00
1986	0.00	0.02	0.15	0.40	0.68	0.73	0.94	0.96	0.99	1.00	1.00	1.00
1987	0.00	0.03	0.09	0.36	0.49	0.88	0.78	1.00	0.98	1.00	1.00	1.00
1988	0.01	0.03	0.22	0.51	0.45	0.68	0.94	0.95	0.97	0.82	1.00	1.00
1989	0.01	0.02	0.14	0.37	0.64	0.65	0.63	0.99	1.00	0.90	0.86	1.00
1990	0.01	0.01	0.16	0.44	0.58	0.80	0.81	0.99	1.00	1.00	1.00	1.00
1991	0.00	0.06	0.15	0.37	0.64	0.79	0.68	0.84	1.00	1.00	1.00	1.00
1992	0.00	0.06	0.26	0.40	0.81	0.92	0.89	1.00	1.00	1.00	1.00	1.00
1993	0.01	0.08	0.27	0.46	0.69	0.80	0.84	0.97	1.00	1.00	1.00	1.00
1994	0.01	0.11	0.34	0.59	0.70	0.92	0.70	0.85	0.98	1.00	1.00	1.00
1995	0.00	0.11	0.38	0.53	0.75	0.79	0.86	1.00	1.00	1.00	1.00	1.00
1996	0.00	0.03	0.19	0.50	0.65	0.73	0.81	1.00	1.00	0.99	0.97	1.00
1997	0.01	0.04	0.25	0.42	0.68	0.79	0.80	0.93	1.00	0.91	1.00	1.00
1998	0.00	0.06	0.21	0.49	0.78	0.81	0.81	0.92	1.00	1.00	1.00	1.00
1999	0.01	0.04	0.24	0.52	0.65	0.84	0.69	0.99	1.00	1.00	1.00	1.00
2000	0.00	0.06	0.25	0.51	0.61	0.87	1.00	0.98	1.00	1.00	1.00	1.00
2001	0.00	0.04	0.26	0.59	0.75	0.74	0.86	0.99	1.00	1.00	1.00	1.00
2002	0.01	0.09	0.32	0.66	0.76	0.92	0.55	0.98	1.00	1.00	1.00	1.00
2003	0.00	0.05	0.22	0.52	0.87	0.80	0.86	1.00	1.00	1.00	1.00	1.00
2004	0.00	0.04	0.25	0.55	0.63	0.84	0.82	0.99	1.00	1.00	1.00	1.00
2005	0.00	0.11	0.28	0.49	0.79	0.80	0.95	0.91	1.00	1.00	1.00	1.00
2006	0.00	0.02	0.29	0.45	0.75	0.87	0.74	0.75	1.00	1.00	1.00	1.00
2007	0.01	0.03	0.16	0.50	0.69	0.78	0.84	0.92	1.00	1.00	1.00	1.00
2008	0.00	0.04	0.28	0.55	0.73	0.83	0.85	0.95	1.00	1.00	1.00	1.00
2009	0.00	0.02	0.13	0.46	0.69	0.88	0.74	0.63	1.00	1.00	1.00	1.00
2010	0.00	0.02	0.06	0.38	0.82	0.87	0.92	0.80	1.00	1.00	1.00	1.00
2011	0.00	0.01	0.14	0.43	0.73	0.93	0.94	0.96	1.00	1.00	1.00	1.00
2012	0.00	0.03	0.13	0.41	0.73	0.88	0.96	0.83	1.00	1.00	1.00	1.00
2013	0.00	0.01	0.06	0.34	0.74	0.92	0.96	1.00	1.00	1.00	1.00	1.00
2014	0.00	0.03	0.07	0.24	0.61	0.89	0.97	0.96	1.00	1.00	1.00	1.00
2015	0.00	0.01	0.11	0.35	0.64	0.91	0.98	0.99	1.00	1.00	1.00	1.00

TAFLA 3.1.6
Þorskur. Aldursskiptar vísitölur (í fjölda) úr stofnmælingu botnfiska í mars.
Cod. *Age disaggregated indices (in numbers) from the groundfish survey in March.*

Ár	Aldur *Age*									
Year	1	2	3	4	5	6	7	8	9	10
1985	16.54	110.48	35.41	48.25	64.59	22.95	15.26	5.04	3.39	1.84
1986	15.07	60.58	95.95	22.46	21.51	27.44	7.17	2.80	0.93	0.82
1987	3.65	28.29	104.44	82.67	21.41	12.76	12.94	2.79	0.98	0.42
1988	3.45	7.06	72.51	103.56	69.54	8.39	6.41	7.23	0.67	0.28
1989	4.04	16.40	22.06	79.90	74.16	39.11	4.85	1.71	1.42	0.27
1990	5.56	11.79	26.10	14.18	27.91	35.22	16.74	1.75	0.58	0.48
1991	3.95	16.02	18.20	30.24	15.49	18.94	22.45	4.91	0.94	0.31
1992	0.71	16.91	33.60	18.95	16.66	6.87	6.35	5.78	1.49	0.23
1993	3.57	4.77	30.87	36.79	13.53	10.61	2.42	2.03	1.40	0.41
1994	14.40	14.96	9.04	26.91	22.43	6.09	3.96	0.80	0.53	0.52
1995	1.08	29.31	24.80	9.06	24.53	18.44	4.02	1.91	0.38	0.20
1996	3.72	5.46	42.72	29.71	13.22	15.35	15.10	4.20	1.14	0.21
1997	1.18	22.26	13.59	56.82	29.85	9.96	9.47	7.31	0.61	0.24
1998	8.07	5.38	30.00	16.19	63.32	29.98	7.00	5.77	3.32	0.75
1999	7.40	33.10	7.03	42.64	13.33	24.82	11.99	2.60	1.47	0.82
2000	18.89	27.71	55.16	7.00	30.79	8.69	8.82	4.57	0.56	0.34
2001	12.29	23.54	36.56	38.39	5.08	15.85	3.55	2.16	0.89	0.33
2002	0.91	38.63	41.48	40.67	37.25	7.45	8.98	1.66	0.81	0.34
2003	11.18	4.22	46.62	36.91	29.17	17.73	4.11	4.78	1.13	0.23
2004	7.01	26.45	8.11	64.57	38.41	27.81	15.92	3.03	3.21	0.51
2005	2.69	17.80	41.72	9.97	46.43	25.01	12.12	6.47	1.01	1.03
2006	9.10	7.43	25.07	40.55	11.72	31.56	11.62	4.10	1.62	0.28
2007	5.67	19.01	9.07	22.87	30.04	10.10	11.39	6.11	2.45	0.87
2008	6.75	12.41	23.03	9.86	22.38	22.95	9.44	8.02	3.05	0.78
2009	21.97	12.63	16.58	22.80	15.68	26.01	16.69	4.85	3.14	1.15
2010	18.69	21.54	18.92	18.12	24.64	14.13	18.35	9.91	3.26	1.97
2011	3.58	23.00	27.58	20.14	23.06	26.56	14.66	13.33	5.02	1.04
2012	20.37	11.02	39.31	56.94	42.02	31.24	28.36	10.79	7.06	3.22
2013	10.93	33.68	18.18	44.44	47.22	25.96	17.22	14.53	7.28	3.48
2014	3.31	24.23	38.84	23.73	47.59	38.28	17.79	8.44	4.37	2.25
2015	21.05	10.95	28.05	42.42	21.27	41.94	29.27	16.94	5.12	3.19

TAFLA 3.1.7
Þorskur. Aldursskiptar vísitölur (í fjölda) úr stofnmælingu botnfiska í október.
Cod. *Age disaggregated indices (in numbers) from the groundfish survey in October.*

Ár	Aldur *Age*									
Year	1	2	3	4	5	6	7	8	9	10
1996	6.69	3.57	20.00	13.98	5.40	7.44	6.26	1.60	0.31	0.09
1997	0.67	16.89	6.83	29.57	15.76	4.09	3.62	2.36	0.25	0.17
1998	5.92	2.63	15.62	7.36	16.01	16.03	5.20	2.24	1.27	0.20
1999	8.61	14.54	5.68	23.38	7.42	9.94	4.05	0.59	0.34	0.36
2000	4.60	13.17	15.25	3.71	11.15	3.49	2.61	1.11	0.34	0.28
2001	7.11	11.51	19.53	21.13	3.30	6.73	1.60	0.76	0.17	0.03
2002	0.92	13.72	16.11	23.39	15.94	5.41	4.77	1.11	0.61	0.08
2003	5.16	2.68	25.66	16.98	13.22	8.99	1.89	2.55	0.38	0.10
2004	3.67	16.28	6.92	29.86	18.85	11.73	7.38	1.88	1.65	0.23
2005	2.15	9.03	20.37	6.82	25.62	10.88	3.86	1.91	0.29	0.31
2006	4.51	4.52	16.28	23.04	7.67	13.93	6.12	2.05	1.02	0.16
2007	3.73	9.82	4.93	11.73	15.68	6.34	5.91	3.14	0.76	0.50
2008	5.30	11.88	15.19	7.66	17.57	18.51	5.67	5.61	1.50	0.79
2009	7.04	8.30	13.14	18.11	12.39	16.46	10.22	3.15	2.75	0.84
2010	10.78	18.82	16.18	15.52	17.96	9.81	11.21	6.81	2.29	1.20
2011	-	-	-	-	-	-	-	-	-	-
2012	7.30	10.33	23.30	20.44	12.28	10.34	9.89	5.47	3.21	1.65
2013	6.25	19.28	13.41	27.13	21.99	12.60	7.72	5.94	2.93	1.87
2014	3.57	16.01	23.57	13.85	23.73	19.83	8.54	5.91	4.02	2.50

http://data.hafro.is/assmt/2015/cod/smb.csv
http://data.hafro.is/assmt/2015/cod/smh.csv

TAFLA 3.1.8

Þorskur. Fjöldi þriggja ára nýliða i milljónum, hrygningar- og viðmiðunarstofn í þús. tonna, afli í þús. tonna, veiðihlutfall (afli/viðmiðunarstofn) og fiskveiðidánartala (meðaltal fyrir 5–10 ára). Nýliðun telur einnig þann hluta árgangsins sem ólst upp við Grænland og gekk síðar á Íslandsmið. Hrygningarstofn táknar hrygningarstofn á Íslandsmiðum á hverjum tíma.

Cod. *Recruitment as 3-year-olds, spawning stock and reference biomass in thous. tonnes, landings in thous. tonnes, harvest rate (landings/reference biomass), and fishing mortality (average for ages 5–10). Recruitment includes young fish of Icelandic origin at Greenland that migrated back to Icelandic grounds. Spawning stock refers to Icelandic waters.*

Ár *Year*	Nýliðun *Recruitment*	Hrygningarstofn[1)] *SSB*	Viðmiðunarstofn[2)] *Biomass 4+*	Afli *Landings*	Veiðihlutfall *Harvest rate*	Fiskveiðidánartala *Fishing mortality*
1955	152	942	2 361	538	0.23	0.29
1956	153	796	2 085	481	0.23	0.29
1957	171	776	1 882	452	0.24	0.31
1958	221	876	1 868	509	0.27	0.35
1959	289	854	1 829	453	0.25	0.32
1960	154	709	1 754	465	0.27	0.37
1961	193	467	1 497	375	0.25	0.36
1962	129	569	1 493	387	0.26	0.38
1963	178	508	1 316	410	0.31	0.46
1964	204	451	1 219	434	0.36	0.55
1965	216	318	1 022	394	0.38	0.58
1966	229	277	1 031	357	0.35	0.59
1967	320	256	1 103	345	0.31	0.56
1968	172	222	1 223	381	0.31	0.72
1969	247	314	1 325	406	0.31	0.56
1970	180	331	1 337	471	0.35	0.61
1971	189	242	1 098	453	0.41	0.68
1972	139	222	997	399	0.40	0.69
1973	273	245	844	383	0.45	0.70
1974	179	187	918	375	0.41	0.76
1975	261	168	895	371	0.41	0.81
1976	367	138	955	348	0.36	0.75
1977	143	199	1 289	340	0.26	0.59
1978	228	212	1 297	330	0.25	0.48
1979	243	304	1 396	368	0.26	0.45
1980	140	357	1 489	434	0.29	0.49
1981	140	264	1 241	469	0.38	0.66
1982	132	167	970	388	0.40	0.73
1983	233	130	791	300	0.38	0.71
1984	139	141	913	284	0.31	0.64
1985	140	163	927	325	0.35	0.67
1986	330	196	854	369	0.43	0.77
1987	260	151	1 030	392	0.38	0.86
1988	176	168	1 032	378	0.37	0.89
1989	89	173	1 002	356	0.36	0.72
1990	131	214	841	335	0.40	0.70
1991	107	164	698	309	0.44	0.80
1992	175	151	550	268	0.49	0.85
1993	136	121	595	252	0.42	0.87
1994	78	156	576	179	0.31	0.63
1995	151	177	557	169	0.30	0.51
1996	166	159	670	182	0.27	0.51
1997	88	189	783	203	0.26	0.55
1998	162	200	721	243	0.34	0.65
1999	71	178	731	260	0.36	0.75
2000	172	166	590	236	0.40	0.76
2001	161	160	688	235	0.34	0.75
2002	159	197	728	209	0.29	0.63
2003	178	190	739	208	0.28	0.58
2004	80	201	799	228	0.28	0.58
2005	154	228	722	214	0.30	0.55
2006	135	223	699	196	0.28	0.55
2007	97	207	679	171	0.25	0.51
2008	134	270	704	147	0.21	0.39
2009	119	255	799	182	0.23	0.38
2010	130	293	843	169	0.20	0.33
2011	172	367	937	172	0.18	0.28
2012	177	411	1 056	196	0.19	0.28
2013	121	453	1 176	223	0.19	0.29
2014	181	425	1 181	221	0.19	0.28
2015	161	547	1 302			
2016	115					
2017	186					

[1)] Hrygningarstofn á hrygningartíma, reiknaður út frá meðalþyngdum og kynþroskahlutfalli í SMB.
Spawning stock biomass at the time of spawning, calculated using weights and maturity in spring survey.

[2)] Stofn 4 ára og eldri í upphafi árs, reiknaður út frá meðalþyngdum í afla.
Biomass of ages 4+ at the beginning of the year, calculated using weights from catch data.

http://data.hafro.is/assmt/2015/cod/summary.csv

TAFLA 3.1.9

Þorskur. Stofnstærð í fjölda eftir aldri (í milljónum). Feitletraðar tölur sýna fjölda að meðtalinni áætlaðri Grænlandsgöngu.

Cod. *Stock size in numbers at age (in millions). Numbers in boldface include estimated immigration from Greenland.*

Ár	Aldur *Age*													
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1955	255	187	152	218	212	115	36	25	13	88	9.2	7.8	8.1	2.6
1956	329	208	153	120	150	135	72	22	15	8	51.9	5.4	4.7	4.8
1957	431	270	171	119	82	96	85	44	13	9	4.6	29.8	3.2	2.8
1958	230	353	221	129	78	51	60	52	**35**	8	5.2	2.6	17.5	1.9
1959	288	188	289	161	82	48	31	35	**52**	19	4.1	2.7	1.5	10.4
1960	192	236	154	216	104	51	30	19	21	**38**	10.6	2.3	1.6	1.0
1961	265	158	193	114	140	64	31	18	10	11	19.1	5.4	1.3	1.0
1962	304	217	129	144	75	88	40	18	**24**	6	5.7	10.1	3.1	0.8
1963	323	249	178	94	92	46	56	23	10	12	2.7	2.9	5.6	2.0
1964	342	264	204	128	58	54	28	31	12	**4**	5.2	1.2	1.5	3.5
1965	478	280	216	147	78	33	31	15	14	4	1.6	1.8	0.5	0.8
1966	256	391	229	157	91	44	18	16	7	6	1.6	0.6	0.8	0.3
1967	369	210	320	171	100	53	24	9	7	2	1.8	0.5	0.2	0.4
1968	269	302	172	243	111	60	31	12	4	3	0.8	0.6	0.2	0.1
1969	281	220	247	130	155	65	33	**41**	5	1	0.7	0.2	0.2	0.1
1970	208	230	180	192	85	92	37	**33**	18	2	0.4	0.2	0.1	0.1
1971	407	170	189	138	120	47	49	18	14	7	0.6	0.1	0.1	0.0
1972	267	334	139	141	83	61	23	22	**23**	5	2.2	0.2	0.0	0.0
1973	389	219	273	104	86	42	29	10	9	9	1.6	0.6	0.1	0.0
1974	548	318	179	198	62	43	20	12	4	3	2.7	0.5	0.2	0.0
1975	214	448	261	131	118	31	20	8	4	1	0.9	0.7	0.1	0.1
1976	339	175	367	192	79	58	14	8	3	1	0.3	0.2	0.2	0.1
1977	363	278	143	281	121	42	28	6	3	1	0.4	0.1	0.1	0.1
1978	209	297	228	114	190	71	22	12	2	1	0.3	0.2	0.0	0.0
1979	209	171	243	181	78	117	41	11	6	1	0.5	0.2	0.1	0.0
1980	196	171	140	194	125	49	**72**	20	5	3	0.5	0.3	0.1	0.1
1981	348	161	140	111	133	75	27	**47**	9	2	1.3	0.3	0.1	0.1
1982	207	284	132	112	76	77	38	12	17	3	0.9	0.5	0.1	0.1
1983	209	170	233	105	76	42	36	15	4	5	1.1	0.3	0.2	0.1
1984	492	171	139	186	72	43	20	14	5	1	1.9	0.4	0.1	0.1
1985	388	403	140	110	125	40	20	8	5	2	0.5	0.8	0.2	0.1
1986	262	318	330	109	71	67	18	8	3	2	0.8	0.2	0.4	0.1
1987	133	214	260	254	69	35	27	7	3	1	0.8	0.3	0.1	0.2
1988	195	109	176	202	158	32	13	9	2	1	0.4	0.3	0.1	0.0
1989	159	160	89	137	128	77	12	4	2	0	0.3	0.1	0.1	0.1
1990	260	130	131	70	88	**100**	33	4	1	1	0.2	0.1	0.1	0.1
1991	202	213	107	102	45	45	42	12	2	0	0.4	0.1	0.0	0.0
1992	116	166	175	80	62	21	16	14	4	0	0.2	0.1	0.0	0.0
1993	226	95	136	129	48	28	7	5	4	1	0.2	0.1	0.1	0.0
1994	247	185	78	97	77	22	10	2	2	1	0.4	0.1	0.0	0.0
1995	132	202	151	58	62	43	11	4	1	1	0.5	0.2	0.0	0.0
1996	241	108	166	116	39	37	23	5	2	0	0.3	0.3	0.1	0.0
1997	106	197	88	131	81	24	20	11	2	1	0.2	0.1	0.1	0.0
1998	256	86	162	70	93	50	13	9	5	1	0.4	0.1	0.1	0.1
1999	241	210	71	128	49	54	24	6	3	2	0.3	0.1	0.0	0.0
2000	237	197	172	55	88	27	23	10	2	1	0.6	0.1	0.0	0.0
2001	266	194	161	132	38	49	12	9	3	1	0.4	0.2	0.0	0.0
2002	120	218	159	124	90	21	22	5	3	1	0.2	0.1	0.1	0.0
2003	230	98	178	125	86	52	11	10	2	1	0.3	0.1	0.0	0.0
2004	202	189	80	142	88	50	26	5	4	1	0.4	0.1	0.0	0.0
2005	145	165	154	64	100	52	24	12	2	2	0.3	0.2	0.1	0.0
2006	200	119	135	123	46	61	26	12	5	1	0.7	0.1	0.1	0.0
2007	178	164	97	108	89	29	32	13	5	2	0.4	0.3	0.1	0.0
2008	194	146	134	78	79	58	16	16	6	2	0.9	0.1	0.1	0.0
2009	257	159	119	107	58	**64**	36	9	8	3	1.0	0.4	0.1	0.1
2010	264	210	130	95	80	40	39	20	5	4	1.4	0.6	0.2	0.0
2011	180	216	172	104	71	56	25	22	11	2	2.3	0.8	0.3	0.1
2012	270	148	177	137	78	50	36	15	13	6	1.5	1.4	0.5	0.2
2013	240	221	121	141	103	55	32	22	9	8	3.8	0.9	0.9	0.4
2014	172	196	181	95	105	72	35	19	12	5	4.4	2.3	0.6	0.6
2015	278	141	161	143	71	74	47	21	11	7	3.0	2.8	1.5	0.4

TAFLA 3.1.10
Þorskur. Veiðidánartala eftir aldri.
Cod. *Fishing mortality by age.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1955	0.04	0.17	0.25	0.27	0.30	0.30	0.28	0.32	0.32	0.31	0.32	0.32
1956	0.05	0.18	0.25	0.26	0.29	0.30	0.29	0.34	0.35	0.33	0.33	0.33
1957	0.08	0.21	0.27	0.27	0.30	0.33	0.33	0.36	0.36	0.33	0.30	0.30
1958	0.11	0.25	0.30	0.29	0.32	0.37	0.40	0.44	0.44	0.38	0.32	0.32
1959	0.09	0.23	0.28	0.26	0.30	0.34	0.35	0.40	0.38	0.32	0.23	0.23
1960	0.10	0.23	0.29	0.29	0.34	0.40	0.43	0.48	0.47	0.39	0.27	0.27
1961	0.09	0.23	0.26	0.26	0.33	0.40	0.42	0.46	0.44	0.35	0.23	0.23
1962	0.11	0.25	0.28	0.26	0.35	0.42	0.47	0.51	0.49	0.38	0.24	0.24
1963	0.13	0.28	0.33	0.31	0.38	0.49	0.59	0.65	0.63	0.46	0.29	0.29
1964	0.13	0.29	0.37	0.36	0.43	0.57	0.74	0.81	0.83	0.61	0.39	0.39
1965	0.12	0.28	0.38	0.40	0.47	0.60	0.74	0.85	0.88	0.65	0.42	0.42
1966	0.09	0.25	0.34	0.38	0.49	0.62	0.78	0.92	1.01	0.78	0.53	0.53
1967	0.08	0.23	0.30	0.34	0.48	0.61	0.75	0.88	0.93	0.72	0.46	0.46
1968	0.08	0.25	0.34	0.41	0.58	0.77	1.04	1.20	1.36	1.08	0.74	0.74
1969	0.06	0.23	0.32	0.35	0.50	0.61	0.72	0.84	0.87	0.71	0.44	0.44
1970	0.07	0.27	0.39	0.43	0.55	0.65	0.76	0.89	0.95	0.80	0.52	0.52
1971	0.09	0.31	0.48	0.53	0.62	0.72	0.80	0.96	1.03	0.88	0.58	0.58
1972	0.09	0.30	0.48	0.55	0.65	0.73	0.79	0.96	1.06	0.91	0.60	0.60
1973	0.12	0.32	0.49	0.56	0.67	0.75	0.80	0.95	1.04	0.90	0.59	0.59
1974	0.11	0.32	0.50	0.58	0.70	0.83	0.92	1.06	1.18	1.03	0.70	0.70
1975	0.11	0.31	0.50	0.60	0.72	0.88	1.02	1.13	1.25	1.10	0.77	0.77
1976	0.07	0.26	0.43	0.55	0.70	0.85	0.95	1.01	1.06	0.94	0.65	0.65
1977	0.03	0.20	0.33	0.43	0.61	0.72	0.73	0.74	0.70	0.63	0.41	0.41
1978	0.03	0.17	0.28	0.35	0.53	0.60	0.55	0.55	0.48	0.45	0.28	0.28
1979	0.03	0.17	0.27	0.34	0.50	0.57	0.50	0.49	0.42	0.39	0.25	0.25
1980	0.03	0.17	0.31	0.39	0.54	0.62	0.56	0.55	0.47	0.44	0.29	0.29
1981	0.02	0.18	0.35	0.49	0.65	0.82	0.85	0.82	0.75	0.69	0.52	0.52
1982	0.03	0.19	0.39	0.56	0.70	0.90	0.96	0.87	0.75	0.67	0.51	0.51
1983	0.02	0.18	0.38	0.55	0.71	0.88	0.91	0.85	0.73	0.67	0.52	0.52
1984	0.04	0.20	0.38	0.53	0.67	0.81	0.75	0.70	0.60	0.56	0.43	0.43
1985	0.05	0.23	0.42	0.58	0.71	0.83	0.76	0.70	0.59	0.56	0.44	0.44
1986	0.06	0.26	0.52	0.71	0.82	0.95	0.87	0.77	0.66	0.61	0.49	0.49
1987	0.06	0.27	0.55	0.82	0.91	1.06	0.99	0.85	0.74	0.69	0.57	0.57
1988	0.05	0.26	0.52	0.79	0.92	1.10	1.08	0.94	0.87	0.82	0.71	0.71
1989	0.04	0.24	0.46	0.65	0.79	0.89	0.80	0.72	0.64	0.62	0.51	0.51
1990	0.05	0.25	0.47	0.66	0.79	0.86	0.75	0.68	0.61	0.59	0.48	0.48
1991	0.09	0.30	0.57	0.81	0.88	0.94	0.84	0.76	0.70	0.68	0.57	0.57
1992	0.10	0.32	0.60	0.87	0.92	1.00	0.89	0.79	0.73	0.70	0.60	0.60
1993	0.14	0.31	0.56	0.80	0.89	1.03	1.02	0.92	0.89	0.84	0.75	0.75
1994	0.09	0.24	0.38	0.53	0.68	0.77	0.71	0.69	0.64	0.63	0.54	0.54
1995	0.06	0.20	0.32	0.42	0.57	0.63	0.56	0.57	0.52	0.52	0.43	0.43
1996	0.04	0.16	0.28	0.41	0.56	0.62	0.58	0.59	0.54	0.54	0.46	0.46
1997	0.03	0.14	0.28	0.42	0.58	0.67	0.65	0.67	0.63	0.62	0.54	0.54
1998	0.03	0.15	0.33	0.52	0.67	0.78	0.81	0.81	0.80	0.76	0.71	0.71
1999	0.04	0.18	0.39	0.66	0.75	0.87	0.92	0.89	0.87	0.83	0.79	0.79
2000	0.06	0.18	0.39	0.63	0.75	0.89	0.96	0.95	0.95	0.91	0.88	0.88
2001	0.07	0.19	0.38	0.58	0.70	0.86	0.98	1.00	1.02	0.97	0.96	0.96
2002	0.04	0.16	0.34	0.48	0.60	0.70	0.81	0.86	0.86	0.83	0.80	0.80
2003	0.03	0.15	0.33	0.50	0.57	0.64	0.69	0.75	0.73	0.72	0.68	0.68
2004	0.03	0.14	0.33	0.53	0.58	0.65	0.69	0.73	0.71	0.70	0.67	0.67
2005	0.03	0.13	0.29	0.48	0.55	0.62	0.66	0.70	0.69	0.68	0.65	0.65
2006	0.03	0.12	0.26	0.46	0.53	0.62	0.68	0.71	0.71	0.69	0.67	0.67
2007	0.03	0.11	0.23	0.38	0.49	0.59	0.67	0.72	0.73	0.72	0.70	0.70
2008	0.02	0.09	0.18	0.29	0.40	0.47	0.49	0.52	0.49	0.48	0.43	0.43
2009	0.03	0.09	0.18	0.30	0.40	0.47	0.47	0.48	0.43	0.42	0.36	0.36
2010	0.03	0.09	0.16	0.25	0.35	0.41	0.39	0.40	0.34	0.34	0.28	0.28
2011	0.03	0.08	0.15	0.23	0.32	0.36	0.32	0.33	0.27	0.26	0.20	0.20
2012	0.03	0.09	0.15	0.23	0.32	0.35	0.32	0.32	0.26	0.25	0.19	0.19
2013	0.04	0.10	0.17	0.24	0.32	0.36	0.33	0.34	0.28	0.26	0.21	0.21
2014	0.03	0.09	0.15	0.23	0.31	0.34	0.32	0.33	0.26	0.24	0.19	0.19

TAFLA 3.1.11
Þorskur. Forsendur í framreikningum á þróun stofnsins.
Náttúrulegur dánarstuðull M=0.2.
Cod. *Input parameters for catch and stock projection.*
Natural mortality coefficient, M=0.2.

Aldur *Age*	Stofnstærð *Stock size*	Veiðimynstur *Selectivity*	Meðalþyngd (kg) í afla *Mean weight (kg) in catch*	Meðalþyngd (kg) í hrygningarstofni *Mean weight (kg) in spawning stock*	Hlutfall kynþroska *Maturity*
	2015	2015–2016	2015–2016	2015–2016	2015–2016
3	160.7	0.121	1.421	0.710	0.004
4	143.1	0.316	1.814	1.047	0.007
5	71.1	0.552	2.757	3.311	0.109
6	73.6	0.822	3.542	3.833	0.353
7	46.7	1.103	4.674	4.902	0.638
8	21.1	1.232	6.039	6.240	0.908
9	11.2	1.136	8.145	8.728	0.979
10	7.4	1.154	9.187	9.705	0.988
11	3.0	0.791	9.722	9.722	1.000
12	2.8	0.791	10.523	10.523	1.000
13	1.5	0.791	11.448	11.448	1.000
14	0.4	0.791	12.992	12.992	1.000

Stofnstærð: Stofnstærð í milljónum fiska í ársbyrjun 2015.
Veiðimynstur: Hlutfallsleg veiðidánartala hvers aldursflokks, meðaltal áranna 2012–2014.
Meðalþyngd: Meðalþyngd í afla spáð út frá þyngdum í SMB 2015.
Hlutfall kynþroska: Kynþroskahlutfall í SMB 2015.

Stock size: *Stock size in millions at the beginning of 2015.*
Selectivity: *Relative fishing mortality on each age group, average for the years 2012–2014.*
Mean weight: *Mean weights in catch, predicted from weights in 2015 spring survey.*
Maturity: *Maturity at age in spring survey 2015.*

http://data.hafro.is/assmt/2015/cod/prognosis.csv

TAFLA 3.1.12

Þorskur. Mat á stærð árganga við þriggja ára aldur (í milljónum) og árlegt endurmat.
Cod. *Retrospective pattern of recruitment estimates at age 3 (in millions).*

Úttektarár *Year of assessment*	Árgangur *Year class*																	
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1998	170																	
1999	206	170																
2000	212	195	204															
2001	185	170	185	175														
2002	181	165	175	210	80													
2003	185	166	167	207	69	196												
2004	183	166	162	198	68	171	153											
2005	180	170	168	193	69	168	133	110										
2006	177	161	161	190	61	164	127	88	166									
2007	176	160	161	185	64	155	123	81	145	135								
2008	177	160	162	178	66	147	122	79	137	116	139							
2009	176	160	163	179	72	154	135	82	133	115	121	218						
2010	172	162	160	180	79	156	132	87	133	127	126	171	177					
2011	172	161	159	179	80	156	134	91	133	123	129	168	178	107				
2012	172	162	159	179	80	156	134	92	135	125	131	171	174	108	182			
2013	172	162	159	178	80	155	135	95	135	122	129	169	174	119	183	151		
2014	172	161	159	178	80	155	135	96	133	120	128	170	175	123	181	160	109	
2015	172	161	159	178	80	154	135	97	134	119	130	172	177	121	181	161	115	186

TAFLA 3.1.13

Þorskur. Mat á stærð viðmiðunarstofns (í þús. tonna) á líðandi stund (feitletrað), spá og árlegt endurmat.
Cod. *Retrospective pattern of reference biomass estimates (ages 4+, in thous. tonnes). Contemporary estimates in boldface.*

Úttektarár *Year of assessment*	Ár *Year*																
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1998	999																
1999	1046	1150															
2000	866	1007	1140														
2001	**577**	638	745	880													
2002	640	**680**	756	941	909												
2003	663	704	**765**	914	868												
2004	680	727	737	**854**	785	861											
2005	694	746	767	854	**760**	823	833										
2006	694	731	741	818	715	**753**	745	709									
2007	693	729	740	807	703	675	**649**	570	574								
2008	698	735	748	805	705	668	629	**590**	647	703							
2009	696	732	746	805	714	687	663	663	**702**	722	762						
2010	686	728	739	801	723	701	679	685	793	**846**	904	1025					
2011	687	728	739	799	722	701	680	695	794	840	**969**	1081	1219				
2012	687	728	739	799	722	700	680	697	798	849	944	**1070**	1192	1211			
2013	688	729	740	800	723	700	680	701	798	847	938	1054	**1173**	1211	1317		
2014	688	729	740	800	724	701	681	704	799	843	932	1047	1161	**1106**	1172	1 220	
2015	688	728	739	799	722	699	679	704	799	843	937	1056	1176	1181	**1302**	1 371	1 350

http://data.hafro.is/assmt/2015/cod/retro_n.csv
http://data.hafro.is/assmt/2015/cod/retro_b.csv

TAFLA 3.2.1
Ýsa. Afli á Íslandsmiðum (í tonnum).
Haddock. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	27 099	39 650	66 749
1951	22 173	33 856	56 029
1952	15 166	31 321	46 487
1953	14 954	39 874	54 828
1954	21 322	41 330	62 652
1955	21 704	43 241	64 945
1956	22 054	40 235	62 289
1957	31 302	45 424	76 726
1958	28 624	41 874	70 498
1959	26 534	38 044	64 578
1960	41 988	45 505	87 493
1961	51 300	50 756	102 056
1962	54 288	65 327	119 615
1963	51 834	50 610	102 444
1964	56 586	42 461	99 047
1965	53 506	45 527	99 033
1966	36 028	24 072	60 100
1967	37 977	22 248	60 225
1968	34 014	17 178	51 192
1969	35 036	11 577	46 613
1970	31 833	12 655	44 488
1971	32 376	13 731	46 107
1972	29 252	10 018	39 270
1973	34 390	11 115	45 505
1974	34 401	8 225	42 626
1975	36 658	9 045	45 703
1976	34 870	7 497	42 367
1977	35 428	4 230	39 658
1978	40 552	2 936	43 488
1979	52 152	3 182	55 334
1980	47 915	3 196	51 111
1981	61 033	2 527	63 560
1982	67 038	2 387	69 425
1983	63 889	2 054	65 943
1984	47 276	1 069	48 285
1985	49 553	1 380	51 099
1986	47 317	1 546	48 863
1987	39 479	1 282	40 761
1988	53 085	1 117	54 202
1989	61 794	1 089	62 883
1990	66 004	1 196	67 200
1991	53 473	1 218	54 691
1992	46 005	1 114	47 119
1993	46 916	1 212	48 128
1994	58 354	1 159	59 504
1995	60 125	759	60 884
1996	56 228	664	56 892
1997	43 214	552	43 766
1998	40 711	482	41 193
1999	44 487	924	45 411
2000	41 135	968	42 103
2001	39 042	609	39 651
2002	49 591	878	50 496
2003	59 984	914	60 884
2004	83 791	1 035	84 826
2005	95 859	1 372	97 231
2006	96 115	1 499	97 614
2007	108 175	1 790	109 965
2008	101 651	839	102 490
2009	81 388	625	82 013
2010	63 868	311	64 179
2011	49 231	207	49 438
2012	45 708	303	46 011
2013	43 466	596	44 062
2014	33 056	886	33 942

TAFLA 3.2.2
Ýsa. Skipting aflans í fjölda eftir aldri (í milljónum).
Haddock. *Catch in numbers at age (in millions).*

Ár	Aldur *Age*										
Year	2	3	4	5	6	7	8	9	10	11	12
1979	0.149	1.908	3.762	6.057	9.022	1.743	0.438	0.056	0.000	0.056	0.056
1980	0.595	1.385	11.481	4.298	3.798	3.732	0.544	0.091	0.032	0.000	0.005
1981	0.010	0.514	4.911	16.900	5.999	2.825	1.803	0.168	0.043	0.000	0.014
1982	0.107	0.245	3.149	10.851	14.049	2.068	1.000	0.725	0.169	0.026	0.005
1983	0.034	1.010	1.589	4.596	9.850	8.839	0.766	0.207	0.263	0.017	0.000
1984	0.241	1.069	4.946	1.341	4.772	3.742	4.076	0.238	0.058	0.019	0.003
1985	1.320	1.728	4.562	6.796	0.855	1.682	1.914	1.903	0.212	0.031	0.049
1986	1.012	4.223	4.068	4.686	5.139	0.494	0.796	0.897	0.344	0.027	0.029
1987	1.939	8.308	6.965	2.728	2.042	1.094	0.132	0.165	0.220	0.089	0.014
1988	0.237	9.831	15.164	5.824	1.304	1.084	0.609	0.066	0.089	0.096	0.024
1989	0.188	2.474	22.560	9.571	3.196	0.513	0.556	0.144	0.034	0.040	0.036
1990	1.857	2.415	8.628	23.611	6.331	0.816	0.150	0.067	0.045	0.013	0.007
1991	8.617	2.145	5.397	7.342	14.103	2.648	0.338	0.040	0.010	0.005	0.000
1992	5.405	10.693	5.721	4.610	3.691	5.209	0.999	0.120	0.010	0.004	0.002
1993	0.769	12.333	12.815	2.968	1.722	1.425	2.239	0.343	0.019	0.001	0.001
1994	3.198	3.343	28.258	10.682	1.469	0.726	0.358	0.647	0.093	0.011	0.001
1995	4.015	7.323	5.744	23.927	5.769	0.615	0.290	0.187	0.268	0.052	0.003
1996	3.090	10.552	7.639	4.468	12.896	2.346	0.208	0.079	0.060	0.051	0.014
1997	1.364	3.939	10.915	4.895	2.610	5.035	0.719	0.064	0.012	0.016	0.040
1998	0.279	8.257	5.667	7.856	2.418	1.422	1.897	0.261	0.017	0.016	0.004
1999	1.434	1.550	17.243	4.516	4.837	0.915	0.620	0.481	0.063	0.000	0.000
2000	2.659	6.317	2.352	13.615	1.945	1.706	0.324	0.222	0.176	0.012	0.002
2001	2.515	11.098	6.954	1.446	6.262	0.675	0.478	0.105	0.042	0.052	0.000
2002	1.082	10.434	15.998	5.099	1.131	3.149	0.262	0.169	0.042	0.033	0.019
2003	0.401	6.352	16.265	12.548	2.968	0.748	1.236	0.091	0.048	0.011	0.006
2004	1.597	4.063	17.652	19.358	8.871	1.940	0.471	0.489	0.092	0.036	0.015
2005	2.405	9.450	6.929	25.421	13.778	4.584	0.809	0.251	0.212	0.003	0.019
2006	0.241	10.038	21.246	6.646	18.840	7.600	2.180	0.323	0.093	0.109	0.000
2007	0.782	3.884	42.224	22.239	3.354	9.952	2.740	0.519	0.062	0.030	0.033
2008	2.316	4.508	9.706	53.022	11.014	1.717	3.033	0.815	0.167	0.020	0.005
2009	1.066	3.185	4.886	8.892	35.011	5.733	0.726	1.381	0.395	0.097	0.017
2010	0.121	6.032	7.061	4.806	6.766	17.503	1.874	0.354	0.412	0.097	0.019
2011	0.253	1.584	11.797	5.080	2.853	3.983	6.220	0.494	0.112	0.058	0.013
2012	0.196	1.322	3.421	13.107	2.223	1.231	2.480	2.662	0.241	0.049	0.056
2013	0.250	1.042	2.865	4.008	9.222	1.206	0.668	1.248	1.367	0.149	0.054
2014	0.238	1.478	1.751	2.725	2.737	4.742	0.447	0.387	0.586	0.652	0.090

TAFLA 3.2.3
Ýsa. Meðalþyngd eftir aldri (g) í stofnmælingu botnfiska í mars.
Haddock. *Weight at age (g) in the groundfish survey in March.*

Ár	Aldur *Age*										
Year	2	3	4	5	6	7	8	9	10	11	12
1985	244	568	1 187	1 673	2 371	2 766	3 197	3 331	4 564	4 930	4 852
1986	239	671	1 134	1 943	2 399	3 190	3 293	3 728	4 436	3 863	5 241
1987	162	550	1 216	1 825	2 605	3 030	3 642	3 837	3 653	4 877	3 814
1988	176	457	974	1 830	2 695	3 102	3 481	3 318	4 169	4 560	4 631
1989	182	441	887	1 510	2 380	3 009	3 499	3 195	5 039	5 015	4 975
1990	184	457	840	1 234	1 965	2 675	3 052	3 267	4 115	4 682	5 220
1991	176	501	1 003	1 406	1 884	2 496	3 755	3 653	5 243	3 427	4 000
1992	157	503	894	1 365	1 891	2 325	2 936	3 682	4 674	4 503	5 250
1993	168	384	878	1 492	1 785	2 562	2 573	3 266	4 047	5 294	5 294
1994	181	392	680	1 235	1 766	1 717	2 977	2 131	3 154	3 897	5 258
1995	167	440	755	1 065	1 857	2 689	5 377	1 306	3 119	3 220	1 640
1996	174	453	813	1 076	1 477	2 171	2 426	4 847	3 686	3 846	3 508
1997	174	424	817	1 221	1 425	1 915	2 390	3 692	3 508	4 028	2 815
1998	203	415	753	1 241	1 747	1 996	2 342	3 076	3 275	3 701	3 630
1999	206	480	715	1 189	1 956	2 366	2 782	2 922	3 534	4 000	4 000
2000	179	552	889	1 159	1 767	2 612	2 917	3 132	3 734	4 142	5 574
2001	190	490	1 056	1 437	1 509	2 169	2 765	3 300	4 715	3 849	4 000
2002	172	475	889	1 460	1 949	2 137	1 990	3 709	4 078	4 551	4 479
2003	230	412	801	1 268	1 873	3 139	2 343	3 301	3 289	4 157	5 295
2004	176	556	807	1 282	1 690	2 454	3 236	2 942	3 957	3 146	2 827
2005	153	448	920	1 188	1 564	2 128	2 808	2 550	2 755	4 053	4 019
2006	127	333	736	1 145	1 512	1 944	2 232	3 272	3 617	3 566	4 000
2007	170	350	615	1 053	1 514	1 786	2 073	2 198	2 408	3 360	2 303
2008	179	382	595	868	1 295	1 828	2 201	2 340	2 568	2 840	2 727
2009	139	442	687	882	1 141	1 495	1 920	2 574	3 070	3 016	3 488
2010	150	392	773	942	1 190	1 468	1 829	2 086	2 730	3 016	3 488
2011	175	442	757	1 129	1 304	1 583	1 865	2 107	3 094	2 398	4 146
2012	202	482	801	1 145	1 480	1 909	2 072	2 353	2 350	2 207	3 211
2013	201	589	967	1 312	1 710	1 999	2 265	2 764	2 709	2 529	2 885
2014	222	570	1 005	1 372	1 751	2 141	2 298	2 653	3 104	3 153	3 162
2015	255	614	1 073	1 637	1 926	2 452	2 774	3 170	3 173	3 577	3 356

TAFLA 3.2.4
Ýsa. Meðalþyngd eftir aldri (g) í afla.
Haddock. *Weight at age (g) from commercial catches.*

Ár	Aldur *Age*										
Year	2	3	4	5	6	7	8	9	10	11	12
1979	620	960	1 410	2 030	2 910	3 800	4 560	4 720	4 000	5 741	6 171
1980	837	831	1 306	2 207	2 738	3 188	3 843	4 506	4 615	4 000	7 337
1981	584	693	1 081	1 656	2 283	3 214	3 409	4 046	4 898	4 000	6 376
1982	289	959	1 455	1 674	2 351	3 031	3 481	3 874	3 952	4 958	5 323
1983	320	1 006	1 496	1 921	2 371	2 873	3 678	4 265	4 463	5 101	4 000
1984	691	1 007	1 544	2 120	2 514	3 027	2 940	3 906	3 941	4 138	5 155
1985	652	1 125	1 811	2 260	2 924	3 547	3 733	4 039	4 564	4 930	4 852
1986	336	1 227	1 780	2 431	2 771	3 689	3 820	4 258	4 436	3 863	5 241
1987	452	1 064	1 692	2 408	3 000	3 565	4 215	4 502	3 653	4 877	3 814
1988	362	780	1 474	2 217	2 931	3 529	3 781	4 467	4 169	4 560	4 631
1989	323	857	1 185	1 996	2 893	4 066	3 866	4 734	5 039	5 015	4 975
1990	269	700	1 054	1 562	2 364	3 414	4 134	4 946	4 115	4 682	5 220
1991	288	699	979	1 412	1 887	2 674	3 135	4 341	5 243	3 427	4 000
1992	313	806	1 167	1 524	1 950	2 357	3 075	4 053	4 674	4 503	5 250
1993	303	705	1 333	1 875	2 386	2 996	3 059	3 363	4 047	5 294	5 294
1994	337	668	1 019	1 717	2 391	2 717	3 280	3 156	3 154	3 897	5 258
1995	351	746	1 096	1 318	2 044	2 893	3 049	3 675	3 119	3 220	1 640
1996	311	787	1 187	1 560	1 849	2 670	3 510	3 567	3 686	3 846	3 508
1997	379	764	1 163	1 649	1 943	2 342	3 020	3 337	3 508	4 028	2 815
1998	445	724	1 147	1 683	2 250	2 475	2 834	3 333	3 275	3 701	3 630
1999	555	908	1 101	1 658	2 216	2 659	2 928	3 209	3 534	4 000	4 000
2000	495	978	1 333	1 481	2 119	2 696	3 307	3 597	3 734	4 142	5 574
2001	541	945	1 456	1 731	1 832	2 243	3 020	3 328	4 715	3 849	4 000
2002	564	928	1 253	1 737	2 219	2 230	2 911	3 365	4 078	4 551	4 479
2003	498	922	1 283	1 704	2 274	2 744	2 635	2 819	3 289	4 157	5 295
2004	559	1 006	1 258	1 579	2 044	2 809	3 123	2 945	3 957	3 146	2 827
2005	339	886	1 265	1 506	1 916	2 323	3 028	3 211	2 755	4 053	4 019
2006	402	749	1 093	1 495	1 758	2 163	2 555	3 054	3 617	3 566	4 000
2007	510	748	988	1 346	1 840	2 062	2 350	2 525	2 408	3 360	2 303
2008	383	636	857	1 125	1 575	2 149	2 417	2 802	2 568	2 840	2 727
2009	452	841	960	1 131	1 352	1 757	2 364	2 497	3 070	3 016	3 488
2010	447	756	1 092	1 294	1 448	1 685	2 188	2 366	2 657	2 639	2 439
2011	588	905	1 122	1 455	1 688	1 914	2 094	2 455	2 919	2 953	3 706
2012	668	978	1 222	1 492	1 903	2 164	2 366	2 704	2 765	3 431	2 924
2013	678	1 084	1 358	1 675	2 036	2 400	2 554	3 097	3 111	2 838	3 634
2014	536	1 080	1 433	1 793	2 121	2 504	2 624	3 178	3 272	3 445	3 254
2015[1)]	559	1 018	1 491	1 989	2 223	2 621	2 852	3 124	3 126	3 392	3 248

[1)] Áætlað. *Estimated.*

TAFLA 3.2.5
Ýsa. Hlutfall kynþroska eftir aldri í stofnmælingu botnfiska í mars.
Haddock. *Maturity at age in the groundfish survey in March.*

Ár	Aldur *Age*										
Year	2	3	4	5	6	7	8	9	10	11	12
1985	0.02	0.14	0.54	0.58	0.76	0.77	0.96	0.93	1.00	1.00	1.00
1986	0.02	0.20	0.41	0.67	0.84	0.88	0.95	0.99	1.00	1.00	1.00
1987	0.02	0.14	0.43	0.54	0.78	0.78	1.00	0.97	1.00	1.00	1.00
1988	0.01	0.22	0.39	0.77	0.79	0.93	0.91	1.00	1.00	1.00	1.00
1989	0.04	0.20	0.53	0.73	0.82	1.00	1.00	1.00	1.00	1.00	1.00
1990	0.11	0.33	0.63	0.81	0.84	0.92	0.88	1.00	1.00	1.00	1.00
1991	0.06	0.22	0.59	0.74	0.82	0.89	0.50	1.00	1.00	1.00	1.00
1992	0.05	0.23	0.42	0.80	0.90	0.90	0.86	1.00	1.00	1.00	1.00
1993	0.12	0.36	0.48	0.67	0.90	0.98	0.91	0.87	1.00	1.00	1.00
1994	0.25	0.31	0.57	0.76	0.85	1.00	0.91	1.00	1.00	1.00	1.00
1995	0.12	0.48	0.38	0.75	0.75	0.61	0.98	1.00	1.00	1.00	1.00
1996	0.19	0.36	0.59	0.65	0.79	0.74	0.95	0.91	1.00	1.00	1.00
1997	0.09	0.44	0.59	0.68	0.75	0.78	0.88	1.00	1.00	1.00	1.00
1998	0.03	0.45	0.67	0.77	0.73	0.85	0.90	1.00	1.00	1.00	1.00
1999	0.05	0.40	0.68	0.72	0.75	0.89	0.76	0.92	1.00	1.00	1.00
2000	0.11	0.26	0.63	0.81	0.87	0.87	1.00	0.78	1.00	1.00	1.00
2001	0.09	0.38	0.52	0.75	0.90	0.92	0.92	1.00	1.00	1.00	1.00
2002	0.05	0.29	0.63	0.80	0.93	0.93	1.00	1.00	1.00	1.00	1.00
2003	0.06	0.35	0.68	0.87	0.92	0.95	1.00	1.00	1.00	1.00	1.00
2004	0.04	0.36	0.57	0.83	0.91	1.00	1.00	1.00	1.00	1.00	1.00
2005	0.02	0.23	0.56	0.75	0.93	0.94	0.97	1.00	1.00	1.00	1.00
2006	0.03	0.12	0.46	0.62	0.74	0.92	1.00	1.00	1.00	1.00	1.00
2007	0.08	0.21	0.42	0.68	0.77	0.88	0.96	1.00	1.00	1.00	1.00
2008	0.03	0.26	0.42	0.62	0.83	0.87	0.90	0.98	1.00	1.00	1.00
2009	0.02	0.30	0.47	0.58	0.85	0.89	1.00	0.97	1.00	1.00	1.00
2010	0.03	0.19	0.62	0.78	0.79	0.89	0.93	1.00	0.96	1.00	1.00
2011	0.04	0.18	0.43	0.82	0.82	0.84	0.90	0.97	1.00	1.00	1.00
2012	0.11	0.17	0.44	0.63	0.82	0.90	0.85	0.91	1.00	1.00	1.00
2013	0.05	0.22	0.38	0.71	0.79	0.92	0.99	0.97	0.99	0.94	1.00
2014	0.11	0.19	0.39	0.57	0.68	0.74	0.92	0.91	0.88	1.00	1.00
2015	0.14	0.28	0.44	0.67	0.80	0.77	0.89	1.00	0.89	1.00	1.00

TAFLA 3.2.6
Ýsa. Aldursskiptar vísitölur (í fjölda) úr stofnmælingu botnfiska í mars.
Haddock. *Age disaggregated indices (in numbers) from the groundfish survey in March.*

Ár	Aldur *Age*											
Year	1	2	3	4	5	6	7	8	9	10	11	12
1985	28.1	32.7	18.3	23.6	26.4	3.7	10.9	4.8	5.5	0.5	0.1	0.1
1986	123.9	108.5	59.0	12.8	16.3	13.1	1.0	2.7	1.2	2.2	0.1	0.0
1987	21.8	338.3	147.5	44.1	7.7	7.5	4.7	0.4	0.6	0.4	0.8	0.0
1988	15.8	40.7	184.8	88.9	22.9	1.3	2.2	1.8	0.2	0.2	0.0	0.3
1989	10.6	23.3	41.2	146.6	45.1	12.9	0.8	0.8	0.4	0.3	0.1	0.0
1990	70.5	31.8	26.7	38.8	92.8	30.9	3.4	0.9	0.2	0.0	0.0	0.0
1991	89.7	145.9	41.4	17.7	20.2	32.9	7.6	0.3	0.1	0.1	0.0	0.1
1992	18.1	211.4	137.8	35.4	16.9	13.8	16.3	2.2	0.2	0.1	0.0	0.0
1993	30.0	37.8	245.0	87.2	11.2	3.8	1.7	4.5	0.9	0.0	0.0	0.0
1994	58.5	61.3	39.8	142.3	42.2	6.9	2.9	1.4	4.4	0.2	0.0	0.0
1995	35.9	82.5	47.0	19.8	69.5	7.7	1.3	0.1	0.3	0.0	0.0	0.0
1996	95.2	66.2	119.9	36.8	19.6	40.6	5.8	0.6	0.1	0.1	0.0	0.0
1997	8.6	119.3	50.8	53.3	10.9	7.4	10.9	1.4	0.1	0.0	0.1	0.1
1998	23.1	18.0	107.9	28.2	23.5	4.9	3.5	4.6	0.3	0.0	0.0	0.0
1999	80.7	85.5	25.5	98.7	13.0	9.8	1.4	1.8	1.0	0.1	0.0	0.0
2000	60.6	90.1	44.6	8.4	25.2	3.1	1.6	0.4	0.2	0.5	0.0	0.0
2001	81.3	147.7	115.4	22.1	4.1	10.6	0.9	0.6	0.0	0.1	0.0	0.0
2002	20.8	298.7	200.7	112.5	23.2	3.5	7.5	0.3	0.3	0.1	0.2	0.0
2003	111.6	97.5	282.3	244.8	113.5	18.0	2.5	4.5	0.5	0.8	0.1	0.0
2004	325.9	291.6	70.8	208.7	109.3	34.0	6.8	1.2	0.8	0.0	0.2	0.2
2005	58.0	698.5	289.4	44.6	157.2	57.5	15.7	3.4	0.3	0.2	0.0	0.0
2006	39.3	88.7	575.9	179.1	19.1	62.9	16.4	6.7	0.7	0.3	0.0	0.0
2007	34.0	65.6	88.6	436.4	85.7	7.9	21.6	4.7	2.1	0.1	0.0	0.0
2008	88.5	68.0	71.7	75.6	222.8	30.0	3.5	7.5	1.6	0.3	0.0	0.0
2009	10.5	111.2	53.8	41.5	41.9	105.6	12.9	2.2	3.1	0.4	0.2	0.0
2010	15.2	27.7	138.2	29.9	18.3	20.6	31.6	2.9	0.5	0.7	0.1	0.1
2011	8.8	27.6	24.8	77.4	14.0	5.9	9.4	14.9	1.2	0.3	0.2	0.1
2012	12.5	14.9	31.3	27.2	58.3	5.2	2.9	5.3	6.9	0.8	0.3	0.2
2013	13.9	23.3	19.7	22.9	22.5	41.9	4.8	2.5	3.8	4.5	0.6	0.3
2014	14.0	24.8	30.3	17.7	16.4	14.8	16.4	1.3	1.1	1.7	1.4	0.2
2015	62.6	19.6	26.6	34.2	12.6	11.2	9.6	10.0	1.1	0.6	1.2	1.0

TAFLA 3.2.7
Ýsa. Aldursskiptar vísitölur (í fjölda) úr stofnmælingu botnfiska í október.
Haddock. *Age disaggregated indices (in numbers) from the groundfish survey in October.*

Ár	Aldur *Age*											
Year	0	1	2	3	4	5	6	7	8	9	10	11
1996	16.1	461.3	109.4	85.6	18.5	7.8	18.3	1.6	0.0	0.0	0.0	0.0
1997	52.9	32.4	212.9	54.5	38.7	7.0	5.7	6.1	0.3	0.0	0.0	0.0
1998	209.1	81.1	32.5	133.4	19.8	15.7	5.3	5.4	1.9	0.0	0.0	0.1
1999	178.6	397.4	66.9	28.6	97.1	11.9	10.4	0.5	2.1	0.3	0.0	0.0
2000	56.2	161.9	260.1	46.3	8.2	28.7	2.0	3.2	0.1	0.3	0.6	0.0
2001	47.0	387.5	281.6	170.2	35.7	4.1	13.9	0.7	1.0	0.0	0.2	0.0
2002	150.6	85.2	237.8	197.5	98.5	19.3	3.0	2.3	1.0	0.1	0.0	0.0
2003	316.5	345.5	146.9	251.9	169.1	56.6	9.5	2.4	0.7	0.0	0.0	0.0
2004	189.4	714.2	347.3	51.2	160.3	70.6	17.0	4.0	0.8	0.5	0.0	0.0
2005	91.1	74.2	560.4	182.1	27.3	96.5	26.7	10.4	1.9	0.0	0.1	0.0
2006	85.9	124.1	117.6	510.4	108.5	13.8	40.4	9.8	3.9	1.5	0.0	0.0
2007	203.4	93.0	78.4	92.8	341.4	58.6	8.5	12.3	3.8	0.6	0.2	0.0
2008	95.3	201.8	93.9	68.4	87.9	198.9	16.8	2.9	3.5	0.2	0.1	0.0
2009	52.8	47.5	269.5	68.1	31.0	48.5	96.5	9.5	1.5	2.2	0.1	0.4
2010	37.2	43.3	56.6	143.4	30.5	14.4	23.7	37.2	4.8	0.9	1.0	0.2
2011	-	-	-	-	-	-	-	-	-	-	-	-
2012	26.8	53.8	29.1	34.3	37.7	70.3	9.3	3.6	9.8	10.3	1.0	0.2
2013	27.1	91.9	131.4	37.3	38.6	39.3	44.8	6.2	2.3	5.8	4.2	0.7
2014	250.2	35.1	41.3	67.3	24.1	27.2	24.4	26.3	2.3	1.5	3.0	1.5

http://data.hafro.is/assmt/2015/haddock/smb.csv
http://data.hafro.is/assmt/2015/haddock/smh.csv

TAFLA 3.2.8

Ýsa. Fjöldi tveggja ára nýliða i milljónum, stofn þriggja ára og eldri, hrygningar- og viðmiðunarstofn í þús. tonna, afli í þús. tonna, veiðihlutfall (afli/viðmiðunarstofn) og fiskveiðidánartala (meðaltal fyrir 4–7 ára).

Haddock. *Recruitment as 2-year-olds, biomass of ages 3+, spawning stock and reference biomass in thous. tonnes, landings in thous. tonnes, harvest rate (landings/reference biomass), and fishing mortality (average for ages 4–7).*

Ár *Year*	Nýliðun *Recruitment*	Stofn 3+[1)] *Biomass 3+*	Hrygn.stofn[2)] *SSB*	Viðm.stofn[3)] *Ref. biomass*	Afli *Landings*	Veiðihlutfall *Harvest rate*	Fiskveiðidánartala *Fishing mortality*
1979	81	162	96	102	55	0.54	0.52
1980	37	192	117	138	51	0.37	0.40
1981	10	207	142	177	64	0.36	0.54
1982	43	180	137	168	69	0.41	0.44
1983	29	148	113	130	66	0.51	0.51
1984	21	113	83	95	48	0.51	0.52
1985	43	102	67	92	51	0.55	0.54
1986	87	96	60	80	49	0.61	0.74
1987	164	105	46	70	41	0.58	0.58
1988	49	154	69	86	54	0.63	0.68
1989	30	168	100	123	63	0.51	0.68
1990	27	146	111	120	67	0.56	0.61
1991	92	123	90	109	55	0.50	0.66
1992	175	106	66	71	47	0.66	0.73
1993	38	130	71	66	48	0.73	0.67
1994	47	128	83	69	60	0.86	0.64
1995	73	124	85	92	61	0.66	0.66
1996	36	108	70	74	57	0.77	0.68
1997	103	87	59	63	44	0.70	0.62
1998	18	97	64	55	41	0.75	0.63
1999	50	91	64	58	45	0.78	0.68
2000	117	91	64	65	42	0.64	0.64
2001	157	115	70	68	40	0.58	0.46
2002	187	168	99	94	50	0.53	0.46
2003	50	220	148	124	61	0.49	0.40
2004	152	253	181	188	85	0.45	0.49
2005	386	259	177	190	97	0.51	0.52
2006	90	299	144	155	98	0.63	0.58
2007	42	298	163	148	110	0.74	0.56
2008	44	250	159	162	103	0.64	0.48
2009	120	193	143	147	82	0.56	0.49
2010	39	168	114	115	64	0.56	0.47
2011	29	152	98	108	49	0.46	0.41
2012	20	141	94	116	46	0.40	0.35
2013	34	132	97	119	44	0.37	0.35
2014	24	115	72	99	34	0.34	0.31
2015	20	112	78	100			
2016	107						

[1)] Stofn 3 ára og eldri í upphafi árs, reiknaður út frá þyngdum úr SMB.
Biomass of ages 3+ at the beginning of the year, calculated using weights in spring survey.

[2)] Hrygningarstofn á hrygningartíma, reiknaður út frá þyngdum og kynþroskahlutfalli úr SMB.
Spawning stock biomasss at the time of spawning, calculated using weights and maturity in spring survey.

[3)] Viðmiðunarstofn 45 cm og stærri ýsu, reiknaður út frá þyngdum úr SMB.
Reference biomass of 45 cm and larger haddock, calculated using weights in spring survey.

TAFLA 3.2.9
Ýsa. Stofnstærð í fjölda eftir aldri (í milljónum).
Haddock. *Stock size in numbers at age (in millions).*

Ár	Aldur *Age*										
Year	2	3	4	5	6	7	8	9	10	11	12
1979	80.9	117.3	27.7	19.6	20.4	3.4	0.8	0.1	0.0	0.1	0.1
1980	37.4	66.1	94.3	19.3	10.5	8.6	1.2	0.2	0.1	0.0	0.0
1981	10.4	30.1	52.9	66.8	11.9	5.2	3.6	0.5	0.1	0.0	0.0
1982	42.8	8.5	24.2	38.9	39.4	4.3	1.7	1.3	0.3	0.1	0.0
1983	29.3	34.9	6.8	16.9	22.0	19.6	1.7	0.5	0.4	0.1	0.0
1984	20.6	24.0	27.7	4.1	9.7	9.1	8.0	0.7	0.2	0.1	0.0
1985	42.8	16.6	18.7	18.2	2.1	3.6	4.1	2.9	0.3	0.1	0.1
1986	86.5	33.8	12.0	11.1	8.7	1.0	1.4	1.6	0.6	0.1	0.1
1987	164.0	69.9	23.9	6.2	4.9	2.5	0.4	0.5	0.5	0.2	0.0
1988	48.7	132.5	49.7	13.3	2.6	2.2	1.1	0.2	0.2	0.2	0.1
1989	29.8	39.7	99.6	27.0	5.6	0.9	0.8	0.3	0.1	0.1	0.1
1990	27.1	24.2	30.3	61.2	13.4	1.7	0.3	0.1	0.1	0.0	0.1
1991	92.3	20.5	17.6	17.0	28.7	5.3	0.6	0.1	0.1	0.1	0.0
1992	175.1	67.8	14.8	9.6	7.2	10.7	1.9	0.2	0.1	0.0	0.1
1993	38.4	138.5	45.8	7.0	3.7	2.6	4.1	0.7	0.1	0.0	0.0
1994	46.8	30.8	102.2	25.9	3.0	1.4	0.8	1.3	0.2	0.0	0.0
1995	72.9	35.5	22.2	58.1	11.5	1.1	0.5	0.4	0.5	0.1	0.0
1996	36.3	56.0	22.4	13.0	25.9	4.2	0.4	0.2	0.1	0.2	0.0
1997	102.5	27.0	36.3	11.4	6.6	9.6	1.3	0.1	0.1	0.0	0.1
1998	18.0	82.7	18.5	19.9	4.9	3.0	3.3	0.4	0.0	0.0	0.0
1999	50.2	14.5	60.2	10.0	9.1	1.8	1.2	1.0	0.1	0.0	0.0
2000	117.4	39.8	10.4	33.7	4.1	3.1	0.7	0.4	0.4	0.0	0.0
2001	156.5	93.7	26.8	6.4	15.3	1.6	1.0	0.3	0.1	0.1	0.0
2002	187.3	125.9	66.7	15.7	3.9	6.8	0.7	0.4	0.1	0.1	0.1
2003	50.2	152.3	93.6	40.1	8.2	2.2	2.8	0.3	0.2	0.1	0.0
2004	152.0	40.7	119.0	61.9	21.5	4.1	1.1	1.1	0.2	0.1	0.0
2005	385.7	123.0	29.6	81.4	33.2	9.6	1.6	0.5	0.5	0.1	0.0
2006	90.3	313.6	92.1	18.0	43.7	14.7	3.7	0.5	0.2	0.2	0.1
2007	42.3	73.7	247.7	56.2	8.7	18.7	5.2	1.1	0.2	0.1	0.1
2008	44.0	33.9	56.8	164.6	25.9	4.1	6.3	1.8	0.4	0.1	0.0
2009	119.8	34.0	23.7	37.7	86.8	11.2	1.8	2.4	0.7	0.2	0.0
2010	38.9	97.1	24.9	15.0	22.8	39.4	4.0	0.8	0.7	0.2	0.1
2011	28.6	31.7	74.1	14.0	7.9	12.6	16.4	1.6	0.4	0.2	0.1
2012	19.6	23.2	24.5	50.0	6.9	3.9	6.7	7.8	0.9	0.2	0.1
2013	34.4	15.9	17.8	17.0	29.1	3.6	2.1	3.2	4.0	0.5	0.1
2014	23.9	27.9	12.1	12.0	10.3	15.4	1.9	1.1	1.5	2.0	0.3
2015	20.3	19.4	21.5	8.3	7.3	6.0	8.4	1.1	0.5	0.7	1.1

TAFLA 3.2.10
Ýsa. Veiðidánartala eftir aldri.
Haddock. *Fishing mortality by age.*

Ár	Aldur *Age*							
Year	2	3	4	5	6	7	8	9
1979	0.00	0.02	0.16	0.42	0.67	0.83	0.99	0.55
1980	0.02	0.02	0.14	0.28	0.51	0.66	0.68	0.56
1981	0.00	0.02	0.11	0.33	0.81	0.92	0.79	0.46
1982	0.00	0.03	0.16	0.37	0.50	0.75	1.06	0.90
1983	0.00	0.03	0.30	0.36	0.68	0.69	0.71	0.64
1984	0.01	0.05	0.22	0.45	0.78	0.61	0.83	0.49
1985	0.03	0.12	0.32	0.53	0.58	0.72	0.74	1.31
1986	0.01	0.15	0.47	0.63	1.05	0.82	0.94	0.98
1987	0.01	0.14	0.39	0.67	0.62	0.66	0.53	0.50
1988	0.01	0.09	0.41	0.67	0.81	0.81	1.00	0.56
1989	0.01	0.07	0.29	0.50	1.00	0.92	1.55	0.68
1990	0.08	0.12	0.38	0.56	0.74	0.77	0.77	0.79
1991	0.11	0.12	0.41	0.65	0.78	0.81	0.89	0.47
1992	0.03	0.19	0.55	0.76	0.83	0.77	0.86	0.97
1993	0.02	0.10	0.37	0.64	0.74	0.93	0.93	0.84
1994	0.08	0.13	0.36	0.61	0.77	0.82	0.64	0.79
1995	0.06	0.26	0.34	0.61	0.80	0.90	0.97	0.86
1996	0.10	0.23	0.47	0.48	0.80	0.95	0.91	0.79
1997	0.01	0.18	0.40	0.64	0.58	0.87	0.90	0.82
1998	0.02	0.12	0.41	0.57	0.78	0.74	1.03	1.04
1999	0.03	0.13	0.38	0.69	0.88	0.79	0.87	0.81
2000	0.03	0.19	0.29	0.59	0.74	0.93	0.74	0.93
2001	0.02	0.14	0.34	0.29	0.60	0.62	0.75	0.57
2002	0.01	0.10	0.31	0.45	0.38	0.71	0.52	0.65
2003	0.01	0.05	0.21	0.42	0.51	0.47	0.68	0.34
2004	0.01	0.12	0.18	0.42	0.61	0.75	0.62	0.64
2005	0.01	0.09	0.30	0.42	0.61	0.75	0.85	0.81
2006	0.00	0.04	0.29	0.52	0.65	0.85	1.06	1.06
2007	0.02	0.06	0.21	0.57	0.55	0.89	0.88	0.79
2008	0.06	0.16	0.21	0.44	0.63	0.62	0.76	0.72
2009	0.01	0.11	0.26	0.30	0.59	0.83	0.59	0.99
2010	0.00	0.07	0.38	0.44	0.40	0.68	0.72	0.64
2011	0.01	0.06	0.19	0.51	0.51	0.43	0.54	0.42
2012	0.01	0.07	0.17	0.34	0.44	0.43	0.53	0.47
2013	0.01	0.08	0.20	0.30	0.43	0.46	0.44	0.55
2014	0.01	0.06	0.17	0.29	0.35	0.41	0.31	0.49

TAFLA 3.2.11
Ýsa. Forsendur í framreikningum á þróun stofnsins árin.
Náttúrulegur dánarstuðull M=0.2.
Haddock. *Input parameters for catch and stock projection.*
Natural mortality coefficient, M=0.2.

Aldur / *Age*	Stofnstærð / *Stock size*	Veiðimynstur / *Selectivity*			Hlutfall kynþroska / *Maturity*		Meðalþyngd (g) í stofni / *Mean weight (g) in stock*	
	2015	2015	2016	2017	2016	2017	2016	2017
2	20.3	0.056	0.006	0.005	0.067	0.066	184	182
3	19.4	0.321	0.308	0.215	0.417	0.317	609	486
4	21.5	0.681	0.694	0.685	0.696	0.694	1 117	1 111
5	8.3	0.993	0.967	0.978	0.827	0.835	1 643	1 689
6	7.3	1.089	1.134	1.129	0.894	0.894	2 200	2 205
7	6.0	1.237	1.204	1.208	0.912	0.925	2 461	2 698
8	8.4	1.250	1.215	1.208	0.935	0.935	2 908	2 915
9	1.1	1.250	1.215	1.208	1.000	1.000	3 167	3 272
10	0.5	1.250	1.215	1.208	1.000	1.000	3 472	3 470
11	0.7	1.250	1.215	1.208	1.000	1.000	3 475	3 698
12	1.1	1.250	1.215	1.208	1.000	1.000	3 775	3 700

Stofnstærð: Stofnstærð í milljónum fiska í ársbyrjun 2015.
Veiðimynstur: Hlutfallsleg veiðidánartala hvers aldursflokks, spáð út frá þyngdum í stofni.
Hlutfall kynþroska: Kynþroskahlutfall, spáð út frá þyngdum í stofni.
Meðalþyngd: Meðalþyngd í stofni, spáð út frá þyngdum í SMB og miðað við áætlaðan vöxt árið 2015.

Stock size: *Stock size in millions at the beginning of 2015.*
Selectivity: *Relative fishing mortality on each age group, predicted from weights in stock.*
Maturity at age: *Maturity predicted from weights in stock.*
Mean weight: *Mean weight at age in the stock, predicted from weights in spring survey 2015 and predicted growth in 2015.*

TAFLA 3.3.1
Ufsi. Afli á Íslandsmiðum (í tonnum).
Saithe. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1955	12 298	35 545	47 843
1956	25 250	42 611	67 861
1957	19 055	43 007	62 062
1958	14 961	38 219	53 180
1959	14 975	33 504	48 479
1960	12 703	35 343	48 046
1961	13 675	36 155	49 830
1962	13 469	36 940	50 409
1963	14 758	33 691	48 449
1964	21 665	38 752	60 417
1965	24 866	35 242	60 108
1966	21 022	31 154	52 176
1967	29 021	47 249	76 270
1968	38 027	39 919	77 946
1969	53 988	62 359	116 347
1970	63 882	49 433	113 315
1971	60 080	73 811	133 891
1972	59 945	47 928	107 873
1973	56 567	54 546	111 113
1974	65 220	32 348	97 568
1975	61 430	26 494	87 924
1976	56 811	25 134	81 945
1977	46 973	15 053	62 026
1978	44 327	5 345	49 672
1979	57 066	6 438	63 504
1980	52 436	5 911	58 347
1981	54 921	4 080	59 001
1982	65 124	3 786	68 910
1983	55 904	2 362	58 266
1984	60 406	2 313	62 719
1985	55 135	1 937	57 072
1986	63 867	1 001	64 868
1987	78 175	2 356	80 531
1988	74 383	2 864	77 247
1989	79 810	2 615	82 425
1990	95 032	3 095	98 127
1991	99 390	2 926	102 316
1992	77 832	1 765	79 597
1993	69 982	1 666	71 648
1994	63 333	1 006	64 339
1995	47 466	1 163	48 629
1996	39 297	804	40 101
1997	36 548	716	37 264
1998	30 531	1 000	31 531
1999	30 583	710	31 293
2000	32 914	232	33 146
2001	31 854	209	32 063
2002	41 687	384	42 071
2003	51 855	398	52 253
2004	64 314	477	64 791
2005	68 283	860	69 143
2006	75 197	466	75 663
2007	64 005	425	64 430
2008	69 991	198	70 189
2009	61 119	272	61 391
2010	53 772	500	54 272
2011	50 386	737	51 123
2012	50 843	940	51 783
2013	57 077	925	58 002
2014	45 733	750	46 483

TAFLA 3.3.2
Ufsi. Skipting aflans í fjölda eftir aldri (í milljónum).
Saithe. *Catch in numbers at age (in millions).*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	0.275	2.540	5.214	2.596	2.169	1.341	0.387	0.262	0.155	0.112	0.064	0.033
1981	0.203	1.325	3.503	5.404	1.457	1.415	0.578	0.242	0.061	0.154	0.135	0.128
1982	0.508	1.092	2.804	4.845	4.293	1.215	0.975	0.306	0.059	0.035	0.048	0.046
1983	0.107	1.750	1.065	2.455	4.454	2.311	0.501	0.251	0.038	0.012	0.002	0.004
1984	0.053	0.657	0.800	1.825	2.184	3.610	0.844	0.376	0.291	0.135	0.185	0.226
1985	0.376	4.014	3.366	1.958	1.536	1.172	0.747	0.479	0.074	0.023	0.072	0.071
1986	3.108	1.400	4.170	2.665	1.550	1.116	0.628	1.549	0.216	0.051	0.030	0.014
1987	0.956	5.135	4.428	5.409	2.915	1.348	0.661	0.496	0.498	0.058	0.027	0.048
1988	1.318	5.067	6.619	3.678	2.859	1.775	0.845	0.226	0.270	0.107	0.024	0.001
1989	0.315	4.313	8.471	7.309	1.794	1.928	0.848	0.270	0.191	0.135	0.076	0.010
1990	0.143	1.692	5.471	10.112	6.174	1.816	1.087	0.380	0.151	0.055	0.076	0.037
1991	0.198	0.874	3.613	6.844	10.772	3.223	0.858	0.838	0.228	0.040	0.006	0.005
1992	0.242	2.928	3.844	4.355	3.884	4.046	1.290	0.350	0.196	0.056	0.054	0.015
1993	0.657	1.083	2.841	2.252	2.247	2.314	3.671	0.830	0.223	0.188	0.081	0.012
1994	0.702	2.955	1.770	2.603	1.377	1.243	1.263	2.009	0.454	0.158	0.188	0.082
1995	1.573	1.853	2.661	1.807	2.370	0.905	0.574	0.482	0.521	0.106	0.035	0.013
1996	1.102	2.608	1.868	1.649	0.835	1.233	0.385	0.267	0.210	0.232	0.141	0.074
1997	0.603	2.960	2.766	1.651	1.178	0.599	0.454	0.125	0.095	0.114	0.077	0.043
1998	0.183	1.289	1.767	1.545	1.114	0.658	0.351	0.265	0.120	0.081	0.085	0.085
1999	0.989	0.732	1.564	2.176	1.934	0.669	0.324	0.140	0.072	0.025	0.028	0.022
2000	0.850	2.383	0.896	1.511	1.612	1.806	0.335	0.173	0.057	0.033	0.017	0.007
2001	1.223	2.619	2.184	0.591	0.977	0.943	0.819	0.186	0.094	0.028	0.028	0.013
2002	1.187	4.190	3.147	2.970	0.519	0.820	0.570	0.309	0.101	0.027	0.015	0.011
2003	2.284	4.363	6.031	2.472	1.942	0.285	0.438	0.289	0.196	0.028	0.029	0.015
2004	0.952	7.841	7.195	5.363	1.563	1.057	0.211	0.224	0.157	0.074	0.039	0.011
2005	2.607	3.089	7.333	6.876	3.592	0.978	0.642	0.119	0.149	0.089	0.046	0.012
2006	1.380	10.051	2.616	5.840	4.514	1.989	0.667	0.485	0.118	0.112	0.086	0.031
2007	1.244	6.552	8.751	2.124	2.935	1.817	0.964	0.395	0.190	0.043	0.036	0.020
2008	1.432	3.602	5.874	6.706	1.155	1.894	1.248	0.803	0.262	0.176	0.087	0.044
2009	2.820	5.166	2.084	2.734	2.883	0.777	1.101	0.847	0.555	0.203	0.134	0.036
2010	2.146	6.284	3.058	0.997	1.644	1.571	0.514	0.656	0.522	0.231	0.114	0.064
2011	2.004	4.850	4.006	1.502	0.677	1.065	1.145	0.323	0.433	0.244	0.150	0.075
2012	1.183	4.816	3.514	2.417	0.903	0.432	0.883	1.015	0.354	0.277	0.173	0.099
2013	1.163	5.538	6.366	2.963	1.610	0.664	0.375	0.537	0.460	0.124	0.118	0.078
2014	0.668	3.499	4.867	2.805	1.276	0.725	0.347	0.241	0.312	0.199	0.128	0.074

TAFLA 3.3.3
Ufsi. Meðalþyngd eftir aldri (g) í afla.
Saithe. *Weight at age (g) from commercial catches.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	1 428	1 983	2 667	3 689	5 409	6 321	7 213	8 565	9 147	9 617	10 066	11 041
1981	1 585	2 037	2 696	3 525	4 541	6 247	6 991	8 202	9 537	9 089	9 351	10 225
1982	1 547	2 194	3 015	3 183	5 114	6 202	7 256	7 922	8 924	10 134	9 447	10 535
1983	1 530	2 221	3 171	4 270	4 107	5 984	7 565	8 673	8 801	9 039	11 138	9 818
1984	1 653	2 432	3 330	4 681	5 466	4 973	7 407	8 179	8 770	8 831	11 010	11 127
1985	1 609	2 172	3 169	3 922	4 697	6 411	6 492	8 346	9 401	10 335	11 027	10 644
1986	1 450	2 190	2 959	4 402	5 488	6 406	7 570	6 487	9 616	10 462	11 747	11 902
1987	1 516	1 715	2 670	3 839	5 081	6 185	7 330	8 025	7 974	9 615	12 246	11 656
1988	1 261	2 017	2 513	3 476	4 719	5 932	7 523	8 439	8 748	9 559	10 824	14 099
1989	1 403	2 021	2 194	3 047	4 505	5 889	7 172	8 852	10 170	10 392	12 522	11 923
1990	1 647	1 983	2 566	3 021	4 077	5 744	7 038	7 564	8 854	10 645	11 674	11 431
1991	1 224	1 939	2 432	3 160	3 634	4 967	6 629	7 704	9 061	9 117	10 922	11 342
1992	1 269	1 909	2 578	3 288	4 150	4 865	6 168	7 926	8 349	9 029	11 574	9 466
1993	1 381	2 143	2 742	3 636	4 398	5 421	5 319	7 006	8 070	10 048	9 106	11 591
1994	1 444	1 836	2 649	3 512	4 906	5 539	6 818	6 374	8 341	9 770	10 528	11 257
1995	1 370	1 977	2 769	3 722	4 621	5 854	6 416	7 356	6 815	8 312	9 119	11 910
1996	1 229	1 755	2 670	3 802	4 902	5 681	7 182	7 734	9 256	8 322	10 501	11 894
1997	1 325	1 936	2 409	3 906	5 032	6 171	7 202	7 883	8 856	9 649	9 621	10 877
1998	1 347	1 972	2 943	3 419	4 850	5 962	6 933	7 781	8 695	9 564	10 164	10 379
1999	1 279	2 106	2 752	3 497	3 831	5 819	7 072	8 078	8 865	10 550	10 823	11 300
2000	1 367	1 929	2 751	3 274	4 171	4 447	6 790	8 216	9 369	9 817	10 932	12 204
2001	1 280	1 882	2 599	3 697	4 420	5 538	5 639	7 985	9 059	9 942	10 632	10 988
2002	1 308	1 946	2 569	3 266	4 872	5 365	6 830	7 067	9 240	9 659	10 088	11 632
2003	1 310	1 908	2 545	3 336	4 069	5 792	7 156	8 131	8 051	10 186	10 948	11 780
2004	1 467	1 847	2 181	2 918	4 017	5 135	7 125	7 732	8 420	8 927	10 420	10 622
2005	1 287	1 888	2 307	2 619	3 516	5 080	6 060	8 052	8 292	8 342	8 567	10 256
2006	1 164	1 722	2 369	2 808	3 235	4 361	6 007	7 166	8 459	9 324	9 902	9 636
2007	1 140	1 578	2 122	2 719	3 495	4 114	5 402	6 995	7 792	9 331	9 970	10 738
2008	1 306	1 805	2 295	2 749	3 515	4 530	5 132	6 394	7 694	9 170	9 594	11 258
2009	1 412	1 862	2 561	3 023	3 676	4 596	5 651	6 074	7 356	8 608	9 812	10 639
2010	1 287	1 787	2 579	3 469	4 135	4 850	5 558	6 289	6 750	7 997	9 429	10 481
2011	1 175	1 801	2 526	3 680	4 613	5 367	5 685	6 466	6 851	7 039	8 268	8 958
2012	1 160	1 668	2 369	3 347	4 430	5 486	6 161	6 448	7 220	8 054	8 147	8 901
2013	1 056	1 675	2 219	3 244	4 529	5 628	6 397	7 055	7 378	7 955	8 400	8 870
2014	1 211	1 575	2 229	2 983	4 378	5 598	6 773	8 023	7 875	8 646	9 179	9 749
2015[1)]	1 142	1 726	2 217	3 071	4 030	5 532	6 846	7 175	7 491	8 218	8 575	9 173

[1)] Áætlað. *Estimated.*

TAFLA 3.3.4
Ufsi. Meðalþyngd eftir aldri (g) í stofnmælingu í mars.
Saithe. *Weight at age (g) in the groundfish survey in March.*

Ár	Aldur *Age*						
Year	3	4	5	6	7	8	9
1985	957	1 673	2 149	3 140	4 092	5 201	4 575
1986	837	1 405	2 270	3 324	4 784	6 044	7 341
1987	864	1 152	1 724	3 433	4 259	6 077	6 945
1988	775	1 429	2 012	2 790	4 357	5 419	7 519
1989	640	1 396	1 784	2 815	3 701	5 110	6 347
1990	739	1 251	2 136	2 616	4 453	6 058	6 912
1991	787	1 355	1 864	2 667	2 948	4 770	4 736
1992	874	1 381	2 008	2 981	3 831	4 302	6 191
1993	759	1 458	2 061	2 948	3 768	4 888	4 399
1994	853	1 607	2 770	3 387	4 721	6 203	7 430
1995	742	1 230	2 324	3 641	4 270	6 143	5 662
1996	899	1 327	1 972	2 740	5 265	5 109	4 072
1997	741	1 303	1 781	2 731	4 229	5 757	7 638
1998	841	1 155	1 799	2 530	3 935	5 384	5 491
1999	774	1 465	2 131	2 873	3 549	5 544	8 046
2000	821	1 352	2 227	2 712	3 618	3 878	5 927
2001	767	1 517	2 124	3 392	4 225	5 140	5 526
2002	739	1 264	2 196	3 366	4 595	5 398	6 570
2003	603	1 183	1 888	2 678	3 678	5 321	8 959
2004	822	1 219	1 808	2 690	4 075	5 446	8 215
2005	671	1 376	1 833	2 341	3 469	5 523	6 560
2006	650	1 170	2 035	2 537	3 120	4 091	6 031
2007	600	1 155	1 755	2 480	3 251	3 592	4 967
2008	692	1 206	1 796	2 323	3 587	4 519	5 517
2009	689	1 427	2 042	2 563	3 256	4 963	5 383
2010	777	1 307	2 183	2 921	3 706	4 648	6 963
2011	609	1 212	2 202	3 078	3 856	4 789	5 696
2012	699	1 063	1 719	2 734	4 178	5 470	6 771
2013	470	1 108	1 904	3 073	3 911	4 890	6 332
2014	667	1 066	1 844	2 764	3 777	5 314	7 491
2015	641	1 247	1 798	2 847	4 161	5 696	7 297

TAFLA 3.3.5

Ufsi. Mælt hlutfall kynþroska eftir aldri í stofnmælingu botnfiska í mars.
Saithe. *Observed proportion mature at age in the groundfish survey in March.*

Ár	Aldur *Age*					
Year	4	5	6	7	8	9
1985	0.05	0.13	0.40	0.58	0.74	0.62
1986	0.02	0.18	0.50	0.75	0.84	0.90
1987	0.04	0.13	0.61	0.69	0.88	0.95
1988	0.01	0.08	0.31	0.62	0.65	0.87
1989	0.03	0.11	0.44	0.40	0.60	0.60
1990	0.02	0.20	0.29	0.71	0.89	0.88
1991	0.01	0.08	0.24	0.21	0.43	0.50
1992	0.02	0.18	0.48	0.62	0.66	0.73
1993	0.06	0.12	0.35	0.51	0.70	0.56
1994	0.09	0.49	0.65	0.81	0.83	0.84
1995	0.02	0.10	0.42	0.70	0.79	0.50
1996	0.02	0.12	0.42	0.71	0.54	1.00
1997	0.11	0.10	0.45	0.66	0.76	0.94
1998	0.00	0.14	0.36	0.66	0.64	0.81
1999	0.22	0.27	0.38	0.44	0.77	1.00
2000	0.14	0.51	0.54	0.76	0.90	0.83
2001	0.17	0.51	0.62	0.91	0.84	1.00
2002	0.05	0.52	0.85	0.90	0.95	0.96
2003	0.03	0.25	0.48	0.64	1.00	1.00
2004	0.03	0.35	0.58	0.84	0.94	1.00
2005	0.13	0.28	0.58	0.71	0.95	0.95
2006	0.05	0.33	0.59	0.61	0.76	0.88
2007	0.05	0.30	0.54	0.78	0.81	0.83
2008	0.07	0.29	0.49	0.73	0.90	0.96
2009	0.03	0.29	0.48	0.77	0.78	0.85
2010	0.06	0.47	0.79	0.93	1.00	1.00
2011	0.02	0.23	0.42	0.78	0.76	0.91
2012	0.01	0.12	0.36	0.66	0.87	0.94
2013	0.04	0.15	0.40	0.62	1.00	1.00
2014	0.02	0.20	0.44	0.61	0.93	1.00
2015	0.02	0.14	0.42	0.69	0.84	1.00

TAFLA 3.3.6

Ufsi. Hlutfall kynþroska eftir aldri byggt á kynþroskalíkani. Aldurshópar yngri en 4 ára taldir ókynþroska og eldri en 9 ára að fullu kynþroska.
Saithe. *Maturity at age based on maturity model. Ages younger than 4 considered immature and older than 9 fully mature.*

Ár	Aldur *Age*					
Year	4	5	6	7	8	9
1985	0.09	0.20	0.38	0.60	0.79	0.91
1986	0.08	0.18	0.35	0.58	0.77	0.89
1987	0.07	0.16	0.33	0.55	0.75	0.88
1988	0.07	0.15	0.30	0.52	0.73	0.87
1989	0.06	0.14	0.29	0.50	0.71	0.86
1990	0.06	0.13	0.27	0.48	0.70	0.85
1991	0.06	0.13	0.27	0.48	0.69	0.85
1992	0.06	0.13	0.27	0.48	0.69	0.85
1993	0.06	0.13	0.27	0.49	0.70	0.86
1994	0.06	0.14	0.29	0.51	0.72	0.86
1995	0.07	0.16	0.32	0.54	0.74	0.88
1996	0.08	0.18	0.36	0.58	0.78	0.90
1997	0.10	0.21	0.40	0.63	0.81	0.91
1998	0.12	0.25	0.45	0.67	0.84	0.93
1999	0.14	0.28	0.50	0.71	0.86	0.94
2000	0.15	0.31	0.53	0.74	0.88	0.95
2001	0.17	0.33	0.55	0.76	0.89	0.95
2002	0.17	0.34	0.56	0.76	0.89	0.95
2003	0.17	0.34	0.56	0.76	0.89	0.95
2004	0.16	0.33	0.55	0.75	0.88	0.95
2005	0.16	0.32	0.54	0.74	0.88	0.95
2006	0.15	0.31	0.53	0.74	0.87	0.95
2007	0.15	0.30	0.52	0.73	0.87	0.94
2008	0.14	0.29	0.51	0.72	0.87	0.94
2009	0.14	0.28	0.50	0.71	0.86	0.94
2010	0.13	0.27	0.48	0.70	0.85	0.94
2011	0.12	0.26	0.47	0.69	0.85	0.93
2012	0.12	0.25	0.46	0.68	0.84	0.93
2013	0.11	0.24	0.44	0.66	0.83	0.92
2014	0.11	0.23	0.42	0.65	0.82	0.92
2015	0.10	0.22	0.41	0.63	0.81	0.92

http://data.hafro.is/assmt/2015/saithe/matobs.csv
http://data.hafro.is/assmt/2015/saithe/maturity.csv

TAFLA 3.3.7
Ufsi. Aldursskiptar vísitölur úr stofnmælingu botnfiska í mars.
Saithe. *Age disaggregated indices from the groundfish survey in March.*

Ár	Aldur *Age*								
Year	2	3	4	5	6	7	8	9	10
1985	0.61	0.58	2.99	5.11	1.74	1.06	0.50	1.37	0.16
1986	2.33	2.40	2.06	2.09	1.42	0.62	0.28	0.19	0.32
1987	0.39	11.52	12.93	6.42	3.95	3.07	0.79	0.36	0.26
1988	0.31	0.49	2.72	2.81	1.71	0.95	0.40	0.07	0.08
1989	1.43	3.96	5.05	6.57	2.49	1.77	0.91	0.40	0.00
1990	0.35	1.69	4.86	6.37	12.33	3.30	1.21	0.64	0.12
1991	0.22	1.40	1.72	2.22	1.13	2.50	0.30	0.02	0.03
1992	0.15	0.91	5.73	5.52	2.79	2.68	1.91	0.28	0.06
1993	1.27	11.04	2.00	6.80	2.41	2.25	1.02	4.02	0.64
1994	0.82	0.73	1.89	1.74	1.95	0.53	0.84	1.00	3.62
1995	0.48	1.98	1.12	0.51	0.28	0.34	0.10	0.15	0.15
1996	0.13	0.51	3.76	1.12	0.99	0.58	1.00	0.05	0.09
1997	0.32	0.90	4.72	3.96	0.94	0.40	0.16	0.10	0.05
1998	0.11	1.64	2.33	2.53	1.23	0.71	0.31	0.08	0.07
1999	0.75	3.71	0.93	1.25	1.64	0.57	0.17	0.02	0.02
2000	0.38	2.02	2.54	0.61	0.84	0.53	0.47	0.07	0.03
2001	0.89	1.90	2.64	1.60	0.20	0.23	0.40	0.13	0.07
2002	1.05	2.23	2.97	3.08	2.15	0.42	0.49	0.32	0.22
2003	0.05	9.62	5.06	2.94	1.34	0.77	0.21	0.05	0.10
2004	0.91	1.38	9.39	6.04	4.35	1.48	0.81	0.17	0.16
2005	0.26	4.32	2.39	7.42	4.66	2.31	0.86	0.44	0.12
2006	0.00	2.18	6.69	1.98	8.91	3.52	1.21	0.29	0.25
2007	0.06	0.31	1.73	3.22	0.81	1.62	0.70	0.29	0.16
2008	0.08	2.25	1.79	2.85	4.01	0.61	0.78	0.34	0.15
2009	0.21	2.43	1.80	0.68	0.91	0.84	0.12	0.26	0.15
2010	0.07	1.23	4.99	2.49	0.63	0.60	0.48	0.07	0.13
2011	0.15	3.83	4.20	3.06	1.15	0.41	0.39	0.44	0.17
2012	0.02	1.75	12.04	6.86	2.75	0.62	0.17	0.38	0.50
2013	0.12	4.27	7.43	6.78	4.65	2.57	1.12	0.30	0.44
2014	0.03	0.39	3.84	3.78	2.04	0.86	0.42	0.15	0.11
2015	0.04	1.07	1.90	3.16	1.72	0.81	0.72	0.68	0.45

TAFLA 3.3.8

Ufsi. Fjöldi þriggja ára nýliða i milljónum, hrygningar- og viðmiðunarstofn í upphafi árs í þús. tonna, afli í þús. tonna og veiðihlutfall (afli/viðmiðunarstofn).

Saithe. *Recruitment as 3-year-olds, spawning stock and reference biomass in thous. tonnes, landings in thous. tonnes, and harvest rate (landings/reference biomass).*

Ár *Year*	Nýliðun *Recruitment*	Hrygningarstofn *SSB*	Viðmiðunarstofn *Biomass 4+*	Afli *Landings*	Veiðihlutfall *Harvest rate*
1980	28	122	312	58	0.19
1981	20	130	304	59	0.19
1982	22	148	294	69	0.23
1983	32	147	270	58	0.22
1984	42	149	287	63	0.22
1985	35	139	299	57	0.19
1986	67	137	318	65	0.20
1987	91	128	335	81	0.24
1988	50	125	415	77	0.19
1989	32	127	397	82	0.21
1990	21	134	377	98	0.26
1991	29	143	336	102	0.30
1992	15	135	288	80	0.28
1993	20	112	230	72	0.31
1994	18	93	187	64	0.34
1995	30	70	152	49	0.32
1996	25	61	148	40	0.27
1997	17	62	155	37	0.24
1998	9	68	153	32	0.21
1999	30	72	131	31	0.24
2000	31	74	141	33	0.23
2001	53	80	161	32	0.20
2002	63	96	217	42	0.19
2003	72	118	276	52	0.19
2004	26	137	316	65	0.20
2005	72	147	282	69	0.25
2006	42	156	307	76	0.25
2007	19	152	278	64	0.23
2008	27	149	248	70	0.28
2009	41	137	224	61	0.27
2010	41	127	227	54	0.24
2011	50	122	239	51	0.21
2012	45	122	253	52	0.20
2013	39	128	268	58	0.22
2014	21	132	265	46	0.18
2015	26	139	255		
2016	32				

TAFLA 3.3.9
Ufsi. Stofnstærð í fjölda eftir aldri (í milljónum).
Saithe. *Stock abundance in numbers at age (in millions).*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	28.2	46.8	30.9	10.3	8.1	3.7	1.3	0.7	0.7	0.5	0.3	0.1
1981	20.2	22.7	35.2	21.2	6.3	4.6	2.0	0.7	0.4	0.4	0.3	0.2
1982	21.6	16.3	17.2	24.6	13.3	3.7	2.6	1.1	0.4	0.2	0.2	0.2
1983	32.1	17.4	12.2	11.8	14.8	7.5	1.9	1.4	0.6	0.2	0.1	0.1
1984	41.8	26.0	13.3	8.6	7.5	9.0	4.3	1.1	0.8	0.4	0.1	0.1
1985	35.4	33.8	19.9	9.4	5.6	4.6	5.2	2.5	0.7	0.5	0.2	0.1
1986	66.8	28.6	25.8	14.0	6.0	3.4	2.6	3.0	1.4	0.4	0.3	0.1
1987	91.4	53.9	21.6	17.8	8.7	3.5	1.8	1.5	1.6	0.8	0.2	0.2
1988	50.5	73.4	39.8	14.3	10.2	4.6	1.7	0.9	0.7	0.9	0.4	0.1
1989	31.9	40.6	54.7	26.8	8.5	5.6	2.3	0.9	0.5	0.4	0.5	0.2
1990	20.8	25.7	30.4	37.2	16.2	4.7	2.9	1.2	0.5	0.3	0.2	0.3
1991	29.5	16.7	19.0	20.2	31.4	8.6	2.3	1.5	0.6	0.2	0.1	0.1
1992	14.8	23.6	12.3	12.4	11.3	16.2	4.0	1.1	0.7	0.3	0.1	0.1
1993	19.8	11.9	17.4	8.0	7.0	5.9	7.7	2.0	0.5	0.4	0.2	0.1
1994	17.6	15.9	8.7	11.2	4.4	3.5	2.7	3.6	0.9	0.3	0.2	0.1
1995	29.7	14.1	11.4	5.4	5.8	2.1	1.5	1.2	1.5	0.4	0.1	0.1
1996	25.5	23.7	10.1	7.0	2.8	2.7	0.8	0.6	0.5	0.7	0.2	0.1
1997	16.8	20.4	17.3	6.5	3.8	1.4	1.2	0.4	0.3	0.2	0.4	0.1
1998	8.6	13.3	14.5	11.2	3.9	2.1	0.7	0.6	0.2	0.1	0.1	0.2
1999	30.1	6.8	9.6	9.8	7.1	2.3	1.1	0.3	0.3	0.1	0.1	0.1
2000	31.0	23.9	5.0	6.5	6.1	4.1	1.2	0.6	0.2	0.1	0.0	0.0
2001	53.4	24.6	17.2	3.3	4.0	3.5	2.1	0.6	0.3	0.1	0.1	0.0
2002	62.6	42.6	18.0	11.8	2.1	2.4	1.9	1.1	0.3	0.1	0.0	0.0
2003	71.6	49.8	30.9	12.2	7.4	1.2	1.3	1.0	0.6	0.2	0.1	0.0
2004	25.5	57.0	36.2	20.9	7.7	4.3	0.7	0.6	0.5	0.3	0.1	0.0
2005	72.2	19.9	38.0	22.8	13.0	4.8	2.7	0.4	0.4	0.3	0.2	0.0
2006	41.7	56.2	13.0	23.3	13.8	7.9	3.0	1.6	0.2	0.2	0.1	0.1
2007	18.8	32.4	36.2	7.9	13.8	8.2	4.8	1.7	0.9	0.1	0.1	0.1
2008	27.1	14.7	21.2	22.3	4.8	8.5	5.1	2.8	0.9	0.4	0.1	0.0
2009	40.9	21.0	9.3	12.6	13.0	2.8	5.0	2.9	1.5	0.5	0.2	0.0
2010	41.0	31.8	13.6	5.6	7.5	7.8	1.7	2.9	1.6	0.7	0.2	0.1
2011	49.7	32.0	21.1	8.5	3.5	4.7	4.9	1.0	1.6	0.8	0.4	0.1
2012	44.6	39.0	21.7	13.6	5.4	2.2	3.0	3.0	0.6	0.9	0.5	0.2
2013	39.2	35.1	26.7	14.1	8.7	3.5	1.4	1.9	1.8	0.3	0.5	0.3
2014	20.5	30.7	23.6	17.0	8.9	5.5	2.2	0.9	1.1	1.0	0.2	0.3
2015	26.3	16.2	21.6	16.0	11.4	6.0	3.7	1.5	0.6	0.7	0.6	0.1

TAFLA 3.3.10
Ufsi. Veiðidánartala eftir aldri.
Saithe. *Fishing mortality by age.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	0.02	0.09	0.18	0.30	0.36	0.44	0.41	0.44	0.36	0.36	0.36	0.36
1981	0.01	0.08	0.16	0.26	0.32	0.39	0.36	0.39	0.32	0.32	0.32	0.32
1982	0.02	0.09	0.18	0.30	0.37	0.45	0.42	0.45	0.37	0.37	0.37	0.37
1983	0.01	0.07	0.15	0.24	0.30	0.36	0.34	0.36	0.30	0.30	0.30	0.30
1984	0.01	0.07	0.14	0.23	0.29	0.34	0.32	0.34	0.28	0.28	0.28	0.28
1985	0.01	0.07	0.15	0.25	0.30	0.37	0.34	0.37	0.30	0.30	0.30	0.30
1986	0.02	0.08	0.17	0.28	0.35	0.42	0.39	0.42	0.34	0.34	0.34	0.34
1987	0.02	0.10	0.21	0.35	0.43	0.52	0.49	0.52	0.43	0.43	0.43	0.43
1988	0.02	0.09	0.19	0.32	0.40	0.48	0.45	0.48	0.39	0.39	0.39	0.39
1989	0.02	0.09	0.19	0.31	0.38	0.46	0.43	0.46	0.37	0.37	0.37	0.37
1990	0.02	0.10	0.21	0.35	0.43	0.52	0.48	0.52	0.43	0.43	0.43	0.43
1991	0.02	0.11	0.23	0.38	0.46	0.56	0.52	0.56	0.46	0.46	0.46	0.46
1992	0.02	0.11	0.22	0.37	0.45	0.55	0.51	0.55	0.45	0.45	0.45	0.45
1993	0.02	0.12	0.24	0.40	0.49	0.59	0.55	0.59	0.49	0.49	0.49	0.49
1994	0.03	0.13	0.27	0.45	0.56	0.67	0.63	0.67	0.55	0.55	0.55	0.55
1995	0.03	0.13	0.28	0.46	0.57	0.69	0.64	0.69	0.56	0.56	0.56	0.56
1996	0.02	0.12	0.25	0.41	0.50	0.60	0.56	0.60	0.49	0.49	0.49	0.49
1997	0.04	0.14	0.23	0.31	0.42	0.53	0.57	0.55	0.56	0.56	0.56	0.56
1998	0.03	0.12	0.19	0.26	0.34	0.43	0.46	0.45	0.46	0.46	0.46	0.46
1999	0.03	0.12	0.20	0.27	0.36	0.45	0.49	0.47	0.48	0.48	0.48	0.48
2000	0.03	0.13	0.21	0.28	0.38	0.47	0.51	0.50	0.51	0.51	0.51	0.51
2001	0.03	0.11	0.18	0.24	0.32	0.40	0.43	0.42	0.43	0.43	0.43	0.43
2002	0.03	0.12	0.19	0.26	0.35	0.44	0.47	0.46	0.47	0.47	0.47	0.47
2003	0.03	0.12	0.19	0.26	0.34	0.43	0.47	0.45	0.46	0.46	0.46	0.46
2004	0.05	0.21	0.26	0.28	0.27	0.26	0.30	0.37	0.43	0.43	0.43	0.43
2005	0.05	0.22	0.29	0.31	0.29	0.29	0.32	0.40	0.47	0.47	0.47	0.47
2006	0.05	0.24	0.31	0.33	0.31	0.31	0.35	0.43	0.51	0.51	0.51	0.51
2007	0.05	0.22	0.28	0.30	0.29	0.28	0.32	0.39	0.46	0.46	0.46	0.46
2008	0.06	0.25	0.32	0.34	0.33	0.33	0.37	0.45	0.53	0.53	0.53	0.53
2009	0.05	0.24	0.30	0.32	0.31	0.30	0.34	0.42	0.50	0.50	0.50	0.50
2010	0.05	0.21	0.27	0.28	0.27	0.27	0.30	0.37	0.44	0.44	0.44	0.44
2011	0.04	0.19	0.24	0.26	0.25	0.24	0.27	0.34	0.40	0.40	0.40	0.40
2012	0.04	0.18	0.23	0.25	0.23	0.23	0.26	0.32	0.38	0.38	0.38	0.38
2013	0.04	0.20	0.25	0.27	0.25	0.25	0.28	0.35	0.41	0.41	0.41	0.41
2014	0.03	0.15	0.19	0.20	0.20	0.19	0.22	0.27	0.32	0.32	0.32	0.32

TAFLA 3.3.11
Ufsi. Forsendur í framreikningum á þróun stofnsins.
Náttúrulegur dánarstuðull M=0.2.
Saithe. *Input parameters for catch and stock projection.*
Natural mortality coefficient M=0.2.

Aldur *Age*	Stofnstærð *Stock size*	Veiðimynstur *Selectivity*	Meðalþyngd (kg) í afla og stofni *Mean weight (kg) in catch and stock*	Hlutfall kynþroska *Maturity*
	2015	2015–2016	2015–2017	2015–2017
3	26.3	0.11	1.142	0.00
4	16.2	0.48	1.726	0.10
5	21.6	0.61	2.217	0.22
6	16.0	0.65	3.071	0.41
7	11.4	0.62	4.030	0.63
8	6.0	0.61	5.532	0.81
9	3.7	0.69	6.846	0.92
10	1.5	0.85	7.175	1.00
11	0.6	1.00	7.491	1.00
12	0.7	1.00	8.218	1.00
13	0.6	1.00	8.575	1.00
14	0.1	1.00	9.173	1.00

Stofnstærð: Stofnstærð í milljónum fiska í ársbyrjun 2015.
Veiðimynstur: Hlutfallsleg veiðidánartala hvers aldursflokks, metin í stofnmatslíkani fyrir tímabilið 2004–2014.
Meðalþyngd: Þyngd 4–9 ára spáð út frá þyngd sama aldursflokks í afla 2014 ásamt þyngd í SMB 2015. Þyngd annarra aldurshópa spáð út frá meðaltali í afla síðustu þriggja ára. Spágildi fyrir 2015 einnig notuð 2016–2017.
Hlutfall kynþroska: Jafnaður kynþroski eftir aldri í SMB 2015.

Stock size: *Stock size in millions at the beginning of 2015.*
Selectivity: *Relative fishing mortality on each age group, estimated in separable stock model for the period 2004–2014.*
Mean weight: *Weights of ages 4–9 predicted from catch weights from same cohorts in 2014 and survey weights in 2015. Weights of other ages predicted from average of last three years of catch weights. Predicted values for 2015 also used for 2016–2017.*
Maturity: *Smoothed maturity at age from spring survey 2015.*

TAFLA 3.4.1
Gullkarfi. Afli á Íslandsmiðum og öðrum svæðum (í tonnum).
Golden redfish. *Landings from Icelandic waters and other areas (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals Íslandsmið *Total Icelandic waters*	Færeyjar Faroe Islands	Austur-Grænland *East Greenland*	Samtals Total
1978	29 625	1 675	31 300	2 039	15 477	48 816
1979	54 805	1 811	56 616	4 805	15 787	77 208
1980	59 931	2 121	62 052	4 920	22 203	89 175
1981	74 107	1 721	75 828	2 538	23 608	101 974
1982	96 772	1 127	97 899	1 810	30 692	130 401
1983	86 164	1 248	87 412	3 394	15 636	106 442
1984	83 999	767	84 766	6 228	5 040	96 034
1985	66 801	511	67 312	9 194	2 117	78 623
1986	67 242	530	67 772	6 300	2 988	77 060
1987	68 636	576	69 212	6 143	1 196	76 551
1988	79 834	638	80 472	5 020	3 964	89 456
1989	51 523	329	51 852	4 140	685	56 677
1990	62 677	479	63 156	2 407	687	66 250
1991	49 392	285	49 677	2 140	4 255	56 072
1992	50 968	496	51 464	3 460	746	55 670
1993	45 356	534	45 890	2 621	1 738	50 249
1994	38 417	252	38 669	2 274	1 443	42 386
1995	40 995	521	41 516	2 581	62	44 159
1996	33 249	309	33 558	2 316	59	35 933
1997	36 100	242	36 342	2 839	37	39 219
1998	36 481	290	36 771	2 565	109	39 446
1999	39 461	363	39 824	1 436	7	41 267
2000	40 758	429	41 187	1 498	89	42 774
2001	34 634	433	35 067	1 631	93	36 791
2002	48 454	116	48 570	1 941	189	50 700
2003	36 461	116	36 577	1 459	215	38 252
2004	31 421	265	31 686	1 139	107	32 932
2005	42 404	189	42 593	2 484	115	45 192
2006	41 363	158	41 521	656	34	42 211
2007	38 276	88	38 364	689	83	39 136
2008	45 414	122	45 538	569	80	46 187
2009	38 294	148	38 442	462	224	39 128
2010	36 030	126	36 155	620	1 653	38 428
2011	43 630	143	43 773	493	1 005	45 271
2012	42 937	152	43 089	449	2 017	45 555
2013	51 162	168	51 330	372	1 499	53 201
2014	47 560	209	47 769	202	2 706	50 677

TAFLA 3.5.1
Djúpkarfi. Afli á Íslandsmiðum (í tonnum).
Demersal deep sea redfish. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1978	3 693	209	3 902
1979	7 448	246	7 694
1980	9 849	348	10 197
1981	19 242	447	19 689
1982	18 279	213	18 492
1983	36 585	530	37 115
1984	24 271	222	24 493
1985	24 580	188	24 768
1986	18 750	148	18 898
1987	19 132	161	19 293
1988	14 177	113	14 290
1989	40 013	256	40 269
1990	28 214	215	28 429
1991	47 378	273	47 651
1992	43 414	-	43 414
1993	51 221	-	51 221
1994	56 674	46	56 720
1995	48 479	229	48 708
1996	34 508	233	34 741
1997	37 876	-	37 876
1998	32 841	284	33 125
1999	27 475	1 115	28 590
2000	30 185	1 208	31 393
2001	15 415	1 815	17 230
2002	17 870	1 175	19 045
2003	26 295	2 183	28 478
2004	16 226	1 338	17 564
2005	19 109	1 454	20 563
2006	16 339	869	17 208
2007	17 091	282	17 373
2008	24 123	-	24 123
2009	19 430	-	19 430
2010	17 642	-	17 642
2011	11 738	-	11 738
2012	11 965	-	11 965
2013	8 761	-	8 761
2014	9 500	-	9 500

TAFLA 3.5.2

Úthafskarfi - efri og neðri stofnar. Afli á Íslandsmiðum (í tonnum) ásamt heildarafla í Grænlandshafi og aðliggjandi hafsvæðum samkvæmt gögnum Alþjóðahafrannsóknaráðsins.

Shallow and deep pelagic redfish. *Landings from Icelandic waters (in tonnes) and total landings from Irminger Sea and adjacent waters according to ICES data.*

	Úthafskarfi - efri stofn *Shallow pelagic redfish*			Úthafskarfi - neðri stofn *Deep pelagic redfish*		
Ár *Year*	Íslandsmið *Iceland*	Önnur mið *Other areas*	Samtals *Total*	Ísland *Iceland*	Önnur mið *Other areas*	Samtals *Total*
1982	-	60 581	60 581	-	-	-
1983	-	60 234	60 234	-	-	-
1984	-	64 832	64 832	-	-	-
1985	-	71 671	71 671	-	-	-
1986	-	105 107	105 107	-	-	-
1987	-	91 169	91 169	-	-	-
1988	-	91 419	91 419	-	-	-
1989	-	38 784	38 784	-	-	-
1990	-	31 901	31 901	-	-	-
1991	-	27 179	27 179	-	59	59
1992	106	62 457	62 564	1 862	1 536	3 398
1993	-	100 771	100 771	2 603	12 461	15 064
1994	665	96 204	96 869	14 807	37 013	51 820
1995	77	100 058	100 136	1 466	74 241	75 707
1996	16	41 753	41 770	4 728	133 825	138 552
1997	321	27 425	27 746	14 980	80 099	95 079
1998	284	23 866	24 150	40 328	52 490	92 818
1999	165	25 347	25 512	36 359	47 793	84 153
2000	3 375	29 841	33 216	41 302	51 811	93 113
2001	228	41 597	41 825	27 920	59 073	86 993
2002	10	43 205	43 216	37 269	65 860	103 128
2003	49	56 639	56 688	46 627	57 669	104 296
2004	10	33 941	33 951	14 446	77 508	91 954
2005	-	28 229	28 229	11 726	33 759	45 485
2006	-	15 734	15 734	16 452	50 836	67 288
2007	71	6 054	6 126	17 769	40 748	58 516
2008	32	2 027	2 059	4 602	25 443	30 045
2009	-	2 380	2 380	16 828	37 578	54 406
2010	15	2 183	2 198	8 552	50 736	59 288
2011	-	234	234	-	47 333	47 333
2012	28	3 145	3 173	5 530	27 276	32 806
2013	32	1 497	1 529	5 274	40 778	46 052
2014	153	6 270	6 423	603	23 152	23 755

TAFLA 3.5.3
Úthafskarfi - efri stofn. Afli eftir þjóðum (í tonnum).
Shallow pelagic redfish. *Landings by nation (in tonnes).*

Ár *Year*	Ísland *Iceland*	Rússland *Russia*	Þýskaland *Germany*	Færeyjar *Faroes*	Græn-land Green-land	Noregur *Norway*	Spánn *Spain*	Portúgal *Portugal*	Litháen *Lithuania*	Eistland *Estonia*	Lettland *Latvia*	Aðrar þjóðir[1)] Other nations	Samtals *Total*
1982	-	60 000	-	-	-	-	-	-	-	-	-	581	60 581
1983	-	60 079	155	-	-	-	-	-	-	-	-	-	60 234
1984	-	60 643	989	-	-	-	-	-	-	-	-	3 200	64 832
1985	-	60 273	5 438	-	-	-	-	-	-	-	-	5 960	71 671
1986	-	84 994	8 574	5	-	-	-	-	-	-	-	11 534	105 107
1987	-	71 469	7 023	382	-	-	-	-	-	-	-	12 295	91 169
1988	-	65 026	16 848	1 090	-	-	-	-	-	-	-	8 455	91 419
1989	3 816	22 720	6 797	226	567	-	-	-	-	-	-	4 658	38 784
1990	4 537	9 632	7 957	-	-	7 085	-	-	-	-	-	2 690	31 901
1991	8 724	9 747	201	115	-	6 197	-	-	-	2 195	-	-	27 179
1992	12 080	15 733	6 447	3 765	9	14 654	-	-	6 656	1 810	780	630	62 564
1993	10 167	25 229	16 677	6 812	710	14 112	-	-	7 899	6 365	6 803	5 998	100 771
1994	5 897	16 349	15 133	2 896	-	6 834	-	1 510	7 404	17 875	13 205	9 767	96 869
1995	8 733	28 314	10 714	3 667	277	4 288	4 327	2 170	16 025	11 798	3 502	6 319	100 136
1996	5 760	9 348	5 696	2 523	1 866	1 681	1 671	476	5 618	3 741	572	2 819	41 770
1997	4 446	3 693	9 276	3 510	-	330	1 812	367	-	3 405	-	906	27 746
1998	1 983	89	9 679	2 990	1 161	701	1 819	60	1 734	3 892	-	42	24 150
1999	3 662	6 538	8 271	1 190	998	2 098	447	62	-	2 055	-	189	25 512
2000	3 766	14 373	5 672	486	956	2 124	1 154	37	430	4 218	-	-	33 216
2001	14 745	5 964	4 755	4 364	1 083	947	1 433	256	8 269	9	-	-	41 825
2002	5 229	13 958	5 354	719	657	1 094	1 005	878	12 052	-	1 841	428	43 216
2003	4 274	15 418	3 579	1 955	1 047	3 214	1 461	1 926	21 629	-	1 269	917	56 688
2004	5 728	13 208	1 126	777	750	2 721	1 679	2 133	3 698	-	1 114	1 018	33 951
2005	3 086	15 562	1 152	210	-	624	1 557	2 780	1 169	-	919	1 170	28 229
2006	1 293	4 953	994	334	-	280	3 576	1 372	466	-	1 803	663	15 734
2007	71	4 037	-	98	-	-	339	529	467	209	186	189	6 126
2008	63	1 597	-	319	-	-	36	-	8	-	-	-	2 059
2009	5	649	-	87	-	-	1 438	-	138	-	-	-	2 380
2010	22	567	-	653	-	12	16	377	551	-	-	-	2 198
2011	72	-	-	162	-	-	-	-	-	-	-	-	234
2012	28	3 145	-	-	-	-	-	-	-	-	-	-	3 173
2013	72	1 457	-	-	-	-	-	-	-	-	-	-	1 529
2014	355	5 871	-	-	-	-	-	-	287	-	-	-	6 423

[1)] Búlgaría, Kanada, Frakkland, Japan, Holland, Pólland, Bretland, Úkraína.
Bulgaria, Canada, France, Japan, Netherlands, Poland, United Kingdom, Ukraine.

TAFLA 3.5.4
Úthafskarfi - neðri stofn. Afli eftir þjóðum (í tonnum).
Deep pelagic redfish. *Landings by nation (in tonnes).*

Ár *Year*	Ísland *Iceland*	Rússland *Russia*	Þýskaland *Germany*	Færeyjar *Faroes*	Græn-land Green-land	Noregur *Norway*	Spánn *Spain*	Portúgal *Portugal*	Litháen *Lithuania*	Eistland *Estonia*	Lettland *Latvia*	Aðrar þjóðir[1)] Other *nations*	Samtals *Total*
1990	-	-	-	-	-	-	-	-	-	-	-	-	-
1991	59	-	-	-	-	-	-	-	-	-	-	-	59
1992	3 398	-	-	-	-	-	-	-	-	-	-	-	3 398
1993	12 741	-	1 135	310	-	878	-	-	-	-	-	-	15 064
1994	47 435	1 465	2 019	-	-	523	-	377	-	-	-	-	51 820
1995	25 898	15 868	8 271	1 572	1 579	3 169	227	2 955	6 868	5 056	1 501	2 744	75 707
1996	57 143	36 400	15 549	3 748	1 671	5 161	5 558	1 903	5 031	3 351	512	2 524	138 552
1997	36 830	33 237	11 200	435	-	2 849	6 895	3 307	-	315	-	12	95 079
1998	46 537	25 748	8 368	4 484	302	438	2 758	4 073	34	76	-	1	92 818
1999	40 261	11 419	8 218	3 466	3 271	3 337	9 885	4 240	-	53	-	5	84 153
2000	41 466	14 851	6 827	2 367	3 327	3 108	9 740	3 694	-	7 733	-	-	93 113
2001	27 727	23 810	5 914	3 377	2 360	4 275	8 649	2 488	7 515	878	-	-	86 993
2002	39 263	25 309	7 858	3 664	3 442	4 197	7 402	2 208	9 771	15	-	-	103 128
2003	44 620	28 638	7 028	3 938	3 403	5 185	9 374	2 109	-	-	-	-	104 296
2004	31 098	31 067	2 251	4 670	2 419	6 277	9 996	2 286	-	-	-	1 889	91 954
2005	12 919	16 323	1 836	1 800	1 431	3 950	3 871	1 088	1 027	-	-	1 240	45 485
2006	20 948	23 670	1 830	3 498	744	5 968	6 673	1 313	1 294	-	-	1 356	67 288
2007	18 097	21 337	1 110	2 902	1 961	4 628	3 810	2 067	1 394	-	575	636	58 516
2008	6 722	15 106	-	2 632	1 170	571	1 179	1 733	749	-	-	219	30 045
2009	15 524	25 309	-	3 403	1 519	-	2 907	1 596	2 613	-	1 355	178	54 406
2010	14 772	22 803	-	3 195	1 932	2 388	7 801	2 203	2 228	-	1 963	3	59 288
2011	11 994	22 364	1 787	2 028	-	1 066	4 361	1 540	1 348	-	845	-	47 333
2012	5 912	18 377	1 523	1 438	-	3 362	632	250	588	-	724	-	32 806
2013	8 545	26 463	1 176	1 882	-	2 979	2 664	-	1 163	-	1 200	-	46 052
2014	2 081	15 475	890	721	-	1 965	732	-	1 024	-	867	-	23 755

[1)] Búlgaría, Kanada, Frakkland, Japan, Holland, Pólland, Bretland, Úkraína.
Bulgaria, Canada, France, Japan, Netherlands, Poland, United Kingdom, Ukraine.

TAFLA 3.6.1
Litli karfi. Afli á Íslandsmiðum (í tonnum).
Norway redfish. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Afli *Landings*
1996	22
1997	1 159
1998	994
1999	498
2000	227
2001	21
2002	20
2003	3
2004	2
2005	4
2006	9
2007	24
2008	15
2009	37
2010	2 602
2011	1 427
2012	535
2013	532
2014	550

http://data.hafro.is/assmt/2015/s_mentella/deep.csv
http://data.hafro.is/assmt/2015/s_viviparus/landings.csv

TAFLA 3.7.1
Grálúða. Afli á Íslandsmiðum og öðrum svæðum (í tonnum).
Greenland halibut. *Landings from Icelandic waters and other areas (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1961	-	2 513	2 513
1962	-	2 730	2 730
1963	-	3 901	3 901
1964	-	4 740	4 740
1965	-	6 755	6 755
1966	6	8 046	8 052
1967	1	30 698	30 699
1968	1	21 871	21 872
1969	5 856	18 465	24 321
1970	7 343	26 480	33 823
1971	5 020	23 953	28 973
1972	4 640	21 832	26 472
1973	2 115	18 348	20 463
1974	2 842	33 438	36 280
1975	1 212	22 282	23 494

	Íslandsmið (Svæði Va)[1)] *Icelandic waters (Va)*		Önnur svæði (XII, XIV, Vb, VI)[1)] *Other areas (XII, XIV, Vb, VI)*			
Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Færeyjar *Faroes*	Austur-Grænland *East Greenland*	Önnur svæði[2)] *Other areas*	Samtals *Total*
1976	1 686	3 761	324	273	-	6 044
1977	10 090	5 589	658	306	-	16 643
1978	11 319	269	595	2 176	-	14 359
1979	16 934	42	409	6 231	-	23 616
1980	27 836	91	1 177	2 148	-	31 252
1981	15 455	325	566	2 893	-	19 239
1982	28 300	669	1 032	2 440	-	32 441
1983	28 429	33	1 436	1 060	-	30 958
1984	30 163	46	3 065	835	-	34 109
1985	29 319	2	2 126	753	-	32 200
1986	31 142	-	940	1 017	-	33 099
1987	44 889	15	1 043	820	-	46 767
1988	49 189	379	969	770	-	51 307
1989	58 497	942	1 606	518	-	61 563
1990	36 679	751	1 282	736	-	39 448
1991	34 875	273	1 662	875	-	37 685
1992	32 026	23	2 269	1 240	-	35 558
1993	33 972	166	4 470	2 275	-	40 883
1994	27 696	912	5 224	3 180	-	37 012
1995	27 391	15	3 832	5 077	-	36 300
1996	22 072	18	6 469	6 914	369	35 826
1997	16 766	26	4 917	6 688	1 870	30 267
1998	10 580	15	3 825	5 940	-	20 360
1999	11 085	23	4 265	4 998	-	20 371
2000	14 492	27	5 092	6 758	-	26 569
2001	16 590	118	3 951	6 588	-	27 291
2002	19 229	466	2 694	6 750	102	29 258
2003	20 353	44	2 194	8 017	-	30 587
2004	15 478	21	1 717	9 590	-	26 785
2005	13 023	218	892	10 185	-	24 318
2006	11 798	19	873	8 589	184	21 463
2007	9 580	945	1 060	10 261	27	21 873
2008	11 672	187	1 759	9 102	1 195	24 481
2009	15 089	693	1 739	9 805	15	27 341
2010	13 294	834	1 413	10 402	52	25 995
2011	13 216	856	1 489	10 761	124	26 446
2012	13 505	628	2 163	12 475	634	29 405
2013	14 858	73	2 582	8 694	716	26 923
2014	9 859	610	2 958	7 526	110	21 063

[1)] Svæðaskipting Alþjóðahafrannsóknaráðsins. *ICES statistical areas.*

[2)] Afli á svæði XII og VI. *ICES statistical areas XII and VI.*

TAFLA 3.8.1
Lúða. Afli á Íslandsmiðum (í tonnum).
Halibut. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	1 323	4 577	5 900
1951	2 364	4 220	6 585
1952	1 823	3 698	5 521
1953	1 073	3 701	4 774
1954	754	2 728	3 482
1955	410	2 202	2 612
1956	710	1 908	2 618
1957	1 498	2 894	4 392
1958	1 121	4 397	5 518
1959	1 126	3 971	5 097
1960	1 701	3 771	5 472
1961	1 618	2 397	4 015
1962	1 517	3 407	4 924
1963	1 202	3 451	4 653
1964	1 089	2 670	3 759
1965	946	3 114	4 060
1966	898	1 749	2 647
1967	1 018	1 787	2 805
1968	940	1 151	2 091
1969	842	1 235	2 077
1970	1 103	2 109	3 212
1971	1 284	1 828	3 112
1972	1 088	1 237	2 325
1973	1 032	968	2 000
1974	977	785	1 762
1975	1 168	726	1 894
1976	1 632	665	2 297
1977	1 717	609	2 326
1978	1 462	375	1 837
1979	1 587	460	2 047
1980	1 215	450	1 665
1981	1 012	186	1 198
1982	1 174	133	1 307
1983	1 309	436	1 745
1984	1 700	354	2 054
1985	1 695	246	1 941
1986	1 623	362	1 985
1987	1 537	577	2 114
1988	1 544	460	2 004
1989	1 259	468	1 727
1990	1 639	278	1 917
1991	1 895	429	2 324
1992	1 155	386	1 541
1993	1 363	385	1 748
1994	1 195	391	1 586
1995	887	232	1 119
1996	837	139	976
1997	646	113	759
1998	501	181	682
1999	567	202	769
2000	493	74	567
2001	589	79	668
2002	683	86	769
2003	637	54	691
2004	556	114	670
2005	516	114	630
2006	447	112	559
2007	419	97	516
2008	472	57	529
2009	498	50	548
2010	528	29	557
2011	532	23	555
2012	35	1	36
2013	39	-	39
2014	45	-	45

TAFLA 3.9.1
Skarkoli. Afli á Íslandsmiðum (í tonnum).
Plaice. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	3 834	5 338	9 172
1951	4 183	4 256	8 439
1952	1 457	3 121	4 578
1953	350	4 343	4 693
1954	289	5 374	5 663
1955	259	7 474	7 733
1956	515	7 373	7 888
1957	1 622	7 981	9 603
1958	648	7 515	8 163
1959	921	7 507	8 428
1960	3 405	4 654	8 059
1961	4 226	6 775	11 001
1962	5 010	6 401	11 411
1963	3 325	6 333	9 658
1964	5 336	4 032	9 368
1965	7 286	3 704	10 990
1966	7 354	4 521	11 875
1967	5 644	5 736	11 380
1968	6 144	4 126	10 270
1969	10 764	3 267	14 031
1970	8 117	1 901	10 018
1971	7 179	2 509	9 688
1972	5 129	1 367	6 496
1973	4 137	641	4 778
1974	3 936	85	4 021
1975	4 399	176	4 575
1976	4 993	32	5 025
1977	5 267	3	5 270
1978	4 499	5	4 504
1979	4 491	1	4 492
1980	5 145	-	5 145
1981	3 840	35	3 875
1982	6 303	28	6 331
1983	8 552	-	8 552
1984	11 334	1	11 335
1985	14 508	2	14 510
1986	12 738	-	12 738
1987	11 192	-	11 192
1988	14 078	9	14 087
1989	11 330	-	11 330
1990	11 400	-	11 400
1991	10 792	-	10 792
1992	10 494	-	10 494
1993	12 522	-	12 522
1994	11 854	-	11 854
1995	10 649	-	10 649
1996	11 063	-	11 063
1997	10 540	-	10 540
1998	7 106	-	7 106
1999	7 064	-	7 064
2000	5 218	-	5 218
2001	4 905	-	4 905
2002	5 126	-	5 126
2003	5 236	-	5 236
2004	5 693	-	5 693
2005	5 794	-	5 794
2006	6 369	-	6 369
2007	5 816	-	5 816
2008	6 718	-	6 718
2009	6 316	-	6 316
2010	5 983	-	5 983
2011	4 943	-	4 943
2012	5 930	-	5 930
2013	5 979	-	5 979
2014	5 926	-	5 926

TAFLA 3.10.1
Sandkoli. Afli á Íslandsmiðum (í tonnum).
Dab. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Afli *Landings*
1984	447
1985	950
1986	1 258
1987	1 186
1988	3 780
1989	2 238
1990	1 898
1991	2 632
1992	3 045
1993	4 233
1994	5 159
1995	5 557
1996	7 954
1997	7 891
1998	5 061
1999	3 981
2000	3 015
2001	4 373
2002	4 358
2003	4 212
2004	2 953
2005	2 115
2006	1 080
2007	810
2008	792
2009	882
2010	612
2011	903
2012	859
2013	708
2014	505

TAFLA 3.11.1
Skrápflúra. Afli á Íslandsmiðum (í tonnum).
Long rough dab. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Afli *Landings*
1987	32
1988	166
1989	565
1990	653
1991	1 710
1992	1 468
1993	1 350
1994	2 694
1995	5 356
1996	6 435
1997	5 709
1998	3 118
1999	3 823
2000	3 176
2001	3 469
2002	3 579
2003	2 830
2004	2 018
2005	874
2006	744
2007	358
2008	275
2009	290
2010	219
2011	178
2012	136
2013	78
2014	71

http://data.hafro.is/assmt/2015/dab/landings.csv
http://data.hafro.is/assmt/2015/r_dab/landings.csv

TAFLA 3.12.1
Langlúra. Afli á Íslandsmiðum (í tonnum).
Witch. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	88	1 018	1 106
1951	81	1 083	1 164
1952	30	720	750
1953	138	456	594
1954	112	666	778
1955	34	741	775
1956	167	715	882
1957	200	892	1 092
1958	372	814	1 186
1959	646	653	1 299
1960	931	486	1 417
1961	725	570	1 295
1962	559	644	1 203
1963	431	614	1 045
1964	469	355	824
1965	412	473	885
1966	122	237	359
1967	162	224	386
1968	132	226	358
1969	166	213	379
1970	169	212	381
1971	125	221	346
1972	138	65	203
1973	22	37	59
1974	52	26	78
1975	69	10	79
1976	143	4	147
1977	115	-	115
1978	120	-	120
1979	140	-	140
1980	19	-	19
1981	3	-	3
1982	54	-	54
1983	10	-	10
1984	11	-	11
1985	32	-	32
1986	335	-	335
1987	4 566	-	4 566
1988	2 974	-	2 974
1989	2 267	-	2 267
1990	1 278	-	1 278
1991	1 775	-	1 775
1992	2 562	-	2 562
1993	1 659	-	1 659
1994	1 772	-	1 772
1995	1 812	-	1 812
1996	1 490	-	1 490
1997	1 271	-	1 271
1998	948	-	948
1999	1 406	-	1 406
2000	1 098	-	1 098
2001	1 132	-	1 132
2002	1 147	-	1 147
2003	1 947	-	1 947
2004	2 123	-	2 123
2005	2 324	-	2 324
2006	2 030	-	2 030
2007	1 805	-	1 805
2008	1 427	-	1 427
2009	1 789	-	1 789
2010	1 326	-	1 326
2011	1 323	-	1 323
2012	1 313	-	1 313
2013	1 162	-	1 162
2014	1 181	-	1 181

TAFLA 3.13.1
Þykkvalúra. Afli á Íslandsmiðum (í tonnum).
Lemon sole. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1951	634	1 389	2 023
1952	347	1 347	1 694
1953	128	1 500	1 628
1954	66	1 539	1 605
1955	30	1 299	1 329
1956	336	1 148	1 484
1957	1 230	1 348	2 578
1958	159	1 453	1 612
1959	224	1 400	1 624
1960	646	1 569	2 215
1961	1 314	1 346	2 660
1962	1 183	1 384	2 567
1963	1 077	1 802	2 879
1964	660	1 692	2 352
1965	774	1 786	2 560
1966	564	978	1 542
1967	347	1 071	1 418
1968	497	873	1 370
1969	453	639	1 092
1970	328	563	891
1971	283	530	813
1972	255	526	781
1973	175	300	475
1974	84	248	332
1975	67	259	326
1976	63	139	202
1977	11	27	38
1978	24	7	31
1979	47	7	54
1980	63	16	79
1981	77	22	99
1982	86	12	98
1983	112	7	119
1984	73	7	80
1985	368	13	381
1986	489	8	497
1987	677	5	682
1988	857	5	862
1989	805	6	811
1990	704	2	706
1991	1 095	3	1 098
1992	912	-	912
1993	716	-	716
1994	693	-	693
1995	741	-	741
1996	984	-	984
1997	1 135	-	1 135
1998	1 432	-	1 432
1999	1 860	-	1 860
2000	1 438	-	1 438
2001	1 371	-	1 371
2002	950	-	950
2003	1 246	1	1 247
2004	2 209	-	2 209
2005	2 505	-	2 505
2006	2 688	-	2 688
2007	2 662	-	2 662
2008	2 634	-	2 634
2009	2 629	-	2 629
2010	1 970	-	1 970
2011	1 900	-	1 900
2012	1 614	-	1 614
2013	1 765	-	1 765
2014	1 203	-	1 203

TAFLA 3.14.1
Stórkjafta. Afli á Íslandsmiðum (í tonnum).
Megrim. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1951	76	562	638
1952	69	434	503
1953	139	534	673
1954	166	532	698
1955	35	562	597
1956	89	470	559
1957	104	606	710
1958	170	531	701
1959	148	452	600
1960	133	415	548
1961	39	458	497
1962	111	398	509
1963	66	405	471
1964	69	371	440
1965	254	467	721
1966	102	280	382
1967	46	368	414
1968	41	454	495
1969	172	488	660
1970	117	521	638
1971	61	523	584
1972	64	371	435
1973	81	324	405
1974	27	283	310
1975	7	228	235
1976	17	151	168
1977	3	165	168
1978	11	125	136
1979	10	101	111
1980	104	114	218
1981	1	70	71
1982	3	35	38
1983	4	62	66
1984	9	95	104
1985	17	44	61
1986	42	35	77
1987	162	21	183
1988	283	65	348
1989	345	51	396
1990	154	22	176
1991	186	20	206
1992	246	-	246
1993	224	-	224
1994	301	2	303
1995	405	-	405
1996	419	-	419
1997	281	-	281
1998	221	-	221
1999	123	-	123
2000	97	-	97
2001	96	-	96
2002	78	-	78
2003	67	-	67
2004	121	-	121
2005	147	-	147
2006	284	-	284
2007	187	-	187
2008	196	-	196
2009	317	-	317
2010	251	-	251
2011	320	-	320
2012	409	-	409
2013	375	-	375
2014	339	-	339

TAFLA 3.15.1
Steinbítur. Afli á Íslandsmiðum (í tonnum).
Atlantic wolffish. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	6 611	6 203	12 814
1951	8 259	9 014	17 273
1952	11 628	13 424	25 052
1953	12 331	11 710	24 041
1954	6 354	9 568	15 922
1955	4 562	10 119	14 681
1956	6 509	11 419	17 928
1957	11 172	11 165	22 337
1958	10 811	13 179	23 990
1959	9 677	9 215	18 892
1960	9 429	9 135	18 564
1961	12 600	7 855	20 455
1962	13 192	10 039	23 231
1963	17 304	12 150	29 454
1964	8 183	9 009	17 192
1965	7 491	10 064	17 555
1966	7 891	6 908	14 799
1967	10 268	6 679	16 947
1968	8 972	5 920	14 892
1969	7 674	4 796	12 470
1970	5 706	4 846	10 552
1971	5 286	5 998	11 284
1972	9 036	5 063	14 099
1973	10 578	3 409	13 987
1974	11 977	3 304	15 281
1975	11 042	2 800	13 842
1976	11 485	1 849	13 334
1977	10 363	320	10 638
1978	10 452	78	10 530
1979	10 334	76	10 410
1980	8 527	90	8 617
1981	8 237	104	8 341
1982	8 341	96	8 437
1983	12 138	109	12 247
1984	10 203	60	10 263
1985	9 602	111	9 713
1986	12 120	24	12 144
1987	12 601	15	12 616
1988	14 583	64	14 647
1989	14 127	52	14 179
1990	14 425	136	14 561
1991	17 818	111	17 929
1992	16 059	82	16 141
1993	12 862	70	12 932
1994	12 692	53	12 745
1995	12 525	36	12 561
1996	14 578	30	14 608
1997	11 635	19	11 654
1998	11 834	42	11 876
1999	13 713	107	13 820
2000	15 038	25	15 063
2001	17 950	150	18 100
2002	14 292	93	14 385
2003	16 440	105	16 545
2004	13 165	76	13 241
2005	15 176	75	15 251
2006	16 407	43	16 450
2007	16 134	76	16 210
2008	14 531	45	14 576
2009	15 115	43	15 158
2010	12 559	28	12 587
2011	10 895	13	10 908
2012	10 167	66	10 233
2013	8 800	34	8 834
2014	7 290	46	7 336

TAFLA 3.16.1
Hlýri. Afli á Íslandsmiðum (í tonnum).
Spotted wolffish. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1965	7	-	7
1966	20	-	20
1967	28	-	28
1968	14	-	14
1969	43	-	43
1970	12	-	12
1971	29	-	29
1972	9	-	9
1973	17	9	26
1974	43	12	55
1975	29	-	29
1976	354	-	354
1977	758	-	758
1978	857	21	878
1979	843	23	866
1980	826	19	845
1981	869	13	882
1982	893	23	916
1983	929	49	978
1984	1 060	11	1 071
1985	1 018	3	1 021
1986	931	-	931
1987	1 196	-	1 196
1988	1 198	-	1 198
1989	637	-	637
1990	767	-	767
1991	813	-	813
1992	858	-	858
1993	1 032	-	1 032
1994	778	-	778
1995	645	-	645
1996	949	-	949
1997	1 086	-	1 086
1998	1 565	-	1 565
1999	1 515	-	1 515
2000	1 850	2	1 852
2001	2 086	1	2 087
2002	2 093	15	2 108
2003	2 388	36	2 424
2004	3 260	21	3 281
2005	3 234	16	3 250
2006	3 626	11	3 637
2007	2 686	1	2 687
2008	2 084	-	2 084
2009	2 291	1	2 292
2010	1 901	1	1 902
2011	1 606	-	1 606
2012	1 950	-	1 950
2013	2 433	-	2 433
2014	1 914	14	1 928

TAFLA 3.17.1
Blálanga. Afli á Íslandsmiðum (í tonnum).
Blue ling. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1966	134	3 411	3 545
1967	191	2 651	2 842
1968	199	2 531	2 730
1969	339	2 099	2 438
1970	394	2 163	2 557
1971	705	3 073	3 778
1972	586	2 330	2 916
1973	548	1 819	2 367
1974	331	2 165	2 496
1975	434	1 942	2 376
1976	624	1 414	2 038
1977	700	1 617	2 317
1978	1 237	194	1 431
1979	2 019	183	2 202
1980	8 133	412	8 545
1981	7 952	284	8 236
1982	5 945	626	6 571
1983	5 117	1 597	6 714
1984	3 122	384	3 506
1985	1 407	66	1 473
1986	1 771	251	2 022
1987	1 687	83	1 770
1988	1 889	278	2 167
1989	2 121	408	2 529
1990	1 989	1 029	3 018
1991	1 582	242	1 824
1992	2 558	322	2 880
1993	5 317	40	5 357
1994	1 831	90	1 921
1995	1 576	52	1 628
1996	1 284	52	1 336
1997	1 319	25	1 344
1998	1 086	25	1 111
1999	2 027	50	2 077
2000	1 560	54	1 736
2001	763	54	817
2002	1 274	50	1 324
2003	1 095	53	1 148
2004	1 085	91	1 176
2005	1 495	70	1 565
2006	1 736	71	1 807
2007	1 999	92	2 091
2008	3 653	105	3 758
2009	4 132	91	4 223
2010	6 372	523	6 895
2011	5 876	797	6 702
2012	4 118	314	4 521
2013	2 769	437	3 204
2014	1 588	101	1 689

TAFLA 3.18.1
Langa. Afli á Íslandsmiðum (í tonnum).
Ling. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	3 551	6 947	10 497
1951	3 278	7 651	10 929
1952	4 420	7 034	11 454
1953	3 325	8 145	11 470
1954	3 442	9 653	13 095
1955	3 972	7 721	11 693
1956	3 823	7 702	11 525
1957	3 591	6 096	9 687
1958	4 195	7 468	11 663
1959	2 681	6 019	8 700
1960	6 774	6 996	13 770
1961	6 032	4 034	10 066
1962	7 073	5 044	12 117
1963	5 607	4 885	10 492
1964	4 976	5 398	10 374
1965	4 811	5 847	10 658
1966	4 559	5 473	10 032
1967	7 531	5 621	13 152
1968	8 697	5 829	14 526
1969	8 677	5 461	14 138
1970	8 345	6 017	14 362
1971	8 867	6 524	15 391
1972	6 085	4 092	10 177
1973	3 564	3 897	7 461
1974	3 868	2 907	6 775
1975	3 748	2 950	6 698
1976	4 538	2 103	6 641
1977	3 433	1 815	5 248
1978	3 439	1 559	4 998
1979	3 759	1 443	5 202
1980	3 149	1 475	4 624
1981	3 348	1 100	4 448
1982	3 733	1 252	4 985
1983	4 256	887	5 143
1984	3 304	574	3 878
1985	2 980	460	3 440
1986	2 948	648	3 596
1987	4 154	820	4 974
1988	5 083	763	5 846
1989	4 833	714	5 547
1990	5 115	441	5 556
1991	5 182	600	5 782
1992	4 546	560	5 106
1993	4 319	521	4 840
1994	4 053	551	4 604
1995	3 729	589	4 318
1996	3 670	607	4 277
1997	3 626	518	4 146
1998	3 603	713	4 316
1999	3 973	536	4 509
2000	3 221	475	3 696
2001	2 863	359	3 222
2002	2 830	426	3 256
2003	3 584	578	4 162
2004	3 718	744	4 462
2005	4 307	750	5 066
2006	6 287	1 119	7 406
2007	6 592	992	7 584
2008	7 736	1 552	9 288
2009	9 613	1 329	10 942
2010	9 867	1 263	11 130
2011	8 797	768	9 565
2012	10 712	1 059	11 771
2013	10 196	1 249	11 445
2014	12 349	1 683	14 032

TAFLA 3.19.1
Keila. Afli á Íslandsmiðum (í tonnum).
Tusk. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1963	5 872	4 425	10 297
1964	3 532	4 214	7 746
1965	2 263	4 347	6 610
1966	2 107	2 468	4 575
1967	2 699	2 433	5 132
1968	4 604	2 028	6 632
1969	4 075	2 143	6 218
1970	4 357	2 630	6 987
1971	3 793	4 319	8 112
1972	2 815	3 645	6 460
1973	2 366	5 241	7 607
1974	1 857	4 679	6 536
1975	1 673	4 058	5 731
1976	2 935	4 177	7 112
1977	3 122	4 826	7 948
1978	3 352	2 980	6 332
1979	3 558	2 895	6 453
1980	3 089	3 801	6 890
1981	2 827	3 649	6 476
1982	2 804	3 076	5 880
1983	3 469	4 818	8 287
1984	3 430	2 262	5 692
1985	3 068	1 996	5 064
1986	2 548	2 832	5 380
1987	2 987	2 657	5 644
1988	3 087	3 777	6 864
1989	3 158	3 918	7 076
1990	4 816	2 475	7 291
1991	6 446	2 286	8 732
1992	6 442	1 567	8 009
1993	4 729	1 329	6 058
1994	4 615	1 212	5 827
1995	5 245	985	6 230
1996	5 226	1 014	6 240
1997	4 814	944	5 758
1998	4 118	1 027	5 145
1999	5 795	1 494	7 289
2000	4 711	1 528	6 239
2001	3 392	1 133	4 525
2002	3 906	1 342	5 248
2003	4 030	1 284	5 314
2004	3 124	1 530	4 654
2005	3 534	1 285	4 819
2006	5 060	1 541	6 601
2007	5 987	1 606	7 593
2008	6 932	1 243	8 175
2009	6 955	1 297	8 252
2010	6 919	2 057	8 976
2011	5 845	1 545	7 390
2012	6 341	1 420	7 761
2013	4 973	1 284	6 257
2014	4 995	1 034	6 029

TAFLA 3.20.1
Lýsa. Afli á Íslandsmiðum (í tonnum).
Whiting. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Afli *Landings*
1984	81
1985	72
1986	77
1987	113
1988	141
1989	190
1990	536
1991	745
1992	510
1993	230
1994	315
1995	560
1996	430
1997	443
1998	531
1999	930
2000	1 354
2001	1 182
2002	1 298
2003	1 025
2004	1 039
2005	796
2006	1 051
2007	1 258
2008	1 688
2009	2 307
2010	2 848
2011	2 964
2012	1 468
2013	985
2014	929

TAFLA 3.21.1
Skötuselur. Afli á Íslandsmiðum (í tonnum).
Anglerfish. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1965	510	469	979
1966	519	382	901
1967	796	391	1 187
1968	926	450	1 376
1969	957	384	1 341
1970	602	311	913
1971	606	178	784
1972	496	107	603
1973	329	72	401
1974	286	94	380
1975	386	67	453
1976	565	53	618
1977	727	43	770
1978	566	37	603
1979	438	56	494
1980	530	37	567
1981	441	21	462
1982	515	13	528
1983	544	42	586
1984	356	49	405
1985	455	15	470
1986	366	9	375
1987	362	20	382
1988	481	54	535
1989	494	-	494
1990	634	-	634
1991	772	-	772
1992	743	-	743
1993	685	-	685
1994	641	-	641
1995	548	-	548
1996	666	-	666
1997	789	-	789
1998	853	-	853
1999	973	-	973
2000	1 570	-	1 570
2001	1 353	-	1 353
2002	965	-	965
2003	1 677	1	1 678
2004	2 223	-	2 223
2005	2 855	-	2 855
2006	2 590	-	2 590
2007	2 791	-	2 791
2008	2 946	-	2 946
2009	4 069	-	4 069
2010	3 282	-	3 282
2011	3 208	-	3 208
2012	2 650	-	2 650
2013	1 496	-	1 496
2014	1 186	3	1 189

TAFLA 3.22.1

Hrognkelsi. Grásleppuafli í tonnum, afli á sóknareiningu, sókn og stofnvísitölur grásleppu og rauðmaga (í þyngd) úr stofnmælingu botnfiska í mars.

Lumpfish. *Female landings in tonnes, CPUE, derived effort, and biomass indices for females and males from the groundfish survey in March.*

Ár *Year*	Grásleppuafli *Female landings*	Afli á sóknareiningu *CPUE*	Sókn *Effort*	Vísitala grásleppu *Female index*	Vísitala rauðmaga *Male index*
1971	4 994	-	-	-	-
1972	4 171	-	-	-	-
1973	7 438	-	-	-	-
1974	4 140	-	-	-	-
1975	7 622	-	-	-	-
1976	9 516	-	-	-	-
1977	6 938	-	-	-	-
1978	5 843	-	-	-	-
1979	5 706	-	-	-	-
1980	7 459	16.1	4.5	-	-
1981	10 158	16.2	5.1	-	-
1982	3 407	14.0	2.5	-	-
1983	4 910	12.6	4.2	-	-
1984	11 885	14.9	7.6	-	-
1985	10 158	12.3	7.5	10.29	2.21
1986	7 175	8.2	6.7	9.57	0.73
1987	10 158	11.5	7.9	12.08	1.59
1988	4 536	9.4	4.1	9.89	0.94
1989	5 998	13.8	4.0	12.72	2.69
1990	2 894	12.1	2.3	10.49	1.75
1991	4 402	9.0	4.7	4.29	0.53
1992	5 777	8.9	6.2	8.19	1.44
1993	3 958	6.0	6.4	6.05	1.48
1994	5 183	6.0	7.9	6.11	1.06
1995	5 005	6.7	7.9	4.68	1.22
1996	4 635	4.6	10.1	4.62	0.49
1997	5 943	6.7	9.0	5.16	0.98
1998	2 891	7.7	3.4	4.55	0.62
1999	3 079	11.9	2.7	7.10	0.52
2000	2 247	9.6	2.3	3.89	0.49
2001	2 987	9.9	2.9	5.56	0.46
2002	4 603	11.1	4.2	10.19	1.20
2003	5 679	12.1	4.9	7.32	0.57
2004	5 272	10.8	5.0	9.05	0.61
2005	3 405	12.0	2.8	7.19	0.57
2006	3 674	22.6	1.6	12.92	0.79
2007	3 014	22.9	1.3	8.85	0.76
2008	4 680	18.1	2.7	7.93	0.72
2009	4 684	12.1	3.9	8.04	0.38
2010	7 716	13.3	5.9	7.01	0.66
2011	4 407	11.1	4.0	4.96	0.47
2012	6 175	13.3	4.7	7.51	0.36
2013	4 575	18.3	2.5	4.30	0.27
2014[1)]	4 041	17.3	2.4	6.36	0.50
2015				9.06	0.39

[1)] Bráðabirgðatölur um sókn og afla á sóknareiningu.
Provisional CPUE and effort figures.

TAFLA 3.23.1
Íslensk sumar- og vorgotssíld. Afli á Íslandsmiðum (í tonnum).
Icelandic summer and spring-spawning herring. *Landings from Icelandic waters (in tonnes).*

	Íslensk sumargotssíld *Icelandic summer-spawning herring*		**Íslensk vorgotssíld** *Icelandic spring-spawning herring*
Ár *Year*	Afli *Landings*	Metið brottkast *Estimated discards*	Afli *Landings*
1951	15 800	-	20 200
1952	10 500	-	12 300
1953	17 600	-	20 400
1954	11 000	-	21 100
1955	20 500	-	21 400
1956	20 400	-	40 500
1957	22 800	-	82 500
1958	33 500	-	83 700
1959	35 000	-	149 900
1960	28 500	-	117 800
1961	74 000	-	211 500
1962	92 900	-	274 200
1963	130 300	-	104 300
1964	86 500	-	101 500
1965	122 900	-	68 900
1966	58 400	-	25 000
1967	67 700	-	15 300
1968	16 800	-	4 300
1969	19 400	-	3 600
1970	15 900	-	400
1971	11 500	-	200
1972	310	-	-
1973	254	-	-
1974	1 274	-	-
1975	13 280	-	-
1976	17 168	-	-
1977	28 925	-	-
1978	37 333	-	-
1979	45 072	-	-
1980	53 268	-	-
1981	39 544	-	-
1982	56 528	-	-
1983	58 867	-	-
1984	50 304	-	-
1985	49 368	-	-
1986	65 500	-	-
1987	75 439	-	-
1988	92 828	-	-
1989	97 270	3 730	-
1990/1991[1)]	101 632	3 465	-
1991/1992	98 538	10 951	-
1992/1993	106 653	1 851	-
1993/1994	101 496	1 245	-
1994/1995	131 994	2 009	-
1995/1996	124 963	888	-
1996/1997	95 882	-	-
1997/1998	64 931	-	-
1998/1999	87 238	-	-
1999/2000	92 896	-	-
2000/2001	100 332	-	-
2001/2002	95 278	-	-
2002/2003	93 601	-	-
2003/2004	125 719	-	-
2004/2005	114 237	-	-
2005/2006	103 043	-	-
2006/2007	135 303	-	-
2007/2008	158 917	-	-
2008/2009	151 780	-	-
2009/2010	46 332	-	-
2010/2011[2)]	43 533	-	-
2011/2012[2)]	49 446	-	-
2012/2013[2)]	72 011	-	-
2013/2014[2)]	72 058	-	-
2014/2015[2)]	94 975	-	-

[1)] Frá 1990/1991 fyrir fiskveiðiárið september–ágúst.
From 1990/1991 for qouta year September–August.

[2)] Meðafli við makrílveiðar í júní–ágúst fyrra fiskveiðiárs meðtalinn.
Bycatch in mackerel fishery in June–August in previous fishing season included.

TAFLA 3.23.2
Sumargotssíld. Skipting aflans í fjölda eftir aldri (í milljónum) eftir vertíðum.
Summer-spawning herring. *Catch in numbers at age (in millions) by fishing season.*

Ár	Aldur *Age*													
Year	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
1987/88	0.03	3.14	44.59	60.28	20.62	19.75	46.24	15.23	13.96	10.18	13.22	6.22	4.72	2.28
1988/89	0.88	4.76	41.33	99.37	69.33	22.95	20.13	32.20	12.35	10.25	7.38	7.28	4.81	1.96
1989/90	3.97	22.63	26.65	77.82	188.65	43.11	8.12	5.90	7.29	4.78	3.45	1.41	0.84	0.35
1990/91	12.57	14.88	56.99	35.59	79.76	157.22	30.25	8.19	4.37	3.38	1.79	0.72	0.45	0.56
1991/92	37.09	88.68	49.08	86.29	34.79	55.23	110.13	10.08	4.16	2.73	2.00	0.52	0.34	0.42
1992/93	16.14	94.86	122.63	38.38	58.60	27.92	38.42	53.11	11.59	1.73	1.76	0.15	0.38	0.00
1993/94	2.47	51.15	177.78	92.68	20.79	28.56	13.31	19.62	15.27	4.25	0.80	0.25	0.00	0.00
1994/95	5.74	134.62	113.29	142.88	87.21	24.91	20.30	16.30	15.70	14.68	2.94	1.44	0.24	0.20
1995/96	4.55	20.99	137.23	86.86	109.14	76.78	21.36	15.22	8.54	9.62	7.03	2.29	0.62	0.24
1996/97	0.72	15.97	40.31	86.19	68.93	84.66	39.66	14.75	8.42	5.84	3.15	5.18	2.00	0.57
1997/98	2.01	39.24	30.14	26.31	36.74	33.70	31.02	22.28	8.53	3.38	1.14	10.30	0.95	2.52
1998/99	23.66	45.39	175.53	22.69	8.61	40.90	25.94	32.05	14.65	2.12	2.75	2.15	1.07	1.01
1999/00	5.31	56.31	54.78	140.91	16.09	13.51	31.47	19.84	22.03	12.61	2.67	2.75	1.42	2.51
2000/01	17.29	57.28	136.28	49.29	76.61	11.55	8.29	16.37	9.87	11.33	6.74	2.98	1.54	1.10
2001/02	27.49	42.30	86.42	93.60	30.34	54.49	10.38	8.76	12.24	9.91	8.26	6.09	1.49	1.26
2002/03	11.70	80.86	70.80	45.61	54.20	21.21	42.20	9.89	4.71	6.52	9.11	9.36	3.99	5.70
2003/04	24.48	211.50	286.02	58.12	27.98	25.59	14.20	10.94	2.23	3.42	4.22	2.56	1.57	1.37
2004/05	23.14	63.35	139.54	182.45	40.49	13.73	9.34	5.77	7.02	3.14	1.86	3.87	0.99	1.86
2005/06	6.09	26.09	42.12	117.91	133.44	27.57	12.07	9.20	5.17	5.12	1.04	1.71	2.11	0.76
2006/07	52.57	118.53	217.67	54.80	48.31	57.24	13.60	5.99	4.30	0.90	1.63	1.21	0.85	0.93
2007/08	10.82	94.25	83.63	163.29	61.21	87.54	92.13	23.24	11.73	7.32	2.59	4.96	2.30	1.42
2008/09	10.43	38.83	90.93	79.75	107.64	59.66	62.19	54.34	18.13	8.24	5.16	2.68	2.63	1.18
2009/10	5.43	21.86	35.22	31.91	18.83	22.73	10.43	9.21	9.55	2.24	1.03	0.77	0.41	0.30
2010/11	1.48	8.84	22.67	29.49	24.29	14.42	17.41	10.04	7.58	8.90	1.76	1.10	0.67	0.56
2011/12	0.52	9.36	24.62	20.05	22.87	23.71	13.75	16.97	10.04	7.62	7.75	1.44	0.62	0.78
2012/13	0.40	10.93	52.83	30.16	25.28	29.72	23.95	19.45	15.12	13.65	8.37	7.32	1.37	0.13
2013/14	6.89	46.85	24.83	35.07	17.25	18.55	19.03	21.82	15.95	15.80	10.08	9.78	6.72	2.49
2014/15	0.00	3.54	53.24	50.61	70.04	34.39	22.08	22.14	13.30	17.76	7.97	4.46	2.86	1.75

TAFLA 3.23.3
Sumargotssíld. Meðalþyngd í afla (g) eftir aldri á vertíðum.
Summer-spawning herring. *Weight at age (g) in the catch by fishing season.*

Ár	Aldur *Age*													
Year	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
1987/88	60	168	200	240	278	304	325	339	356	378	400	404	424	430
1988/89	75	157	221	239	271	298	319	334	354	352	371	390	408	437
1989/90	63	130	206	246	261	290	331	338	352	369	389	380	434	409
1990/91	80	127	197	245	272	285	305	324	336	362	370	382	375	378
1991/92	74	135	188	232	267	289	304	323	340	352	369	402	406	388
1992/93	68	148	190	235	273	312	329	339	355	382	405	377	398	398
1993/94	66	145	211	246	292	324	350	362	376	386	419	389	389	389
1994/95	66	134	201	247	272	303	333	366	378	389	390	412	418	383
1995/96	68	130	183	240	277	298	325	358	378	397	409	431	430	467
1996/97	75	139	168	212	258	289	308	325	353	353	377	404	395	410
1997/98	63	131	191	233	269	300	324	341	355	362	367	393	398	411
1998/99	52	134	185	238	264	288	324	340	348	375	406	391	426	456
1999/00	74	137	204	233	268	294	311	339	353	362	378	385	411	422
2000/01	62	159	217	268	289	325	342	363	378	393	407	425	436	430
2001/02	74	139	214	244	286	296	324	347	354	385	403	421	421	433
2002/03	85	161	211	258	280	319	332	354	405	396	416	433	463	460
2003/04	72	156	189	229	260	283	309	336	336	369	394	378	412	423
2004/05	84	149	213	248	280	315	331	349	355	379	388	412	419	425
2005/06	106	170	224	262	275	298	324	335	335	356	372	394	405	413
2006/07	107	189	234	263	290	304	339	349	369	416	402	413	413	467
2007/08	93	158	221	245	261	277	287	311	339	334	346	356	384	390
2008/09	105	174	232	275	292	307	315	327	345	366	377	372	403	434
2009/10	113	190	237	274	304	318	326	335	342	360	372	394	409	421
2010/11	87	204	243	271	297	315	329	335	341	351	367	366	405	416
2011/12	97	187	245	283	309	328	343	352	356	364	375	386	378	432
2012/13	65	206	244	282	301	320	333	344	350	359	364	367	373	391
2013/14	95	182	238	271	300	322	337	349	360	365	362	375	377	394
2014/15	76	202	259	288	306	328	346	354	362	366	367	380	383	403

http://data.hafro.is/assmt/2015/herring/catage.csv
http://data.hafro.is/assmt/2015/herring/wcatch.csv

TAFLA 3.23.4
Sumargotssíld. Hlutfall kynþroska og náttúrulegur dánarstuðull eftir aldri.
Summer-spawning herring. *Maturity and natural mortality by age.*

	Aldur *Age*											
	2	3	4	5	6	7	8	9	10	11	12	13+
Hlutfall kynþroska *Maturity*	0.00	0.20	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Náttúrulegur dauði *Natural mortality 1987–2008; 2011–*	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Náttúrulegur dauði *Natural mortality 2009*	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Náttúrulegur dauði *Natural mortality 2010*	0.74	0.74	0.74	0.69	0.63	0.60	0.58	0.57	0.56	0.54	0.53	0.54

TAFLA 3.23.5
Sumargotssíld. Fjöldi þriggja ára nýliða í milljónum, hrygningarstofn og afli í þús. tonna og fiskveiðidánartala (meðaltal fyrir 5–10 ára).
Summer-spawning herring. *Recruitment as 3-year-olds in millions, spawning stock and landings in thous. tonnes, and fishing mortality (average for ages 5–10).*

Ár *Year*	Nýliðun *Recruitment*	Hrygningarstofn *SSB*	Afli *Landings*	Fiskveiðidánartala *Fishing mortality*
1987	530	384	75	0.35
1988	271	423	93	0.27
1989	448	386	97	0.32
1990	301	350	102	0.40
1991	842	310	99	0.44
1992	1 035	344	107	0.42
1993	638	425	101	0.25
1994	694	442	132	0.31
1995	204	408	125	0.34
1996	183	309	96	0.36
1997	778	271	65	0.25
1998	325	302	87	0.28
1999	564	294	93	0.37
2000	407	313	100	0.33
2001	495	281	95	0.40
2002	1 566	314	94	0.39
2003	1 180	421	126	0.26
2004	802	542	114	0.22
2005	1 159	610	103	0.22
2006	863	730	135	0.12
2007	913	702	159	0.25
2008	878	757	152	0.23
2009	803	642	46	0.07
2010	646	453	44	0.10
2011	629	393	49	0.14
2012	422	442	72	0.22
2013	414	399	72	0.16
2014	101	410	95	0.26
2015	477	342		

http://data.hafro.is/assmt/2015/herring/maturity.csv
http://data.hafro.is/assmt/2015/herring/summary.csv

TAFLA 3.23.6
Norsk-íslensk vorgotssíld. Afli í Norðaustur-Atlantshafi (í þús. tonna).
Norwegian spring-spawning herring. *Landings in the Northeast Atlantic (in thous. tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	31	902	933
1951	49	1 229	1 278
1952	9	1 246	1 255
1953	32	1 043	1 074
1954	15	1 629	1 645
1955	18	1 342	1 360
1956	41	1 618	1 659
1957	18	1 300	1 319
1958	23	964	986
1959	35	1 077	1 111
1960	27	1 075	1 102
1961	85	745	830
1962	176	672	849
1963	178	807	985
1964	367	914	1 282
1965	540	1 008	1 548
1966	691	1 264	1 955
1967	359	1 318	1 677
1968	75	637	712
1969	1	67	68
1970	-	62	62
1971	-	21	21
1972	-	13	13
1973	-	7	7
1974	-	8	8
1975	-	14	14
1976	-	10	10
1977	-	23	23
1978	-	20	20
1979	-	13	13
1980	-	19	19
1981	-	14	14
1982	-	17	17
1983	-	23	23
1984	-	54	54
1985	-	170	170
1986	-	225	225
1987	-	127	127
1988	-	135	135
1989	-	104	104
1990	-	86	86
1991	-	85	85
1992	-	104	104
1993	-	232	232
1994	21	458	479
1995	174	731	906
1996	165	1 055	1 220
1997	220	1 206	1 427
1998	198	1 025	1 223
1999	203	1 032	1 235
2000	186	1 021	1 207
2001	78	688	766
2002	127	681	808
2003	118	632	750
2004	103	691	794
2005	156	847	1 003
2006	160	809	969
2007	174	1 093	1 267
2008	218	1 328	1 546
2009	265	1 422	1 687
2010	206	1 251	1 457
2011	152	841	993
2012	121	705	826
2013	91	594	685
2014	59	378	437

TAFLA 3.24.1
Loðna. Afli þjóða eftir vertíðum (í þús. tonna).
Capelin. *Landings by nation and fishing season (in thous. tonnes).*

Ár *Year*	**Vetur (jan–mar)** *Winter (Jan–Mar)*					**Sumar og haust (jún–des)** *Summer and autumn (Jun–Dec)*						
	Ísland *Iceland*	Noregur *Norway*	Færeyjar *Faroes*	Grænland *Greenland*	Samtals vertíð *Season total*	Ísland *Iceland*	Noregur *Norway*	Færeyjar *Faroes*	Grænland *Greenland*	ESB *EU*	Samtals vertíð *Season total*	Samtals *Total*
1963	1	-	-	-	1	-	-	-	-	-	-	1
1964	9	-	-	-	9	-	-	-	-	-	-	9
1965	50	-	-	-	50	-	-	-	-	-	-	50
1966	125	-	-	-	125	-	-	-	-	-	-	125
1967	97	-	-	-	97	-	-	-	-	-	-	97
1968	78	-	-	-	78	-	-	-	-	-	-	78
1969	171	-	-	-	171	-	-	-	-	-	-	171
1970	191	-	-	-	191	-	-	-	-	-	-	191
1971	183	-	-	-	183	-	-	-	-	-	-	183
1972	277	-	-	-	277	-	-	-	-	-	-	277
1973	441	-	-	-	441	-	-	-	-	-	-	441
1974	462	-	-	-	462	-	-	-	-	-	-	462
1975	457	-	-	-	457	3	-	-	-	-	3	460
1976	339	-	-	-	339	114	-	-	-	-	114	453
1977	549	-	24	-	573	260	-	-	-	-	260	833
1978	469	-	36	-	505	498	154	3	-	-	655	1 160
1979	522	-	18	-	540	442	124	22	-	-	588	1 128
1980	392	-	-	-	392	368	119	24	-	17	528	920
1981	156	-	-	-	156	485	91	16	-	21	613	769
1982	13	-	-	-	13	-	-	-	-	-	-	13
1983	-	-	-	-	-	133	-	-	-	-	133	133
1984	440	-	-	-	440	425	105	10	-	8	548	988
1985	348	-	-	-	348	645	193	66	-	16	920	1 268
1986	342	50	-	-	392	553	150	65	-	5	773	1 165
1987	501	60	-	-	561	311	82	65	-	-	458	1 019
1988	601	57	-	-	658	311	12	48	-	-	371	1 029
1989	609	56	-	-	665	54	53	14	-	-	121	786
1990	612	62	12	-	686	84	22	6	-	-	111	798
1991	202	-	-	-	202	56	-	-	-	-	56	258
1992	573	48	-	-	621	213	65	19	1	-	298	919
1993	489	-	-	1	490	450	127	24	10	-	611	1 101
1994	550	15	-	2	567	211	99	12	2	-	324	891
1995	539	-	-	1	540	176	28	-	2	-	206	746
1996	708	-	10	6	724	474	206	32	15	61	773	1 497
1997	775	-	16	6	797	536	154	27	6	47	764	1 561
1998	457	-	15	10	482	291	73	27	8	42	441	923
1999	608	15	14	22	659	83	11	6	2	-	102	761
2000	761	15	32	22	830	127	80	30	7	21	265	1 095
2001	767	-	10	29	806	150	106	12	9	17	294	1 061
2002	901	-	28	26	955	180	119	-	13	28	340	1 295
2003	585	-	40	23	648	96	78	4	3	18	199	847
2004	479	16	31	17	543	46	34	-	12	-	92	635
2005	594	69	19	10	692	9	-	-	-	-	9	701
2006	193	8	30	7	238	-	-	-	-	-	-	238
2007	307	38	19	13	377	-	-	-	-	-	-	377
2008	149	38	10	6	203	-	-	-	-	-	-	203
2009	15	-	-	-	15	-	-	-	-	-	-	15
2010	111	28	8	5	151	5	-	-	-	-	5	5
2011	322	31	20	13	386	8	59	-	5	-	72	457
2012	577	46	30	22	675	9	-	-	1	-	10	685
2013	454	40	30	17	541	-	-	-	-	-	-	541
2014	111	6	8	16	142	-	31	-	5	10	46	187
2015	354	51	30	38	472	-	-	-	-	-	-	-

TAFLA 3.24.2
Loðna. Skipting aflans í fjölda eftir aldri (í milljörðum).
Capelin. *Catch in numbers at age (in billions).*

	Vetur (jan–mar) *Winter (Jan–Mar)*				**Sumar/haust (jún–des)** *Summer/autumn (Jun–Dec)*			
	Aldur *Age*				Aldur *Age*			
Year	2	3	4	5	1	2	3	4
1978	-	-	-	-	0.0	21.4	12.2	0.0
1979	1.0	20.8	4.8	0.1	0.6	29.4	6.1	0.0
1980	1.3	17.6	3.5	0.0	4.9	17.2	5.4	0.0
1981	1.7	7.1	1.9	0.0	0.6	27.9	2.0	0.0
1982	0.0	0.8	0.1	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.6	7.2	0.8	0.0
1984	2.1	18.1	3.4	0.0	0.5	9.8	7.8	0.1
1985	0.4	9.1	5.4	0.0	0.8	25.6	15.4	0.2
1986	0.1	9.8	6.9	0.2	0.0	10.0	23.3	0.5
1987	0.0	6.9	15.5	0.0	0.0	27.7	6.7	0.0
1988	0.0	23.4	7.2	0.3	0.3	13.6	5.4	0.0
1989	0.1	22.9	7.8	0.0	1.7	6.0	1.5	0.0
1990	1.4	24.8	9.6	0.1	0.8	5.9	1.0	0.0
1991	0.5	7.4	1.5	0.0	0.3	2.7	0.4	0.0
1992	2.7	29.4	2.8	0.0	1.7	14.0	2.1	0.0
1993	0.2	20.1	2.5	0.0	0.2	24.9	5.4	0.2
1994	0.6	22.7	3.9	0.0	0.6	15.0	2.8	0.0
1995	1.3	17.6	5.9	0.0	1.5	9.7	1.1	0.0
1996	0.6	27.4	7.7	0.0	0.2	25.2	12.7	0.2
1997	0.9	29.1	11.0	0.0	1.8	33.4	10.2	0.4
1998	0.3	20.4	5.4	0.0	0.9	25.1	2.9	0.0
1999	0.5	31.2	7.5	0.0	0.3	4.7	0.7	0.0
2000	0.3	36.3	5.4	0.0	0.2	12.9	3.3	0.1
2001	0.4	27.9	6.7	0.0	0.0	17.6	1.2	0.0
2002	0.1	33.1	4.2	0.0	0.0	18.3	2.5	0.0
2003	0.1	32.2	1.9	0.0	0.3	11.8	1.0	0.0
2004	0.6	24.6	3.0	0.0	0.0	5.3	0.5	0.0
2005	0.1	31.5	3.1	0.0	0.0	0.4	0.0	0.0
2006	0.1	10.4	0.3	0.0	0.0	0.0	0.0	0.0
2007	0.3	19.5	0.5	0.0	0.0	0.0	0.0	0.0
2008	0.5	10.6	0.4	0.0	0.0	0.0	0.0	0.0
2009	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.0
2010	0.7	5.3	0.9	0.0	0.0	0.2	0.0	0.0
2011	0.1	16.2	0.6	0.0	0.0	2.5	1.6	0.0
2012	0.6	25.0	6.1	0.0	0.0	0.2	0.2	0.0
2013	0.3	12.1	9.7	0.2	0.0	0.0	0.0	0.0
2014	0.1	4.8	1.3	0.0	0.0	2.2	0.6	0.0
2015	0.3	17.5	4.7	0.1	-	-	-	-

TAFLA 3.24.3
Loðna. Mældur fjöldi (í milljörðum) ókynþroska 1 og 2 ára í haustleiðöngrum (sep–des).
Capelin. *Estimated abundance (numbers in billions) of immature ages 1 and 2 from acoustic autumn surveys (Sep–Dec).*

Ár *Year*	1 árs *Age 1*	2 ára *Age 2*
1980	23.5	-
1981	21.0	1.1
1982	68.0	1.7
1983	44.1	8.2
1984	73.8	4.6
1985	33.8	12.6
1986	58.6	1.4
1987	21.3	2.5
1988	43.9	6.7
1989	29.2	1.8
1990	24.9	1.3
1991	60.0	5.3
1992	104.6	2.3
1993	100.4	9.8
1994	119.0	6.9
1995	165.0	30.1
1996	111.9	16.4
1997	66.8	30.8
1998	121.0	5.9
1999	89.8	4.4
2000	103.7	10.9
2001	101.8	2.4
2002	1.0	0.5
2003	4.9	3.1
2004	7.9	0.1
2005	-	-
2006	44.7	0.3
2007	5.7	0.1
2008	7.5	0.4
2009	13.0	-
2010	91.6	6.3
2011	9.0	0.6
2012	18.5	2.0
2013	60.1	6.9
2014	57.0	3.3

TAFLA 3.24.4

Loðna. Stofnstærð í fjölda eftir aldri (í milljörðum) miðað við 1. janúar. Taflan sýnir einnig þyngd ókynþroska og kynþroska loðnu (í þús. tonna) og stærð hrygningarstofns í lok vertíðar.

Capelin. *Stock abundance in numbers by age and maturity group (in billions) on 1 January. Also shown is biomass (in thous. tonnes) of the immature and maturing stock components and the spawning stock biomass at the end of the fishing season.*

Ár *Year*	Fjöldi ókynþroska *Number immature*			Fjöldi kynþroska *Number mature*					Samtals þyngd *Total biomass*		Hrygn.stofn *SSB*
	2 ára *Age 2*	3 ára *Age 3*	Alls *Total*	2 ára *Age 2*	3 ára *Age 3*	4 ára *Age 4*	5 ára *Age 5*	Alls *Total*	Ókynþroska *Immature*	Kynþroska *Mature*	Þyngd *Biomass*
1979	137.6	12.8	150.4	-	51.8	14.8	0.3	66.9	1 028	1 358	600
1980	50.6	13.8	64.4	-	53.4	3.6	0.2	57.2	502	980	300
1981	55.3	3.5	58.8	-	16.3	4.9	-	21.2	527	471	170
1982	41.2	3.0	44.2	-	8.0	0.5	-	8.5	292	171	140
1983	123.7	12.6	136.3	-	14.3	2.0	-	16.3	685	315	260
1984	105.0	35.7	140.7	-	39.8	7.6	0.1	47.5	984	966	440
1985	211.6	34.3	245.9	-	25.2	15.6	0.3	41.1	1 467	913	460
1986	83.2	83.9	167.1	-	34.5	10.5	0.2	45.2	1 414	1 059	460
1987	131.9	25.6	157.5	-	22.1	37.0	0.2	59.1	1 003	1 355	420
1988	120.5	31.2	151.3	-	34.1	11.7	-	45.8	1 083	993	400
1989	67.8	20.1	87.9	-	48.8	16.0	0.3	64.8	434	1 298	440
1990	53.9	8.6	62.5	-	31.2	12.1	-	43.3	291	904	115
1991	98.9	8.6	107.5	-	22.3	4.5	-	26.8	501	544	330
1992	111.6	8.1	119.7	-	54.8	5.3	-	60.1	487	1 106	475
1993	124.6	13.9	138.5	-	46.5	3.5	-	50.0	622	1 017	499
1994	121.3	16.9	138.2	-	50.5	4.6	-	55.1	573	1 063	460
1995	188.1	29.5	217.6	-	35.1	8.7	-	43.8	696	914	420
1996	165.2	37.9	203.1	-	75.5	20.1	-	95.6	800	1 820	830
1997	160.0	24.1	184.1	-	72.4	24.8	-	97.2	672	1 881	430
1998	138.8	29.5	168.3	-	50.1	7.9	-	58.0	621	1 106	492
1999	140.9	16.1	157.0	-	53.2	16.0	-	69.3	585	1 171	500
2000	115.8	20.5	136.3	-	68.2	10.0	-	78.2	535	1 485	650
2001	122.2	21.0	161.2	-	46.3	10.5	-	56.8	655	1 197	450
2002	117.3	7.6	126.6	-	59.3	10.5	-	69.8	510	1 445	475
2003	109.4	9.4	105.1	-	58.4	2.9	-	61.3	487	1 214	410
2004	134.6	11.4	143.5	-	54.2	6.2	-	60.4	597	1 204	535
2005	48.6	2.9	51.5	-	86.6	7.5	-	72.5	570	1 450	602
2006	81.7	2.1	83.8	-	29.4	1.9	-	31.3	761	639	400
2007	55.8	1.1	56.9	-	52.5	1.4	-	53.9	515	997	410
2008	32.4	4.0	36.4	-	32.5	0.7	-	33.2	339	619	406
2009	37.3	6.4	43.7	-	14.5	2.6	-	17.1	413	343	328
2010	77.0	2.9	79.9	-	21.5	4.2	-	25.7	728	548	410
2011	117.7	13.6	131.3	-	36.2	1.9	-	38.1	1 235	765	411
2012	49.1	28.8	77.9	-	46.4	7.9	-	54.4	678	1 112	418
2013	60.8	9.6	70.4	2.2	22.0	18.8	0.4	43.4	574	983	417
2014	69.6[1)]	17.2[1)]	86.8[1)]	0.6	22.5	6.3	0.1	29.4	591[1)]	545	424
2015	51.1[1)]	3.0[1)]	54.1[1)]	0.6	40.9	10.9	0.1	52.5	254[1)]	1 013	460

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.25.1
Kolmunni. Afli í Norðaustur-Atlantshafi (í þús. tonna).
Blue whiting. *Landings in the Northeast Atlantic (in thous. tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1970	-	38	38
1971	-	76	76
1972	1	77	77
1973	3	100	103
1974	4	103	108
1975	1	111	112
1976	9	155	164
1977	16	253	269
1978	35	574	609
1979	19	1 100	1 119
1980	10	1 113	1 123
1981	15	908	923
1982	2	549	551
1983	7	546	553
1984	-	615	616
1985	-	678	678
1986	-	847	847
1987	-	655	655
1988	-	558	558
1989	5	622	627
1990	-	562	562
1991	-	370	370
1992	-	475	475
1993	-	481	481
1994	-	459	459
1995	-	579	579
1996	1	645	646
1997	10	662	672
1998	69	1 060	1 129
1999	160	1 096	1 256
2000	261	1 152	1 413
2001	365	1 415	1 780
2002	286	1 270	1 557
2003	501	1 820	2 321
2004	422	1 955	2 378
2005	266	1 761	2 027
2006	315	1 651	1 966
2007	238	1 374	1 612
2008	164	1 083	1 246
2009	120	515	636
2010	88	436	524
2011	6	98	104
2012	63	321	384
2013	105	519	624
2014	183	1 017	1 200

TAFLA 3.26.1
Makríll. Afli í Norðaustur-Atlantshafi (í þús. tonna).
Mackerel. *Landings in the Northeast Atlantic (in thous. tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1987	-	655	655
1988	-	680	680
1989	-	585	590
1990	-	628	628
1991	-	668	668
1992	-	760	760
1993	-	825	825
1994	-	821	821
1995	-	756	756
1996	-	564	564
1997	1	569	570
1998	-	666	667
1999	-	640	640
2000	-	739	739
2001	-	737	737
2002	-	771	771
2003	-	679	679
2004	-	660	660
2005	-	549	549
2006	4	477	481
2007	36	550	586
2008	112	510	622
2009	116	622	738
2010	122	753	875
2011	159	787	947
2012	149	743	893
2013	151	780	932
2014	173	1 223	1 396

TAFLA 3.28.1
Gulllax. Afli á Íslandsmiðum (í tonnum).
Greater silver smelt. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Afli *Landings*
1985	5
1986	53
1987	42
1988	206
1989	8
1990	112
1991	246
1992	657
1993	1 255
1994	613
1995	492
1996	808
1997	3 367
1998	13 387
1999	5 495
2000	4 332
2001	2 478
2002	4 357
2003	2 686
2004	3 637
2005	4 481
2006	4 775
2007	4 246
2008	8 778
2009	10 829
2010	16 428
2011	10 515
2012	9 289
2013	7 154
2014	7 241

http://data.hafro.is/assmt/2015/mackerel/landings.csv
http://data.hafro.is/assmt/2015/s_smelt/landings.csv

TAFLA 3.29.1
Humar. Afli á Íslandsmiðum (í tonnum).
Nephrops. *Landings from Icelandic waters (in tonnes).*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1951	-	26	26
1952	-	53	53
1953	-	144	144
1954	-	236	236
1955	-	203	203
1956	-	138	138
1957	-	312	312
1958	728	593	1 321
1959	1 404	602	2 006
1960	2 081	451	2 532
1961	1 490	322	1 812
1962	2 662	154	2 816
1963	5 550	512	6 062
1964	3 487	586	4 073
1965	3 706	409	4 115
1966	3 465	546	4 011
1967	2 731	208	2 939
1968	2 489	157	2 646
1969	3 512	189	3 701
1970	4 026	119	4 145
1971	4 657	155	4 812
1972	4 321	260	4 581
1973	2 791	5	2 796
1974	1 983	6	1 989
1975	2 357	-	2 357
1976	2 780	-	2 780
1977	2 723	-	2 723
1978	2 059	-	2 059
1979	1 440	-	1 440
1980	2 398	-	2 398
1981	2 520	-	2 520
1982	2 603	-	2 603
1983	2 672	-	2 672
1984	2 459	-	2 459
1985	2 385	-	2 385
1986	2 564	-	2 564
1987	2 712	-	2 712
1988	2 240	-	2 240
1989	1 866	-	1 866
1990	1 692	-	1 692
1991	2 157	-	2 157
1992	2 230	-	2 230
1993	2 381	-	2 381
1994	2 238	-	2 238
1995	1 027	-	1 027
1996	1 633	-	1 633
1997	1 228	-	1 228
1998	1 411	-	1 411
1999	1 376	-	1 376
2000	1 239	-	1 239
2001	1 420	-	1 420
2002	1 548	-	1 548
2003	1 666	-	1 666
2004	1 437	-	1 437
2005	2 030	-	2 030
2006	1 875	-	1 875
2007	2 006	-	2 006
2008	2 070	-	2 070
2009	2 464	-	2 464
2010	2 540	-	2 540
2011	2 240	-	2 240
2012	1 914	-	1 914
2013	1 724	-	1 724
2014	1 965	-	1 965

TAFLA 3.29.2
Humar. Afli (í tonnum) og afli á togtíma (kg/klst) eftir svæðum.
Nephrops. *Landings (in tonnes) and CPUE (kg/hour trawled) by area.*

Ár *Year*	**SV-mið** Jökuldjúp–Selvogsleir		**Vestmannaeyjamið** Selvogsbanki–Háfadjúp		**SA-mið** Skaftárdjúp–Lónsdjúp		**Alls** Total	
	Afli *Landings*	á togtíma *CPUE*	Afli *Landings*	á togtíma *CPUE*	Afli *Landings*	á togtíma *CPUE*	Afli *Landings*	á togtíma *CPUE*
1970	1 517	35.9	916	34.7	1 593	51.1	4 026	40.2
1971	1 393	46.9	1 446	43.0	1 818	55.5	4 657	48.4
1972	1 500	36.8	1 370	35.9	1 451	40.8	4 321	37.7
1973	1 130	30.9	535	31.7	1 126	31.9	2 791	31.3
1974	408	32.0	492	32.2	1 083	48.5	1 983	39.4
1975	527	33.6	717	35.6	1 113	43.9	2 357	38.5
1976	817	32.4	608	31.5	1 355	42.1	2 780	36.2
1977	571	27.5	663	32.8	1 489	42.5	2 723	35.7
1978	395	31.2	290	28.6	1 374	47.9	2 059	40.0
1979	700	33.9	445	32.8	295	34.2	1 440	33.6
1980	734	43.8	540	34.4	1 124	55.5	2 398	45.5
1981	398	44.0	627	44.1	1 495	58.8	2 520	51.8
1982	640	44.0	509	42.8	1 454	60.2	2 603	51.5
1983	572	42.5	710	45.8	1 390	51.6	2 672	47.8
1984	422	36.1	722	47.9	1 315	48.5	2 459	45.6
1985	522	46.9	583	57.1	1 280	60.8	2 385	56.4
1986	495	49.0	454	56.2	1 615	68.2	2 564	61.3
1987	615	43.5	599	57.4	1 498	55.6	2 712	52.6
1988	625	39.3	965	42.7	650	36.8	2 240	39.9
1989	394	32.8	645	35.7	827	38.0	1 866	36.0
1990	217	29.3	304	29.0	1 171	48.1	1 692	40.0
1991	374	35.0	361	29.0	1 422	51.0	2 157	42.1
1992	400	40.8	414	40.0	1 417	60.5	2 230	51.3
1993	446	42.1	435	38.3	1 500	61.6	2 381	51.4
1994	539	30.8	493	35.4	1 205	43.8	2 238	38.0
1995	510	26.0	325	28.0	192	26.0	1 027	27.0
1996	514	30.0	721	37.8	398	39.2	1 633	35.2
1997	371	25.2	533	30.5	324	46.2	1 228	31.3
1998	145	22.2	746	39.1	520	49.0	1 411	38.9
1999	131	25.5	669	38.2	576	47.9	1 376	39.7
2000	107	25.8	454	38.2	678	64.3	1 239	46.6
2001	258	26.6	296	29.2	866	73.5	1 420	44.9
2002	288	25.6	265	29.9	995	64.8	1 548	43.7
2003	133	30.5	357	32.9	1 176	69.9	1 666	52.0
2004	126	16.8	341	25.9	970	58.4	1 437	38.5
2005	218	30.6	953	48.2	860	46.9	2 030	44.9
2006	316	47.6	490	46.4	1 069	93.7	1 875	65.5
2007	1 200	93.0	53	59.1	753	111.5	2 006	97.6
2008	599	87.5	477	102.8	994	144.5	2 070	112.7
2009	1 130	70.0	472	99.8	862	86.9	2 464	80.0
2010	1 173	76.8	652	71.6	715	82.1	2 540	75.8
2011	846	65.7	474	65.9	920	89.1	2 240	71.0
2012	791	62.9	439	57.2	684	75.7	1 914	63.0
2013	647	59.7	341	46.3	736	73.5	1 724	60.5
2014	1 093	74.8	234	43.6	638	68.1	1 965	67.4

TAFLA 3.29.3
Humar. Skipting aflans í fjölda eftir aldri (í milljónum).
Nephrops. *Catch in numbers at age (in millions).*

Ár	Aldur *Age*																	
Year	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1982	0.08	0.98	5.41	6.21	7.34	8.03	5.79	4.62	3.51	1.28	0.96	0.32	0.16	0.06	0.04	0.00	0.00	0.00
1983	0.10	0.73	4.49	6.81	6.64	6.65	4.74	5.00	3.79	1.77	1.16	0.63	0.34	0.15	0.05	0.02	0.00	0.00
1984	0.26	1.45	4.74	5.97	6.86	6.18	4.00	3.41	3.20	1.53	1.27	0.80	0.47	0.33	0.12	0.07	0.02	0.02
1985	0.05	0.89	3.70	5.22	5.78	6.59	5.15	4.02	3.26	1.33	1.00	0.57	0.33	0.13	0.05	0.03	0.01	0.00
1986	0.01	0.44	3.25	6.39	8.61	7.51	5.25	4.13	3.30	1.20	0.96	0.52	0.22	0.07	0.04	0.00	0.00	0.00
1987	0.05	0.42	2.44	5.29	7.34	8.31	5.43	4.45	3.33	1.62	1.06	0.61	0.38	0.17	0.11	0.05	0.02	0.02
1988	0.09	0.73	2.70	4.53	6.04	6.18	5.25	3.99	2.53	1.19	0.88	0.47	0.37	0.14	0.04	0.05	0.01	0.00
1989	0.07	0.75	3.37	3.81	4.59	5.06	3.52	2.99	2.59	1.22	0.82	0.53	0.34	0.15	0.06	0.02	0.01	0.00
1990	0.08	1.09	5.44	7.15	5.93	4.42	2.78	2.13	1.57	0.83	0.63	0.42	0.33	0.16	0.09	0.04	0.01	0.01
1991	0.04	0.87	4.86	7.94	9.02	6.95	3.81	2.85	1.90	0.84	0.61	0.36	0.26	0.11	0.06	0.02	0.02	0.00
1992	0.01	0.44	3.11	6.30	8.34	8.28	4.89	3.12	2.01	0.90	0.55	0.30	0.18	0.08	0.02	0.02	0.01	0.01
1993	0.05	0.35	2.49	4.65	6.35	6.94	5.16	3.90	3.11	1.41	0.90	0.52	0.31	0.15	0.07	0.04	0.00	0.00
1994	0.12	0.90	2.27	4.05	5.45	6.09	4.47	3.79	3.13	1.64	1.01	0.49	0.34	0.13	0.04	0.02	0.00	0.00
1995	0.06	0.53	1.71	2.07	2.26	2.58	1.89	1.78	1.37	0.70	0.44	0.38	0.24	0.09	0.04	0.01	0.00	0.00
1996	0.07	0.73	3.10	4.23	4.19	4.13	2.81	2.28	1.99	1.01	0.83	0.63	0.38	0.16	0.08	0.03	0.00	0.00
1997	0.03	0.51	2.48	3.57	3.59	2.88	1.81	1.58	1.46	0.80	0.64	0.47	0.29	0.17	0.06	0.03	0.01	0.00
1998	0.00	0.19	1.40	2.54	3.49	3.32	2.24	1.88	1.71	0.96	0.79	0.62	0.43	0.24	0.12	0.04	0.02	0.00
1999	0.03	0.18	1.26	2.64	3.63	4.01	2.83	2.10	1.65	0.78	0.54	0.37	0.28	0.14	0.08	0.04	0.01	0.01
2000	0.03	0.19	1.18	1.61	2.21	2.75	2.23	2.22	1.87	0.94	0.66	0.45	0.29	0.14	0.08	0.03	0.01	0.00
2001	0.02	0.22	0.87	1.55	2.35	2.85	2.23	2.35	2.14	1.23	0.90	0.63	0.40	0.21	0.11	0.04	0.01	0.00
2002	0.01	0.17	1.77	2.21	2.23	2.52	1.98	2.10	1.98	1.22	1.06	0.93	0.71	0.41	0.23	0.10	0.04	0.02
2003	0.06	0.26	1.04	3.31	3.61	3.02	2.14	1.90	1.77	1.13	1.03	0.88	0.78	0.46	0.29	0.13	0.04	0.01
2004	0.03	0.56	1.99	2.60	4.65	4.53	2.32	1.74	1.25	0.67	0.52	0.43	0.39	0.28	0.21	0.13	0.07	0.03
2005	0.02	0.22	1.76	3.44	3.94	5.16	4.61	3.54	2.65	1.38	0.77	0.56	0.44	0.20	0.12	0.05	0.02	0.01
2006	0.01	0.22	1.19	2.83	4.13	4.29	3.59	3.31	2.60	1.29	0.88	0.58	0.42	0.20	0.13	0.05	0.03	0.02
2007	0.02	0.12	0.80	1.82	2.93	3.88	2.82	2.58	2.49	1.62	1.14	0.99	0.84	0.45	0.38	0.21	0.19	0.11
2008	0.02	0.24	1.21	2.42	3.50	3.99	3.65	3.43	2.69	1.57	1.01	0.95	0.73	0.37	0.25	0.11	0.06	0.04
2009	0.04	0.26	1.29	2.38	3.36	4.28	3.72	3.43	2.96	1.82	1.21	1.22	1.16	0.68	0.55	0.27	0.18	0.12
2010	0.02	0.24	1.39	2.55	3.55	4.34	3.55	3.56	2.86	1.89	1.22	1.37	1.14	0.74	0.52	0.30	0.26	0.17
2011	0.02	0.25	1.50	2.85	3.27	4.17	3.42	3.19	2.93	1.83	1.08	0.99	0.90	0.53	0.43	0.18	0.11	0.08
2012	0.00	0.09	0.70	1.54	2.11	2.89	2.82	2.56	2.41	1.70	1.07	1.02	1.02	0.56	0.42	0.23	0.13	0.16
2013	0.00	0.02	0.29	0.88	1.62	2.40	2.21	2.18	2.30	1.45	1.12	1.01	0.97	0.60	0.42	0.24	0.13	0.14
2014	0.00	0.01	0.20	0.73	1.57	2.39	2.30	2.43	2.48	1.57	1.29	1.19	1.06	0.79	0.54	0.33	0.17	0.17

TAFLA 3.29.4

Humar. Fjöldi fimm ára nýliða i milljónum, veiðistofn (6 ára og eldri) og stofn stórhumars (10 ára og eldri) í upphafi árs í þús. tonna, afli í þús. tonna og fiskveiðidánartala (meðaltal fyrir 6–13 ára).

Nephrops. *Recruitment as 5-year-olds in millions, fishable (6+) and large category (10+) stock in thous. tonnes, landings in thous. tonnes, and fishing mortality (average for ages 6–13).*

Ár *Year*	Nýliðun *Recruitment*	Veiðistofn *Biomass 6+*	Stofn stórhumars *Biomass 10+*	Afli *Landings*	Fiskveiðidánartala *Fishing mortality*
1982	90	13.5	4.3	2.6	0.28
1983	86	13.1	4.4	2.7	0.30
1984	86	12.6	4.0	2.5	0.30
1985	76	12.3	3.9	2.4	0.28
1986	75	11.9	3.8	2.6	0.31
1987	76	11.2	3.6	2.7	0.36
1988	85	10.4	3.2	2.2	0.32
1989	95	10.4	2.9	1.9	0.30
1990	89	11.1	2.7	1.7	0.23
1991	78	11.8	3.1	2.2	0.25
1992	71	11.7	3.4	2.2	0.25
1993	67	11.2	3.8	2.4	0.30
1994	69	10.5	3.6	2.2	0.31
1995	76	10.1	3.3	1.0	0.14
1996	76	11.1	3.7	1.6	0.20
1997	77	11.5	3.9	1.2	0.14
1998	77	12.3	4.4	1.4	0.15
1999	87	12.9	4.7	1.4	0.13
2000	90	13.8	5.3	1.2	0.11
2001	105	15.0	5.7	1.4	0.12
2002	107	16.4	6.1	1.5	0.12
2003	108	17.7	6.5	1.7	0.11
2004	107	19.0	7.2	1.4	0.08
2005	105	20.3	8.3	2.0	0.12
2006	94	20.9	9.0	1.9	0.11
2007	88	21.3	9.7	2.0	0.10
2008	82	21.4	10.2	2.1	0.11
2009	68	21.1	10.6	2.5	0.12
2010	58	20.0	10.6	2.5	0.12
2011	47	18.4	10.1	2.2	0.13
2012	32	16.8	9.8	1.9	0.11
2013	17	15.0	9.4	1.7	0.11
2014	13	13.1	8.8	2.0	0.14
2015	4	10.7	7.8		

TAFLA 3.29.5

Humar. Forsendur í framreikningum á þróun stofnsins. Náttúrulegur dánarstuðull M=0.2.

Nephrops. *Input parameters for stock projection. Natural mortality coefficient, M=0.2.*

Aldur *Age*	Stofnstærð *Stock size*	Veiðimynstur *Selectivity*	Meðalþyngd (g) *Mean weight (g)*
5	4.2	0.05	23
6	10.7	0.12	34
7	10.8	0.22	46
8	15.2	0.35	60
9	16.2	0.42	75
10	14.4	0.60	89
11	12.0	0.80	104
12	10.1	0.85	119
13	7.7	1.00	131
14	5.9	1.00	145
15	4.6	1.00	159
16	2.9	1.00	175
17	2.1	1.00	217
18	1.0	1.00	238
19	0.6	1.00	268
20	0.2	1.00	284

Stofnstærð:	Stofnstærð í milljónum 2015.
Veiðimynstur:	Hlutfallsleg veiðidánartala hvers *aldursflokks 2014.*
Meðalþyngd:	Út frá sambandi lengdar og þyngdar.
Stock size:	*Stock size in millions in 2015.*
Selectivity:	*Relative fishing mortality on each age group in 2014.*
Mean weight:	*From length-weight regression.*

http://data.hafro.is/assmt/2015/nephrops/summary.csv
http://data.hafro.is/assmt/2015/nephrops/prognosis.csv

TAFLA 3.30.1
Rækja. Afli íslenskra skipa eftir svæðum (í tonnum).
Northern shrimp. *Landings of the Icelandic fleet by area (in tonnes).*

Ár *Year*	Íslandsmið *Icelandic waters*				Önnur veiðisvæði *Other areas*			Samtals
	Djúpslóð *Offshore*	Dohrnbanki *Dohrn Bank*	Grunnslóð *Inshore*	Samtals *Total*	Flæmingjagrunn *Flemish Cap*	Miklibanki *Grand Banks*	Barentshaf *Barents Sea*	*Total*
1955	-	-	390	390	-	-	-	390
1956	-	-	772	772	-	-	-	772
1957	-	-	500	500	-	-	-	500
1958	-	-	768	768	-	-	-	768
1959	-	-	1 068	1 068	-	-	-	1 068
1960	-	-	1 396	1 396	-	-	-	1 396
1961	-	-	1 207	1 207	-	-	-	1 207
1962	-	-	541	541	-	-	-	541
1963	-	-	733	733	-	-	-	733
1964	-	-	675	675	-	-	-	675
1965	-	-	926	926	-	-	-	926
1966	-	-	1 776	1 776	-	-	-	1 776
1967	-	-	1 428	1 428	-	-	-	1 428
1968	-	-	2 469	2 469	-	-	-	2 469
1969	-	-	3 281	3 281	-	-	-	3 281
1970	-	-	4 431	4 431	-	-	-	4 431
1971	-	-	6 248	6 248	-	-	-	6 248
1972	10	-	5 334	5 344	-	-	-	5 344
1973	-	-	7 286	7 286	-	-	-	7 286
1974	74	-	6 442	6 516	-	-	-	6 516
1975	415	-	4 526	4 941	-	-	-	4 941
1976	415	-	6 366	6 781	-	-	-	6 781
1977	839	-	6 310	7 149	-	-	-	7 149
1978	1 726	-	5 537	7 263	-	-	-	7 263
1979	1 621	-	7 222	8 843	-	-	-	8 843
1980	3 886	-	6 074	9 960	-	-	-	9 960
1981	2 344	-	5 803	8 147	-	-	-	8 147
1982	1 729	-	7 451	9 180	-	-	-	9 180
1983	6 055	42	7 005	13 102	-	-	-	13 102
1984	13 019	742	10 655	24 416	-	-	-	24 416
1985	14 189	1 794	8 911	24 894	-	-	-	24 894
1986	27 687	1 150	6 994	35 831	-	-	-	35 831
1987	32 137	1 329	5 170	38 636	-	-	-	38 636
1988	23 929	1 424	4 393	29 746	-	-	-	29 746
1989	19 373	1 326	6 086	26 785	-	-	-	26 785
1990	21 844	281	7 709	29 834	-	-	-	29 834
1991	29 131	469	8 657	38 257	-	-	-	38 257
1992	35 351	1 751	9 800	46 902	-	-	-	46 902
1993	38 730	2 553	12 598	53 881	2 243	-	-	56 124
1994	54 724	1 426	16 642	72 792	2 300	-	-	75 097
1995	60 184	1 150	14 589	75 923	7 622	-	-	83 545
1996	55 430	566	12 465	68 461	20 681	-	-	89 142
1997	62 442	2 856	9 617	74 915	6 381	-	514	81 810
1998	48 246	1 421	5 847	55 514	6 572	-	642	62 728
1999	26 373	769	4 374	31 516	9 277	-	2 295	43 088
2000	20 064	132	3 839	24 035	8 912	97	705	33 749
2001	21 644	9	4 072	25 725	5 265	55	-	31 045
2002	25 425	1 231	2 548	29 204	5 741	55	-	35 000
2003	21 629	703	1 576	23 908	4 715	133	-	28 756
2004	15 388	411	560	16 359	3 567	105	-	20 026
2005	3 763	29	705	4 497	4 014	140	-	8 651
2006	608	-	250	858	1 958	226	-	3 042
2007	1 681	-	330	2 011	-	-	10	2 021
2008	1 450	-	744	2 194	-	-	-	2 194
2009	4 122	-	1 393	5 515	-	-	-	5 515
2010	6 403	4	1 170	7 577	-	185	-	7 758
2011	6 270	68	1 407	7 745	-	124	574	8 375
2012	7 339	-	2 453	9 793	-	-	731	10 524
2013	7 019	345	3 363	10 727	-	92	157	10 631
2014	4 020	29	3 008	7 057	-	-	22	7 079

TAFLA 3.30.2
Rækja. Afli á grunnslóð eftir svæðum og fiskveiðiárum (í tonnum).
Northern shrimp. *Inshore landings by area and quota year (in tonnes).*

Ár *Year*	Arnar-fjörður	Ísafj.-djúp	Húna-flói	Skaga-fjörður	Eyja-fjörður	Skjálf-andi	Öxar-fjörður	Við Eldey	Breiðafjörður Norður-firðir	Breiðafjörður Sunnan-verður[1)]	Kollu-áll[1)]	Jökul-djúp[1)]	Samtals *Total*
1990/91	720	3 099	2 004	502	-	125	151	212	5	335	1 242	20	8 415
1991/92	605	2 554	2 107	500	-	310	500	514	-	138	1 962	11	9 201
1992/93	751	2 501	1 500	451	-	603	697	852	-	402	4 619	14	12 390
1993/94	853	2 511	1 044	501	-	801	905	1 352	-	258	4 497	54	12 976
1994/95	699	1 955	2 305	708	-	797	1 445	1 115	47	294	5 074	1 397	15 836
1995/96	708	2 756	2 670	1 528	47	1 023	1 308	1 756	71	68	1 784	580	14 299
1996/97	720	2 254	2 084	1 570	-	1 009	1 762	632	28	1	258	24	10 342
1997/98	546	1 435	1 432	1 224	-	682	1 509	-	93	-	10	1	6 932
1998/99	551	1 025	536	1 010	-	213	1 504	-	82	-	7	1	4 929
1999/00	548	1 722	3	399	-	-	527	-	60	34	30	1	3 324
2000/01	639	1 287	-	-	-	-	121	-	80	397	696	1 164	4 384
2001/02	752	1 497	-	-	-	2	92	-	49	-	506	-	2 898
2002/03	637	989	-	-	-	4	5	-	-	38	49	2	1 724
2003/04	748	-	-	-	-	2	2	-	-	42	166	1	961
2004/05	440	-	-	-	-	-	-	-	-	27	238	-	705
2005/06	9	3	-	-	-	-	-	-	-	29	209	-	250
2006/07	3	3	-	-	-	-	-	-	-	13	301	2	321
2007/08	158	9	-	-	-	-	-	-	-	51	472	7	697
2008/09	508	2	-	-	-	-	-	-	-	194	580	5	1 289
2009/10	314	1	-	-	-	-	-	1	-	25	787	18	1 144
2010/11	337	-	-	-	-	-	-	1	-	103	311	-	752
2011/12	224	1 040	-	-	-	2	-	-	-	143	1 479	10	2 895
2012/13	475	527	-	-	-	85	2	179	-	174	1 366	215	3 023
2013/14	201	1 128	-	-	-	1	-	197	-	238	1 319	141	3 225

[1)] Veiðisvæðið við Snæfellsnes. *Referred to as Snæfellsnes area.*

TAFLA 3.30.3
Rækja. Tillögur um hámarksafla á grunnslóð eftir svæðum og fiskveiðiárum (í tonnum).
Northern shrimp. *TAC recommended for inshore areas by quota year (in tonnes).*

Ár *Year*	Arnar-fjörður	Ísafj.-djúp	Húna-flói	Skaga-fjörður	Skjálf-andi	Öxar-fjörður	Við Eldey[1)]	Norður-firðir	Snæfells-nes[2,3)]	Samtals *Total*
1990/91	700	3 000	2 000	500	125	150	400	5	-	6 880
1991/92	600	2 500	2 000	500	300	500	800	0	-	7 200
1992/93	750	2 500	1 500	450	600	700	600	0	-	7 100
1993/94	850	2 500	1 000	500	800	900	1 500	0	-	8 050
1994/95	700	2 100	2 300	700	700	1 450	1 500	50	-	9 500
1995/96	700	2 700	2 500	1 500	1 000	1 300	1 600	70	-	11 370
1996/97	700	2 300	2 100	1 500	1 000	1 750	500	50	-	9 900
1997/98	550	1 450	1 400	1 200	700	1 500	0	70	-	6 870
1998/99	550	1 000	500	1 000	300	1 500	0	80	-	4 930
1999/00	550	1 800	0	400	0	500	0	60	-	3 310
2000/01	650	1 200	0	0	0	200	0	80	-	2 130
2001/02	750	1 500	0	0	0	140	0	60	-	2 450
2002/03	650	1 000	0	0	0	0	0	0	300	1 950
2003/04	750	0	0	0	0	0	0	0	200	950
2004/05	450	0	0	0	0	0	0	0	200	650
2005/06	0	0	0	0	0	0	0	0	200	200
2006/07	0	0	0	0	0	0	0	0	200	200
2007/08	150	0	0	0	0	0	0	0	400	550
2008/09	500	0	0	0	0	0	0	0	400	900
2009/10	300	0	0	0	0	0	0	0	900	1 200
2010/11	400	0	0	0	0	0	0	0	450	850
2011/12	200	1 000	0	0	0	0	0	0	850	2 050
2012/13	450	500	0	0	400	0	250	0	1 000	2 600
2013/14	200	1 100	0	0	0	0	200	0	950	2 450
2014/15	350	750	0	0	0	0	200	0	600	1 900
2015/16							200		700	900

[1)] Tillögur eru gefnar fyrir almanaksár. *Recommendations for calendar years.*

[2)] Veiðisvæðið við Snæfellsnes: Kolluáll, Jökuldjúp og sunnanverður Breiðafjörður.
Snæfellsnes area: Kolluáll, Jökuldjúp and southern Breiðafjörður.

[3)] Fram til 2002 var ekki gefið út aflamark fyrir svæðið. *Until 2002, there was no recommended TAC.*

http://data.hafro.is/assmt/2015/shrimp/c_inshore.csv
http://data.hafro.is/assmt/2015/shrimp/advice.csv

TAFLA 3.30.4
Rækja. Meðalfjöldi í kg í stofnmælingu á rækjusvæðunum á grunnslóð.
Northern shrimp. *Mean number per kg from inshore surveys.*

Ár *Year*	Arnar-fjörður	Ísafj.-djúp	Húna-flói	Skaga-fjörður	Skjálf-andi	Öxar-fjörður	Við Eldey	Breiðafjörður: Norður-firðir	Breiðafjörður: Sunnan-verður[1)]	Kollu-áll[1)]	Jökul-djúp[1)]
1990	256	349	380	311	562	484	202	590	189	219	-
1991	383	393	382	322	341	277	260	-	216	302	-
1992	390	370	409	302	399	314	214	-	186	215	227
1993	319	378	481	319	391	342	233	660	203	254	-
1994	308	429	400	391	366	304	271	-	212	318	-
1995	272	394	387	356	394	306	232	505	206	309	281
1996	307	363	331	340	299	248	205	464	191	294	269
1997	312	357	362	333	264	255	243	411	212	247	364
1998	364	465	483	382	347	232	292	397	218	264	261
1999	367	348	536	383	457	217	246	494	217	262	324
2000	462	447	470	397	363	338	240	337	191	187	-
2001	395	389	590	534	472	585	254	336	234	237	263
2002	394	426	525	347	272	687	207	370	188	235	249
2003	314	428	403	351	283	497	-	419	193	213	261
2004	353	263	305	-	-	-	184	346	160	183	171
2005	361	381	305	370	303	292	-	-	186	184	-
2006	297	355	349	-	-	306	-	-	170	205	-
2007	246	283	339	587	393	315	-	-	157	-	-
2008	368	279	313	525	288	395	-	-	200	175	228
2009	308	324	433	478	332	303	-	726	185	194	235
2010	307	404	466	485	395	308	200	-	184	224	-
2011	387	294	373	445	410	395	-	-	197	258	219
2012	310	353	421	493	329	388	-	-	180	195	208
2013	320	321	431	533	522	390	192	-	192	208	214
2014	385	300	435	479	313	277	194	-	164	202	176

[1)] Veiðisvæðið við Snæfellsnes. *Referred to as Snæfellsnes area.*

TAFLA 3.30.5
Rækja. Afli úthafsrækju á Íslandsmiðum eftir svæðum (í tonnum).
Northern shrimp. *Offshore landings in Icelandic waters by area (in tonnes).*

Ár *Year*	Hali	Norðurkantur	Við Sporðagrunn	Skagafjarðardjup	Við Kolbeinsey	Eyjafjarðarall	Við Grimsey	Við Slettugrunn	Langanesdjup	Bakkafloadjup	Heraðsdjup	Brattikantur	Eilífðarkantur	Rauða torgið	Önnur svæði *Other areas*	Samtals *Total*
1991	821	10 488	3 820	884	6 801	1 089	3 243	555	37	156	839	123	1	274	-	29 131
1992	899	8 649	3 036	1 263	6 837	1 270	5 882	762	90	2 071	4 260	65	5	154	108	35 351
1993	975	10 875	1 894	2 720	5 113	2 573	7 726	1 581	664	1 074	2 962	55	24	280	214	38 730
1994	2 052	13 152	3 121	5 305	10 437	3 042	7 687	2 868	1 615	1 264	3 534	212	35	330	70	54 724
1995	248	17 684	3 007	5 854	12 208	4 358	6 531	1 494	1 314	1 989	4 612	266	58	487	74	60 184
1996	175	14 140	2 570	2 809	16 808	2 395	6 329	1 541	1 059	1 373	5 368	159	35	663	6	55 430
1997	880	14 902	1 395	2 395	11 541	2 201	9 243	3 327	4 751	1 513	8 584	305	28	1 372	5	62 442
1998	502	12 878	561	1 747	7 697	920	5 768	5 762	2 802	1 425	6 692	600	127	765	-	48 246
1999	17	5 214	1 523	2 562	4 756	1 881	4 957	1 858	179	712	1 214	44	25	1 419	12	26 373
2000	6	3 477	4 223	1 603	2 499	745	2 230	1 622	188	486	1 868	57	37	1 021	2	20 064
2001	2	2 119	893	1 825	2 255	1 207	3 854	4 656	979	866	2 586	98	4	299	1	21 644
2002	357	9 909	2 040	3 028	3 905	1 074	2 172	1 855	154	50	338	1	11	531	-	25 425
2003	15	7 321	510	1 671	3 950	504	4 120	2 307	177	6	779	20	2	247	-	21 629
2004	178	5 030	494	1 970	3 438	682	1 961	1 498	82	-	2	-	-	53	-	15 388
2005	2	863	11	387	938	97	943	518	-	1	-	4	-	-	-	3 763
2006	-	26	1	20	88	1	280	193	-	-	-	-	-	-	-	608
2007	1	568	37	117	458	8	287	205	-	-	-	-	-	-	-	1 681
2008	-	259	162	158	722	6	67	76	-	-	-	-	-	-	-	1 450
2009	99	1 276	67	185	1 744	37	503	211	-	-	-	-	-	-	-	4 122
2010	3	1 351	10	107	2 354	83	1 448	1 032	10	-	-	-	5	1	-	6 404
2011	-	955	37	110	1 110	230	2 772	1 050	-	-	-	3	-	3	-	6 270
2012	128	1 323	760	425	699	127	2 775	1 096	1	-	-	-	5	-	-	7 339
2013	455	531	240	824	1 614	122	1 945	1 284	-	2	1	-	-	1	-	7 019
2014	179	256	534	791	684	241	762	572	-	-	-	1	-	-	-	4 020

http://data.hafro.is/assmt/2015/shrimp/w_inshore.csv
http://data.hafro.is/assmt/2015/shrimp/c_offshore.csv

TAFLA 3.30.6
Rækja. Meðalfjöldi í kg í stofnmælingu á úthafsrækjusvæðunum.
Northern shrimp. *Mean number per kg from offshore surveys.*

Ár *Year*	Hali	Norðurkantur	Við Sporðagrunn	Skagafjarðardjúp	Við Kolbeinsey	Eyjafjarðaráll	Við Grímsey	Við Sléttugrunn	Langanesdjúp	Bakkaflóadjúp	Héraðsdjúp	Rauða torgið
1990	-	181	224	241	181	225	272	231	215	218	242	162
1991	-	162	198	258	184	186	305	242	201	234	280	164
1992	150	161	250	333	182	301	375	268	240	378	311	130
1993	160	178	226	280	192	247	395	261	228	284	240	112
1994	161	193	238	319	168	167	423	281	218	337	348	179
1995	179	193	259	360	203	261	390	366	263	360	349	152
1996	148	176	216	258	190	198	289	283	282	243	244	158
1997	171	195	190	244	222	197	329	304	295	314	282	153
1998	190	196	220	233	201	184	289	281	316	335	279	194
1999	165	185	213	260	193	193	292	296	282	267	294	169
2000	178	170	253	335	197	225	327	357	293	293	299	169
2001	162	158	237	322	168	196	433	355	282	242	251	136
2002	143	171	241	307	188	187	315	392	326	253	282	171
2003	181	178	208	246	225	210	274	356	352	271	279	199
2004	150	193	213	245	198	221	264	322	328	270	286	192
2005	159	188	198	229	197	197	244	290	328	285	286	222
2006	-	172	206	190	192	168	238	263	259	311	309	199
2007	-	177	210	223	174	192	262	287	291	352	232	180
2008	-	169	191	224	174	172	260	272	308	353	233	153
2009	-	160	172	185	156	151	220	241	268	280	245	146
2010	-	149	177	196	163	160	236	225	288	288	255	146
2011	-	160	191	216	151	162	249	236	287	270	236	146
2012	-	155	188	223	160	175	276	255	256	330	289	149
2013	-	161	214	224	194	214	325	321	295	333	332	173
2014	-	171	212	205	184	216	270	298	251	297	309	-

TAFLA 3.31.1
Hörpudiskur. Afli eftir svæðum (í tonnum).
Iceland scallop. *Landings by area (in tonnes).*

Ár *Year*	Breiða-fjörður	Arnar-fjörður	Ísafjarðar-djúp	Húna-flói	Hval-fjörður	Patreks-fjörður	Dýra-fjörður	Skaga-fjörður	Vopna-fjörður	Samtals *Total*
1969	-	-	402	-	-	-	-	-	-	402
1970	2 216	-	199	17	-	-	-	-	-	2 432
1971	2 542	140	534	374	-	68	-	-	-	3 658
1972	4 564	295	2 087	306	-	78	19	-	-	7 349
1973	3 218	196	1 219	72	-	140	3	-	-	4 848
1974	2 851	-	-	-	-	-	-	-	-	2 851
1975	2 729	27	-	-	-	28	-	-	-	2 784
1976	3 420	148	-	101	-	-	-	-	-	3 669
1977	3 752	73	260	342	-	-	-	-	-	4 427
1978	7 575	126	603	270	-	17	128	-	-	8 719
1979	6 055	178	473	937	-	16	141	-	-	7 800
1980	7 133	279	615	855	42	-	155	-	-	9 079
1981	8 328	522	687	228	315	32	74	-	-	10 186
1982	10 034	670	634	67	521	27	123	-	-	12 076
1983	11 218	842	921	1 695	346	59	100	-	-	15 181
1984	11 880	550	867	1 733	82	67	28	376	-	15 583
1985	12 128	754	881	1 986	-	16	120	665	518	17 068
1986	12 708	619	707	1 232	-	-	121	513	529	16 429
1987	11 071	227	314	1 576	-	-	84	-	-	13 272
1988	9 810	-	218	-	-	-	30	-	-	10 058
1989	10 066	-	469	177	-	-	60	-	-	10 772
1990	10 090	263	704	1 199	-	-	124	-	-	12 380
1991	8 918	339	346	598	-	-	-	-	96	10 297
1992	10 553	277	647	765	-	-	88	24	99	12 443
1993	10 752	128	431	390	-	97	72	-	-	11 870
1994	7 485	313	147	450	-	-	-	-	-	8 401
1995	8 000	-	3	379	-	-	-	-	-	8 382
1996	8 473	-	-	389	-	-	-	11	-	8 873
1997	8 882	244	-	958	127	15	-	140	-	10 424
1998	8 395	94	-	1 248	195	31	-	75	-	10 098
1999	8 131	95	-	180	361	-	-	5	-	8 868
2000	8 589	126	-	66	293	-	-	-	-	9 074
2001	6 331	4	-	-	164	-	-	-	-	6 499
2002	5 124	-	-	-	68	-	-	-	-	5 192
2003	789	-	-	-	-	-	-	-	-	789
2004	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-	-	-
2013	-	-	-	-	-	-	-	-	-	-
2014	280	-	-	-	-	-	-	-	-	280

TAFLA 3.32.1
Kúfskel. Afli eftir svæðum (í tonnum).
Ocean quahog. *Landings by area (in tonnes).*

Ár *Year*	Faxaflói *Faxa Bay*	Norðvesturland *Northwest area*	Norðausturland *Northeast area*	Afli alls *Total landings*
1987	-	1 085	-	1 085
1988	-	4 724	-	4 724
1989	-	-	-	-
1990	-	-	-	-
1991	-	-	-	-
1992	-	-	-	-
1993	-	-	-	-
1994	-	-	3	3
1995	10	2 060	-	2 070
1996	-	5 720	664	6 384
1997	-	2 867	1 483	4 350
1998	-	7 680	-	7 680
1999	-	2 736	1 151	3 887
2000	-	-	1 584	1 584
2001	-	-	7 424	7 424
2002	-	-	12 353	12 353
2003	-	-	14 431	14 431
2004	-	-	10 376	10 376
2005	-	-	2 045	2 045
2006	-	-	451	451
2007	-	-	3 253	3 253
2008	-	-	3 840	3 840
2009	-	-	615	615
2010	-	-	1	1
2011	-	-	5	5
2012	-	-	16	16
2013	-	-	20	20
2014	-	-	18	18

TAFLA 3.33.1
Beitukóngur. Afli (í tonnum) og afli á sóknareiningu (kg í gildru) í Breiðafirði.
Common whelk. *Landings (in tonnes) and CPUE (kg per hauled pot) in Breiðafjörður.*

Ár *Year*	Afli *Landings*	Afli á sóknareiningu *CPUE*
1996	500	4.3
1997	1 284	2.7
1998	10	3.5
1999	417	3.3
2000	825	3.7
2001	709	3.6
2002	0	-
2003	248	4.8
2004	863	3.1
2005	991	3.8
2006	839	2.9
2007	554	2.9
2008	398	1.9
2009	116	2.6
2010	142	3.3
2011	512	2.6
2012	375	1.7
2013	89	1.1
2014	93	2.2

http://data.hafro.is/assmt/2015/quahog/landings.csv
http://data.hafro.is/assmt/2015/whelk/landings.csv

TAFLA 3.34.1
Sæbjúga. Afli eftir svæðum (í tonnum) og afli á togtíma (kg/klst).
Sea cucumber. *Landings by area (in tonnes) and CPUE (kg/hour towed).*

	Afli *Landings*				Afli á sóknareiningu *CPUE*			
Ár *Year*	V *W*	N *N*	SA *SE*	Samtals *Total*	V *W*	N *N*	SA *SE*	Meðaltal *Average*
2006	50	-	-	50	-	-	-	-
2007	-	-	-	-	-	-	-	-
2008	998	-	-	998	687	-	-	687
2009	1 040	-	114	1 154	863	-	1 712	916
2010	1 360	-	885	2 246	904	-	1 080	938
2011	985	-	1 670	2 655	808	-	1 363	1 098
2012	775	-	640	1 415	1 103	-	1 187	1 140
2013	677	-	747	1 424	876	-	862	867
2014	705	-	142	847	805	-	739	790

TAFLA 3.35.1
Ígulker. Afli (í tonnum) og afli á togtíma (kg/klst).
Sea urchin. *Landings (in tonnes) and CPUE (kg/hour towed).*

Ár *Year*	Afli *Landings*	Afli á sóknareiningu *CPUE*
1993	694	-
1994	1 493	-
1995	981	-
1996	492	-
1997	20	-
1998	1	-
1999	10	-
2000	2	-
2001	0	-
2002	0	-
2003	0	-
2004	40	-
2005	29	-
2006	35	461
2007	134	381
2008	126	373
2009	140	483
2010	146	401
2011	144	381
2012	135	365
2013	129	374
2014	231	447

http://data.hafro.is/assmt/2015/cucumber/landings.csv
http://data.hafro.is/assmt/2015/urchin/landings.csv

TAFLA 3.36.1
Hvalir. Veiðar Íslendinga (fjöldi).
Whales. *Number of whales caught by the Icelandic whaling fleet.*

Ár *Year*	Steypireyður *Blue*	Langreyður *Fin*	Sandreyður *Sei*	Búrhvalur *Sperm*	Hnúfubakur *Humpback*	Hrefna[3)] *Minke*
1948	24	195	5	15	-	-
1949	33	249	12	28	2	-
1950	28	226	-	11	-	-
1951	11	312	2	13	1	-
1952	14	224	25	2	-	-
1953	5	207	70	48	2	-
1954	9	177	93	54	1	-
1955	10	236	134	20	-	-
1956	8	265	72	95	-	-
1957	10	348	78	81	-	-
1958	5	289	91	123	-	-
1959	6	178	67	120	-	-
1960	-	160	42	177	-	-
1961	-	142	58	150	-	-
1962	-	303	44	136	-	-
1963	-	283	20	136	-	-
1964	-	217	89	138	-	-
1965	-	289	74	69	-	-
1966	-	310	41	86	-	-
1967	-	239	48	119	-	-
1968	-	202	3	75	-	-
1969	-	251	69	103	-	-
1970	-	272	44	61	-	-
1971	-	208	240	106	-	-
1972	-	238	132	76	-	-
1973	-	267	138	47	-	-
1974	-	285	9	71	-	90
1975	-	245	138	37	-	181
1976	-	275	3	111	-	195
1977	-	144	131	110	-	194
1978	-	236	14	140	-	198
1979	-	260	84	96	-	202
1980	-	236	100	101	-	201
1981	-	254	100	43	-	200
1982	-	194	71	87	-	212
1983	-	144	100	-	-	204
1984	-	167	95	-	-	178
1985	-	161	38	-	-	145
1986[1)]	-	76	40	-	-	-
1987[1)]	-	80	20	-	-	-
1988[1)]	-	68	10	-	-	-
1989[1)]	-	68	-	-	-	-
1990[2)]	-	-	-	-	-	-
1991[2)]	-	-	-	-	-	-
1992[2)]	-	-	-	-	-	-
1993[2)]	-	-	-	-	-	-
1994[2)]	-	-	-	-	-	-
1995[2)]	-	-	-	-	-	-
1996[2)]	-	-	-	-	-	-
1997[2)]	-	-	-	-	-	-
1998[2)]	-	-	-	-	-	-
1999[2)]	-	-	-	-	-	-
2000[2)]	-	-	-	-	-	-
2001[2)]	-	-	-	-	-	-
2002[2)]	-	-	-	-	-	-
2003[1)]	-	-	-	-	-	37
2004[1)]	-	-	-	-	-	25
2005[1)]	-	-	-	-	-	39
2006	-	7	-	-	-	60[1)]+1
2007	-	-	-	-	-	39[1)]+6
2008	-	-	-	-	-	38
2009	-	125	-	-	-	81
2010	-	148	-	-	-	60
2011	-	-	-	-	-	58
2012	-	-	-	-	-	52
2013	-	134	-	-	-	35
2014	-	137	-	-	-	24

[1)] Skv. sérstöku leyfi Sjávarútvegsráðuneytisins.
In accordance with special permit issued by the Government of Iceland.

[2)] Engar hvalveiðar í atvinnuskyni leyfðar árin 1986–2005.
No permits issued for commercial whaling in the period 1986–2005.

[3)] Engar opinberar skýrslur um veiðar fyrir árin 1948–1973.
No official statistics available for the period 1948–1973.

http://data.hafro.is/assmt/2015/whales/catch.csv

TAFLA 3.37.1
Selir. Skráð selveiði við Ísland (fjöldi) og fjöldi veiðimanna.
Seals. *Recorded number of seals caught in Iceland and number of sealers.*

Ár	Heildar-veiði	Landsels-kópar	Útsels-kópar	Eldri landselur	Eldri útselur	Annað	Eldri land-/útselur	Ógreint
Year	*Total catch*	*Harbour pups*	*Grey pups*	*Older harbour*	*Older grey*	*Other*	*Older harbour/grey*	*Unspecified*
1962[1)]	5 786	5 101	293	-	-	-	392	-
1963[1)]	6 573	5 795	568	-	-	-	210	-
1964[1)]	7 063	6 176	593	-	-	-	294	-
1965[1)]	6 581	5 598	767	-	-	-	216	-
1966[1)]	6 148	5 578	404	-	-	-	166	-
1967[1)]	4 977	4 481	449	-	-	-	47	-
1968[1)]	5 726	5 049	524	-	-	-	153	-
1969[1)]	6 666	5 831	579	-	-	-	256	-
1970[1)]	6 740	5 942	404	-	-	-	394	-
1971[1)]	6 894	6 126	557	-	-	-	211	-
1972[2)]	6 930	6 237	415	-	-	-	278	-
1973[2)]	6 803	5 996	483	-	-	-	324	-
1974[2)]	6 240	5 534	406	-	-	-	300	-
1975[2)]	6 673	6 111	122	-	-	-	440	-
1976[2)]	6 470	5 895	274	-	-	-	301	-
1977[2)]	6 601	5 705	96	-	-	-	267	533
1978[2)]	4 623	4 030	93	168	53	18	87	174
1979[2)]	4 978	4 278	201	253	143	3	100	-
1980[2)]	3 648	3 357	54	7	31	8	-	191
1981[2)]	2 974	2 510	3	94	25	8	219	115

Ár	Heildar-veiði	Landsels-kópar	Útsels-kópar	Eldri landselur	Eldri útselur	Annað	Landselur aldur óþekktur	Útselur aldur óþekktur	Fjöldi veiði-manna[5)]
Year	*Total catch*	*Harbour pups*	*Grey pups*	*Older harbour*	*Older grey*	*Other*	*Harbour age unknown*	*Grey age unknown*	*Sealers*
1982[3)]	4 656	2 367	1 154	634	488	13	-	-	249
1983[3)]	5 110	2 025	803	1 672	563	47	-	-	314
1984[3)]	5 512	2 485	1 079	1 114	782	52	-	-	348
1985[3)]	6 094	2 254	1 245	1 498	1 097	-	-	-	335
1986[3)]	6 450	2 481	1 187	1 446	1 331	5	-	-	349
1987[3)]	5 166	1 664	982	1 376	1 128	16	-	-	311
1988[3)]	3 422	867	659	905	986	5	-	-	191
1989[3)]	4 863	982	1 169	1 232	1 437	43	-	-	223
1990[3)]	2 462	546	1 088	221	586	21	-	-	358
1991[3)]	1 866	454	1 007	9	393	3	-	-	374
1992[3)]	3 181	624	1 148	525	828	56	-	-	400
1993[3)]	3 068	971	973	225	787	112	-	-	144
1994[3)]	2 814	1 032	960	7	655	160	-	-	135
1995[3)]	2 216	860	943	5	384	24	-	-	59
1996[3)]	1 825	848	543	2	421	11	-	-	49
1997[3)]	1 979	676	356	18	920	9	-	-	58
1998[3)]	1 197	545	143	21	424	64	-	-	50
1999[3)]	1 409	638	255	11	407	98	-	-	54
2000[3)]	1 188	595	105	61	398	29	-	-	59
2001[3)]	1 062	571	152	40	278	21	-	-	52
2002[4)]	773	364	162	7	179	13	42	6	34
2003[4)]	938	405	253	11	252	5	12	-	46
2004[4)]	524	140	96	6	202	6	70	4	32
2005[4)]	395	120	85	1	128	1	58	2	25
2006[4)]	482	100	99	-	112	4	92	75	18
2007[4)]	384	72	84	-	185	6	32	5	16
2008[4)]	342	33	57	1	123	11	117	-	24
2009[4)]	318	57	-	-	-	93	97	71	-
2010[4)]	451	66	98	1	-	114	123	49	24
2011[4)]	432	50	107	18	-	197	38	22	-
2012[4)]	632	100	88	5	18	177	146	98	69
2013[6)]	336	48	-	234	1	29	24	-	-
2014[6)]	231	24	1	142	-	27	37	-	-

[1)] Byggt á gögnum um verslun og útflutning selskinna.
Heimild: Teitur Arnlaugsson, Rannsóknastofnun fiskiðnaðarins 1973.
Based on trade and export statistics on seal skins.

[2)] Uppruni upplýsinga óþekktur. *Unknown sources.*

[3)] Byggt á veiðigögnum og meðafla við hrognkelsaveiðar frá Hringormanefnd og Félagi selabænda.
Based on catch statistics on hunting and bycatch in lumpfish fisheries.

[4)] Byggt á veiðigögnum, meðafla við hrognkelsaveiðar og almennar netaveiðar frá Hringormanefnd, Félagi selabænda og afladagbókum netabáta.
Based on catch statistics on direct hunting and bycatch in gillnet fisheries.

[5)] Fjöldi sem stundar veiðar og hrognkelsaveiðimenn sem tilkynna netaveidda seli.
Number of seal hunters and lumpfish fishermen who report seal bycatch.

[6)] Veiðigögn fyrir árin 2013 og 2014 ekki tæmandi. *Catch data for 2013 and 2014 incomplete.*

http://data.hafro.is/assmt/2015/seals/catch.csv

4 English summary of the State of Marine Stocks in Icelandic Waters 2014/2015 and Prospects for the Quota Year 2015/2016

2.1 Cod

Total landings of Atlantic cod (*Gadus morhua*) in 2014 were 221 thousand t, compared to 223 thousand t in 2013. The total allowable catch (TAC) for cod in the quota year 2014/2015 was set according to the harvest control rule (HCR) at 218 thousand t.

Biomass indices in the spring survey have more than doubled in the last seven years, mostly due to increased abundance of older cod. Mean weights at age in the landings and spring survey have increased in recent years and are presently around the long-term average.

The reference biomass (age 4 and older) in 2015 is estimated 1302 thousand t and the spawning stock is estimated at 547 thousand t, compared to $B_{lim} = 125$ and $B_{trigger} = 220$ thousand t. The reference biomass has increased in recent years and is now larger than observed in the last three decades. The spawning stock has not been larger since the early 1960s. During the last decade, the harvest rate has declined from 34–40% to around 20% and the fishing mortality from above 0.7 in 2000 to 0.3 in 2014. Recruitment during this period has been around two thirds of the long-term average. The decrease in harvest rate, imposed by management action, has hence been the main reason for the increase in stock size.

Based on the present assessment, the TAC in 2015/2016 should be set at 239 thousand t according to the management plan. It is expected that catches in the next few years will remain around that level. The Marine Research Institute (MRI) iterates the importance that catches are constrained within that specified in the HCR.

2.2 Haddock

In 2014, 34 000 t of haddock (*Melanogrammus aeglefinus*) were landed, compared to 44 000 t in 2013. The national TAC in the quota year 2014/2015 was set according to the harvest control rule (HCR) at 30 400 t. According to the HCR, the TAC for the next quota year is 40% of the predicted reference biomass (45 cm and larger) in the beginning of the next calendar year.

The spawning stock biomass 2015 is estimated at 78 000 t and the biomass of age 3 and older haddock at 112 000 t. The harvest rate in 2014 was 35%. Year classes 2008–2013 are estimated to be small, or 28 million age 2 individuals on average (about 24 000 t), but the 2014 year class is estimated to be large. Growth was poor in 2004–2009 but has increased since then. Growth in 2014 is estimated above average and faster than predicted last year. Mean weight at age in March 2015 is close to or above the average since 1985 for all age groups.

Based on the present assessment, the TAC for the quota year 2015/2016 according to HCR is 36 400 t.

2.3 Saithe

In 2014, landings of saithe (*Pollachius virens*) were 46 000 t, compared to 58 000 t in 2013. The TAC for the quota year 2014/2015 was set according to the harvest control rule (HCR) at 58 000 t.

The catch weights have have decreased for ages 4–6 in recent years but are close to average for other ages. Biomass indices from the spring trawl survey were high in 2012–2013 but lower in 2014–2015. The reference biomass of age 4 and older is estimated as 255 000 t at the beginning of 2014, with a harvest rate of 18% in 2014. The 2008 and 2009 year classes are large but recruitment has been lower since then. Short-term projections based on the HCR indicate that the reference biomass at the beginning of 2016 will be around 238 000 t.

According to the HCR, the saithe TAC for the quota year 2015/2016 will be 55 000 t.

2.4 Golden redfish

In 2014, approximately 51 000 t of golden redfish (*Sebastes norvegicus*) were landed from the East-Greenland, Iceland and Faroese waters, about 2 500 t less than in 2013, and of which about 48 000 t were caught in Icelandic waters.

According to an age-length based model (Gadget) the spawning stock has increased since 2005 after a considerable reduction in 1985–1995. Fishing mortality has decreased in recent years and is now close to $F_{MSY,9–19} = 0.097$. There are indications from surveys conducted in Icelandic and East-Greenland waters that recruitment in recent years has been poor.

In 2014, the Icelandic government adopted a formal management plan for the golden redfish fishery in East-Greenland/Iceland/Faroes area. ICES has evaluated this management plan but Greenland and the Faroes have not yet adopted it. The management plan is based on a HCR of $F_{MSY,9–19} = 0.097$, reducing linearly if the spawning stock is estimated below 220 000 t ($B_{trigger}$). According to the HCR, the golden redfish TAC for the quota year 2015/2016 will be 51 000 t for the East-Greenland/Iceland/Faroes area.

2.5 Beaked redfish

Beaked redfish (*Sebastes mentella*) are managed as three separate stocks: Icelandic demersal deep sea redfish, shallow pelagic redfish, and deep pelagic redfish.

In 2014, about 9 500 t of Icelandic **demersal deep sea redfish** were landed, about 700 t more than in 2013. The lack of long-term indices of abundance prevent analytical assessment, but survey indices from the autumn survey since 2000 are used as basis for the advice. The index of fishable biomass decreased in 2000–2014. ICES and MRI recommend that effort should be kept low and the TAC in Icelandic waters should not exceed 10 000 t for the quota year 2015/2016.

In 2014, about 6 400 t of **shallow pelagic redfish** were caught, mainly by Russia on the main fishing grounds south and southeast of Greenland. Annual landings peaked at about 100 000 t in 1993–1995. Given the poor state of the stock, ICES has advised since 2010 that no directed fishery should take place.

In 2014, the estimated landings of **deep pelagic redfish** were about 24 000 t, compared to 43 000 t in 2011 and 75 000–140 000 t in 1995–2004. The Icelandic fleet caught about 2 000 t in 2014, compared to 8 500 t in 2014 which is the lowest catch since the beginning of the fishery in 1992.

ICES will give advice on the pelagic redfish stocks for 2016 in autumn 2015, and will base the advice on the results from the international acoustic/trawl survey conducted in the Irminger Sea and adjacent waters in June–July 2015.

2.6 Norway redfish

A directed fishery for Norway redfish (*Sebastes viviparus*) started in 1997 with a catch of 1 200 t. The catches declined rapidly until 2000, and between 2001 and 2009 only a few tonnes were landed. In 2010, a directed fishery started again with total landings of 2 600 t, followed by 1 400 t in 2011 and annual landings of about 500 t in 2012–2014. Little is known about the stock size and sustainable yield. Therefore, MRI recommends that the precautionary approach is adopted in the management of Norway redfish fishery and recommends a TAC of no more than 1 500 t for the quota year 2015/2016.

2.7 Greenland halibut

In 2014, approximately 21 000 t of Greenland halibut (*Reinhardtius hippoglossoides*) were landed from the East Greenland, Iceland, and Faroese waters, of which the Icelandic fleet caught 10 000 t. CPUE of the Icelandic trawler fleet has been slowly increasing from a historical low in 2005. Biomass indices from combined surveys in Icelandic and Greenlandic waters have been increasing in recent years and are close to the high levels observed in 1998–2001. ICES and MRI recommend that effort should be reduced to a level corresponding to the long-term maximum sustainable yield. Such effort corresponds to a total catch of no more than 22 000 t for the East Greenland, Icelandic and Faroese waters in the 2015/2016 quota year.

2.8 Halibut

In 2012, a regulation was issued to ban all directed fishery for halibut (*Hippoglossus hippoglossus*) and that all viable halibut must be released in other fisheries. The landings of halibut dropped to 36–45 t in 2012–2014, compared to 555 t in 2011. Historically, halibut has mainly been taken as bycatch in the bottom trawl and longline fisheries. In the last years before the regulations, a longline fishery directed at halibut was developing, coinciding with a sharp decline in the survey biomass index. In recent years, the biomass indices from the groundfish survey have declined to a very low level. Currently, the halibut stock seems to be severely depleted, with very little recruitment into the spawning stock in recent years.

MRI recommends that these regulations should be maintained until clear indications of improvement in the stock are evident.

2.9 Plaice

In 2014, about 6 000 t of plaice (*Pleuronectes platessa*) were landed. Survey biomass indices have been stable and increased somewhat in recent years. Stock assessment indicates a decrease in fishing mortality since 1996 and an increase in biomass since 2000. MRI recommends that the catch should not exceed 6 500 t in the quota year 2015/2016, and that regulations regarding area closures on spawning grounds remain in effect.

2.10 Dab

In 2014, 505 t of dab (*Limanda limanda*) were landed. Between 1987 and 1997, landings of dab increased from 1 200 to 8 000 t, but have since decreased substantially. Survey indices of fishable biomass and juvenile abundance declined considerably in 2015. MRI recommends a TAC no higher than 500 t in the defined management area for the quota year 2015/2016.

2.11 Long rough dab

In 2014, only 70 t of long rough dab (*Hippoglossoides platessoides*) were landed, compared to the record high of 6 400 t in 1996. Survey indices and CPUE have been near a historical low in recent years. MRI does not recommend a TAC for the quota year 2015/2016. However, MRI recommends closure of main spawning areas during the spawning season.

2.12 Witch

Since 1988, landings of witch (*Glyptocephalus cynoglossus*) have ranged between 900 and 3 000 t, with landings in 2014 amounting to about 1 200 t. The abundance index for the fishable stock reached a maximum in 2005, declined in 2005–2008 but has since been stable. CPUE shows a similar trend, although it has increased since 2012 concurrent to a decrease in fishing effort. Survey data indicate a considerable decline in recruitment in recent years. MRI recommends a TAC of no more than 1 100 t for the quota year 2015/2016.

2.13 Lemon sole

In 2014, about 1 200 t of lemon sole (*Microstomus kitt*) were landed. Survey indices of the fishable stock were high in 2003–2010, but have decreased in 2011 to 2015. Recruitment indices have been high since the early 2000s. CPUE in the demersal seine fishery off Southwest Iceland has doubled from the period 1993–1998 to the present. Preliminary stock assessment indicates a high fishing mortality rate. MRI recommends a TAC of no more than 1 300 t for the quota year 2015/2016.

2.14 Megrim

Megrim (*Lepidorhombus whiffiagonis*) is caught as bycatch in the demersal seine and *Nephrops* fisheries off South Iceland. In 2014, 340 t of megrim were landed. MRI does not recommend a TAC for the quota year 2015/2016.

2.15 Atlantic wolffish

Landings of Atlantic wolffish (*Anarhichas lupus*) in 2014 were about 7 300 t, the lowest landings since before 1950. The index of fishable biomass is above average but recruitment indices are at historically low levels. The fishable part of the stock has been decreasing since 2006 and is not expected to increase much in the coming years, since recruitment to the fishable stock will be low. MRI recommends a TAC of no more than 8 200 t for the quota year 2015/2016, based on $F_{max} = 0.29$. In addition, MRI recommends a continued closure of the major spawning area off West Iceland during the spawning and incubation season in autumn and winter.

2.16 Spotted wolffish

Landings of spotted wolffish (*Anarhichas minor*) in 2014 were about 1 900 t. The average annual landings were about 900 t in 1982–1997, but have increased to 2 300 t since 1997. Survey indices of recruitment, total biomass and fishable biomass are all at a historical low, while the harvest rate is about three times higher than in 1985–1997. The basis of the MRI advice is to reduce the harvest rate to half of what it was in 2000–2013. MRI recommends that the TAC for the quota year 2015/2016 should not exceed 900 t.

2.17 Blue ling

In 2014, about 1 700 t of blue ling (*Molva dypterygia*) were landed. Indices from the autumn survey indicated an increase in biomass and recruitment between 2005 and 2010, but indices from 2012 indicate a decrease in stock size which is projected to continue due to very low levels of the juvenile index since 2010. MRI recommends that landings be constrained to no more than 2 550 t in the quota year 2015/2016. The basis of the advice is to bring the exploitation level down to similar levels as observed in 2002–2009 when the stock size was increasing. Furthermore, a continued closure of known spawning grounds from 15 February to 30 April should be maintained.

2.18 Ling

Landings of ling (*Molva molva*) in 2014 were 14 000 t, having increased steadily since 2001. Survey indices of harvestable biomass have remained high since 2007, however the juvenile index has been at low levels for the last three years. Estimates from an analytical stock assessment indicate that SSB has increased in recent years and at the same time fishing mortality has decreased and was at F_{MSY} in 2014. SSB and catches are projected to decline in coming years due to the low estimates of recent recruitment. MRI and ICES recommend

a TAC of no more than 16 200 t on the basis of F_{MSY} in the quota year 2015/2016, including catches of foreign fleets which have been about 1 500 t in recent years.

2.19 Tusk

Landings of tusk (*Brosme brosme*) from Icelandic waters were 6 000 t in 2014. Indices of the fishable biomass in the spring survey increased considerably in 2001–2012, but have varied at high level in the last three years. Recruitment indices peaked in 2006, decreased until 2013, but there are signs that recruitment is again increasing. The tusk stock assessment is based on the Gadget model as recommended by ICES.

MRI recommends that the catches be no more than 3 440 t in the quota year 2015/2016, including catches of foreign fleets. This advice is based on $F_{MSY} = 0.20$. It is furthermore recommended that the closure of nursery areas off the southeast and south coast is continued.

2.20 Whiting

In 2014, about 900 t of whiting (*Merlangius merlangus*) were landed. The landings have declined over the last three years. Whiting was mostly a bycatch in the Icelandic bottom trawl fishery, but a directed fishery has developed on the spawning grounds off the south coast in spring. Survey indices of the fishable stock were high in 2004–2005, due to good recruitment, but have declined since then. Recruitment indices were above average in 2008 and 2015, but very low in the years between. MRI does not recommend a TAC for whiting for the quota year 2015/2016. However, low indices of the fishable stock indicate that the stock has declined in recent years.

2.21 Anglerfish

In 2014, about 1 200 t of anglerfish (*Lophius piscatorius*) were landed from Icelandic waters. The catches have been declining since 2009 when they reached a maximum of 4 100 t. Recent surveys and CPUE indicate a relatively large fishable stock, due to very good recruitment in 1998–2007. However, survey indices since 2012 have shown poor recruitment for year classes 2008–2014. Due to the decreasing recruitment, the fishable stock is expected to decline in the coming years. MRI recommends that that the catches be no more than 1 000 t in the quota year 2015/2016.

2.22 Lumpfish

In 2014, about 4 000 t of female lumpfish (*Cyclopterus lumpus*) were landed in Iceland, which is 1 500 t below the average landings of the period 1971–2014. Effort and number of licenses have decreased in recent years. After several years of decline, the biomass index has increased over the past two years.

The basis of the MRI advice is to keep F_{proxy} at or below the average from the reference period (1985–2011). The advice is given in two stages: In this report an initial advice is based on the 2015 survey biomass index, but the final advice will be given after the survey in 2016, based on the 2015 and 2016 survey biomass indices.

MRI recommends an initial TAC of 2 040 t for the 2015/2016 quota year. MRI also recommends improved monitoring of bycatch and discards of other species from the female lumpfish fishery.

2.23 Herring

Landings of **Icelandic summer-spawning herring** (*Clupea harengus*) during the fishing season 2014/2015 amounted to 95 000 t but the TAC was set at 83 000 t. The difference is because of transfer of quota between years. The main part of the stock overwintered in offshore areas west of Iceland instead of inshore areas in Breiðafjörður as it did for the seven preceding years. The spawning stock biomass is estimated 342 000 t in the year 2015, significantly lower than in the 2014 assessment. A very small 2011 year class entering the spawning stock is the main reason for the decline in SSB. MRI recommends a TAC of 71 000 t for 2015/2016 based on $F_{0.1} = 0.22$.

In 2014, around 59 000 t of **Norwegian spring-spawning herring** were landed by Icelandic vessels, with estimated total international landings of 437 000 t. This corresponds to 18 000 t more than the recommended TAC set by ICES. As the spawning stock biomass in 2015 is estimated to be below B_{pa}, the fishing mortality rate shall be reduced. Therefore, ICES has recommended a TAC of 283 000 t for 2015, corresponding to $F = 0.08$. Iceland has issued a quota of 41 000 t in 2015, based on an international agreement reached in 2007. It is expected that the catches will exceed the advised TAC, as in the two last years, due to lack of agreement among the coastal states on the allocation of the quota. ICES will recommend a TAC for 2016 in autumn 2015.

2.24 Capelin

The TAC of capelin (*Mallotus villosus*) for the fishing season 2014/2015 was 580 000 t. The total landings were 517 000 t, of which Icelandic vessels landed 354 000 t. The fishing season 2015/2016 will be based on the year classes from 2012 and 2013. The indices of immature capelin in the 2014 autumn survey were close to the long-term average of 60 billion fish. Based on these results, ICES and MRI advice according to a recently adopted HCR that an initial quota of 54 000 t be set for the season 2015/2016. This advice will be revised after autumn/winter surveys in 2015/2016. Further, MRI advises that summer/autumn fishery should not open until October.

2.25 Blue whiting

International landings of blue whiting (*Micromesistius poutassou*) in the Northeast Atlantic in 2014 are estimated at around 1.2 million t, of which Icelandic landings were around 183 thousand t. Due to poor recruitment of the year classes 2005–2008, the spawning stock declined to about 2.9 million t in 2010. Since then, recruitment has been close to the long-term average, which in combination with low fishing mortalities has led to an increase in the spawning stock biomass, to about 5.7 million t in 2015. ICES recommended a catch quota not exceeding 840 thousand t in 2015 but the coastal states agreed on a TAC of 1 260 thousand t. ICES will release its advice for 2016 in October 2015.

2.26 Mackerel

International landings of mackerel (*Scomber scombrus*) in the Northeast Atlantic in 2014 are estimated at 1.4 million t. Since the mid 2000s mackerel has been observed in the Icelandic EEZ in increasing numbers and a directed fishery started in 2007. In 2014 the Icelandic landings were 173 000 t. According to the stock assessment from September 2014, the spawning stock was around 2 million t during 1994–2003 but increased thereafter and was around 4.3 million t in 2014. ICES recommends a catch quota of 906 000 t in 2015 and will assess the stock in autumn 2015 and release its advice for 2016 in October.

2.27 Pearlside

Experimental pelagic trawl fishery for pearlside (*Maurolicus muelleri*) started in 2008 and the landings peaked in 2009 at around 46 000 t. Since then, landings have decreased and no landings were reported in 2013 or 2014. Little is known about the biology and stock size of pearlside. MRI recommends that the catch should not exceed 30 000 t in the quota year 2015/2016.

2.28 Greater silver smelt

In 2014, about 6 300 t of greater silver smelt (*Argentina silus*) were landed, compared to the historical maximum of 16 400 t in 2010. The fishable biomass index increased in 2014, however this change is unlikely to be driven by changes in biomass. The stock is assessed with limited data and must therefore be harvested with caution. MRI recommends a TAC of 8 000 t for the quota year 2015/2016.

2.29 Nephrops

In 2014, a total of 1 965 t of *Nephrops norvegicus* were landed, compared to 1 724 t in 2013. The survey biomass index has decreased since 2008 and reached its lowest value in 2015. According to the current assessment, the fishable stock biomass (age 6 and older) in 2015 is 10 700 t. The stock biomass increased in 1997–2007, as a result of large year classes and a sustainable F_{opt} management strategy. Recent year classes have been measured historically small and the fishable stock has decreased sharply. However, the stock of large *Nephrops* (age 10 and older) is still above the long-term average. MRI recommends a TAC of no more than 1 500 t in the quota year 2015/2016.

2.30 Northern shrimp

In the quota year 2014/2015, the fishery for **inshore** northern shrimp (*Pandalus borealis*) was open in Arnarfjörður and Ísafjarðardjúp, and in the Snæfellsnes and Eldey areas. MRI recommends a TAC of 700 t for the Snæfellsnes area in the period 1 May 2015 to 15 March 2016, and 200 t for the Eldey area in 2015. MRI will recommend TACs for other inshore areas on the basis of stock assessment surveys in autumn 2015.

In 2014, the **offshore** catch of northern shrimp was 4 000 t, compared to the highest level of 65 000 t in 1997. MRI recommends a TAC of 4 000 t for offshore northern shrimp (excluding the Dohrn Bank area) for the quota year 2015/2016.

2.31 Iceland scallop

The Iceland scallop (*Chlamys islandica*) fishery remained closed during the 2014/2015 fishing season. Survey indices declined drastically in 2001–2006 to a historical minimum. The downward trend in stock abundance was mainly due to increased natural mortality, probably caused by protozoan infestation in

adult scallops. Recruitment has been poor but year classes from 2010 and especially 2012 are emerging. MRI therefore recommends a continued closure of the conventional scallop fishery in the quota year 2015/2016.

2.32 Ocean quahog

In 2014, only 18 t of ocean quahog (*Arctica islandica*) were landed, compared to the maximum of 14 400 t in 2003. Since 1987 a fishery for human consumption has been developing, but annual landings have been variable due to variable effort related to the market. MRI recommends a harvest rate of 2.5% of the estimated stock size corresponding to no more than 32 500 t in the quota year 2015/2016.

2.33 Common whelk

Pot fishing for common whelk (*Buccinum undatum*) started in Breiðafjörður in 1996. In 2014, the total catch amounted to 93 t compared to 89 t in 2013. According to a survey conducted in 2012, 15 years of fishing has had a negligible effect on the abundance index. MRI recommends a TAC not exceeding 750 t in Breiðafjörður in the quota year 2015/2016.

2.34 Sea cucumber

In 2014, about 850 t of sea cucumber (*Cucumaria frondosa*) were landed. Since 2003, the fishery has been developing, but annual landings were minimal until 2008. A maximum of nine fishing licenses are issued in this fishery, three within each of the three defined areas off Iceland. MRI recommends a harvest rate of 10% of the estimated stock size in each surveyed subarea.

2.35 Sea urchin

In 2014, 231 t of sea urchin (*Strongylocentrotus droebachiensis*) were landed. Harvesting of sea urchin started in 1993 and total landings reached a maximum of 1 500 t in 1994, but declined rapidly and were negligible in 1997–2006. Since 2007 the catches have been between 125 and 231 t. Areas with good quality sea urchins are limited in size, which requires a precautionary management approach.

2.36 Whales

In 2006, Iceland resumed commercial whaling on fin whales (*Balaenoptera physalus*) and common minke whales (*Balaenoptera acutorostrata*). In 2014, 24 common minke whales and 137 fin whales were caught in Icelandic waters.

According to stock assessments conducted by the Scientific Committees of IWC and NAMMCO, the size of the **common minke whale** stock around Iceland (the Central North Atlantic stock) is estimated to be close to what it was when commercial whaling commenced. Based on IWC and NAMMCO assessments, MRI has in recent years recommended that annual catches of common minke whales from the Central North Atlantic stock do not exceed 229 animals in the Icelandic continental shelf area (CIC). A formal assessment of the minke stocks is in progress within IWC and NAMMCO. MRI will advise on 2016 hunting after a NAMMCO assessment in autumn 2015.

Results from a **fin whale** sightings survey in 2007 indicate a total population size of 20 600 animals in the East Greenland/Iceland/Jan Mayen area (EGI), which is similar to the 1995 and 2001 surveys. On the basis of recent assessments conducted by the Scientific Committees of the IWC and NAMMCO, the MRI has in recent years evaluated annual catches of up to 154 fin whales on the traditional grounds west of Iceland as sustainable and precautionary. MRI will advice on 2016 hunting after a NAMMCO assessment of the status of fin whale population in the North Atlantic.

2.37 Seals

According to a survey conducted in 2011, the **harbour seal** (*Phoca vitulina*) stock was around 11 000 animals. The stock was estimated as 34 000 seals in 1980 and has remained stable since 2003. However, a partial survey in 2014 indicates a considerable reduction in numbers. The adopted management plan is to maintain the harbour seal population at around 12 000 animals.

A **grey seal** (*Halichoerus grypus*) survey was conducted in 2012, where 4 200 animals were estimated along the Icelandic coast. The stock was estimated as 12 000 animals in 1990. The adopted management plan is to maintain the grey seal population at around 4 100 animals.

Seal catch data for the last few years are incomplete and it is important to improve the monitoring and collection of catch data, as a basis to evaluate the current mortality rate and population status.

5 Appendices

5.1 Stock assessment methods

A variety of methods are applied in the stock assessments and analysis of survey results. Most of them are based on commercial catch at age and survey indices. The methods differ in whether they assume that catch at age is known without error, how fleet and survey selectivity is estimated, whether they project backward or forward, and how different datasets are weighted. The models fitted to catch-at-age data fall into three categories:

1. Models that project backward and assume that commercial catch at age is known without error. This family of models (VPA, ADAPT, XSA) has been used for many years for assessing stocks in the North Atlantic.
2. Models that project forward and do not follow the commercial catch at age exactly, but optimize an objective function that describes the goodness of fit between observed data (commercial catch at age and survey indices) and model fit based on the same data. These models are often referred to as statistical catch-at-age models.
3. Time series analysis (TSA) where continuous process variability in the fleet selectivity is estimated, along with measurement noise in the data.

The main stock assessment models used by the MRI in 2015 are:

1. ADAPT. Assessment method where the catch-at-age variability is explained with changes in the fleet selectivity.
2. TSA. Time series analysis using a Kalman filter that has been used to analyze the Icelandic saithe and cod for many years, and in later years the herring, haddock, redfish and various stocks in other areas.
3. EXCAM. Statistical catch-at-age model developed at MRI. The model estimates the stock size, recruitment, and future projections.
4. ADCAM. Statistical catch-at-age model developed at MRI to evaluate harvest control rules. The model estimates the stock size, recruitment, and future projections. A simplified version is also used, ADSEP, where a continuous change in the fleet selectivity is not estimated.
5. Gadget. Multispecies model originally developed at MRI. Incorporates both the age and length of fish, especially useful to study the effect of size-dependent predation on the mean weight, and to estimate growth, migrations, cannibalism, etc. In addition, it is a practical model to assess stocks with limited or no age data, but a considerable amount of length measurements. The model does not incorporate catch at age directly, but length and age measurements from the fishery are a part of the total objective function to be optimized.

This list reflects that a number of somewhat similar models is being used. When choosing a model, the decision is based on factors such as whether a description of the model has been published in scientific journals and whether there is good experience from using the model in stock assessment. When several models are used, it is also important to compare the results between the models. When the difference is large, extreme estimates are avoided unless very good reasons are to choose such a model.

In the listing above, many of the models evaluate the uncertainty, both in the assessment and future projections. This uncertainty is generally underestimated, since it does not incorporate all factors, such as time-variable selectivity, natural mortality, growth, and wrong assumptions. In recent years, a considerable research effort has been made to analyze these sources of uncertainty. When estimating unknown quantities, additional information

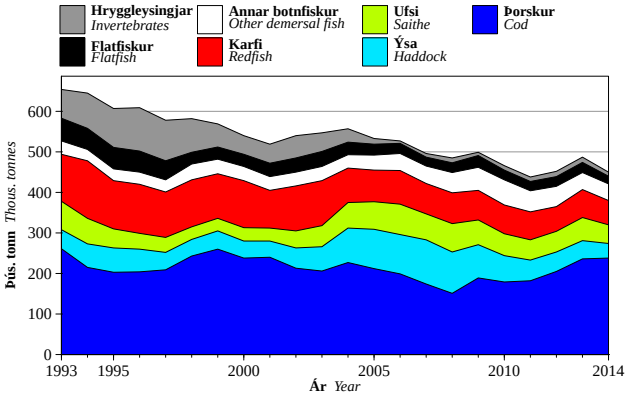
can be gained by knowing the uncertainty in the data, and even though the uncertainty is usually underestimated, those estimates can be useful when comparing different methods and datasets.

In many cases, it is not possible to use traditional stock assessment models, such as those enumerated above. When biomass indices are available that are considered to reflect changes in the size of a particular stock, the annual catch divided by the biomass index (F_{proxy}) can be used to provide management advice. F_{proxy} is an index of the relative harvest rate, and the basis of the advice is a specific target F_{proxy}. The annual advice is calculated by multiplying the newest biomass index with the target F_{proxy}.

The main problem with this type of advice is that the biomass index can vary greatly between years, as a result of measurement noise. Therefore, it is usually necessary to apply some kind of a buffer, e.g., limiting changes in the advice to a certain amount or proportion, incorporate the last year's advice in a weighted average, or to smooth the biomass indices. International demands dictate that precaution is applied when using F_{proxy} as the basis of advice, since it is based on much less information than advice based on traditional stock assessment models.

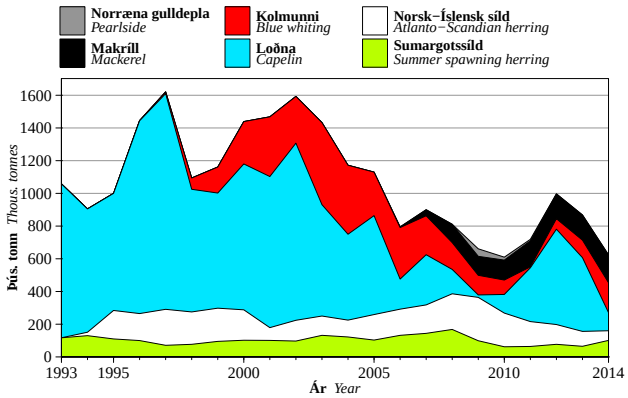
5.2 Fishing in Icelandic waters 2014

The Icelandic fishing fleet is diverse, ranging from small one-man fishing boats to factory ships with dozens of crew members. Nearly 1 700 Icelandic vessels fished in 2014 and landed around 1.1 million tonnes, which is around 300 kt less than the total in 2013 (Figs 5.2.1 and 5.2.2). Of this total about 625 kt were pelagic stocks (capelin, herring, blue whiting, mackerel) which is 245 kt less than in 2013.



Mynd 5.2.1. Afli íslenska fiskveiðiflotans, skipt eftir helstu tegundum og tegundahópum botnfisks og hryggleysingja.

Figure 5.2.1. Landings of the Icelandic fisheries divided by main taxonomic groups of demersal fish and invertebrates.



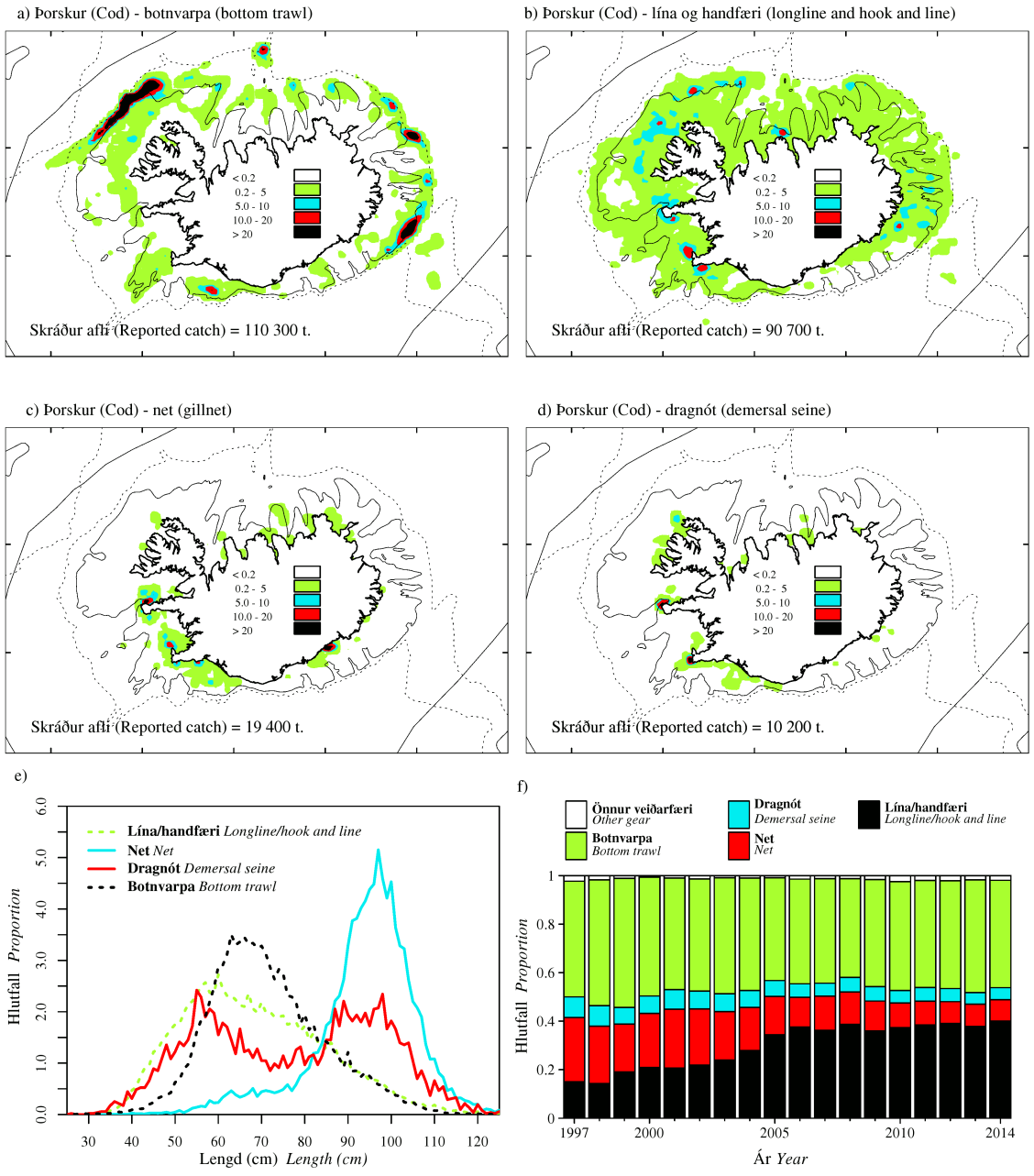
Mynd 5.2.2. Afli íslenska fiskveiðiflotans á Íslandsmiðum, skipt eftir helstu tegundum uppsjávarfisks.

Figure 5.2.2. Landings of the Icelandic fisheries divided by main species of pelagic fish.

A variety of gears is used. In the groundfish fishery (roundfish and flatfish) the main gears are bottom trawl, longline, handline, gillnets, and demersal seine. The pelagic fishery (capelin, herring, mackerel, and blue whiting) uses mainly seine and pelagic trawl, and pelagic redfish is caught in pelagic trawl. Figures 5.2.3–5.2.5 show the catch distribution for cod, haddock, and saithe by gear in 2014, along with length distributions from the same gears. Furthermore, the total landings from each gear is shown, based on logbook records. Figure 5.2.6 shows Icelandic fishing effort by gear in Icelandic waters.

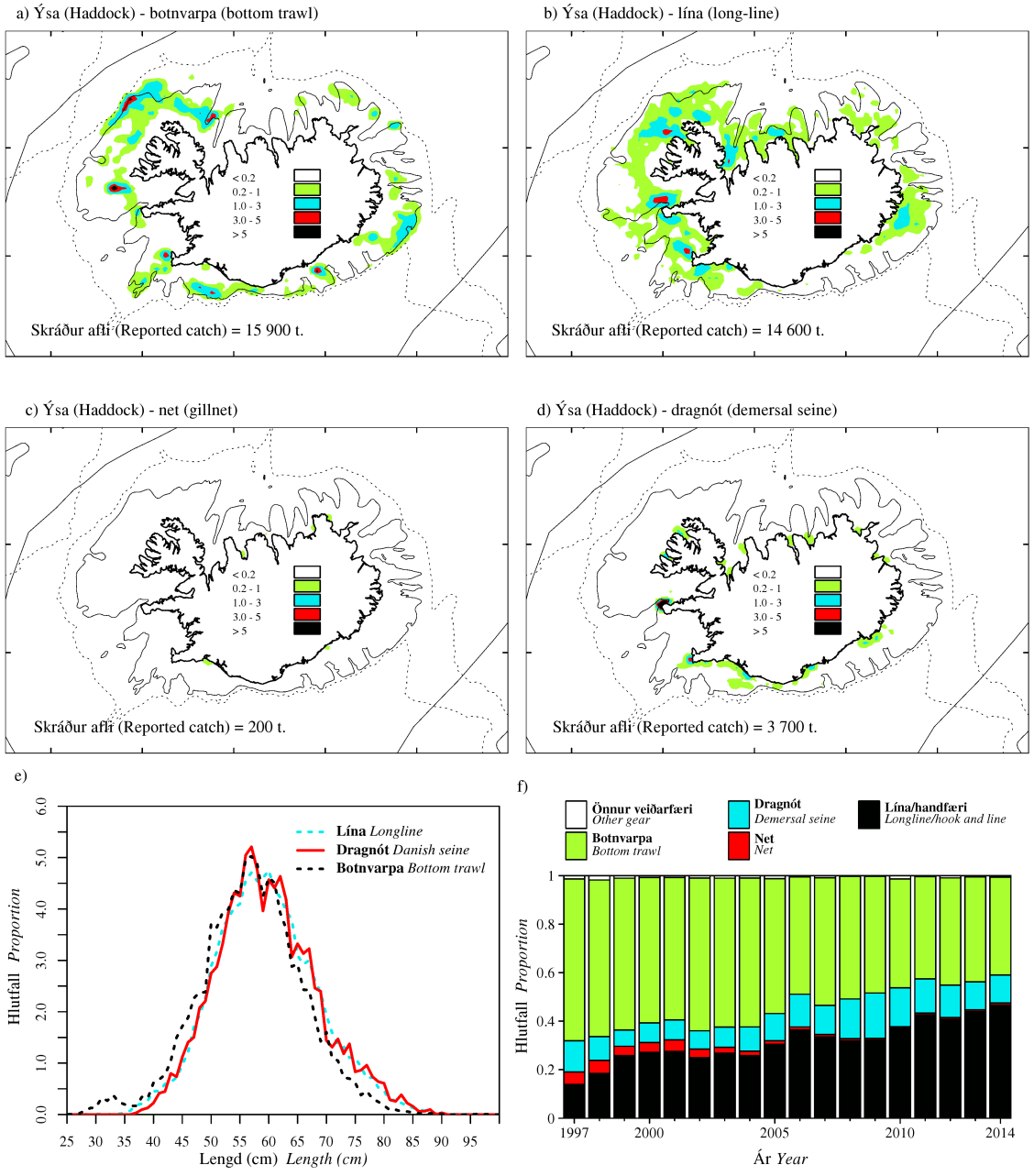
The fishing grounds for cod vary by gear used (Fig. 5.2.3). Longline and handline are most common in coastal areas but bottom trawls are used offshore. Furthermore, the length distribution of cod varies by gear. The largest cod are caught in gillnets, while the smallest cod are caught by longline and handline. Bottom trawls tend to catch larger fish than longline and handline.

The fishing fleet has changed a lot in recent decades because of technological advances and vessel renewal, making it difficult to interpret changes in catch rates over long periods. For this reason, logbook data have in recent years become less important for stock assessment than survey data. Nevertheless, logbook data are always analyzed to see if there are large differences between commercial catch rates and survey indices, and to examine such discrepancies.



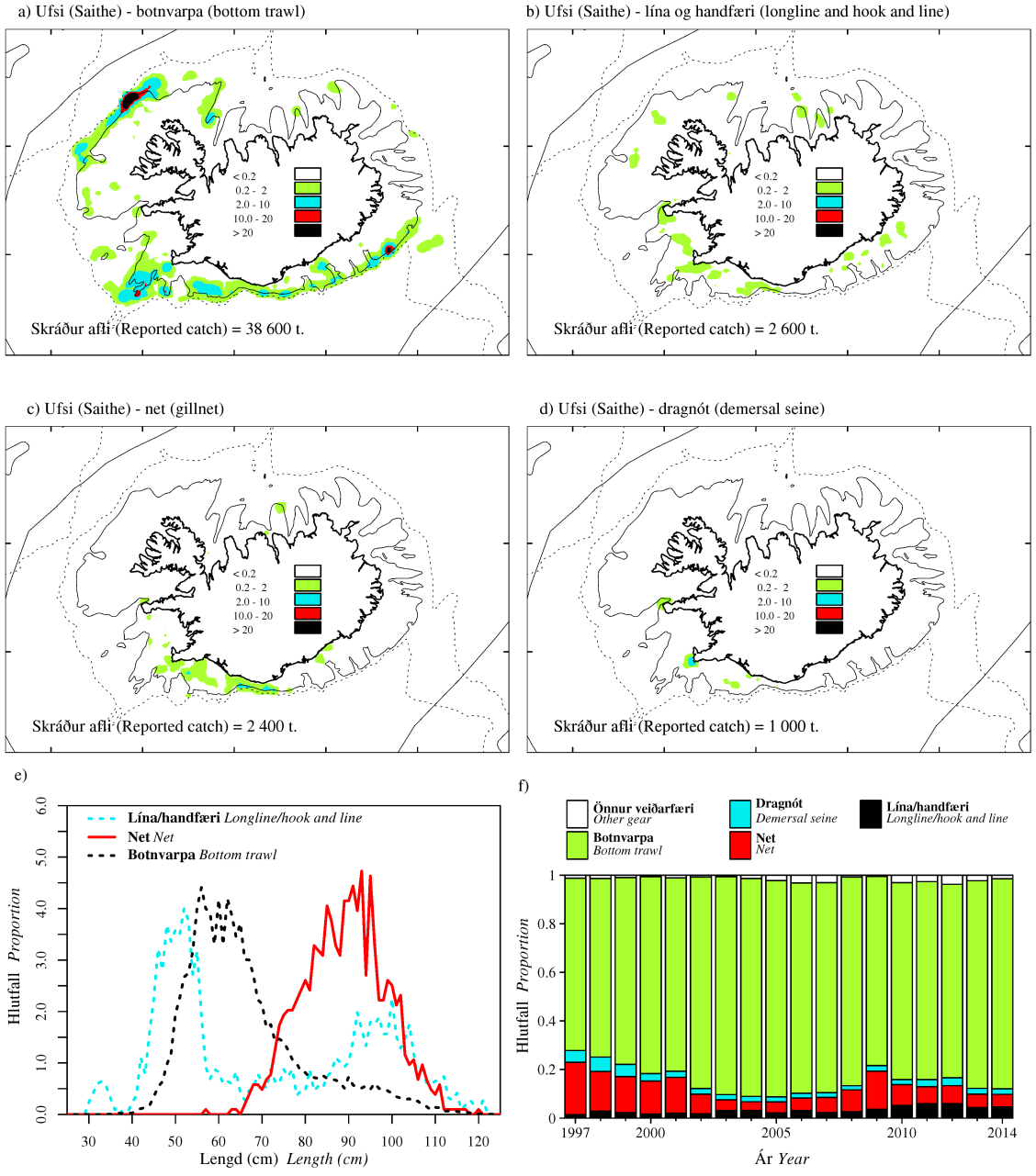
Mynd 5.2.3. Veiðisvæði þorsks árið 2014 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með (a) botnvörpu, (b) línu og handfærum, (c) netum og (d) dragnót eru sýndar, ásamt (e) lengdardreifingu og (f) hlutfallslegum afla mismunandi veiðarfæra.

Figure 5.2.3. Location of cod catches in 2014 with (a) bottom trawl, (b) longline and hook and line, (c) gillnet and (d) demersal seine, along with (e) length distribution and (f) proportion of catches by fishing gear.



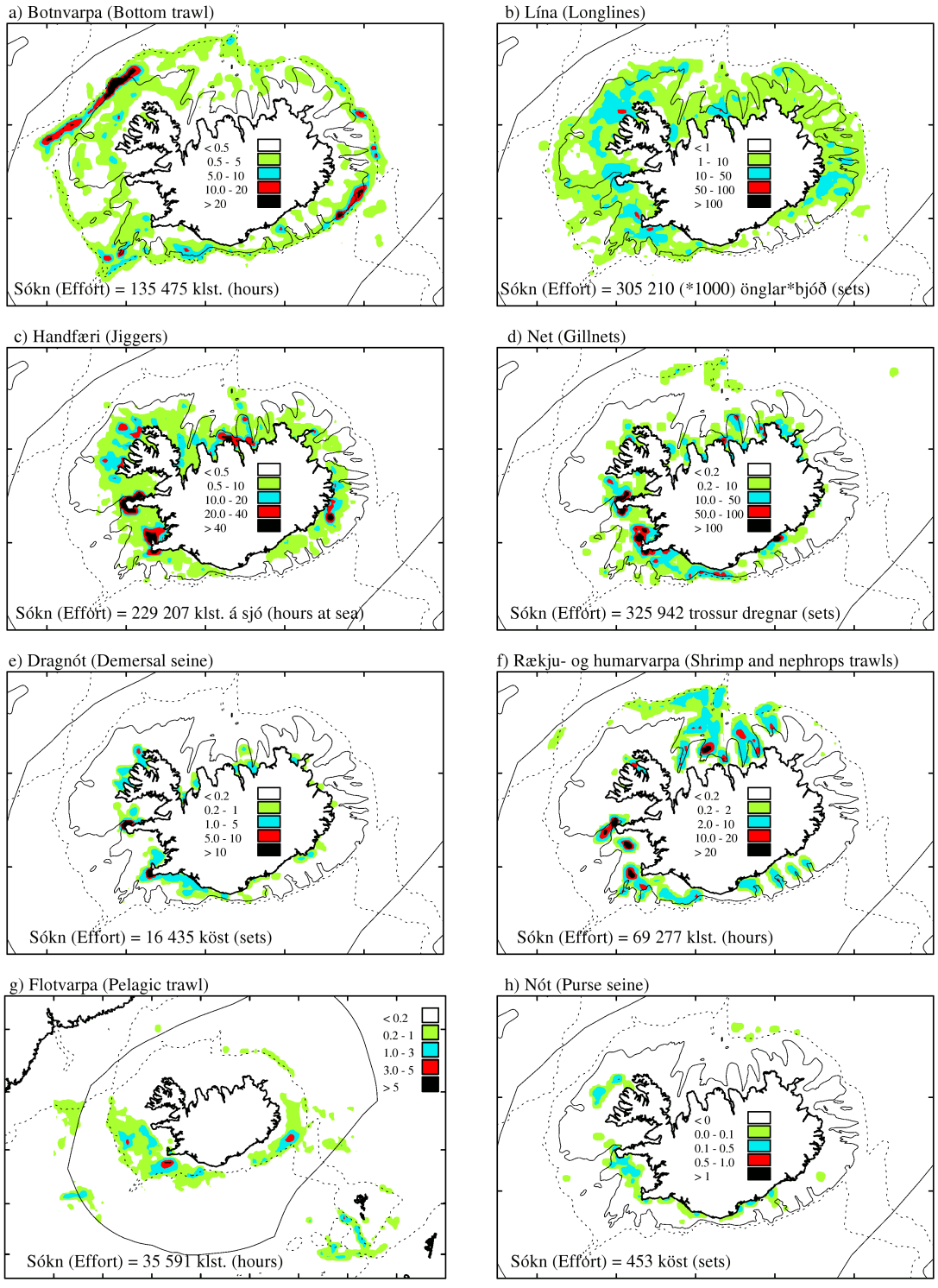
Mynd 5.2.4. Veiðisvæði ýsu árið 2014 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með (a) botnvörpu, (b) línu og handfærum, (c) netum og (d) dragnót eru sýndar, ásamt (e) lengdardreifingu og (f) hlutfallslegum afla mismunandi veiðarfæra.

Figure 5.2.4. Location of haddock catches in 2014 with (a) bottom trawl, (b) longline and hook and line, (c) gillnet and (d) demersal seine, along with (e) length distribution and (f) proportion of catches by fishing gear.



Mynd 5.2.5. Veiðisvæði ufsa árið 2014 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með (a) botnvörpu, (b) línu og handfærum, (c) netum og (d) dragnót eru sýndar, ásamt (e) lengdardreifingu og (f) hlutfallslegum afla mismunandi veiðarfæra.

Figure 5.2.5. Location of saithe catches in 2014 with (a) bottom trawl, (b) longline and hook and line, (c) gillnet and (d) demersal seine, along with (e) length distribution and (f) proportion of catches by fishing gear.



Mynd 5.2.6. Sókn íslenskra fiskiskipa á Íslandsmiðum árið 2014 sem nota (a) botnvörpu, (b) línu, (c) handfæri, (d) net, (e) dragnót, (f) rækju- og humarvörpur, (g) flotvörpu og (h) nót.

Figure 5.2.6. Effort of the Icelandic fishing fleet in Icelandic waters in 2014 using (a) bottom trawl, (b) longline, (c) jiggers, (d) gillnet, (e) demersal seine, (f) shrimp and Nephrops trawls, (g) pelagic trawl, and (h) purse seine.