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State of Marine Stocks in
Icelandic Waters 2011/2012

Prospects for the
Quota Year 2012/2013

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Editors: Þorsteinn Sigurðsson og Árni Magnússon.

This report is produced under the supervision of the special fisheries advisory board.

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Helga Lilja Bergmann and Birkir Bárðarson managed the printing of the report along with the editors.

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Foreword

In this report on the state of marine stocks for the fishing year 2011/2012 and prospects for the quota year 2012/2013 is provided customary information about the state of specific stocks, development of fisheries, stock size and recommended maximum catch levels, which takes into account their estimated productivity and conservation issues where necessary. For the first time the spotted wolffish is included as an independent stock, one of the small but valuable populations in Icelandic waters at which research is increasingly directed. Also, there is a short chapter about important environmental factors and their respective effects on marine life.

As before, the report is based on contributions from a great many employees of the Marine Research Institute and collaborators at sea and on land, who are here thanked for their diligence and professionalism under the management of Björn Ævarr Steinarsson and the editors of the report led by Þorsteinn Sigurðsson. As always, the most important fish populations in Icelandic waters have been covered by committees within the International Council for the Exploration of the Sea (ICES) and the reader is directed to the web site of the latter for further information: www.ices.dk.

As is reported, fishing mortality rate of cod has decreased from 0.75 in 2000 to 0.28 in 2011 and the harvest rate (proportion of the fishable stock) has at the same time decreased from 35-40% to about 20%. This change means that year classes last longer in the overall population and stocks are growing as a result. Both the fishable stock and the spawning stock of cod have grown over the last few years and the spawning stock is now more than twice as large as it was for most of the last decade. It hasn't been larger since the early 1960's. The proportion of older fish in catches has increased despite the fact that rather small year classes are now the majority of the fishable stock. These effects are seen as increased CPUE and more economical use of allowed quotas. It could be said that these are classic symptoms of a fisheries management system and stock status that are developing in a positive way.

The cod stock is estimated to have been about 1070 thousand tonnes in the beginning of this year which agrees with the predictions made last year. After a series of poor year classes in the years 2001-2007, year classes 2008, 2009, and 2011 are estimated to be near the historical average which is about 175 million recruits, but the 2010 year class is considered to be about 60% of the average year class size. These average sized year classes are now entering the fishable stock (the 2008 year class 2012) and expectations are that the overall stock will continue to grow if exploitation remains as it is currently, despite the poor year class of 2010.

There is a more pessimistic prediction for the haddock stock in Icelandic waters, which has been very abundant in recent years but is declining rapidly. The newest measurements show that the haddock stock will decrease in the near future as average sized year classes disappear from the stock and a series of poor year classes enters the fishable stock. The year classes 2008-2011 are all estimated to be very small and it is clear that they will not support catches at the levels that have been seen in recent years. Due to this trend, the stock is predicted to decrease and therefore the recommended catches for the next years.

As was reported, the Marine Research Institute of Iceland has been working on preparation of scientific evaluation of harvest rules for saithe and haddock, also within ICES, because it is important to be in agreement with modern demands that carefully prepared management plans are on hand for the important fish stocks in Icelandic waters. In recent months the Ministry of Fisheries and Agriculture has initiated cooperation with the fisheries industry

to develop a management policy and harvest rules for these two important species. In addition, there is ongoing work to develop recommendations for other stocks, such as golden redfish and lumpfish.

The Marine Research Institute has for many years highlighted the poor state of the halibut stock in Icelandic waters and advised closing the fishery to exploitation, as well as other measures to rebuild the stock. Furthermore, the institute has suggested that other ways of protecting this stock need to be found. At the beginning of the year, regulations were enacted that are intended to protect halibut stocks and those regulations were developed following proposals from a committee organized by the Minister of Fisheries and Agriculture, but also upon thorough investigation by the Marine Research Institute into the possible measures that could be taken to restore the halibut population. Investigation of conservation procedures included seeking the advice of experienced ship's captains who suggested that the best way to protect the halibut stock without having a negative effect on the harvesting of other species would be to release young healthy halibut. The Marine Research Institute considers the variety of aforementioned conservations methods to be a sign that policy makers are ready and able to deal with management of a small fish stock that has been exploited for many decades.

During the last decade there has been much uncertainty about the status of some of the most important pelagic species in Icelandic waters. Following a good season of capelin fishing last winter, the status of next season's catches is unclear because of failure to measure the size of the upcoming year class, as has happened often in the past. Despite the Marine Research Institute having twice sent ships to research capelin stocks last winter, not enough capelin were measured to suggest that fishing is advisable. Due to sea ice on the traditional sampling grounds, surveys of likely capelin grounds were not sampled and therefore uncertainty remains about the state of capelin stocks for the next fishing season. Furthermore, research indicates that capelin have recently become a more important food source for other economically important species. It is not clear what has caused this shift or if this is a lasting change, but it seems likely that increased ocean temperature in the northern ocean has weakened the capelin stock since the turn of the last century. There is no indication that the warming of Icelandic waters is decreasing and there is no doubt that this has had an important effect on the increasing mackerel migrations in recent years. In the year 2011 the influence of warm water was unusually strong to the west of Iceland and the mackerel migration that year reflected the pattern well. It will be interesting to follow the development of the state of the ocean around Iceland in the coming months, considering that fluctuations in seawater temperature and currents have a decisive effect on the size and movements of pelagic species. Furthermore, it is important to note that the Icelandic summer-spawning herring stock is rebounding. The infection that has plagued the stock for the last four years is abating and the younger year classes that are now joining the fishable stock are virtually uninfected.

Reykjavík, 06/08 2012
Jóhann Sigurjónsson

4. English summary of the State of Marine Stocks in Icelandic waters 2011/2012 – Prospects for the Quota Year 2012/2013

2.1. Cod

Total nominal landings of Atlantic cod (*Gadus morhua*) in 2011 were 172 000 t, compared to 169 000 t in 2010. Based on domestic advice, the national TAC for cod in the quota year 2011/2012 was set at 177 000 t.

Mean weights at age in the landings and the survey have been increasing in recent years and are presently around the long-term average.

Biomass indices in the spring survey have increased during the last 5 years, mostly due to increased abundance of older cod. The indices of year classes 2001–2007 as juveniles were at or below the mean but are in later years (6–11 year old) above the mean.

The reference biomass in 2012 is estimated as 1 070 000 t and the spawning stock as 419 000 t, compared to B_{lim}=125 and $B_{trigger}$=220 000 t. The stock has been increasing in recent years and is now larger than observed in the last three decades. During the last 10 years, the harvest rate has declined from 34–40% to around 20% and the fishing mortality from above 0.7 in 2000 to 0.28 in 2011. Recruitment during this period has been around 2/3 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 2012/2013 should be set at 196 000 t according to the management plan. Following the HCR will most likely lead to an additional increase in TAC in the medium term.

The Marine Research Institute (MRI) emphasizes the importance of managers subtracting all other expected catches prior to allocating the ITQ catches to the fishing fleet.

2.2. Haddock

In 2011, 49 000 t of haddock (*Melanogrammus aeglefinus*) were landed, compared with 64 000 t in 2010. The advice for the quota year 2011/12 was 37 000 t and the TAC was set at 45 000 t.

The biomass of age 3 and older haddock is estimated as 121 000 t at the beginning of 2012. The mean fishing mortality is estimated as 0.45 in 2011 and 0.40 in 2012, given that the landings will be 44 000 t. Short and medium term predictions show that the stock size of haddock will decrease in coming years, when the small year classes from 2008–2011 will replace the medium year classes from 2004–2007. There is some risk of the spawning stock going below the historical minimum in 2014–2015, how much depends on fishing effort. Growth was very slow in 2004–2009 but increased considerably in 2009–2011, when it was estimated to be around average. Mean weight at age of 5 years and older haddock is still below average, but above average for the small 2008–2011 year classes.

Two years ago, the Ministry of Fisheries requested MRI to suggest a management plan for haddock. Work has been ongoing since then and recently proposals for a harvest control rule (HCR) were introduced to the Ministry of Fisheries and stakeholders. Based on the suggested management plan, the MRI recommends a TAC for the quota year 2012/2013 not exceeding 32 000 t. This will lead to low probability of the spawning stock in 2014–2015 going below B_{lim}.

2.3. Saithe

In 2011, landings of saithe (*Pollachius virens*) were 51 000 t, a decrease of approximately 6% compared to 2010. The advice for the quota year 2011/2012 was 45 000 t and the TAC was set at 52 000 t.

The reference biomass of age 4 and older is estimated as 265 000 t at the beginning of 2012, the fishing mortality in 2011 as 0.26, and the harvest rate as 22%. The biomass estimate this year is considerably higher than last year, due to a large estimated 2008 cohort. As signals in the data are contradictory about the size of this cohort, there is an increased risk of overestimation this year.

Over the last two years, possible harvest control rules (HCR) for the Icelandic saithe have been evaluated within ICES. To maximize the long-term yield of the saithe stock, a 20% HCR similar to that used in Icelandic cod management is recommended. Furthermore, the analysis indicates that a shift in the fishery towards younger saithe can decrease the potential yield in the long term.

The advice of the MRI is based on the average between last year's advice and 20% of the current reference biomass (4+). The MRI recommends that the TAC for the quota year 2012/2013 should not exceed 49 000 t.

2.4. Golden redfish and *Sebastes viviparous*

In 2011, approximately 45 000 t of **golden redfish** (*Sebastes marinus*) were landed, around 6 000 t more than in 2010. The spring survey index of the fishable stock is above 90% of the observed maxi-

mum and there are indications from the autumn survey that year classes 1996–2001 are above average in size. According to an age-length based model (Gadget) the fishable stock has increased since 2005 after a considerable reduction 1985–1995. MRI recommends that the fishing mortality (F_{MSY}) should not exceed 0.15, corresponding to a TAC for the quota year 2012/2013 of no more than 45 000 t .

Exploratory fishery for ***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 direct fishery started again and total landings were 2 600 t, followed by 1 400 t in 2011. Very little is known about the stock size and sustainable yield. Therefore, MRI recommends that the precautionary approach is adopted in the management of *Sebastes viviparus* fishery in order to ensure sustainability of the resource and recommends a TAC of no more than 1 500 t for the quota year 2012/2013.

2.5. Deep sea redfish

In 2011, 13 000 t of **Icelandic demersal deep sea redfish** were landed, or about 5 000 t less than in 2010. 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 advice. ICES and MRI recommend that effort should be kept low and that the TAC in Icelandic waters should not exceed 10 000 t for the quota year 2012/2013.

In 2011, an estimated 600 t of **shallow pelagic redfish** were caught, which is the lowest catch since the fishery started in 1982. No fishing was conducted on the main fishing grounds south and southeast of Greenland. Some of the catches were taken in the same area as the deep pelagic redfish. Annual landings peaked at about 100 000 t in 1993–1995. Given the very low state of the stock, ICES advises no directed fishery.

In 2011, the estimated landings of **deep pelagic redfish** were about 47 000 t, compared to 59 000 t in 2010. Annual landings were between 80 000 and 140 000 t in 1995–2004. The Icelandic fleet caught about 12 300 t in 2011, compared to 14 600 t in 2010. Given the reduced abundance of this stock in the biennial international redfish surveys since 1999, ICES advises that the total catch in 2013 should not exceed 20 000 t.

2.6. Greenland halibut

In 2011, approximately 26 000 t of Greenland halibut (*Reinhardtius hippoglossoides*) were landed from the East Greenland, Iceland, and Faeroese waters of which the Icelandic fleet caught 13 000 t in 2011. CPUE of the Icelandic trawler fleet has been slowly increasing from a historical low in 2005. Biomass indices from the Icelandic autumn groundfish survey in 1996–2010 show a similar pattern. There is no agreement on sharing of the stock between nations. ICES and MRI recommend that effort should be reduced to a level corresponding to long-term maximum sustainable yield. Such effort corresponds to a total catch of no more than 20 000 t for the East Greenland, Icelandic and Faeroese waters in the 2012/2013 quota year.

2.7. Halibut

In 2011, 550 t of halibut (*Hippoglossus hippoglossus*) were landed. From 1996 onwards, annual landings have been less than 1 000 t, the lowest observed since 1905. Historically, halibut has mainly been taken as bycatch in the bottom trawl and longline fisheries. In recent years a longline fishery has been developing, coinciding with a sharp decline in the survey biomass index. In recent years, the biomass indices from the groundfish survey have declined sharply. Currently, the halibut stock seems to be severely depleted, with very little recruitment into the spawning stock in recent years.

Due to the poor state of the stock, the Ministry of Fisheries has issued regulations where a ban is set on a directed fishery for halibut and that all viable halibut must be released in other fisheries. The MRI recommends that these regulations should be valid until clear indications of significant improvement in the stock are visible.

2.8. Plaice

In 2011, 4 900 t of plaice (*Pleuronectes platessa*) were landed. Survey indices have increased somewhat in recent years, and recruitment measurements from the groundfish survey suggest some improvement in the last few years. Stock assessment results show increasing biomass since 2000 and fishing mortality has also been decreasing since then. The MRI recommends that the catch should not exceed 6 500 t in the quota year 2012/2013, and that regulations regarding area closures on spawning grounds remain in effect.

2.9. Dab

In 2011, 900 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 considerably. CPUE is now near a historical low. The MRI recommends that the TAC for the quota year 2012/2013 should not exceed what is considered to be bycatch in other fisheries. Considering the state of the stock, this could amount to about 500 t from the defined management area for the 2012/2013 quota year.

2.10. Long rough dab

In 2011, 180 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. The MRI recommends that the TAC for the quota year 2012/2013 should not exceed what is ex-

pected to be landed as bycatch in other fisheries. Considering the state of the stock, this could amount to around 200 t for the 2012/2013 quota year from the defined management area.

2.11. Witch

Since 1988, landings of witch (*Glyptocephalus cynoglossus*) have been between 900 and 3 000 t, with landings in 2011 amounting to 1 300 t.

The abundance index for the fishable stock reached a maximum in 2005, but has since been declining and CPUE has shown a similar trend. The size of the witch stock remains uncertain, but survey data indicate that both the fishable stock and recruitment have declined in recent years. The MRI recommends a TAC of 1 100 t for the quota year 2012/2013.

2.12. Lemon sole

In 2011, 1 900 t of lemon sole (*Microstomus kitt*) were landed. Survey indices of the fishable stock were high in 2003–2010 but somewhat lower in the last two years. Recruitment indices have also been high since the early 2000s. CPUE in the Danish seine fishery off southwest Iceland has doubled from the period 1993–1998 to the present. Preliminary stock assessment indicates a high current fishing mortality rate. Therefore, the MRI recommends the effort to be reduced and a TAC of no more than 1 400 t for the quota year 2012/2013.

2.13. Megrim

Megrim (*Lepidorhombus whiffiagonis*) is caught as bycatch in the Danish seine and *Nephrops* fisheries off South Iceland. In 2011, 321 t of megrim were landed. The MRI does not recommend a TAC for the quota year 2012/2013.

2.14. Atlantic wolffish

Landings of Atlantic wolffish (*Anarhichas lupus*) in 2011 were around 11 000 t, the lowest landings since 1985. The index of fishable biomass is close to average but recruitment indices are at a historical low level. According to the stock assessment, the fishable part of the stock has been decreasing since 2006 and further decline is foreseen, as recruitment to the fishable stock will be low in the coming years. MRI recommends a TAC according to the management strategy of F_{max} or 7 500 t for the quota year 2012/2013. In addition, the MRI recommends a continued closure of the major spawning area off West Iceland during the spawning and incubation season in autumn and winter.

2.15. Spotted wolffish

Landings of spotted wolffish (*Anarhichas minor*) in 2011 were about 1 600 t. The average annual landings were 1 000 t in 1982–1997, but have increased to 2 300 t since 1998. Survey indices of recruitment, total biomass, and fishable biomass are all at the historical minimum, while the harvest rate is about tree times higher than in 1985–1997. The basis of the MRI advice is to reduce the harvest rate to half of what it has been on the average since 2000. The MRI recommends that the TAC for the quote year 2012/2013 should not exceed 900 t.

2.16. Blue ling

In 2011, 6 500 t of blue ling (*Molva dypterygia*) were landed. In past decades, blue ling has mainly been taken as bycatch in the bottom trawl fishery. In 2008–2011, the proportion caught by longliners increased considerably as a result of targeting of blue ling by that fleet. Longlines account for 70% of landings in 2011. Indices from the autumn survey indicate an increase in biomass and recruitment since 2005, but the most recent survey results from spring 2012 indicate a sharp decrease in stock size.

MRI considers the current high exploitation level unsustainable and recommends that landings be constrained to no more than 3 100 t in the quota year 2012/2013. The advice is to bring catches to sustainable levels as indicated by an exploratory Gadget model. Furthermore, a continued closure of known spawning grounds from 15 February–30 April should be maintained.

2.17. Ling

Landings of ling (*Molva molva*) in 2011 were 9 600 t, having increased steadily since 2001. Survey indices of harvestable biomass have remained high since 2007. In 2011, the exploitation level had decreased and was at a similar level as in 2004 to 2008, when survey indices were increasing rapidly.

MRI recommends a TAC of no more than 12 000 t in the quota year 2012/2013, including catches of foreign vessels which have been about 1 400 t in recent years. The basis of the advice is to keep exploitation levels at a similar level as observed in 2004 to 2008 and in 2011. Exploratory analytical assessment indicates that these catches would result in fishing mortality close to $F_{0.1}$.

2.18. Tusk

Landings of tusk (*Brosme brosme*) from Icelandic waters were 7 400 t in 2011. Indices of fishable biomass in the spring survey have increased considerably since 2001. However, recruitment indices peaked in 2006 but have decreased since then, and were in 2012 at the lowest observed value. The tusk stock assessment is based on the Gadget model as recommended by ICES.

The MRI recommends that the catches be no more than 6 700 t in the quota year 2012/2013, including catches of foreign vessels. This advice is based on the assumption that $F_{max}=F_{MSY}=0.29$. It is furthermore recommended that the closure of nursery areas off the southeast and south coast is continued.

2.19. Anglerfish

In 2011, about 3 200 t of anglerfish *(Lophius piscatorius)* were landed from Icelandic waters, which is the third highest recorded catch. Previous results from surveys and CPUE indicated a large fishable stock due to very good recruitment during the period 1998–2007. Latest survey results indicate a declining ternd in fishable biomass in 2012. Furthermore, survey indices show poor recruitment for year classes 2008–2011. With current fishing effort and the reduced recruitment in the last four years, the fishable stock will decline considerably in the coming years. The MRI recommends 1 500 t as the TAC for the quota year 2012/2013, and an effort should be made to reduce the bycatch of juvenile anglerfish in trawl fisheries.

2.20. Lumpfish

In 2011, about 5 200 t of female lumpfish *(Cyclopterus lumpus)* were landed in Iceland. This is slightly less than the annual average landings in 1971–2010 of 6 200 t. Effort and number of licenses have increased in recent years. A recent decline in the female biomass index, increasing F_{proxy}, and a record low male abundance index indicate the need of a more precautionary management approach.

The objective of the MRI advice is to keep F_{proxy} at or below the long-term average. The advice is given in two stages: in this report an initial advice is based on the 2012 survey biomass index, but the final advice will be given by end of March 2013 based on the 2012 and 2013 survey biomass indices. If the survey biomass index does not change much, the final advice is around 3 times the initial advice.

MRI recommends an initial TAC of 1 700 t for the 2012/2013 quota year, or approximately 3 500 barrels. MRI will recommend a final TAC after the 2013 spring survey. Furthermore, it is recommended that data collection and monitoring be improved in the male fishery and lumpfish bycatch in other fisheries.

2.21. Herring

Landings of **summer-spawning herring** (*Clupea harengus*) in Icelandic waters during the fishing season 2011/12 amounted to 49 000 t. For the fourth winter in a row, the stock was heavily infected by *Ichthyophonus* and it is estimated that 14% of the fishable stock will die because of it during the spring of 2012. There are strong indications that the infection is decreasing and the estimate of the stock size is more optimistic now compared to previous years with relatively strong year classes entering the fishable stock. The spawning stock is estimated as 377 000 t in the beginning of the 2012/13 fishing season. Thus, MRI recommends a TAC for 2012/13 corresponding to $F_{0.1}$=0.22 of 67 000 t.

In 2011, around 151 000 t of **Norwegian spring-spawning herring** were landed by Icelandic vessels, with estimated total international landings of 988 000 t. ICES has recommended a TAC of 833 000 t for the 2012 season, corresponding to a weighted F = 0.125. According to the international agreement reached in January 2007, Iceland will have a quota of 121 000 t in 2012. ICES will not recommend a TAC for 2013 until autumn 2012.

2.22. Capelin

In the beginning of July 2011, 82 000 t of capelin quota were allocated to Norway, Faroe Islands and Greenland on the basis of an existing agreement. No capelin fishery was allowed inside Icelandic EEZ from 6 July to 30 September 2011. A starting quota of 181 000 t was allocated to Iceland and the starting of the Icelandic fishery season set to 1 October. The final TAC based on survey results in January 2012 was 765 000 t.

A summer fishery took place in 2011 for the first time since 2004, with landings of 63 000 t. The autumn fishery started in October but only 9 000 t were landed in Oct–Dec. The winter fishery started in the beginning of January 2012 and the landings in Jan–Mar were 675 000 t. The total international landings 2011/2012 were 747 000 t.

The fishing season 2012/2013 will be based on the year classes from 2010 and 2009. The annual autumn survey could not be conducted because of a strike and two surveys conducted later in the winter covered only a limited part of the potential distribution area of young capelin. The indices from these two surveys are very low and do not provide a basis for an initial quota for 2012/2013. Therefore MRI advices that the fishery is not opened until further acoustic surveys have confirmed sufficient abundance of these cohorts to sustain a fishery with the usual prerequisite of a target remaining spawning stock of 400 000 t in spring 2013.

2.22. Blue whiting

International landings of blue whiting (*Micromesistius poutassou*) in the Northeast Atlantic in 2011 are estimated to be around 94 000 t. Icelandic landings were 6 000 t.

The analytical assessment in 2011 indicates a steady decrease in the spawning stock of about 66% between 2004 and 2012 and ICES recommends that a catch quota of 391 000 t in 2012 should not be exceeded. ICES will assess the stock in September and release its advice for 2013 in October 2012.

2.24. Mackerel

International landings of mackerel (*Scomber scombrus*) in the Northeast Atlantic in 2011 are estimated at 927 000 t. Since the mid 2000s mackerel has been observed in the Icelandic EEZ, which has led to a direct fishery in the last years. In 2011 the Icelandic landings were 159 000 t. The spawning stock increased from 2003 to 2009 but has decreased since then and the estimated spawning stock in 2012 is about 2.7 million t. ICES will assess the stock in

the autumn and release its advice for 2013 in October 2012. A multilateral agreement on sharing the mackerel quotas has not been reached among the nations participating in the fishery.

2.25. Pearlside

Experimental pelagic trawl fishery for pearlside (*Maurolicus muelleri*) started in late 2008 with a catch of only a few tonnes. In 2009, the catch was about 46 000 t, followed by 18 000 t in 2010 and 9 000 t in 2011. Very little is known about the biology and stock size of the pearlside and its position in the ecosystem. The MRI recommends that the catch should not exceed 30 000 t in the quota year 2012/2013.

2.26. Greater silver smelt

In 2011 about 10 000 t of greater silver smelt (*Argentina silus*) were landed compared to the historical maximum of 16 400 t in 2010. The 2011 autumn survey that has formed the basis of advice was not conducted, but preliminary results from a Gadget model indicate that the state of the stock is healthy, although the fishing mortality in recent years has been higher than can be sustained in the long run ($F_{0.1}$=0.17).

The stock is assessed with limited data and must therefore be harvested with caution. The MRI recommends a precautionary TAC of 8 000 t for the quota year 2012/2013. The basis of the advice is the preliminary results of the Gadget model. MRI further reiterates last year´s advice that the precautionary approach be adopted in management of the greater silver smelt fishery in order to ensure sustainability of the resource.

2.27. Nephrops

In 2011, 2 240 t of *Nephrops norvegicus* were landed, compared to 2 540 t in 2010. The survey biomass index has decreased since 2008 and is now under the long-term average. CPUE (kg/hour, single rigged) was 71 kg in 2011, compared to 76 kg and 80 kg in 2010 and 2009, respectively. According to the current assessment, the fishable stock biomass (age 6 and older) in 2012 is estimated 16 000 t. The stock declined around 1995 due to poor overall recruitment and high fishing intensity off Southeast Iceland. The increase in stock biomass in recent years is considered the combined result of larger year classes from 1994–1995 onwards and a sustainable F_{opt} management strategy. MRI recommends a TAC of no more than 1 900 t in the quota year 2012/2013.

2.28. Northern shrimp

In recent years, the inshore fishery for northern shrimp (*Pandalus borealis*) has been closed, with the exception of the Snæfellsnes area and Arnarfjörður. MRI recommends a preliminary TAC of 1 000 t for the Snæfellsnes area in the quota year 2012/2013. Furthermore MRI recommends a continued closure of other areas until surveys have shown a significant increase of abundance.

In 2011, the offshore catch of northern shrimp was 6 300 t, compared to its highest level of 65 000 t between 1995 and 1997. MRI recommends a TAC of 5 000 t for northern shrimp in the offshore areas (excluding the Dohrn Bank area) for the quota year 2012/2013.

2.29. Iceland scallop

The Iceland scallop (*Chlamys islandica*) fishery remained closed during the 2011/2012 fishing season. Survey indices declined drastically between 2001–2008, resulting in 2011 indices amounting to only 10% of the average for 1993–2000. The downward trend in stock abundance is mainly due to increased natural mortality, probably caused by protozoan infestation in adult scallops. Recruitment has been poor in the period 2004–2010. MRI therefore recommends a continued closure of the scallop fishery in the quota year 2012/2013.

2.30. Ocean quahog

In 2011 only 5 t of ocean quahog was landed, compared to the maximum 14 400 t in 2003. Since 1987 a fishery for human consumption has been developing, but annual landings have been variable because of variable effort connected to the market. In 2009 the fishery for ocean quahog (*Arctica islandica*) with a hydraulic dredge stopped and since then a dry dredge has been used. MRI recommends a harvest policy of 2.5% of the estimated stock size corresponding to no more than 31 500 t in the quota year 2012/2013.

2.31. Common whelk

Pot fishing for common whelk (*Buccinum undatum*) started in Breiðafjörður in 1996. In 2011, the total catch amounted to 512 t compared to 142 t in 2010. Due to increased effort and uncertainty in stock size, MRI recommends a TAC not exceeding 750 t in Breiðafjörður.

2.32. Sea cucumber

In 2011 about 2 700 t of sea cucumber (*Cucumaria frondsoa*) were landed. Since 2003 a fishery for human consumption 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 policy of 10% of the estimated stock size in each sub area.

2.33. Sea urchin

In 2011, 144 t of sea urchin (*Strongylocentrotus droebachiensis*) were landed. Harvesting of sea urchin commenced in 1993. Total landings reached a maximum of 1 500 t in 1994 but declined rapidly and were negligible in the years between 1997–2006.

During the last 5 years, the catches have been between 126 and 146 t. Areas with good quality sea urchins are limited in size, which requires a precautionary management strategy.

2.34. Whales

In 1986, the International Whaling Commission´s (IWC) resolution on a temporary closure of commercial whaling came into effect. In 2006, Iceland resumed commercial whaling on fin whales (*Balaenoptera physalus*) and common minke whales (*Balaenoptera acutorostrata)*. In 2011, 58 minke whales were caught, compared with 60 in 2010. No fin whaling was conducted in 2011, but 148 fin whales were caught in 2010.

The minke whale stock around Iceland is considered to be in a healthy condition, and historic catches are not thought to have affected the stock appreciably.

Based on stock assessments conducted by the Scientific Committees of NAMMCO and the IWC, the MRI recommends 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) and 121 animals in the CM area. This advice applies for the calendar years 2013 and 2014.

Results from a fin whale sightings survey in 2007 indicate a total population size of 20 600 animals in the East Greenland, Iceland, and Jan Mayen stock area (EGI stock area), which is similar to the 1995 and 2001 surveys.

On the basis of a recent assessment conducted within the Scientific Committees of the IWC and NAMMCO, the MRI recommends annual catches of up to 154 fin whales as sustainable and precautionary for the calendar years 2013 and 2014.

2.35. Seals

In 2011, the reported seal catch and bycatch in Iceland was 114 grey seals (*Halichoerus grypus*), 85 harbour seals (*Phoca vitulina*), 6 harp seals (*Phoca groenlandica*), two bearded seals (*Erignathus barbatus*), one ringed seal (*Phoca hispida*) and 188 seals of unidentified species. **Grey seal** surveys were conducted in 2008 and 2009, where 6 100 (95% CI: 4 600–7 600) animals were estimated along the Icelandic coast. The stock was estimated as 12 000 animals in 1990. After a continuous decline from 1980 to 2002 the stock seems to be increasing again. According to a survey conducted in 2011, the stock of **harbour seals** was around 11 000 animals. The stock was estimated as 34 000 seals in 1980 but has remained stable since 2003.

Tafla 1.

Tillögur um hámarksafla fiskveiðiárin 2012/2013 og 2011/2012, ásamt aflamarki samkvæmt ákvörðun stjórnvalda fiskveiðiárið 2011/2012 (þús. tonn).
TACs recommended by the Marine Research Institute for the quota years 2012/2013 and 2011/2012, and national TACs for the quota year 2011/2012 (thous. tonnes).

Tegund *Species*	Tillaga 2012/2013 *Recomm. TAC 2012/2013*	Tillaga 2011/2012 *Recomm. TAC 2011/2012*	Aflamark 2011/2012 *National TAC 2011/2012*
Þorskur *(Cod)*	196[1)]	177[1)]	177
Ýsa *(Haddock)*	32	37	45
Ufsi *(Saithe)*	49	45	52
Gullkarfi *(Golden redfish)*	45	40	40
Litli karfi *(Sebastes viviparus)*	1,5	1,5	-
Djúpkarfi *(Deep sea redfish)*	10	10	12
Úthafskarfi *(Pelagic redfish)*	-[2)]	20[3)]	55 (9,8)[4)]
Grálúða *(Greenland halibut)*	20[3)]	12[3)]	25 (13)[4)]
Skarkoli *(Plaice)*	6,5	6,5	6,5
Sandkoli *(Dab)*	0,5[5)]	0,5[5)]	0,5
Skrápflúra *(Long rough dab)*	0,2[5)]	0,2[5)]	0,2
Langlúra *(Witch)*	1,1	1,1	1,3
Þykkvalúra (*Lemon sole)*	1,4	1,8	1,8
Steinbítur *(Atlantic wolffish)*	7,5	7,5	10,5
Hlýri *(Spotted wolffish)*	0,9		-
Íslensk sumargotssíld *(Herring)*	67	40	45
Norsk-íslensk vorgotssíld *(Atlanto-Scandian herring)*	-[2)]	833	833 (121)[4)]
Loðna *(Capelin)*	0[6)]	765	765
Kolmunni (*Blue whiting*)	-[2)]	391	391(60)[4)]
Makríll *(Mackerel)*	-[2)]	586–639	932 (145)[4)]
Gulldepla *(Pearlside)*	30	30	-
Blálanga *(Blue ling)*	3,1	4	-
Langa *(Ling)*	12	7,5	7,5
Keila *(Tusk)*	6,7	6,9	7
Gulllax *(Greater silver smelt)*	8	6	-
Skötuselur *(Anglerfish)*	1,5	2,5	2,85
Hrognkelsi *(Lumpfish)*	1,7[6)]	3,7	-
Humar *(Nephrops)*	1,9	2	2,1
Rækja á grunnsl. *(Inshore shrimp)*	1[6),7)]	2	2
Rækja á djúpsl. *(Offshore shrimp)*	5	7	-
Hörpudiskur *(Iceland scallop)*	0	0	0
Kúfskel *(Ocean quahog)*	31,5	31,5	-
Beitukóngur *(Common whelk)*	0,75	-	-
Hrefna *(Common minke whale)*[8)]	229	216	216
Langreyður *(Fin whale)*[8)]	154	154	154

[1)] Samkvæmt aflareglu. *According to management plan.*
[2)] Ráðgjöf fyrir almanaksárið 2013 verður veitt í október 2012. *Recommended TAC for calendar year 2013 will be given in October 2012.*
[3)] Aflamark á öllu útbreiðslusvæði stofns fyrir almanaksár. *TAC for the total area of distribution for calendar year.*
[4)] Samanlagt heildaraflamark allra veiðiþjóða og aflamark ákveðið fyrir Ísland (í sviga). *Total TAC* and *national TAC within parentheses.*
[5)] Aflamark verði ekki hærra en sem nemi þeim afla er ætla má að fáist sem aukaafli við aðrar veiðar. *Recommended TAC not to exceed expected bycatch levels caught in other fishing operations.*
[6)] Tillaga um afla í upphafi vertíðar. *Provisional TAC.*
[7)] Svæðið við Snæfellsnes. *Snæfellsnes area.*
[8)] Fjöldi dýra innan íslenska landgrunnsins. *Number of animals within the Icelandic shelf area.*

Tafla 2.

Aðrar tillögur Hafrannsóknastofnunarinnar fyrir fiskveiðiárið 2012/2013.

Additional advice for the quota year 2012/2013.

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.
Skarkoli – Áframhaldandi friðun á hrygningarstöðvum við suður-, suðvestur- og vesturströndina á hrygningartíma.
Sandkoli – Engar beinar veiðar.
Skrápflúra – Engar beinar veiðar.
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 við Suður- og Suðausturland til verndar smákeilu.
Skötuselur – Leitað verði leiða til að draga úr meðafla ungs skötusels við togveiðar.
Kúfskel – Aflamarki verði úthlutað eftir svæðum með tilliti til stofnstærðar á hverju svæði.
Sæbjúga – Afli fari ekki yfir 10% af áætlaðri stofnstærð hverrar veiðislóðar.

Cod *– Expected catches by foreign vessels and other catches not subject to TAC be subtracted from the TAC before allocation of quota to Icelandic vessels.*
Atlantic halibut *– Continued ban on directed halibut fishery and implemented conservation act for protection of the stock.*
Plaice *– Continuing closure of the spawning areas off the south, southwest and west coast of Iceland during the spawning season.*
Dab *– No targeted fishery.*
Long rough dab *– No targeted fishery.*
Atlantic wolffish *– Continuing closure of the spawning areas off the west coast of Iceland (Látragrunn) during spawning season.*
Blue ling *– Continuing closure of known spawning areas during spawning time.*
Ling *– Subtract expected catches by foreign vessels from TAC before allocation of quota to Icelandic vessels.*
Tusk *– Subtract expected catches by foreign vessels from TAC before allocation of quota to Icelandic vessels. Continuing ban on fishery in nursery areas in South and Southeast Icelandic waters in order to protect juveniles.*
Anglerfish *– Effort should be made to reduce bycatch of juveniles in trawl fisheries.*
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.*

1. Environmental conditions

Estimations of the seasonal conditions around Iceland have been, in part, based upon data collected during the spring survey undertaken annually in May/June. On this cruise, samples and measurements are taken from set stations all around the country in order to record the general status of the ocean, phytoplankton, and krill. Emphasis is placed on comparable sampling methods from one year to the next to track changes that can occur in the sea and on land. Repeated samplings have also been undertaken in the same stations at other times of the year, but this practice does not have as long a history.

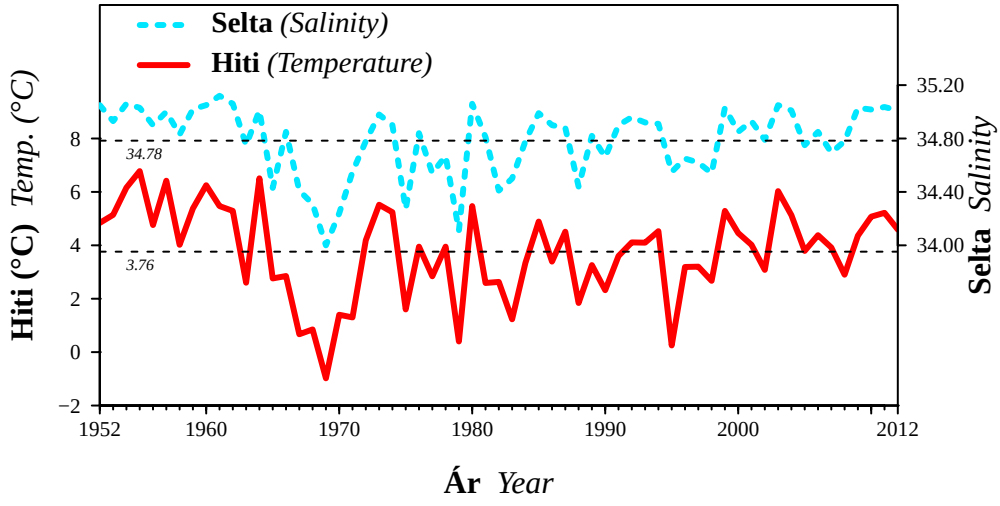
Results indicate that the status of the ocean is highly variable in the many areas surrounding Iceland from year to year. Studies during the past few decades indicate that warm seawater in the northern seas most often support increased total productivity, but a complex combination of environmental factors affects the food chain and the yield of harvested species in Icelandic waters. The following is a brief discussion of the seasonal conditions in Icelandic waters over recent years. More detailed information is attainable in the report from the Marine Research Institute of Iceland "Environmental Conditions in Icelandic Waters 2011", Hafrannsóknir nr. 162 (2012).

1.1. Temperature and salinity to the north of Iceland

Every year for more than half a century, temperature and salinity have been measured off the coast (figure 1.1). These measurements appear to be a good indication of the general state of the ocean north of Iceland as well as an estimation of the influx of warm and saline seawater from the Atlantic to the south of Iceland. After a warm period in the northernmost North Atlantic a cooling began in the 1960's. The so-called Sea Ice Years 1965-1971 began with increased volume of Polar seawater in the Iceland Sea. As can be seen, warm and cold years have alternated since the year 1971 and the years 1979 and 1995 the coldest years after the Sea Ice Years. Measurement results of recent decades show a slow increase in temperature in the northern fishing grounds after 1995. Since 1998 temperature and salinity have been near to or above the average. From the spring of 2006 until 2008 the temperature and salinity of surface waters (0-50 m) were closer to average, but were well over average from the spring of 2009 until 2012. At greater depth the temperature and salinity have most often been above the average and this reflects the higher temperature and salinity of the ocean to the south and west of the country in recent years (figure 1.2).

1.2. Bottom temperature

Temperatures near the bottom of Icelandic waters reflect, as a rule, the temperature distributions of the upper layers. Near-bottom temperature is usually lower to the north and east of the country due to the influence of cold seawater from the north, but it is usually higher to the south and west of Iceland where it is influenced by warm water from the south. In figure 1.2 mean temperature in the water column 50-100 m above the bottom in several locations around the country has been depicted, except for north of the country where the average is calculated for 150-300 m depth.

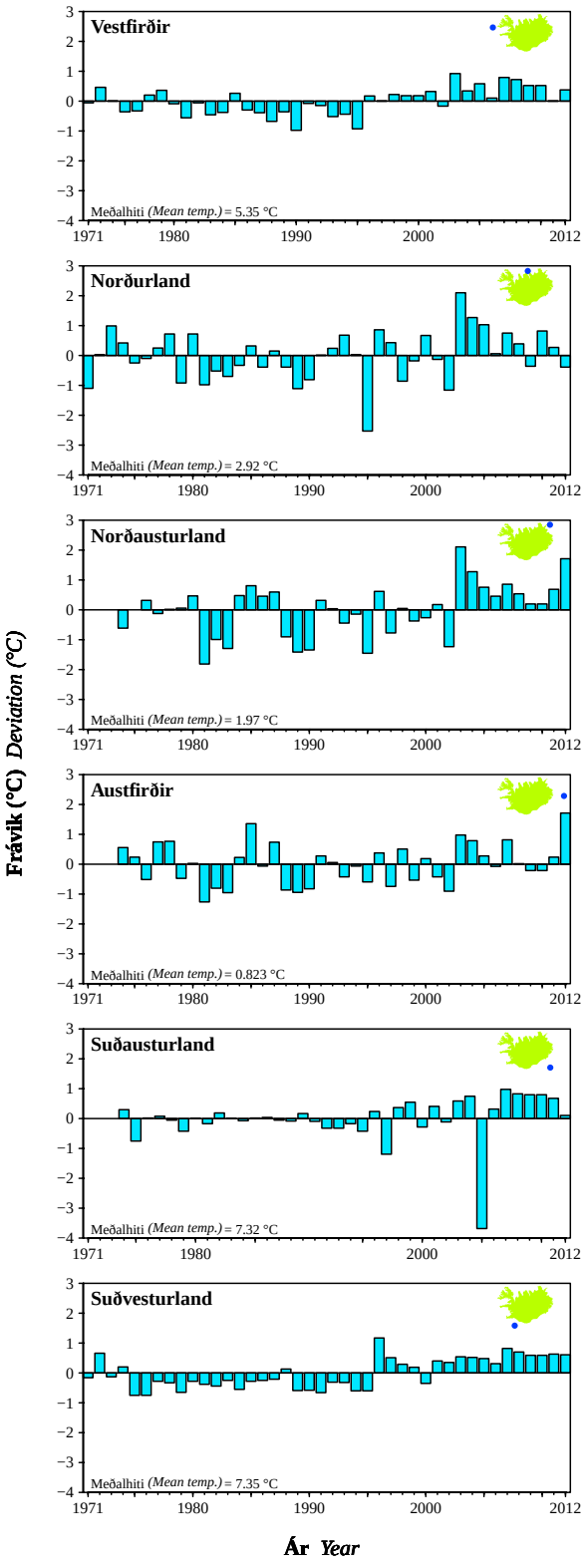


Mynd 1.1. Hiti og selta að vori á 50 m dýpi á stöð 3, 20 sjómílur norður af Siglunesi árin 1952–2012. Láréttu línurnar tákna meðaltöl fyrir tímabilið.

Fig. 1.1. Temperature and salinity in spring at 50 m depth at station 3 on the Siglunes section 1952–2012. The horizontal lines indicate the means for the same period.

Bottom temperature on the Icelandic shelf is usually lowest in Februrary-March and highest in August-September or even later in the year. Annual fluctuation is most in the shallowest areas and decrease with increasing depth. Outside of the Icelandic shelf to the north and the east of the country the bottom temperature is always below 0°C (deepwater of the North Sea). Off the coast of the middle of the north coast (in Eyjafjarðarál, depth as much as 700 m) the cold deepwater reaches in close to land and splits the northern fishing grounds into western and eastern regions. On the shelf slope to the south and west of Iceland the bottom temperature does decrease with increasing depth but it does not go much below 4°C.

Temperature has generally been above average for the last decade (figure 1.2) around the country. Measurements from 2012 show that bottom temperature in the spring was near or above average.



Mynd 1.2. Frávik frá meðalhita yfir botni (°C) áranna 1971–2012 á mismunandi svæðum umhverfis Ísland í maí/júní.

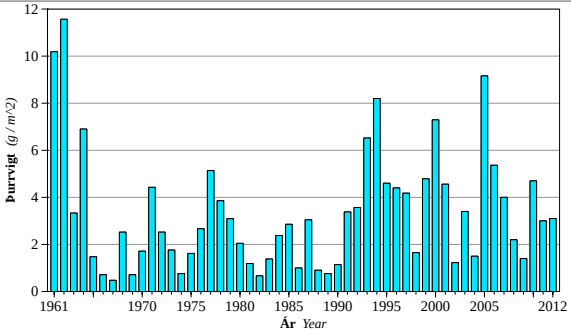
Fig. 1.2. Temperature anomalies (°C) near bottom in Icelandic waters in May/June for the years 1971 to 2012.

1.3. Krill

Krill plays an important role in the marine ecosystem because not only is it an important food for pelagic stocks such as herring and capelin, it is also the main food for all fish stocks while they are in their larval and fry stages. The presence of enough krill is considered a crucial factor in the survival rate of fish larvae when they start to hunt their own food. Studies conducted by the MRI have shown a connection between krill biomass in the spring off the southwest of Iceland and the number of cod fry in August and, therefore, new recruitment of cod stocks. Although this connection is weak, there are indications that ecological connections exist between growth and development of organisms at the lowest steps of the food chain and those higher up.

Annual fluctuations in krill biomass to the south and north of the country are roughly simultaneous. In figure 1.3 the results from measurements of amounts of krill taken off the northern coast (Siglunes transect) and there is the longest timeline.

In 2011 krill biomass north of Iceland was below average, but preliminary results suggest that krill biomass in May 2012 is near average.



Mynd 1.3. Átumagn (g þurrvigt m^{-2}, 0–50 m) að vorlagi á Siglunes-sniði árin 1961–2012. Súlurnar sýna meðaltöl allra stöðva á sniðinu. Gildið fyrir árið 2012 er bráðabirgðatala sem getur breyst við endanlega úrvinnslu.

Fig. 1. 3. Zooplankton biomass (g dry weight m^{-2}, 0–50 m) in spring at Siglunes section in 1961–2012. The columns show means for all stations at the section. Provisional value for 2012.

2. State of stocks

2.1. COD *Gadus morhua*

2.1.1. Landings, effort and year class distribution

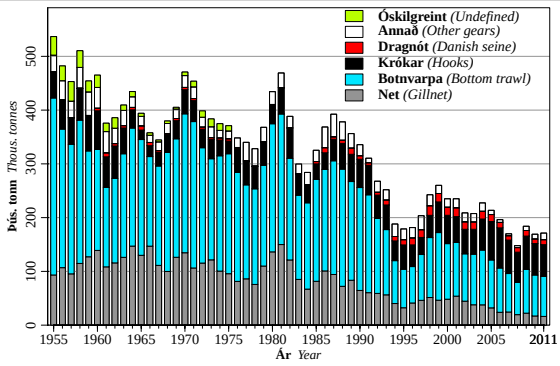
Total landings from the Icelandic cod stock in 2011 were 172 thousand tonnes, as compared to 169 thousand tonnes in 2010 (figure 2.1.1 and table 3.1.1). TAC for quota year 2010/2011 was, according to governmental catch rule, 160 thousand tonnes but total landings were 169 thousand tonnes. The landings that exceeded the catch rule were due to landings of undersized fish, project fund landings, and catch of foreign vessels not taken into account when the catch limits were set. Recommended TAC and actual landings are shown in table 2.1.1 along with actual catch of foreign vessels.

In 2011 43% of landings was caught with bottom trawl, 35% by longline, 10% in gillnets, 7% on handlines and 5% by Danish seine (figure 2.1.1). The biggest change over the last few years is the increasing use of longline and decreasing use of gillnets. The proportion of landings caught by gillnet in 2011 was at an historical low, only half of the average over the last 30 years.

The age distribution of the catch in 2011 was rather in agreement with that which was expected (figure 2.1.2 and table 3.1.2). In relation to the last decade, there is a higher proportion of older fish in the total catch. CPUE was high across all gears in 2011 (figure 2.1.3). Drawing conclusions about the development of the population size from these data is difficult. This is because of improvements in fishing gear and difficulties in distinguishing between direct targeting and when effort is taken to avoid too large a portion of the cod stock in harvesting.

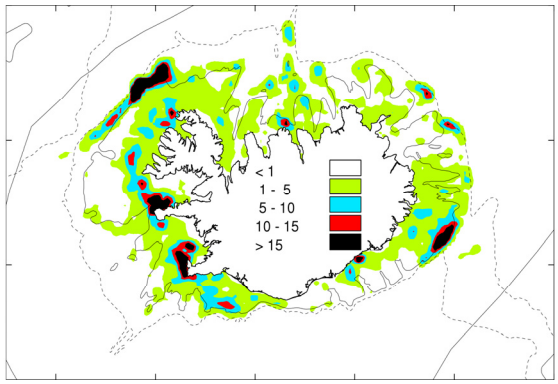
2.1.2. Mean weight and maturity

Mean weight at age in catches (table 3.1.3) has increased over the last 4-5 years and in 2011 was



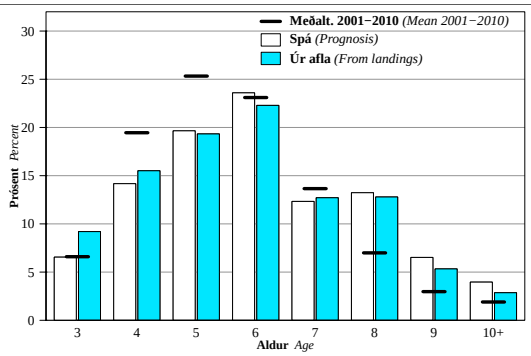
Mynd 2.1.1. ÞORSKUR. Heildarafli (þús. tonna) eftir veiðarfærum árin 1955–2011.

Fig. 2.1.1. COD. Total landings (thous. tonnes) 1955–2011 by gear type.



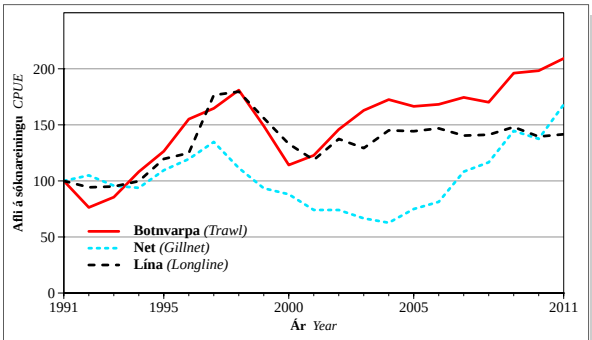
ÞORSKUR. Veiðisvæði við Ísland árið 2011 (tonn/sjm^2). Veiðisvæði mismunandi veiðarfæra eru sýnd í viðauka 5.2.

COD. Fishing grounds in 2011 (tonnes/nmi^2). Further information by gear type are given in Appendix 5.2.



Mynd 2.1.2. ÞORSKUR. Aldursdreifing afla (% af fjölda) 2011, ásamt spá frá í maí 2011. Meðal-aldursdreifing áranna 2001–2010 er jafnframt sýnd.

Fig. 2.1.2. COD. Age distribution in the 2011 catch (% by number), compared to last year's prediction. Mean age distribution 2001–2010 is also shown.



Mynd 2.1.3. ÞORSKUR. Þorskafli á sóknareiningu eftir veiðarfærum árin 1991–2011 (miðað við 100 árið 1991).

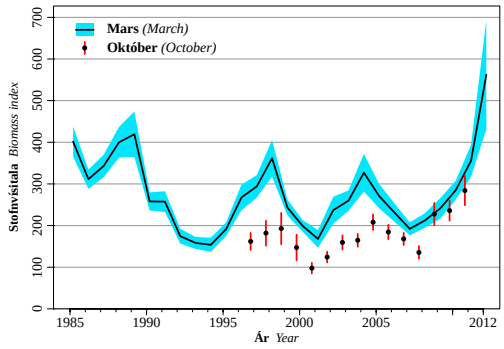
Fig. 2.1.3. COD. Relative changes in CPUE by fishing gear during 1991–2011 (1991=100).

near the historical average. Based on the March groundfish survey (SMB) it is predicted that mean weight at age in catches in 2012 will be near or above the average. Average weight of sexually mature cod in the March SMB has also increased in recent years and in 2012 it was well above mean for the time period from 1985-present (table 3.1.4).

Sexual maturity by age is estimated following data from the SMB (table 3.1.5). Here, about half of the cod have reached sexual maturity be age 6. Maturity proportion at age 4-5 has been somewhat lower in the last few years than in years past, but the proportion of the stock that is mature at age 7-8 has been higher in recent years than the historical average.

2.1.3. Biomass index

Total biomass indices for cod in the spring groundfish survey (SMB) and the fall groundfish survey (SMH) have increased much in the last few years (figure 2.1.4). The increase in the SMB index from 2012 is even higher than previous calculations had suggested it would be which can, in large part, be explained by a single haul with an extremely large amount of fish and therefore caused an unusually wide standard deviation in the index.



Mynd 2.1.4. **Þorskur**. Þyngdarvísitölur úr stofnmælingu í mars og að hausti. Skyggða svæðið og lóðréttu línurnar sýna staðalfrávik í mati á vísitölum.

*Fig. 2.1.4. **Cod**. Biomass indices from spring and autumn groundfish surveys. Shaded area and vertical lines show one standard deviation in the estimates.*

All cod age groups are represented in the survey and indices for ages 1-10 used in stock assessment as a measurement of trends in stock size. Indices for the year classes 2001-2007, according to the SMB, indicate that they were near or under average size at ages 1-4 (table 3.1.6) but when they were older (ages 6-11) they were of similar size as the average year class. This is primarily a result of decreased fishing pressure in recent years.

2.1.4. Stock assessment and assumptions

Estimations of stock size are based on landings for which age distribution has been calculated (table 3.1.2) and year class indices from SMB and SMH (table 3.1.6). Natural mortality is considered constant at 0.2 in all age groups of age three and older. Estimations of the size of cod stocks is based on results of an ADCAM model, but for comparison a few other models are also run that have a similar structure but have other assumptions regarding various error terms (see Appendix 5.1).

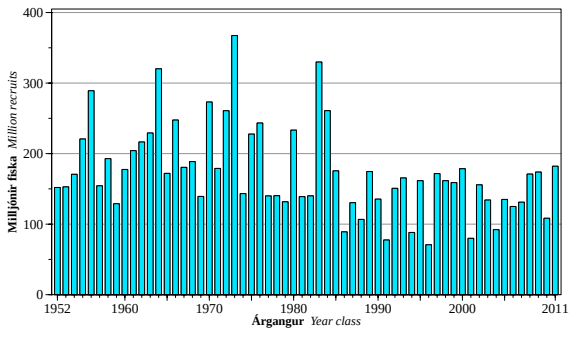
The reference stock (4+) has been used to calculate TAC in accordance with the catch rule and

TAFLA 2.1.1
Þorskur. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonna) árin 1984–1991 og fiskveiðiárin 1991/1992–2011/2012.

***Cod**. TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1984–1991 and the quota years 1991/1992–2011/2012.*

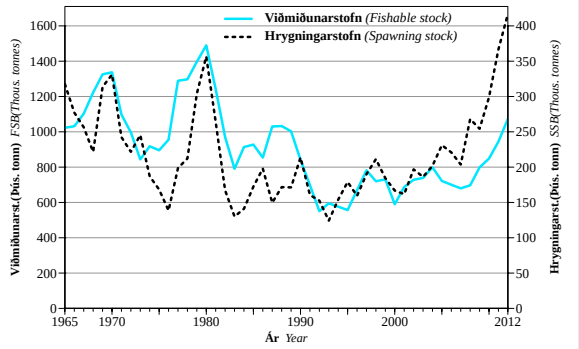
Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra *Landings (others)*	Afli alls *Total catch*
1984	200	242	281	2.0	283
1985	200	263	323	3.0	326
1986	300	300	365	3.0	369
1987	300	330	390	2.0	392
1988	300	350	376	2.0	378
1989	300	325	354	2.0	356
1990	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			

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



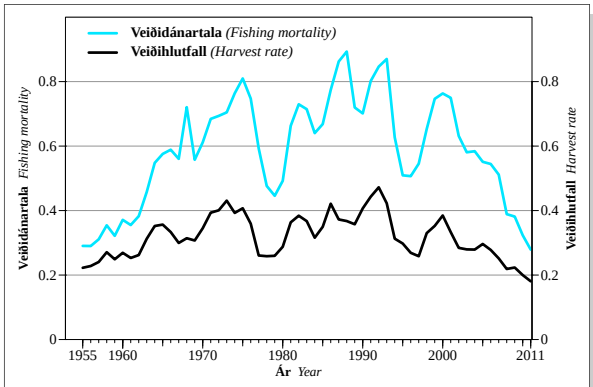
Mynd 2.1.5. **Þorskur.** Áætluð stærð þorskárganganna 1952–2011. Fjöldi við þriggja ára aldur (í milljónum).

*Fig. 2.1.5. **Cod.** Estimated year class size 1952–2011 at age 3 (in millions).*



Mynd 2.1.6. **Þorskur**. Stærð viðmiðunarstofns (fjögurra ára og eldri) og hrygningarstofns á hrygningartíma árin 1965–2012 í þús. tonna.

*Fig. 2.1.6. **Cod**. Fishable stock (4+) and spawning stock biomass at spawning time during the period 1965–2012 (thous. tonnes).*



Mynd 2.1.7. **Þorskur.** Veiðihlutfall og veiðidánarstuðlar ($F_{5–10}$) frá árinu 1955.

*Fig. 2.1.7. **Cod.** Harvest rate and fishing mortality ($F_{5–10}$) since 1955.*

it is based on mean weight by age in landings. Mean weight by age in the spawning stock is based on data from the SMB for age seven and younger fish, but data from landings are used for fish age eight and older.

In 2010 the reference points Btrigger and Blim were defined for the Icelandic cod stock. These are based on spawning stock and Blim is defined as 125 thousand tonnes, which is the lowest historical value of the spawning stock, and Btrigger is 220 thousand tonnes. According to the catch rule, harvest rate is decreased if the stock goes below Btrigger.

In order to calculate TAC for the coming quota year it is necessary to estimate the mean weight at age in landings in the assessment year and the mean weight at age in landings for 2012 is estimated from the average weight in the spring groundfish survey in March, 2012.

2.1.5. Status and projections

The average size of year classes from 2002-2008, which are now the bulk of the spawning and reference stocks, is about 135 million recruits (figure 2.1.5 and table 3.1.7), or 77% of the historical average of year classes from 1955-2007 which is about 176 million. Year classes from 2008, 2009, and 2011 are considered to be near to the average, but the 2010 year class is about 108 million recruits. According to the stock assessment, the reference stock was 1070 thousand tonnes and the spawning stock is 419 thousand tonnes at the beginning of 2012 (figure 2.1.6 and table 3.1.7). The reference stock has grown by nearly 60% in the last 5 years and is now estimated to be higher than it has been in three decades. The spawning stock is more than twice as big as it has been for most of the last few decades and hasn't been so large since the early 1960's. It is, therefore well above Btrigger and Blim.

The harvest rate (landings as a proportion of the reference stock) and mean fishing mortality of fish age 5–10 are indicators of fishing pressure on the stock. Harvest rate describes total pressure on the population while fishing mortality is rather an indicator of fishing pressure on older fish. When gillnetting is a less common method, as has been the case in recent years, the fishing mortality can be expected to be lower than the harvest rate. In the last decade harvest rate has fallen from about 35-40% to about 20%. Fishing mortality has fallen from 0.75 in 2000 to 0.28 in 2011 (figure 2.1.7 and table 3.1.7) and currently, it is at an historical low.

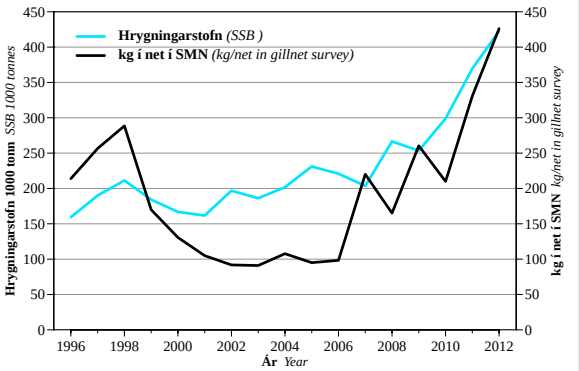
Considering that recruitment during the past decade has been below average, growth of the stock in recent years is first and foremost a result of decreased fishing effort. Less fishing pressure has allowed year classes to last longer in the stock. Consistent with this, the proportion of older cod is higher now than in previous decades and the spawning stock has grown proportionally more than the reference stock (figure 2.1.6).

In the 2011 stock assessment it was estimated that the reference stock at the at the beginning of

TAFLA 2.1.2
Þorskur. Áhrif mismunandi aflahámarks á áætlaða stærð stofnsins (þús. tonna) árið 2014.
***Cod**. Projection of stock and spawning stock biomass (thous. tonnes) in 2014 for different management strategies.*

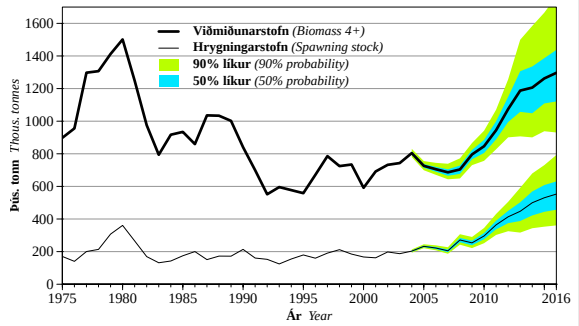
2012				2013				2014	
Áætlaður afli *Pred. landings*	Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn.stock*	$F^{1)}$	Afla-mark *TAC*	Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn.stock*	$F^{1)}$	Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn.stock*
177	1070	419	0.26	150	1192	474	0.20	1263	574
				196[2)]	1192	461	0.26	1211	523
				250	1192	444	0.35	1149	467

1) Meðalveiðidánartala 5–10 ára þorsks. *Average fishing mortality of age groups 5–10.*
2) Aflaregla. *Catch rule*



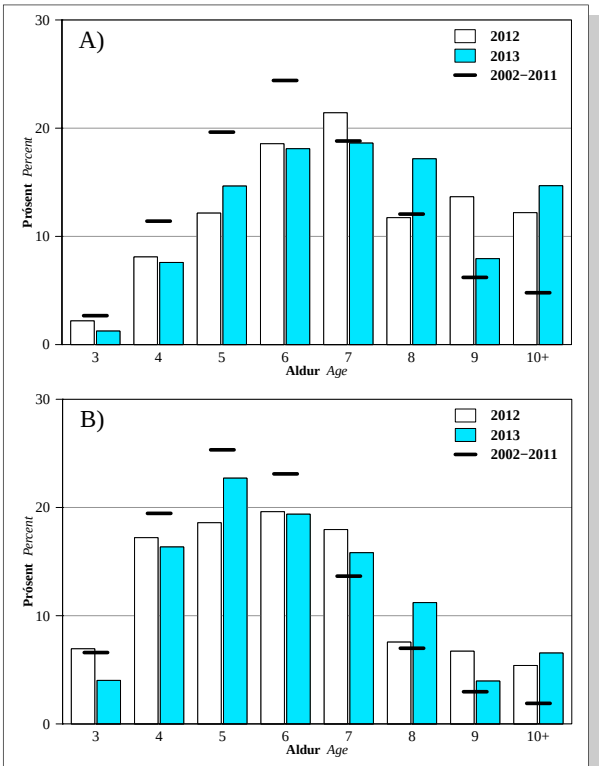
Mynd 2.1.8. **Þorskur**. Stærð hrygningarstofns samkvæmt stofnmati og þróun aflabragða í stofnmælingu með netum 1996–2012.

*Fig. 2.1.8. **Cod**. Spawning stock biomass according to stock assessment and average catches in the gillnet survey 1996–2012.*



Mynd 2.1.9. **Þorskur.** Stærð hrygningar- og viðmiðunarstofns frá árinu 1975 ásamt framreikningum til ársins 2016 miðað við að afli verði samkvæmt aflareglu.

*Fig 2.1.9. **Cod.** Spawning and reference stock size from 1975 and projection to 2016 based on harvest control rule.*



Mynd 2.1.10. **Þorskur.** Spá um hlutfallslega aldursdreifingu í aflanum í þyngd (A) og í fjölda (B) árin 2012–2013 ásamt meðalaldursdreifingu áranna 2002–2011.

*Fig. 2.1.10. **Cod**. Prognosis of percentage age distribution by weight (A) and by numbers (B) in the 2012 and 2013 catches. Mean age distribution during the period 2002–2011 is also shown.*

2011 was about 964 thousand tonnes (now estimated about 944 thousand tonnes) and the spawning stock about 362 thousand tonnes (now 367 thousand tonnes).

Estimates of the size of reference stock in 2012 which are based on catch at age from the fishery and SMH are about 20% higher than estimates based on catch at age from the fishery and SMB. When data from both surveys are used the stock assessment falls in between the two. The SMH was cancelled in the fall of 2011 due to a union strike but results from 1996-2010 are still used in assessment.

Groundfish surveys using gillnets (SMN) have been conducted annually since 1996 and the measured index should be an indication of the spawning stock but is not used in the stock assessment. Although the indices from the SMN are rather different from the estimates of spawning stock biomass, both have grown considerably over the last few years (figure 2.1.8).

In the projection of stock size (figure 2.1.9) the uncertainty in the description of trends in mean weight and size estimates of developing year classes is combined with causes of skew from other sources. Projections are shown up to 2016 and currently there are size estimates of most of the year classes that will comprise the stock until that time.

Projections indicate that if the catch rule is followed both the spawning stock and the reference stock will likely grow in the coming years (table 2.1.2). TAC will probably increase to just less than 250 thousand tonnes in 2016. There is, however, considerable uncertainty (figure 2.19) and some likelihood that the stock will decrease somewhat from the size it is now.

The recruitment that these projections to 2016 are based on is close to average sized year classes, considering that mean recruitment from year classes 2006-2011 is estimated at about 150 million. Yield per recruit has been in the range of 1.5-1.9 kg depending on the growth of the individual so maximum yield from these year classes is in the range of 220-280 thousand tonnes.

It is expected that in the coming years older fish will represent a higher proportion of landings than they have in past years (figure 2.10). The expectation is that the proportion consisting of 10+ fish in landings will exceed 10%. Such a high proportion has not been seen since 1983 when the proportion of gillnets was three times as high as it is now.

In recent years, there have been limits on the mesh size of nets and closures of spawning grounds

during the spawning season. In light of the growing proportion of large cod, the MRI will review these limitations in the coming months to determine if they are still necessary.

2.1.6. Advice

According to the present stock assessment, the 20% catch rule, in which the total landings of the current quota year are considered, suggests 196 thousand tonnes in the quota year 2012/2013 (table 2.1.2). The Marine Research Institute emphasizes that before quota shares are allocated it is necessary to consider expected landings that are currently outside the total landings. Given the recent history, these landings could total about 5 000 tonnes in the next quota year.

2.1.7. Cod stocks in the Barents Sea

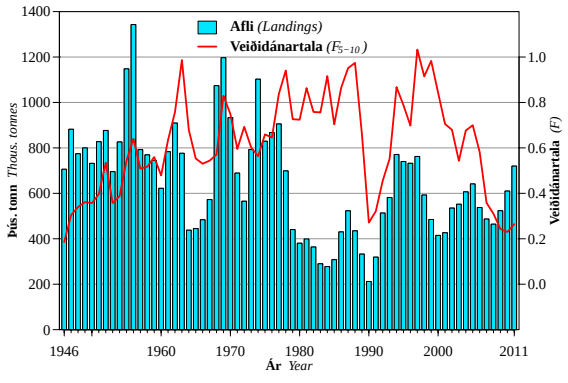
Landings of cod from the stocks in the Barents Sea from WWII until 1980 averaged about 800 thousand tonnes (figure 2.1.11). In the 1980's these landings averaged 350 thousand tonnes despite heavy fishing. Since the 1990's these landings have been 570 thousand tonnes on average. Icelanders fished for cod in the Barents Sea and around Svalbard in the first part of the twentieth century. Fishing there ceased for a long time, or until 1993. In the period 1998-2011 Icelandic landings from this stock have increased from 1 500 to just less than 13 thousand tonnes.

Recruitment has been close to average in recent years, fishing mortality has fallen to about 0.25 and stock size has increased considerably. ICES recommends that fishing follow the current catch rule in 2013. According to the rule, the TAC will be 940 thousand tonnes and fishing mortality will be 0.30.

2.1.8. Cod stocks near Greenland

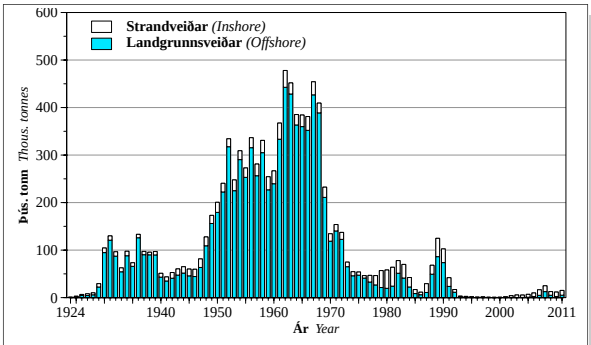
Significant cod harvesting on the Greenland shelf began around 1925 and landings in 1931 were about 20 thousand tonnes. Following a period of relatively little fishing from 1940-1945, landings increased steadily and reached a peak of 450 thousand tonnes in 1962. Landings remained steady in the range of 350-430 thousand tonnes until 1968, but decreased rapidly and were only 100 thousand tonnes in 1973 (figure 2.1.12). Since then, landings have been very small with the exception of two periods: 1979-1981 and 1988-1990. The increase in landings in these periods can be traced back to large year classes from 1973, 1984 and 1985. From 1990 until 2001 landings were insignificant, often under 1 000 tonnes. In the years 1998-2008 landings increased again and peaked just below 25 thousand tonnes in 2008. This increase is in part due to a large year class from 2003, this year class is estimated to be only a third as large as that of 1984. Landings last year were more than 16 thousand tonnes, thereof 11 thousand tonnes were caught in fjords along the west coast of Greenland. Stock assessments indicate that the 2003 year class has greatly diminished by now.

ICES recommends that cod harvesting along western Greenland continue to be very limited.



Mynd 2.1.11. **Þorskur í Barentshafi**. Heildarafli (þús. tonna) og veiðidánartölur (F) 5–10 ára árin 1946–2011.

*Fig. 2.1.11. **Northeast Arctic Cod**. Annual landings (thous. tonnes) 1946–2011 and mean F_{5-10} during the same period.*



Mynd 2.1.12. **Þorskur við Grænland**. Heildarafli (þús. tonna) árin 1924–2011.

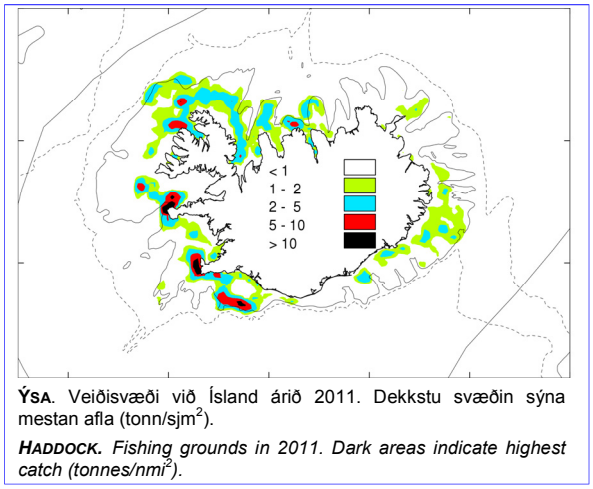
*Fig. 2.1.12. **Greenland cod**. Total landings (thous. tonnes) since 1924.*

2.2. HADDOCK *Melanogrammus aeglefinus*

2.2.1. Landings, effort, and age distribution in landings

Haddock landings in 2011 were about 49 thousand tonnes or about 23% less than in 2010. For the quota year 2011/2012 the Marine Research Institute (MRI) recommended a TAC of 37 thousand tonnes but the allocated total quota was 45 thousand tonnes (table 2.2.1). In the first eight months of the current quota year landed catch was 2% more than landings from the same time period last year, or 39 thousand tonnes.

Figure 2.2.1 shows haddock landings by gear for the period 1982-2011 and landings from 1950 are in table 3.2.1. In the last seven years the proportion of landings caught by longline and Danish seine has been high compared to previous years. Haddock landings in 2011 can be divided by gear so that 42% was caught with bottom trawls, 43% with longline, 14% with Danish seine, and less than 1% with gillnets. Compared to quota year 2010 the proportion of longline fishing increased by 5% while the proportion of bottom trawl decreased by 3% and Danish seine decreased by 2%.



ÝSA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

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

The age distribution of the landings in 2011 is shown in figure 2.2.2 and landings by numbers at age are shown in table 3.2.2. The 2003 year class was about 26% of the haddock stock in biomass compared to 47% and 57% in 2009 and 2008, respectively. Year classes from 2004-2006 were about 40% and the 2007 year class was 27% of the biomass in landings.

The results of studies of discards of haddock indicate that in the period 1991-1998 discards were 8-20% of the number of landed fish but this has decreased to 2-6% over the last decade. Discards in 2011 were considered proportionally little as in previous years.

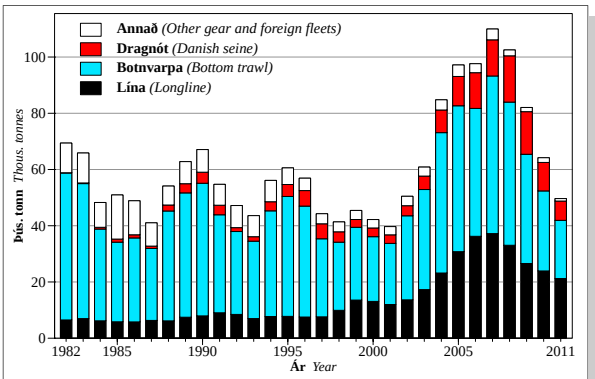
2.2.2. Mean weight and sexual maturity

Mean weight at age (table 3.2.3) is calculated with data from the spring groundfish survey (SMB). Mean weight has been very low in recent years but it

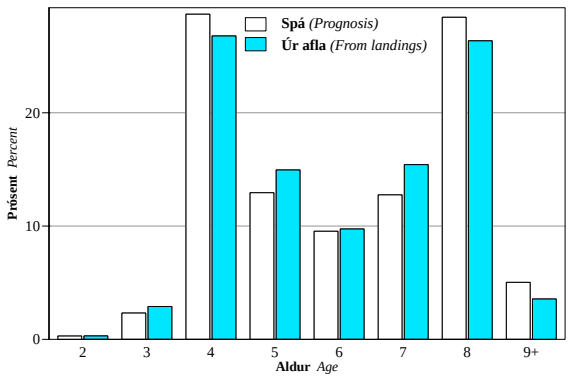
TAFLA 2.2.1.
ÝSA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonna) 1984–2011/2012.
HADDOCK. *TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1984–2011/2012.*

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra *Landings (others)* [1]	Afli alls *Total landings*
1984[1]	55	60	47	1	48
1985[1]	45	60	50	1	51
1986[1]	50	60	47	1	48
1987[1]	50	60	40	1	41
1988[1]	60	65	53	1	54
1989[1]	60	65	62	1	63
1990[1]	60	65	66	1	67
1991[2]	38	48	40	1	41
1991/92[3]	50	50	47	1	48
1992/93[3]	60	65	47	1	48
1993/94[3]	65	65	56	1	57
1994/95[3]	65	65	60	1	61
1995/96[3]	55	60	53	1	54
1996/97[3]	40	45	50	1	51
1997/98[3]	40	45	37	1	38
1998/99[3]	35	35	45	1	46
1999/00[3]	35	35	41	1	40
2000/01[3]	30	30	39	1	40
2001/02[3]	30	41	44	1	45
2002/03[3]	55	55	55	1	56
2003/04[3]	75	75	78	1	79
2004/05[3]	90	90	96	1	97
2005/06[3]	105	105	97	1	98
2006/07[3]	95	105	100	2	102
2007/08[3]	95	100	110	1	111
2008/09[3]	83	93	89	1	90
2009/10[3]	57	63	68	1	69
2010/11[3]	45	50	50	0	51
2011/12[3]	37	45			

[1] Almanaksár. *Calendar year.*
[2] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[3] Fiskveiðiárið september–ágúst. *Quota year September–August.*

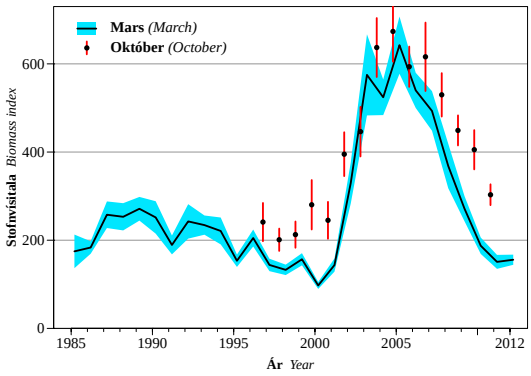


Mynd 2.2.1. **ÝSA**. Afli í þús. tonna eftir veiðarfærum árin 1982–2011.
Fig. 2.2.1. ***HADDOCK****. Total landings (thous. tonnes) 1982–2011 by gear type.*



Mynd 2.2.2. **Ýsa**. Aldursdreifing í afla 2011 (% af þyngd). Spá frá maí 2011 og mat ári síðar byggt á gögnum úr afla.

*Fig. 2.2.2. **Haddock**. Age distribution in the 2011 catch (% by biomass). Prognosis in May 2011 and estimate 2011 based on samples from landings.*



Mynd 2.2.3. **Ýsa**. Heildarvísitölur (í þyngd) úr stofnmælingum í mars og október. Skyggða svæðið og lóðréttu línurnar sýna eitt staðalfrávik í mati á vísitölunum.

*Fig. 2.2.3. **Haddock**. Total biomass indices in the Icelandic groundfish surveys in March (line) and October (dots). Shaded area and vertical lines show one standard deviation in the estimate.*

did increase much from 2010 until 2012. The mean weight of older age groups is still rather low, but the younger age groups are close to or above the average. Mean weight has always been somewhat variable and most often more so in large year classes. The 2003 year class was very large and consistent with that, it was very light at age. The youngest year classes of haddock are estimated to be small and thus their mean weight is higher than the mean weight of previous years. The low mean weight of large year classes is observable immediately at two years of age but after that growth is often similar to that of smaller year classes. From 2005-2009 growth across all year classes in the stock was slow, but the haddock stock was then very large. Over the years 2010 and 2011 growth rate has increased greatly.

Mean weight at age in commercial catches (table 3.2.4) follows the mean weight in the survey rather well. Mean weight of the youngest year classes is much larger than in the survey; of course, effort targets haddock that have reached a certain size.

Maturity by age is estimated using data from the SMB (table 3.2.5). Proportion mature was much lower in the years 1985-1990 in relation to later years, even though mean weight at the same time was rather high. The proportion mature by length has changed little in recent years but proportion mature by age has followed growth trends, and is lower in the slow-growing year classes.

2.2.3. Groundfish survey

All age groups of haddock are well represented in the groundfish survey and therefore an accurate estimate of the size of the year class is attainable immediately at the first year of life.

Age disaggregated indices from the groundfish survey are shown in tables 3.2.6 and 3.2.7. In the SMB year classes from 1998-2000, 2002, 2003, and 2007 were large, those from 2001, 2008-2011 were small, and year classes from 2004-2006 were closer to average. Total biomass indices in the groundfish survey (figure 2.2.3) increased much in the years 2001-2003 when the biomass of the large year classes from 1998-2000 grew quickly. Total biomass indices were very high in 2004-2006 and the measurement error relatively low because of the even distribution of haddock. The biomass indices have declined rapidly since 2005 due to lack of recruitment.

2.2.4. Assumptions of the stock assessment

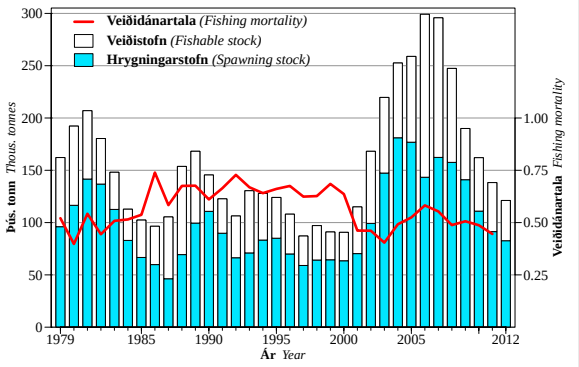
In the estimation of the size of haddock stock a few different models are used which are all based on age disaggregated landings and age disaggregated indices from the groundfish surveys in March and October.

The expected mortality rate caused by other factors than fishing (recorded landings) is 0.2 for the entire period. In projections it is expected that in 2012 growth rate will be similar to that in 2011 when it was just over the average of the period 1985-2010. Furthermore, it is taken into consideration that slow-growing year classes come into the harvest later than others. Landings in 2012 are assumed to be 44 thousand tonnes.

2.2.5. Stock status and prognoses

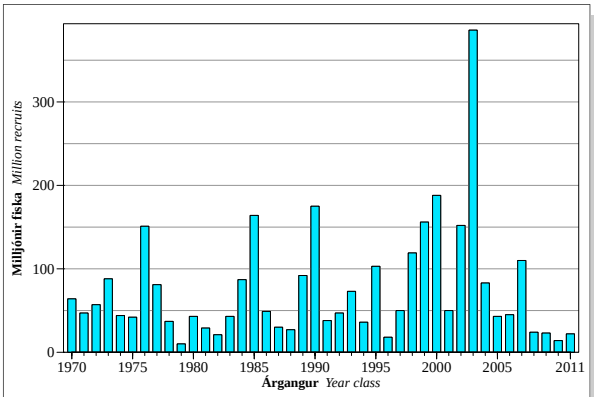
All stock assessment models show that the haddock stock is declining which is to be expected as average year classes disappear out of the stock and small year classes take their place. There is some discrepancy between models that use data from the SMB and those that use the autumn groundfish survey (SMH). Models using SMB data indicate a smaller stock which is to be expected considering that the indices from the SMB have decreased faster than those from the SMH. The advice is based on a model that uses both data sets for consistency.

Biomass of fish age three and older in the beginning 2012 is now estimated at 121 thousand tonnes (figure 2.2.4 and table 3.2.8). Mean fishing mortality for 4-7 year old haddock in 2011 (figure 2.2.4 and table 3.2.8) is estimated at about 0.45



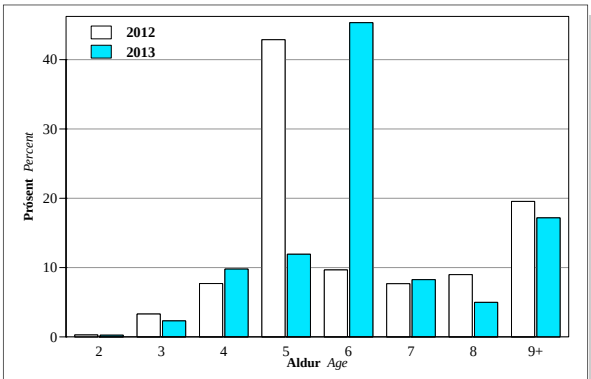
Mynd 2.2.4. **Ýsa**. Stærð hrygningarstofns, stærð veiðistofns (þriggja ára og eldri) 1979–2012 og meðalveiðidánartala (F) 4–7 ára ýsu 1979–2011.

*Fig. 2.2.4. **Haddock**. Biomass of spawning stock and fishable stock (ages 3+) in 1979–2012 and fishing mortality (ages 4–7) in 1979–2011.*



Mynd 2.2.5. **Ýsa**. Áætluð stærð ýsuárganganna 1970–2011. Fjöldi við tveggja ára aldur (í milljónum).

*Fig. 2.2.5. **Haddock**. Estimated size of year classes 1970–2011 at age 2 (in millions).*



Mynd 2.2.6. **Ýsa**. Spá um aldursdreifingu (% af þyngd) í afla 2012 og 2013.

*Fig. 2.2.6. **Haddock**. Prognosis of percentage age distribution (in biomass) in 2012 and 2013 landings.*

which is well above the limit at which management was aiming. Fishing mortality in 2012 is estimated at 0.40 given landings of 44 thousand tonnes (table 2.2.2).

The year classes from 2008-2011 are all estimated to be very weak (figure 2.2.5), on average about 20 million two year old recruits. This number will mean about 16 thousand tonnes total landings at most from each year class and assuming that yield per recruit will be about 800 grams, as has been seen with year classes of similar size in the last few decades.

It is expected that the 2003 year class will be 16% of the landings in 2012 by weight and 10% in 2013 when it is 10 years old. The year class from 2007 will be a large portion of landings in the coming years, 43% by weight in 2012 and 46% in 2013 (figure 2.2.6).

In past years the estimate of growth rate has been the main source of uncertainty in the stock assessment of haddock. There is substantial uncertainty about the growth rates in the coming years but also about the numbers of individuals in year classes as reflected in more than 20% difference between estimates based on the SMB and those based on results of the SMH.

2.2.6. Harvest rules

In the years 2006-2009 the MRI recommended that the average fishing mortality of haddock aged 4-7 should not go over 0.35. The reason for this was that poor growth in previous years led to year classes entering the fishable stock slower than before and that had an effect on fishing practices. This led to a decrease in the fishing mortality as it was intended.

At the request of the Minister of Fisheries and Agriculture, the MRI has been working for the last few years on propositions toward a management strategy and harvest rules for haddock. The institute has examined several options and in this process

TAFLA 2.2.2.

Ýsa. Áætluð áhrif mismunandi aflahámarks á stofnstærð (þús. tonn) árið 2014.

***Haddock**. Projection of stock and spawning stock biomass (thous. tonnes) in 2014 for different management strategies.*

2012				2013				2014	
Áætlaður afli *Pred. landings*	3+ stofn 3+ *stock*	Hr. stofn *Sp. stock*	*F*[1)]	Afla-mark *TAC*	3+ stofn 3+ *stock*	Hr. stofn *Sp. stock*	*F*[1)]	3+ stofn 3+ *stock*	Hr. stofn *Sp. stock*
44	121	83	0.40	27	100	85	0.28	89	76
				30	100	85	0.32	86	73
				32	100	85	0.35	85	71
				35	100	85	0.39	81	68

[1)] F=Veiðidánartala 4–7 ára ýsu. *F=Fishing mortality of age groups 4–7.*

tried to take into account the growth and variation in recruitment. According to the present proposal roughly 40% of estimated biomass 45 cm and larger would be harvested from the beginning of the quota year. Blim for the spawning stock is defined as the historical minimum, which is 45 thousand tonnes. According to calculations such a harvest rule would lead to a low probability that the stock drop below Blim if recruitment remains as it has been in recent decades. If the stock drops below Btrigger there will be a slow decrease of harvest rate. This proposal has been presented to policy makers and stakeholders. According to the presently proposed harvest rule, TAC would be 32 thousand tonnes in the quota year 2012/2013.

2.2.7. Proposals for TAC in the quota year 2012/2013

Table 2.2.1 shows proposals from the MRI, policy decisions, and haddock landings from 1984 and table 2.2.2 shows the estimated effects of various TAC levels on stock size in the coming years.

The haddock stock should continue to decrease in coming years when small year classes from 2008-2011 enter the spawning stock and it is likely that stock will decline to an historical minimum in 2014-2015. In order to decrease this risk the MRI recommends that the TAC for haddock in quota year 2012/2013 be 32 thousand tonnes in agreement with the standing proposed catch rule.

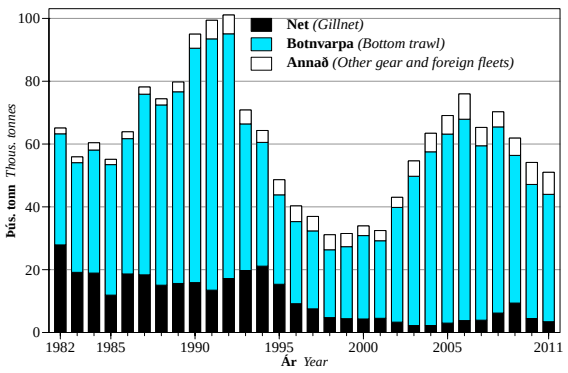
2.3. SAITHE *Pollachius virens*

2.3.1. Landings and year class distribution

Saithe landings in 2011 were more than 51 thousand tonnes, about 3 000 tonnes less than 2010 (figure 2.3.1 and table 3.3.1). In the last decade landings from Icelandic waters reached a minimum in 1998-2001 at over 30 thousand tonnes. From 2001 landings increased and were over 76 thousand tonnes in 2006, but a decreasing trend has followed since. Landings in 2010/2011 was over 52 thousand tonnes but TAC was 50 thousand tonnes (table 2.3.1).

The proportion of bottom trawl in total catches in 2011 was 80% while 7% was caught by gillnet; these are similar proportions to the average since 2000. The prominent change in catch proportion by gear occurred in the 1980's and 1990's, when gillnetting averaged 26% from 1982-1996 but then about 10% after that period.

Landings by age in 2011 are shown in figure 2.3.2 along with predictions from the 2011 stock assessment. Catch at age from 1980-2011 is shown in table 3.3.2. In 2011 the proportion of age 3 saithe was 12% and age 4 fish were about 29%. Less was caught of age 3-6 saithe than had been predicted; conversely the proportion of older fish was higher than expected.

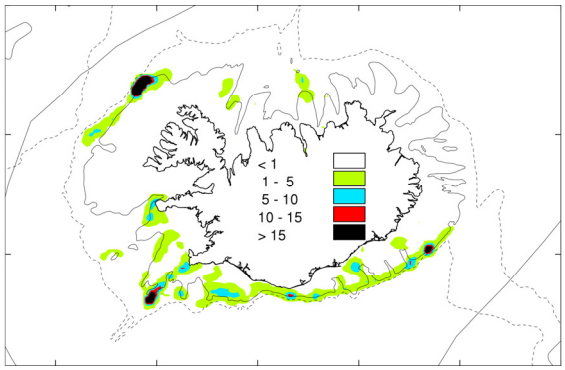


Mynd 2.3.1. **UFSI**. Heildarafli (þús. tonn) árin 1982–2011 eftir veiðarfærum.

Fig. 2.3.1. ***SAITHE****. Total landings (thous. tonnes) 1982–2011 by gear type.*

2.3.2. Mean weight and maturity

Mean weight at age was unusually low in 2005-2009 but has increased and is now close to the historical average for ages 4-8 (table 3.3.3). In the saithe stock there is a negative correlation between year class size and mean weight. Also, there are indications that mean weight of year classes stagnates or decreases with age. Such changes have been interpreted as indications that a large number of slow-growing saithe have entered Icelandic waters. It is, however, difficult to distinguish between density and environmental factors as being the cause of



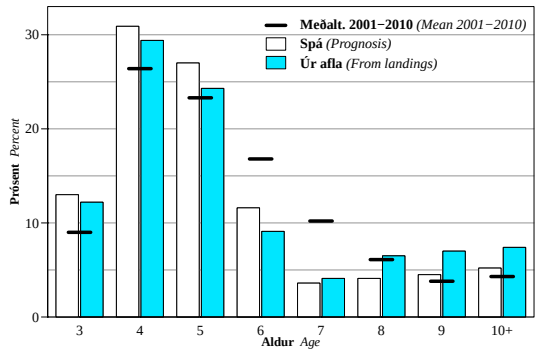
UFSI. Veiðisvæði við Ísland árið 2011. Öll veiðarfæri sýnd. Dekkstu svæðin sýna mesta veiði (tonn/sjm^2).

SAITHE*. Fishing grounds in 2011. All gears. The dark areas indicate highest catch (tonnes/nmi^2).*

TAFLA 2.3.1.
UFSI. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonna) 1984–2011/12.
SAITHE*. TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1984–2011/12.*

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)* [1]	Afli alls *Total landings*
1984[1]	65	70	60	2	63
1985[1]	60	70	55	2	57
1986[1]	60	70	64	1	65
1987[1]	65	70	78	2	81
1988[1]	75	80	74	3	77
1989[1]	80	80	80	3	82
1990[1]	90	90	95	3	98
1991[2]	65	65	69	2	71
1991/92[3]	70	75	86	2	88
1992/93[3]	80	92	76	2	78
1993/94[3]	75	85	67	2	69
1994/95[3]	70	75	50	1	61
1995/96[3]	65	70	40	1	41
1996/97[3]	50	50	37	1	38
1997/98[3]	30	30	32	1	33
1998/99[3]	30	30	31	1	32
1999/00[3]	25	30	30	0	30
2000/01[3]	25	30	32	0	32
2001/02[3]	25[4]	37[5]	36	0	36
2002/03[3]	35	45[6]	47	0	47
2003/04[3]	50	50	56	0	56
2004/05[3]	70	70	70	1	71
2005/06[3]	80	80	78	0	78
2006/07[3]	80	80	66	0	66
2007/08[3]	60	80	68	0	68
2008/09[3]	50	65	62	0	62
2009/10[3]	35	50	58	0	58
2010/11[3]	40	50	52	1	52
2011/12[3]	45	52			

[1] Almanaksárið. *Calendar year.*
[2] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[3] Fiskveiðiárið september–ágúst. *Quota year September–August.*
[4] Alþjóðahafrannsóknaráðið lagði til svæðalokanir og að bein sókn í ufsa yrði bönnuð. *ICES recommended area closures and no directed saithe fishing.*
[5] Heildaraflamark hækkað úr 30 í 37 við lok ársins 2001. *National TAC increased from 30 to 37 thous. tonnes at end of 2001.*
[6] Heildaraflamark hækkað úr 37 í 45 í upphafi árs 2003. *National TAC increased from 37 to 45 thous. tonnes at beginning of 2003.*



Mynd 2.3.2. **Ufsi**. Aldursdreifing í afla 2011 (% af fjölda) borin saman við spá frá í fyrra. Meðalaldursdreifing áranna 2001–2010 er jafnframt sýnd.

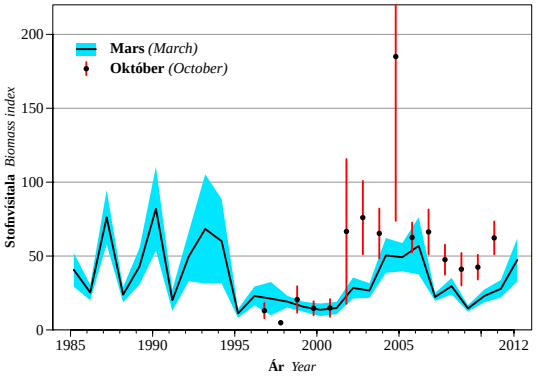
*Fig. 2.3.2. **Saithe**. Age distribution in the 2011 catch (% by number) compared to last year's prediction. Mean age distribution (2001–2010) is also shown.*

decreased growth and mean weight or whether mean weight decreases because of an influx of saithe from other waters.

Mean weight of saithe in the groundfish survey in March (SMB) shows similar trends as weight in landings (table 3.3.3 and 3.3.4). In the groundfish survey there is more variation in mean weight within each age group than in the catches. In the assessment the fishable biomass and spawning biomass are calculated using the weight at age in landings.

The mean weights for ages 4-9 in the 2012 catches are predicted with a model using the weights of the same year classes from the previous year and weights from SMB in the current year as predictor variables. On the other hand, mean weights of ages 3 and 10-14 saithe are estimated from the average of the last three years. It is assumed in projections that mean weights in landings in coming years will be similar to those in 2012.

Information about maturity at age is obtained in the groundfish survey (table 3.3.5), but considerable variability is seen in estimates of proportion mature from one year to the next. This is explained in part by difficulties in obtaining samples from landings and variability in where saithe is caught in the groundfish survey. Maturity is estimated with a model that uses data from the SMB and projections use the results of this model from the current year.



Mynd 2.3.3. **Ufsi**. Heildarvísitölur (í þyngd) úr stofnmælingum í mars og október. Skyggða svæðið og lóðréttu línurnar sýna eitt staðalfrávik í mati á vísitölunum.

*Fig. 2.3.3. **Saithe**. Total biomass indices in the Icelandic groundfish surveys in March and October. Shaded area and vertical lines show one standard deviation in the estimate.*

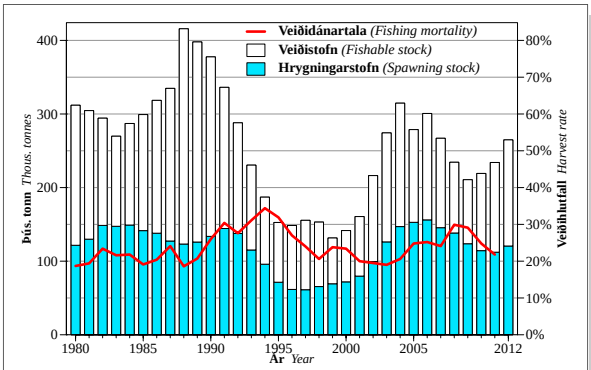
2.3.3. Groundfish survey

Saithe is rather poorly sampled in the survey with bottom trawl because it is a schooling fish that often stays some distance from the bottom. This is reflected in survey indices which show great variation from one year to the next, especially in 1996 (figure 2.3.3). Variation in biomass indices is the main source of uncertainty in the assessment of saithe. Despite the fact that saithe are rather poorly sampled in the groundfish survey, it is possible to use the indices from the SMB to estimate stock size (table 3.3.6). Total biomass indices from the SMB were relatively high in 2004-2006, about 50% lower in 2007-2011, but increased again in 2012 (figure 2.3.3). The autumn groundfish survey (SMH) and commercial CPUE provide a similar description of trends in the stock.

2.3.4. Stock status and projections

A catch-at-age model (ADCAM) is used in the estimation of stock size based on commercial catch at age and survey catch at age. Selectivity is fixed within three periods: 1980-1996, 1997-2003 and from 2004-present. The beginning of the second period is marked by the decreased proportion of gillnets from 1997. The beginning of the third period is marked by indications within the data that selectivity has shifted increasingly toward smaller fish in recent years.

The spawning stock in the beginning of 2012 was estimated at about 121 thousand tonnes and the fishable stock (age 4+) at 265 thousand tonnes (figure 2.3.4 and table 3.3.7). Both the fishable stock and the spawning stock have decreased somewhat since 2006. Mean fishing mortality in 2011 is estimated to be 0.26 and harvest rate (landings/ fishable stock) was 22%.



Mynd 2.3.4. **Ufsi**. Stærð hrygningarstofns og veiðistofns 1980–2012 og veiðihlutfall (afli/veiðistofn) 1980–2011.

*Fig. 2.3.4. **Saithe**. Biomass of spawning stock and fishable stock (ages 4+) 1980–2012 and harvest rate (landings/fishable stock) in 1980–2011.*

TAFLA 2.3.2.
UFSI. Áhrif mismunandi aflamarks á áætlaða stærð stofnsins (þús. tonna) árið 2014.
SAITHE. *Projection of stock and spawning stock biomass (thous. tonnes) in 2014 for different management strategies.*

2012					2013			2014	
Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn. stock*	*F*[1)]	Afli *Catch*	Aflamark *TAC*	Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn. stock*	*F*[1)]	Stofn 4+ *Stock 4+*	Hrygn. stofn *Spawn. stock*
265	121	0.24	52	45	259	130	0.20	264	146
				50	259	130	0.22	259	143
				55	259	130	0.25	253	139
				60	259	130	0.28	246	134

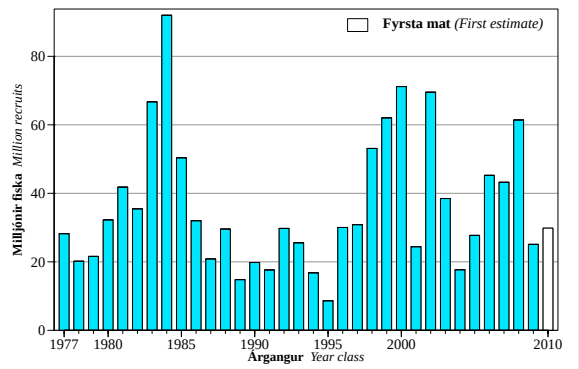
[1)] F = Meðalveiðidánartala 4–9 ára ufsa. *Mean fishing mortality of age groups 4–9.*

Strong year classes from 1998-2000 and 2002 made the fishable stock rather large in 2003-2007; landings in those years averaged 65 thousand tonnes and fishing mortality was near 0.3. As these year classes disappeared from the stock, catch levels remained high, resulting in higher fishing mortality, around 0.35 and harvest rate of about 30%, in 2008 and 2009.

Recruitment is estimated as numbers at age 3. Year classes 1998-2000 and 2002 are estimated as large, but recruitment after that has been average (figure 2.3.5). The estimated size of the 2008 year class is still somewhat uncertain because while SMB indicates a large year class, both age disaggregated landings and the groundfish survey from last year indicate a year class that is slightly above average.

In projections the landings in 2012 are expected to be 52 thousand tonnes based on a comparison of the results of fishing in this calendar year compared to those of 2011. Projections suggest that the spawning stock in the beginning of 2013 will be 130 thousand tonnes which is rather larger than the spawning stock at the beginning of 2012, but that the fishable stock will decrease slightly from 265 to 259 thousand tonnes. Predicted effects of various TAC levels on the stock size are shown in table 2.3.2.

The ADCAM model predicts a considerably larger stock size than in previous years and gives higher estimates than other stock assessment models that have been considered. The difference lies mainly in the estimated size of the 2008 year class and this uncertainty should decrease when data are added next year. If the 2008 year class turns out to be smaller than it is now thought to be, the stock size estimate this year will most likely turn out to be an over-estimation.



Mynd. 2.3.5. **UFSI**. Stærð árganganna 1977–2010. Fjöldi við þriggja ára aldur (í milljónum).

Fig. 2.3.5. ***SAITHE.*** *Size of year classes 1977–2010 at age 3 (in millions).*

2.3.5. Recommendations of TAC for quota year 2012/2013

Table 2.3.1 shows the recommended TAC from the Marine Research Institute, official policy decisions, and saithe landings from 1984. Early in 2010, work began under the direction of the International Council for the Exploration of the Sea (ICES) to estimate reference points and fishing mortality rates that provide maximum sustainable yield from the saithe stock in Icelandic waters. Blim was defined as the historical minimum, 65 thousand tonnes. The results suggest that MSY of saithe will be achieved with a similar catch rule (20%) as that used in management of Icelandic cod. This harvest rule is comparable to an average fishing mortality of up to 0.28 for saithe ages 4-9.

More detailed analysis was presented to an ICES working group this spring, where a 20% harvest rule was shown to provide more stable landings than a fixed mean fishing mortality because the harvest rule takes into account last year's advice which decreases the effects of variable stock size estimates. In addition, the harvest rule is not as sensitive to changes in selectivity that are common in the Icelandic saithe fishery. The analysis this spring also highlighted the fact that increased fishing pressure on young saithe, as has been practiced in recent years, decreases the potential yield of the stock. According to ICES, a management strategy that includes a harvest rule as described above conforms with international conservation perspectives, as well as the goal of Icelandic policy makers to maintain sustainable exploitation of fish stocks and maximize sustainable yield. These results have been presented to the government for further discussion and examination.

Until both a management strategy and a harvest rule are provided, recommendations of the MRI are based on the average of last year's advice and 20% of the current estimated fishable stock size. The

Marine Research Institute recommends that TAC for saithe in the quota year 2012/2013 should be no more than 49 thousand tonnes.

2.4. GOLDEN REDFISH *Sebastes marinus*
NORWAY REDFISH *Sebastes viviparus*

2.4.1. Golden redfish

2.4.1.1. Landings, effort and age distribution in landings

Golden redfish in the East Greenland/Iceland/Faeroes region is considered as a single stock. In the last two decades 90-98% of the total landings of golden redfish in this region were caught within the Icelandic EEZ (table 3.4.1 and figure 2.4.1). Total landings were highest in 1982 at 130 thousand tonnes, but after that annual catches decreased steadily and from 1993-2011 annual catch ranged from 33-51 thousand tonnes. Total landings in 2011 were 42 thousand tonnes and over 95% of these landings came from Icelandic waters.

Landings on the east coast of Greenland increased from over 200 tonnes in 2009 to almost 1 700 tonnes in 2010 and 2011, which is the largest catch there since the beginning of the 1990's. In the Faeroes golden redfish landings have decreased considerably in recent years and totalled only 500-600 tonnes in 2006-2011, which is the lowest catch since 1978.

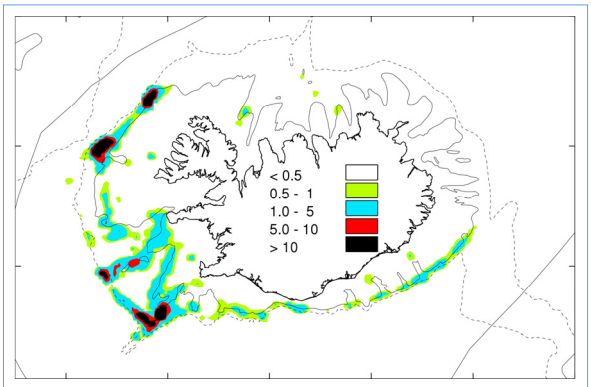
The majority of the golden redfish that is landed from Icelandic waters is caught with bottom trawl. CPUE in bottom trawls has been relatively steady from 1978-present, with a temporary decrease from 1992-1999 and an increase in recent years (figure 2.4.1).

Two strong year classes from 1985 and 1990 provided the majority of catches from 1995-2008. In recent years the proportion of these year classes has been decreasing and in 2011 year classes from 1996-2001 represented most of the catch (figure 2.4.2).

2.4.1.2. Groundfish survey

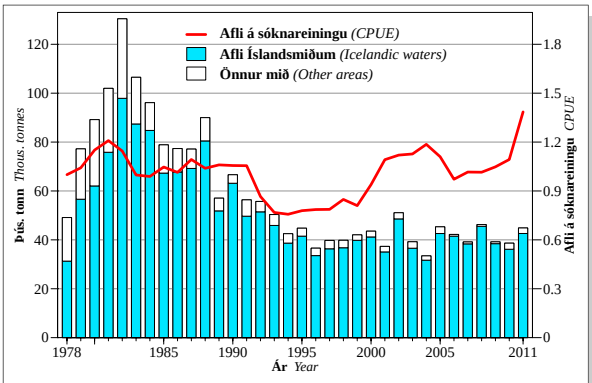
Total biomass indices in the Icelandic groundfish survey in March (SMB) and from the Icelandic autumn groundfish survey (SMH) are shown in figure 2.4.3. There are no measurements from SMH in 2011. The index that is presented now is different from those that have been used in past years in that the division of fishing grounds into areas has been revised. Also, now the daily vertical migrations of redfish stocks are taken into consideration because there is considerable variation in catches depending on what time of day nets are cast. Redfish are mostly close to the bottom during the day and up in the water column at night.

The total biomass index from SMB shows that the stock decreased rapidly from 1985 until 1995 (figure 2.4.3). Trends in landings from the bottom trawl fleet (figure 2.4.1) in the same period are consistent with the survey. From the year 1996 the biomass index of golden redfish has increased, with a few fluctuations, and in 2012 it was the highest it has been since the beginning of the record in 1985. The biomass index of the fishable stock (figure 2.4.4) has also increased rapidly in recent years and it is now over 90% of what it was at the beginning of the record.



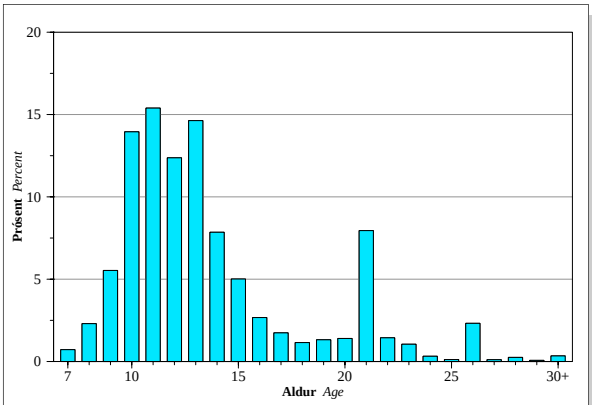
GULLKARFI. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn á sjm^2).

GOLDEN REDFISH. *Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



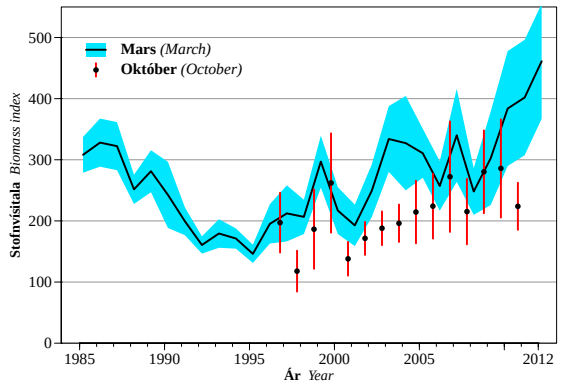
Mynd 2.4.1. **GULLKARFI**. Afli á Íslandsmiðum, heildarafli á svæðinu Austur-Grænland/Ísland/Færeyjar 1978–2011 og vísitala afla á togtíma árin 1978–2011.

Fig. 2.4.1. ***GOLDEN REDFISH****. Landings from Icelandic grounds 1978–2011, total landings from East Greenland, Icelandic and Faroese waters and CPUE index during 1978–2011.*



Mynd 2.4.2. **GULLKARFI**. Aldursdreifing afla (% af fjölda) 2011.

Fig. 2.4.2. ***GOLDEN REDFISH.*** *Age distribution in the 2011 catch (% by number).*



Mynd 2.4.3. **GULLKARFI**. Heildarvísitölur (í þyngd) úr stofnmælingum botnfiska í mars 1985–2012 og október 1996–2010. Skyggða svæðið og lóðréttu línurnar sýna eitt staðalfrávik í mati á vísitölum.

*Fig. 2.4.3. **GOLDEN REDFISH.** Total biomass indices in the Icelandic groundfish surveys in March 1985–2012 and October 1996–2010. Shaded area and vertical lines show one standard deviation in the estimate.*

Indices from the SMH cover a shorter period than SMB. The total biomass index increased steadily from 2000 until 2009 and then decreased somewhat in 2010. Variance is greater in SMH than in SMB because the sampling stations are sparser.

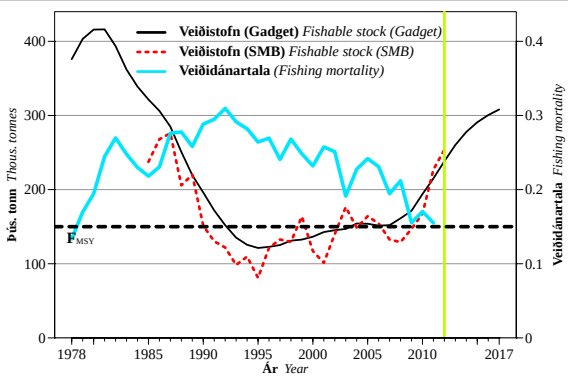
Age disaggregated indices from the SMH indicate that year classes from 1996-2001 are above average size and they are increasingly joining the fishable stock. Unlike the strong year classes from 1985 and 1990, the 1996-2001 year classes were not abundant as young fish in the survey, which indicates that increase in the stock is due to dispersal from other waters.

2.4.1.3. Stock status

Data about the age disaggregated landings are available since 1995 and give some indication of the speed at which year classes disappear from landings. In the period from 2000-2011 the number of the 1985 year class in catches has decreased by about 20% per year, which is somewhat higher than that which would give maximum sustainable yield.

In recent years, the Gadget model (see Appendix 5.1) has been used in estimation of the stock size of golden redfish and the effects of various fishing effort in coming years. Figure 2.4.4 shows trends in the fishable stock and fishing mortality of golden redfish that has completely joined the fishable stock (15-25 years old). The results of the Gadget model indicate some growth in the stock last year. The reason for this is, first and foremost, decreased importance of year class recruitment from Icelandic surveys, and this is thought to show clearly that a large portion of the year classes that have entered the fishable stock in recent years have not been recorded as young fish in the survey of Icelandic golden redfish.

The results of the Gadget model show that the fishing mortality that leads to maximum sustainable yield (FMSY) is near 0.15. Fishing mortality has been above this limit since 1979, but has decreased steadily since 1992 and was, in 2011, near 0.16. Projections (figure 2.4.4) suggest that if fishing mortality remains near 0.15 the spawning stock would grow in the coming years.



Mynd 2.4.4. **GULLKARFI**. Stærð veiðistofns (þús tonn) 1978–2012 og veiðidánartala (F) 1978–2011 samkvæmt Gadget líkani, ásamt framreikningum til ársins 2017 miðað við að sókn sé takmörkuð við þann fiskveiðidauða sem gefur hámarksafrakstur (F_{MSY}). Einnig er sýnd vísitala veiðistofns (35 cm og stærri) úr SMB 1985–2012.

*Fig. 2.4.4. **GOLDEN REDFISH.** Fishable stock size (thous. tonnes) 1978–2012, F 1978–2011 based on the Gadget model and the development of the fishable biomass, projecting with F_{MSY}=0.15 to 2017. Also shown is the index of the fishable biomass (35 cm and larger) in the Icelandic groundfish survey in March 1985–2012.*

2.4.1.4. Stock status and TAC recommendations in the quota year 2012/2013

Table 2.4.1 shows TAC recommendations from the Marine Research Institute (MRI), governmental policy decisions and total landings from Icelandic waters in the quota year 1994/1995.

The International Council for the Exploration of the Sea (ICES) asserts that it is not possible to base policy decisions upon the Gadget model before

TAFLA 2.4.1
GULLKARFI. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn) 1994/1995–2011/2012.
***GOLDEN REDFISH.** TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1994/1995–2011/2012.*

Ár / *Year*	Tillaga gullkarfi *Rec. TAC S.marinus*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Aðrar þjóðir *Landings (others)*	Heildarafli *Total landings*
1994/95	25	77[1)]	40	-	40
1995/96	25	65[1)]	37	-	37
1996/97	30	65[1)]	36	-	36
1997/98	35	65[1)]	35	-	35
1998/99	35	65[1)]	41	-	41
1999/00	35	60[1)]	37	-	37
2000/01	35	57[1)]	37	-	37
2001/02	30	65[1)]	46	-	46
2002/03	35	60[1)]	42	-	42
2003/04	35	57[1)]	30	-	30
2004/05	35	57[1)]	40	-	40
2005/06	35	57[1)]	38	-	38
2006/07	35	57[1)]	42	-	42
2007/08	35	57[1)]	35	-	35
2008/09	30	50[1)]	44	-	44
2009/10	30	50[1)]	36	-	36
2010/11	30	37.5	39	-	39
2011/12	40	40	-	-	-

[1)] Sameiginlega fyrir gull- og djúpkarfa. *Both Sebastes marinus and demersal S. mentella.*

analysis has been conducted on the characteristics of the model. The council proposes that golden redfish landings from the East Greanland/Iceland/Faeroes region should not exceed 40 thousand tonnes and this is the mean landings for the last 15 years. The MRI recommends that effort be limited to FMSY according to the Gadget model. This would mean that landings in the East Greenland/Iceland/Faeroes region would not exceed 45 thousand tonnes in the quota year 2012/2013.

2.4.2. Norway redfish (*Sebastes viviparus*)

2.4.2.1. Fishing and landings

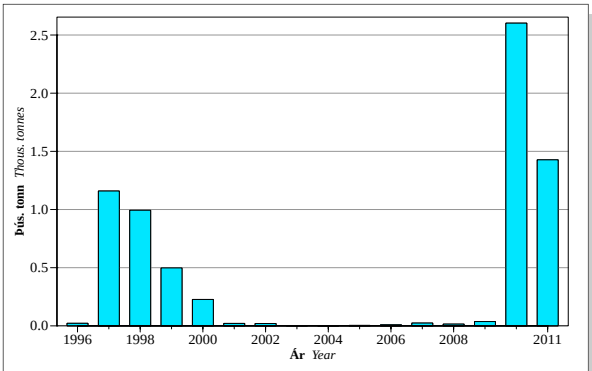
Norway redfish is the smallest Sebastes species in Icelandic waters and only rarely grows to more than 30 cm in length. It is found primarily south and southwest of Iceland and is most often caught as bycatch in golden redfish harvesting. Little is known about the biology of Norway redfish other than the fact that it grows slowly and can have a very long lifespan as do other redfish species.

During the period 1997-1999 experimental fishing of Norway redfish took place off the southern coast of Iceland. Landings totalled under 1 200 tonnes in 1997 but decreased rapidly and were only 200 tonnes in the year 2000 (figure 2.4.5). Landings were very small from 2001-1009 but in 2010 direct targeting of Norway redfish began again and a new historical maximum of 2 600 tonnes were landed. Total landings in 2011 were 1 400 tonnes.

The Norway redfish that were caught in 2011 were mostly in the size range 18-30 cm and mean length was just over 23 cm.

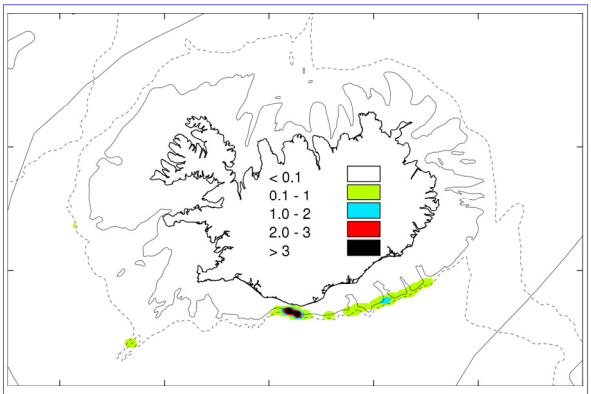
2.4.2.2. Stock survey

Norway redfish is caught over a wide area in the SMB and the most common length range is 15-25 cm. Most of the landings come from southeast of Iceland but distribution of this species is often rather uneven which is reflected in the uncertainty in indices (figure 2.4.6). The total biomass index of Norway redfish has been since measurements began in 1985.



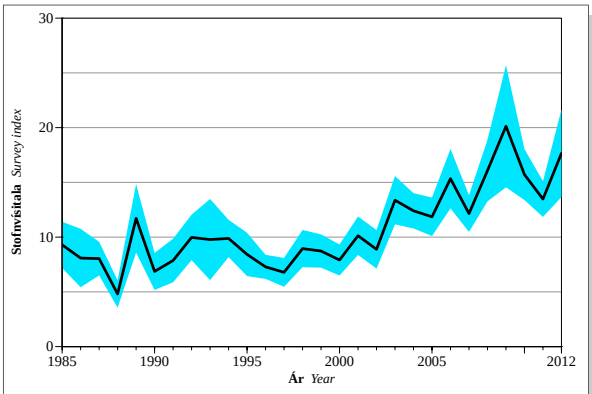
Mynd 2.4.5. **Litli karfi**. Landaður afli á íslandsmiðum árin 1996–2011.

*Fig. 2.4.5. **Sebastes viviparus**. Landings from Icelandic grounds 1996–2011.*



Litli karfi. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***Sebastes viviparus**. Fishing grounds in 2011. Dark areas indicate highest catch (tonnes/nmi^2).*



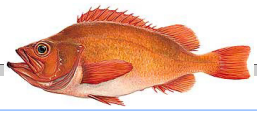
Mynd 2.4.6. **Litli karfi**. Heildarvísitölur (í þyngd) úr stofnmælingum botnfiska í mars 1985–2012. Skyggða svæðið sýnir eitt staðalfrávik í mati á vísitölum.

*Fig. 2.4.6. **Sebastes viviparus**. Total biomass indices in the Icelandic groundfish surveys in March 1985–2012. Shaded area shows one standard deviation in the estimate.*

2.4.2.3. Stock status and TAC recommendations in the quota year 2012/2013

Since studies and fishing have been somewhat limited until recently, there is little known about the stock size and sustainable catch levels. Just as with other Sebastes species in Icelandic waters, Norway redfish is a slow-growing species and quite long-lived. For this reason, it is important that fishing pressure be limited. Furthermore, there is very little known about the recruitment of this species. For the purposes of caution, the MRI recommends that strict limits be placed on fishing of Norway redfish until a greater understanding of its resistance to fishing pressure has been attained and that TAC not exceed 1 500 tonnes in the 2012/2013 quota year.

2.5. DEEP SEA AND PELAGIC REDFISH *Sebastes mentella*



2.5.1. Population structure

Deep sea redfish on the shelf slopes of Greenland, Iceland and the Faeroes and pelagic redfish in the Greenland Sea and nearby waters are considered to be a single species. Harvesting of deep sea redfish began in the beginning of the 1950's but harvesting of pelagic redfish began in 1982. The International Council for the Exploration of the Sea (ICES) distinguishes deep sea redfish in Icelandic waters and pelagic redfish in the Greenland Sea and surroundings waters into three biologically separate populations:

1. Deep sea redfish on the slope of the Icelandic shelf.
2. Shallow pelagic redfish in the Greenland Sea, at less than 500 m depth.
3. Deep pelagic redfish in the Greenland Sea, at more than 500 m depth.

The Greenlandic shelf and shelf slopes are thought to be the nursery for the redfish described here in all three regions.

It is considered to be impossible to manage Sebastes mentella harvesting based on the depth of catch. So, ICES has proposed four management areas for fishing effort targeting these redfish:

1. The slopes of the Icelandic shelf.
2. Southwest Greenland Sea.
3. Northeast Greenland Sea.
4. Deep sea redfish on the eastern Greenlandic shelf.

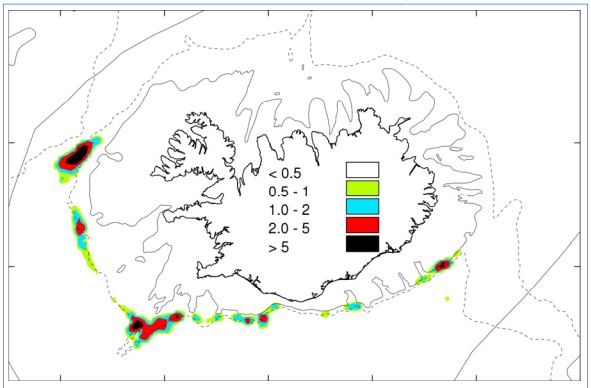
The area management described above in the Greenland Sea is based on the fact that the majority of redfish caught in the Northeast Greenland Sea is from more than 500 m depth but the majority caught in the Southwest Greenland Sea are from less than 500 m depth.

Pelagic redfish are harvested from the international waters of the Greenland Sea and the EEZ of both Greenland and Iceland. The Northeast Atlantic Fisheries Commission (NEAFC) manages this fishing activity following recommendations from ICES.

In this chapter, discussion focuses on each of these three populations separately; that is deep sea redfish on the slope of the Icelandic shelf, pelagic redfish found at less than 500 m depth (shallow pelagic stock) and pelagic redfish found at more than 500 m depth (deep pelagic stock).

2.5.2. Deep sea redfish on the slope of the Icelandic shelf

Deep sea redfish in Icelandic waters has traditionally been fished by bottom trawl. In the 1990's there was rather heavy fishing with pelagic trawl but these have since stopped. The main fishing grounds are on the shelf slope at about 450-600 m depth, from Víkurál west of the West Fjords, south and east to about the Rosengarten which is on the western edge of the Faeroes Ridge.



DJÚPKARFI. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn á sjm^2).

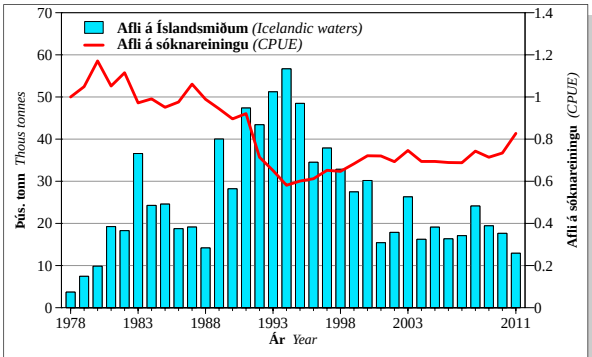
DEMERSAL DEEP SEA REDFISH. *Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

2.5.2.1. Catch and effort

Estimated deep sea redfish landings in 2011 were under 13 thousand tonnes, which is 5 000 less than the year before and the smallest total catch since 1980 (table 3.5.1 and figure 2.5.1). Landings peaked in 1994 at about 57 thousand tonnes, they were in the range of 29-38 thousand tonnes in 1996-2000 and 17-28 thousand tonnes in 2001-2010.

CPUE in bottom trawls decreased rapidly from 1986-1994 but increased slowly until the year 2000 (figure 2.5.1). During the years 200-2010 CPUE changed little but in 2011 it was higher than it had been since 1991, though still lower than from 1978-1991.

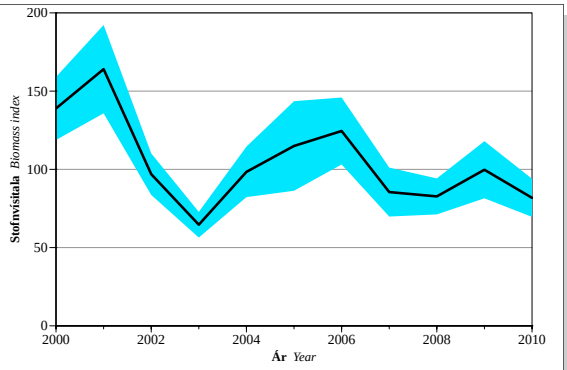
2.5.2.2. Status of the deep sea redfish stock



Mynd 2.5.1. **DJÚPKARFI**. Afli á Íslandsmiðum og afli á togtíma árin 1978–2011.

Fig. 2.5.1. ***DEMERSAL DEEP SEA REDFISH.*** *Landings from Icelandic grounds and CPUE during 1978–2011.*

The biomass indices for the deep sea redfish stock as measured by the autumn Icelandic groundfish survey (SMH) 2000-2010 is shown in figure 2.5.2. There was no groundfish survey in 2011. The biomass index was highest in 2001 but decreased considerably until 2003. It has remained relatively similar since then, but there is some variability between years. Small deep sea redfish (less than 30 cm) has also decreased considerably in this period, which indicates that there has been poor recruitment to the fishable stock.



Mynd 2.5.2. **DJÚPKARFI**. Stofnvísitala (þyngd) samkvæmt stofnmælingu botnfiska að hausti 2000–2010. Skyggða svæðið sýnir eitt staðalfrávik í mati á vísitölu veiðistofns.

*Fig. 2.5.2. **DEMERSAL DEEP SEA REDFISH**. Total survey biomass indices 2000–2010. Shaded area shows one standard deviation in the estimate of the fishable stock.*

In German groundfish surveys off the eastern coast of Greenland in the years 2003-2005 a large number of 20-30 cm redfish were measured. From 2006-2010 that length class decreased, but the 30+ cm increased. Little deep sea redfish was measured in 2011 and measurements from that year are the lowest since the beginning of the 1990's. The shelf of eastern Greenland is also thought to be the nursery for pelagic redfish and for this reason, it is unknown how much of the redfish measured here will join the fishable deep sea redfish stocks in the coming years.

2.5.2.3. Recommended TAC of deep sea redfish in the quota year 2012/2013

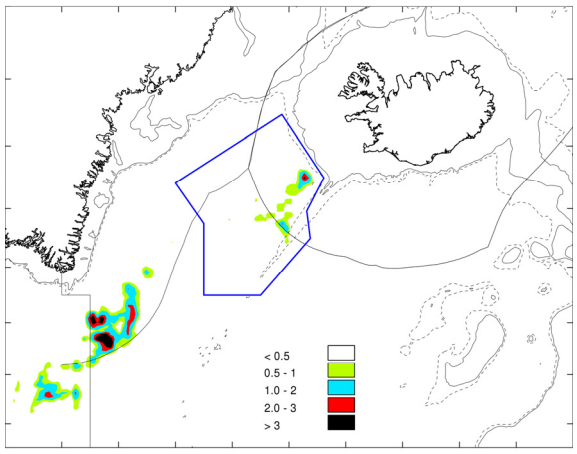
Table 2.5.1 shows the recommended TAC from the Marine Research Institute of Iceland (MRI) and ICES for deep sea redfish (which have historically included the East Greenland/Iceland/Faeroes region but were changed in the quota year 2010-2011 to include only Icelandic waters), governmental management decisions for TAC for Iceland and total catches from Icelandic waters for quota year 1994/1995.

The deep sea redfish is long-lived, slow-growing species and it reaches maturity around age 12. Such species are especially sensitive to heavy fishing pressure and a long time is required to recover following overfishing. Furthermore, the fishing mortality that provides maximum sustainable yield (FMSY) considerably lower than for short-lived species. For these reasons, it is necessary to use caution in harvesting this stock. There is little known about the yield capacity of deep sea redfish stocks and there is considerable uncertainty about the stock size of deep sea redfish on the slope of the Icelandic shelf. Age and length structured models are not used to assess the stock because little is known of the age distribution and because the time series are short. Thus, management advice is based on trends in SMH data. The fishable stock of deep sea redfish, according to the SMH, is small in comparison to that which was calculated in 2000. Although fishing

TAFLA 2.5.1.
DJÚPKARFI. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn) 1994/1995–2011/2012.
***DEMERSAL DEEP SEA REDFISH (S. MENTELLA)**. TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1994/1995–2011/2012.*

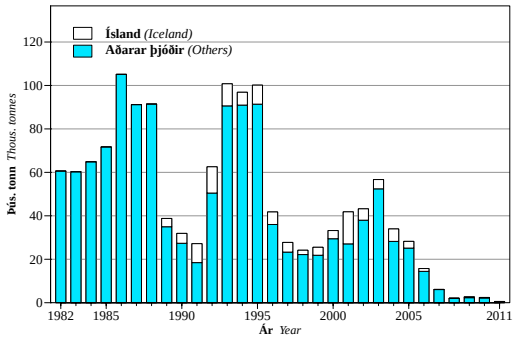
Ár *Year*	Tillaga djúpkarfi *Rec. TAC S.mentella*	Aflamark *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*
1994/95[2)]	40	77[1)]	52	1	53
1995/96[2)]	35	65[1)]	41	1	42
1996/97[2)]	35	65[1)]	38	1	39
1997/98[2)]	30	65[1)]	33	1	33
1998/99[2)]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

[1)] Sameiginlega fyrir gull- og djúpkarfa. *Both Sebastes marinus and demersal S. mentella.*
[2)] Tillögur um aflahámark fyrir Austur-Grænland/Ísland/Færeyjar. *TAC recommendation applied to East Greenland/Iceland/Faeroes.*



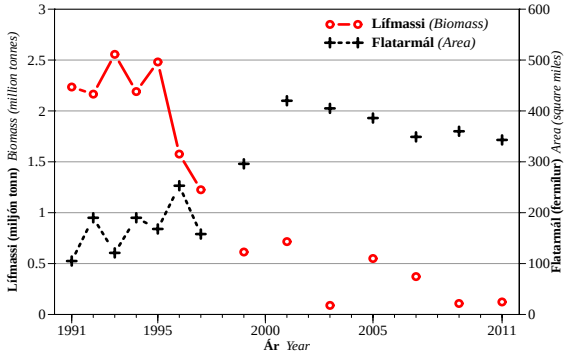
ÚTHAFSKARFI, EFRI STOFN. Veiðisvæði íslenskra skipa árin 2001–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2). Skilgreint veiðisvæði neðri stofns úthafskarfa er afmarkað á myndinni.

***SHALLOW PELAGIC REDFISH**. Fishing grounds of the Icelandic fleet in 2001–2011. Dark areas indicate highest catch (tonnes/nm^2). Also indicated is the region for the deep pelagic management unit.*



Mynd 2.5.3. **ÚTHAFSKARFI, EFRI STOFN**. Heildarafli og afli Íslendinga í Grænlandshafi árin 1982– 2011.

*Fig. 2.5.3. **SHALLOW PELAGIC REDFISH**. Total catch and Icelandic catch from the Irminger Sea 1982–2011.*



Mynd 2.5.4. **ÚTHAFSKARFI, EFRI STOFN**. Niðurstöður bergmálsmælinga og flatarmál mælingasvæðis frá árinu 1991.

*Fig. 2.5.4. **SHALLOW PELAGIC REDFISH**. Results of the acoustic estimate and size of the area surveyed since 1991.*

pressure has decreased, there has been no observable increase in the size of the fishable stock. ICES and the MRI recommend that harvesting of deep sea redfish in Icelandic waters be severely limited such that TAC in quota year 2012/2013 does not exceed 10 thousand tonnes.

2.5.3. Shallow pelagic redfish

2.5.3.1. Catch and effort

Harvesting of the shallow pelagic redfish stock, which lives shallower than 500 m depth, is mostly concentrated on the international waters of the Greenland Sea and in the Greenlandic EEZ, but some harvest does occur in Icelandic waters. Most harvesting occurs from July-October at less than 400 m depth.

Figure 2.5.3 shows total catches since the year 1982, table 3.5.2 shows catches by area and table 3.5.3 shows catches by nation. For the first five years landings ranged from 60-105 thousand tonnes but from 1989-1991 they decreased dramatically because of less effort. Annual landings increased anew to about 100 thousand tonnes between the years 1993-1995. From 1996-2005 landings were 25-55 thousand tonnes, and this decrease is explained in part by a switch in effort to increased harvesting of the deep pelagic redfish stock (see chapter 2.5.4). In the last six years fishing of the shallow pelagic redfish has decreased considerably and landings were below 600 tonnes in 2011, which is an historical minimum. No fishing occurred on the traditional shallow pelagic redfish grounds southeast and south of Hvarf and the reported landings were from the same fishing grounds as the deep pelagic redfish.

Icelandic landings increased from under 4 000 tonnes in 1989 to over 12 thousand tonnes in 1992 (table 3.5.3 and figure 2.5.3). From 1997-2002 Icelandic landings were 2-15 thousand tonnes, but they have decreased considerably in recent years and in 20111 total catch was 405 tonnes.

2.5.3.2. Stock status

The stock size of shallow pelagic redfish in the Greenland Sea was measured in the summer of 2011 on a collective cruise of Icelandic, German and Russian researchers. The results of sonar measurements indicated that biomass had decreased from 2.2 million tonnes in 1994 to about 120 thousand tonnes in 2011, which is roughly similar to biomass measured in 2009 (figure 2.5.4). Most shallow pelagic redfish were found south and southwest of Hvarf as in previous measurements. The next survey is planned for the summer of 2013.

2.5.3.3. TAC recommendations for the year 2013

Table 2.5.2 shows recommendations from ICES for TAC for both pelagic redfish stocks since 1989, Icelandic management policy decisions for TAC for Iceland since 1996, Icelandic landings and total catches since 1989. In the assignment of catch allowances since 2000, the Icelandic policy makers have separated the two pelagic stocks, in accordance with ICES recommendations.

Due to very negative trends in the biomass of shallow pelagic redfish, ICES has recommended that a closure of the stock be in effect from 2010 and onward. This recommendation stands for 2012.

NEAFC manages fishing of pelagic redfish. The commission has agreed to continue this until 2014. It has been officially decided to close the shallow pelagic redfish fishery to fishing because of the poor status of the stock. Russia has protested the closure and has set an independent TAC for Russian ships that fish both pelagic redfish stocks.

2.5.4. Deep pelagic redfish

2.5.4.1. Catch and effort

In the years 1992-1994 fishing practices developed that increasingly targeted the deep pelagic redfish stock, at more than 500 m depth, to the west of the Reykjanes Ridge near the Icelandic and Greenlandic national waters and even inside the Icelandic EEZ. This region is the main fishing

TAFLA 2.5.2.
ÚTHAFSKARFI, EFRI OG NEÐRI STOFNAR. Tillögur Alþjóðahafrannsóknaráðsins um aflahámark, heildaraflamark íslenskra skipa samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn) 1989–2012.
SHALLOW AND DEEP PELAGIC REDFISH. *TAC recommended by ICES, national TAC and landings (thous. tonnes) 1989–2012.*

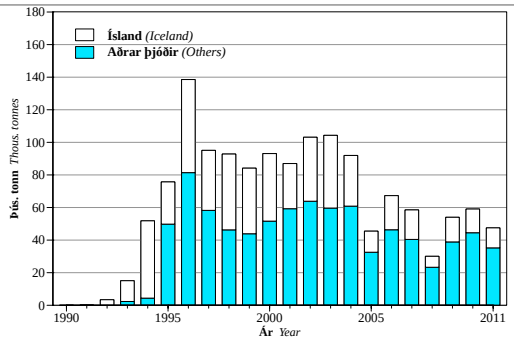
			Úthafskarfi, efri stofn *Shallow pelagic* S. mentella			Úthafskarfi, neðri stofn *Deep pelagic* S. mentella		
Ár *Year*	Tillaga *Rec. TAC*	Aflamark fyrir Ísland *National TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *Total landings*	Afli Íslendinga *Landings (Iceland)*	Afli annarra þjóða *Landings (others)*	Afli alls *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])	0.4	2.3	2.7	15.1	38.9	54.0
2010	20 (0[1])	21.1 (6.3[2])	0.2	2.2	2.4	14.6	44.5	59.1
2011	20 (0[1])	11.8 (0[2])	0.4	0.2	0.6	12.3	35.2	47.5
2012	20 (0[1])	9.8 (0[2])						

[1] Tillaga Alþjóðahafrannsóknaráðsins fyrir efri stofn úthafskarfa. *ICES reccomendation for shallow pelagic stock.*
[2] Úthlutað aflamark fyrir Suðursvæði (efri stofn). *TAC for Southern fishing area (shallow pelagic stock).*

grounds for deep pelagic redfish and it is often called the Northern Grounds. The fishing season is from April-July. Mainly, deep pelagic redfish of more than 40 cm length are caught and these are larger fish than that which is caught in the shallow pelagic redfish stocks. Since the year 1996 most of the pelagic redfish landings have come from this stock.

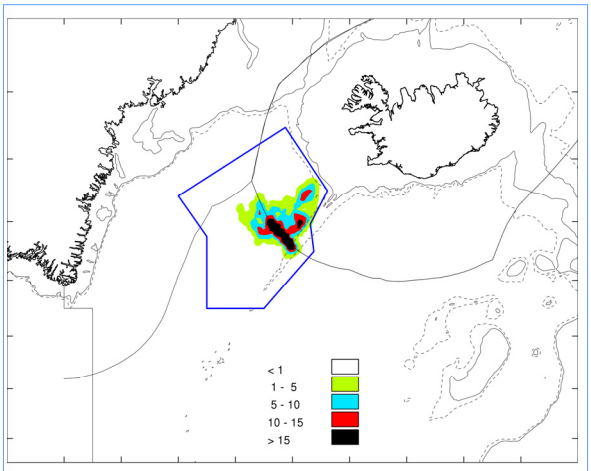
Table 3.5.2 and figure 2.5.5 show the estimated total catches since 1991 and table 3.5.4 shows landings by nation. Landings were in the range of 75-140 thousand tonnes from 1995-2004, with a peak in 1996. Since 2005 landings have decreased considerably, with total catches in the range of 30-67 thousand tonnes. The estimated landings in 2011 were over 47 thousand tonnes which is 12 tonnes less than landings in 2010.

Icelandic landings increased from under 3 000 tonnes in 1992 to 57 thousand tonnes in 1996 (table 3.5.4 and figure 2.5.4). From 1997-2004 Icelandic landings were 28-47 thousand tonnes. As has been the case for other nations, the Icelandic landings



Mynd 2.5.5. **ÚTHAFSKARFI, NEÐRI STOFN**. Heildarafli og afli Íslendinga í Grænlandshafi árin 1991– 2011.

Fig. 2.5.5. ***DEEP PELAGIC REDFISH.*** *Total catch and Icelandic catch from the Irminger Sea 1991–2011.*



ÚTHAFSKARFI, NEÐRI STOFN. Veiðisvæði íslenskra skipa árin 2004–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2). Skilgreint veiðisvæði neðri stofns úthafskarfa er afmarkað á myndinni.

DEEP PELAGIC REDFISH. *Fishing grounds of the Icelandic fleet in 2004–2011. Dark areas indicate highest catch (tonnes/nmi^2). The polygon indicates the region for the deep pelagic management unit.*

have decreased dramatically over recent years. Total landings in 2011 were over 12 thousand tonnes, which is a 2 000 ton decrease from the year before.

2.5.4.2. Stock status

Total biomass of the deep pelagic redfish stock in the Greenland Sea was measured in the summer of 2011 during a cooperative research cruise involving Icelandic, Russian and German scientists. This was the seventh time since 1999 that such an international research cruise was undertaken. In order to estimate stock size, researchers employed the trawl method because sonar methods have not been possible. Measurements from 2005 and 2007 were not compatible with measurements from other years due to differences in methods and a portion of the biomass recorded in these years might actually belong to the shallow pelagic redfish stock. The highest biomass of deep pelagic redfish was observed inside the Icelandic EEZ and on the border of the EEZ southwest of the Reykjanes Peninsula. In 2011 biomass was estimated at 475 thousand tonnes, which is similar to the estimate from 2009. The peak of deep pelagic redfish biomass was observed in 2001 when it reached about 1 million tonnes.

2.5.4.3. TAC recommendations for quota year 2013

Table 2.5.2 shows the TAC recommendations from ICES for both pelagic redfish stocks since 1989, Icelandic management policy decisions since 1996, Icelandic catches and total landings since 1989.

Little information is available about the age structure of deep pelagic redfish stock and the time series are short. For this reason, the use of models relying on age and length to estimate stock is impossible. Therefore, the advice is based on stock trends according to the international research cruise that is undertaken every other year since 1999. ICES recommends that TAC for quota year 2013 should not exceed 20 thousand tonnes, which is the same advice they have given for the last three years. The council asserts that because the stock is in decline it is necessary that effort be decreased, considering that effort has been far above the yield capacity of the stock.

NEAFC manages effort targeting pelagic redfish and has agreed that management policy should be in accordance with ICES advice by 2014. TAC for the quota year 2012 is 32 thousand tonnes, but after that it will decrease annually until 2014. That is, TAC will be 26 thousand tonnes in 2013 and 20 thousand tonnes in 2014. Allowable catches over this period will be reviewed in accordance of ICES advice. Also, part of this agreement is a division of the total landings by nation though until now each country has set its own unilateral TAC. The Icelandic share of the quota is 31% and TAC for Icelandic ships will be 10 thousand tonnes in 2012 and 8 thousand tonnes in 2013.

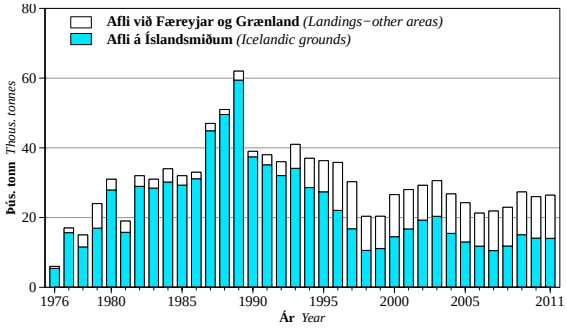
Russia has contested the agreement and considers the status of pelagic redfish to be far better than ICES states. In addition, they are dissatisfied with the division of the total landings between interested parties. With these issues of contention in mind, the Russians have decided upon a unilateral TAC for 2012 at 29 500 tonnes, which is the same as their total for 2011. This quota includes both redfish stocks which they consider a single stock, rather than two separate ones. Thus, the total landings for 2012 are about 55 thousand tonnes.

2.6. GREENLAND HALIBUT *Reinhardtius hippoglossoides*

The Greenland halibut found along the east coast of Greenland, around Iceland and the Faeroe Islands are considered as a single stock and management advice from the International Council for the Exploration of the Sea (ICES) and the Marine Research Institute of Iceland (MRI) are made considering this total region.

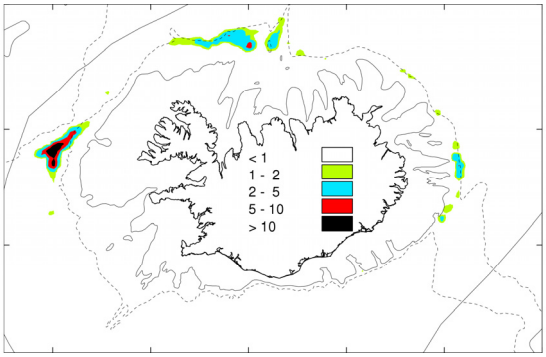
2.6.1. Catches and effort

Total landings of Greenland halibut in the region of East Greenland/Iceland/Faeroes was 26 thousand tonnes in 2011 (figure 2.6.1 and table 3.6.1), thereof 13 thousand tonnes were harvested from Icelandic waters. The Icelandic portion of the allotted landings was near or above 90% from 1982-1992, but decreased rapidly after this period and last year it was about half of total landings. TAC for Icelandic ships in the quota year 2010/2011 was 13 thousand tonnes and landed catch was just above 12 thousand tonnes.



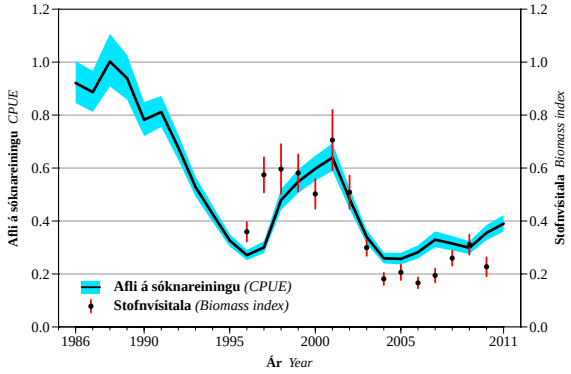
Mynd 2.6.1. **GRÁLÚÐA**. Afli á Íslandsmiðum og heildarafli (þús. tonna) við Ísland, Austur-Grænland og Færeyjar 1976–2011.

*Fig. 2.6.1. **GREENLAND HALIBUT**. Landings from Icelandic grounds and total landings (thous. tonnes) from East Greenland, Icelandic and Faroese waters 1976–2011.*



GRÁLÚÐA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***GREENLAND HALIBUT**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



Mynd 2.6.2. **GRÁLÚÐA**. Afli á sóknareiningu hjá íslenska togaraflotanum 1985–2011 og stofnvísitala úr stofnmælingu botnfiska að hausti 1996–2010.

*Fig. 2.6.2. **GREENLAND HALIBUT**. CPUE of the Icelandic fishing fleet 1985–2011 and biomass index from the Icelandic autumn survey 1996–2010.*

CPUE of the Icelandic trawler fleet was relatively stable from 1985-1989 but decreased after that to a low point in 1995-1997 (figure 2.6.2). CPUE during these three years was only less than 30% of the average for the years 1985-1989. CPUE doubled from 1998-2001, decreased by half until 2004 but has increased for the past few years. According to logbooks of foreign vessels fishing along the east coast of Greenland, catches have been relatively stable for the last three years.

2.6.2. Stock status

The autumn groundfish survey shows that the stock increased somewhat in the period from 1996-2001 but decreased to a low point in 2004-2007 (figure 2.6.2). The fall groundfish survey was cancelled in 2011 due to a labour strike but Greenland halibut in the northwest fishing grounds were examined. The limited data collected there do not indicate any change from the status of the past few years. Trends in bottom trawl landings have been in fairly good agreement with groundfish surveys. The same can be said about the groundfish surveys from East Greenland, which date back to 1998. These measurements along with historical trends in landings of the Icelandic trawler fleet indicate that the stock is still in a low point. Stock estimates with biomass-dynamic models based on total landings, biomass indices described above and CPUE from the Icelandic trawler fleet indicate more clearly that fishing mortality is high and that the stock is near an historical minimum, but still above the defined danger limits.

2.6.3. Projections and TAC recommendations for the quota year 2012/2013

Table 2.6.1 shows recommendations, official

Icelandic management policy decisions and Greenland halibut landings since 1984. No agreement has been reached between the Greenlandic, Icelandic and Faeroese about exploitation of the stock and division of total catches. The Icelandic government issued a TAC of 13 thousand tonnes within Icelandic waters for the current quota year, while Greenland's TAC is 12 thousand tonnes. Fishing in the Faeroes is managed by fishing days. In light of the fact that no agreement has been reached about management of the stock, ICES recommended that no direct fishing of Greenland halibut be allowed in 2012, and the year before ICES recommended a very low TAC as a preliminary step toward an international agreement about the exploitation of the Greenland halibut stock in the East Greenland/Iceland/Faeroes region.

ICES and the MRI recommend a TAC for Greenland halibut in the East Greenland/Iceland/ Faeroes region for quota year 2012/2013 of 20 thousand tonnes. This recommendation aims at attaining maximum sustainable yield, according to the biomass-dynamic model.

TAFLA 2.6.1.
GRÁLÚÐA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum íslenskra stjórnvalda og afli (þús. tonn) 1984–2011/2012.

GREENLAND HALIBUT. *TAC recommended by the Marine Research Institute, national TAC in Icelandic waters and landings (thous. tonnes) 1984–2011/2012.*

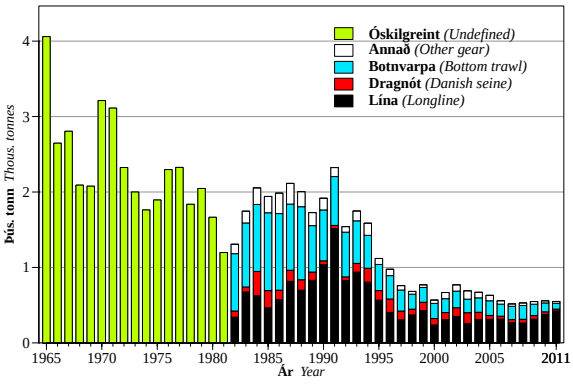
Ár	Tillaga	Aflamark fyrir Ísland[3]	Afli á Íslandsmiðum[3]	Afli á öðrum miðum[1]	Afli alls
Year	*Rec. TAC*	*National TAC in Icelandic waters[3]*	*Landings from Icelandic waters[3]*	*Landings in other areas[1]*	*Total landings*
1984[1]	25	30	30.2	3.9	34.1
1985[1]	25	30	29.2	2.9	32.2
1986[1]	25	30	31.3	2.0	33.1
1987[1]	25	30	44.9	1.9	46.8
1988[1]	30	30	49.6	1.7	51.3
1989[1]	30	30	59.4	2.1	61.1
1990[1]	30	30	37.4	2.0	39.4
1991[2]	27	33	31.2	2.5	33.7
1991/92[3]	25	25	30.3	3.5	33.8
1992/93[3]	30	30	34.5	6.7	41.3
1993/94[3]	25	30	29.5	8.4	37.6
1994/95[3]	30[4]	30	26.4	8.9	35.3
1995/96[3]	20[4]	20	22.3	13.8	36.1
1996/97[3]	15[4]	15	17.7	13.3	31.0
1997/98[3]	10[4]	10	11.0	9.8	20.8
1998/99[3]	10[4]	10	11.2	9.3	20.5
1999/00[3]	10[4]	10	11.5	12.0	23.5
2000/01[3]	20[4]	20	20.0	11.3	31.3
2001/02[3]	20[4]	20	19.2	9.9	29.1
2002/03[3]	23[4]	23	20.3	10.2	30.5
2003/04[3]	20[4]	23	15.8	11.3	27.1
2004/05[3]	15[4]	15	13.0	11.0	24.0
2005/06[3]	15[4]	15	12.7	9.5	22.2
2006/07[3]	15[4]	15	9.6	11.3	20.9
2007/08[3]	15[4]	15	9.7	11.1	20.8
2008/09[3]	5[4]	15	15.6	11.6	27.2
2009/10[3]	5[4]	12	14.1	11.6	25.7
2010/11[3]	5[4]	13	12.2	13.1	25.3
2011/12[3]	0[4]	13			

[1] Almanaksárið. *Calendar year.*
[2] Tímabilið janúar–ágúst 1991. *January–August 1991.*
[3] Fiskveiðiárið september–ágúst. *Quota year September–August.*
[4] Tillögur um aflahámark fyrir Austur-Grænland/Ísland/Færeyjar. *TAC recommendation applied to East Greenland/Iceland /Faeroes.*

2.7. HALIBUT *Hippoglossus hippoglossus*

2.7.1. Landings and effort

In 2011 the landed catch of halibut from Icelandic waters was about 550 tonnes. Icelandic landings were 526 tonnes, or about 96% of the total catch. Since 1996 landings from Icelandic waters has been below 1 000 tonnes. The historical record of halibut landings dates back to 1905 and the stock has never been as low as it has been in recent years. Total landings of halibut are shown in figure 2.7.1 and table 3.7.1.



Mynd 2.7.1. **LÚÐA**. Heildarafli (þús. tonn) árin 1965–2011 skipt eftir veiðarfærum.

*Fig. 2.7.1. **HALIBUT**. Total landings during the period 1965–2011 (thous. tonnes) divided by gear.*

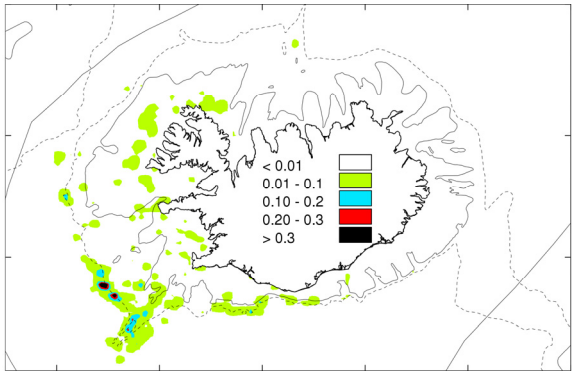
Landings taken by bottom trawl decreased steadily from over 1 000 tonnes in 1985-1986 to 200 tonnes in 1998 and then remained in the range of 110-220 tonnes until last year when it increased anew to a total of 400 tonnes due targeted fishing of the species with halibut longline (hawk weights). In recent years 70-90% of Icelandic catches have been taken with these two gears.

Halibut landings from Danish seine have never been a high proportion of the total catch. Last year 24 tonnes were landed with Danish seine.

2.7.2. Stock status

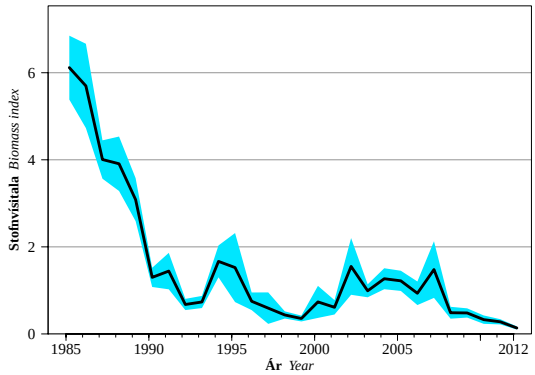
Biomass indices in spring groundfish surveys from 1985-2012 show similar trends as the CPUE of Danish seine. The biomass index decreased rapidly in the beginning of this period and has been low since 1992 (figure 2.7.2). These results support the assertion that the halibut stock was in rapid decline from 1985-1992 and that the stock is currently at an historical low.

Halibut that has been caught in the SMB is mostly 3-5 year old sexually immature fish. The abundance of this age group has been very low for just under two decades and this indicates that severe disturbance has occurred in the stock. This status has been persistent for so long that it is easy to foresee that the stock will remain at this low point for the coming years.



LÚÐA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***HALIBUT**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



Mynd 2.7.2. **LÚÐA**. Vísitala veiðistofns (stofnþyngd) í stofnmælingu í mars 1985–2012. Skyggða svæðið sýnir eitt staðalfrávik í mati á vísitölunni.

*Fig. 2.7.2. **HALIBUT**. Biomass index in the Icelandic groundfish survey in spring 1985–2012. The shaded area shows one standard deviation in the biomass estimate.*

2.7.3. Recommendations for quota year 2012/2013

In light of the extremely poor status of the halibut stock, the Ministry of Fisheries and Agriculture convened a committee with the task of examining conservation methods for this stock. The committee presented their results in January of 2011 concluding that the most effective method of conservation would be to ban direct targeting of halibut. As a result of this conclusion, the Marine Research Institute (MRI) reviewed all available information about possible methods to conserve the halibut stock. Furthermore, experienced captains of fishing vessels were contacted in order to increase the number of options

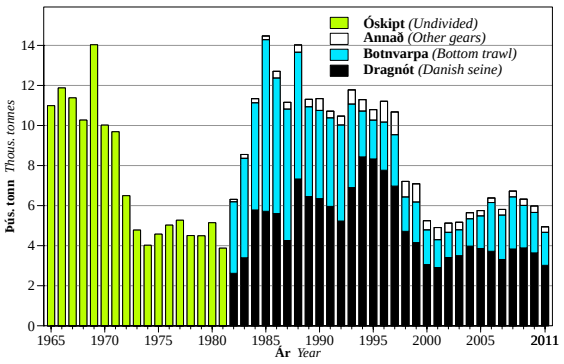
under consideration to try to restore the halibut stock. The result of this review was that the only realistic way to begin working against the decline of the halibut stock was to release all living halibut caught in fishing gear if there was a chance that the fish would survive.

In the wake of this review, the Ministry of Fisheries and Agriculture instituted management policy banning direct targeting of halibut through the use of hawk weights and requiring that all living halibut be released, no matter in what gear it was caught. This policy came into effect on 1 January, 2010. The MRI recommends that the search for further management methods continue and that the above policy remain until there is indication of restoration in the halibut stock.

2.8. PLAICE *Pleuronectes platessa*

2.8.1. Landings

Landed catches of plaice in 2011 were about 4 900 tonnes (figure 2.8.1 and table 3.8.1). Plaice catches in Icelandic waters since 1950 are shown in table 3.8.1. Landings were largest at 14 500 tonnes in 1985, they ranged from 10-14 thousand tonnes from 1986-1997 and in the range of 4 900-7 100 tones since 1998.



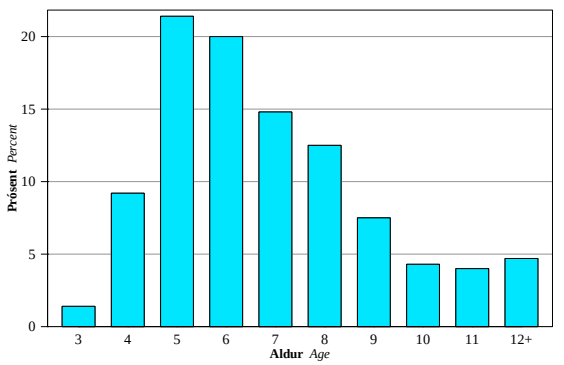
Mynd 2.8.1. **SKARKOLI**. Heildarafli (þús. tonna) árin 1965–2011 skipt eftir veiðarfærum.

*Fig. 2.8.1. **PLAICE**. Total landings during the period 1965–2011 (thous. tonnes) divided by gear.*

The main portion of the plaice catches have come from Danish seine fishing. In 1992 about half of the landings came from the bottom trawl sector but that proportion decreased to less than 20% in 1995. Since the year 1996 the proportion of landings caught in bottom trawl has increased and is now from 24-38%. Landings from other gears, including gillnets, were about 2% of the total last year.

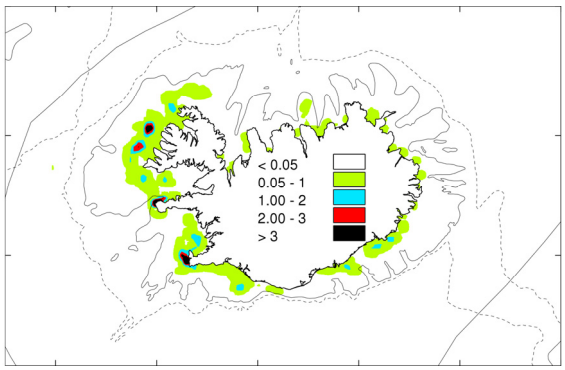
2.8.2. Cohort distribution, biomass index and CPUE

The age distribution of landings in 2011 (figure 2.8.2) shows that five and six year old plaice were the highest proportion of the catch. These two cohorts account for 41% of landed fish. In addition, the proportion of seven and eight year old plaice was somewhat high at around 15 and 12%.



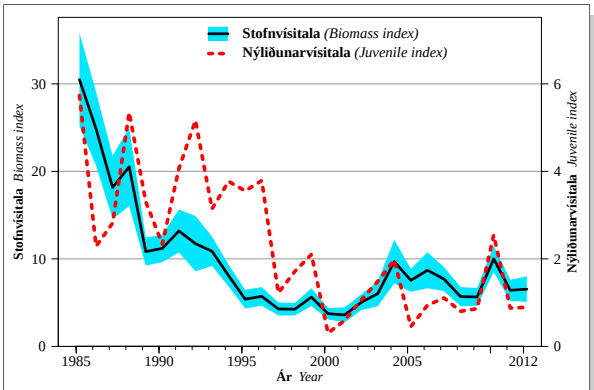
Mynd 2.8.2. **SKARKOLI**. Hlutfallsleg aldursdreifing (% af fjölda) í lönduðum afla 2011.

*Fig. 2.8.2. **PLAICE**. Percentage age distribution (% by numbers) of the 2011 landings.*



SKARKOLI. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***PLAICE**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

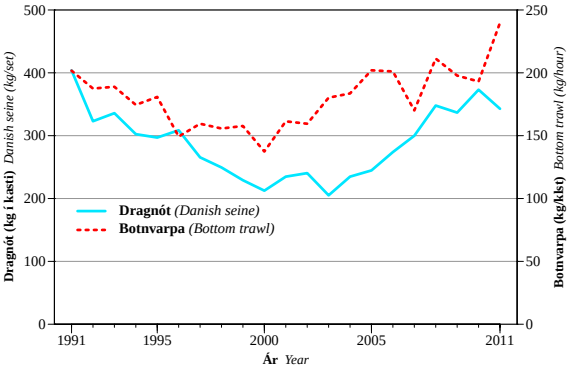


Mynd 2.8.3. **SKARKOLI**. Vísitölur veiðistofns (stofnþyngd) og ungfisks (fjöldi fiska) í stofnmælingu botnfiska í mars árin 1985–2012.

*Fig. 2.8.3. **PLAICE**. Indices for fishable stock (biomass) and juveniles (number of fish) in the groundfish survey in spring 1985–2012.*

Biomass indices from the spring groundfish survey (SMB) from 1985-2012 indicate that the fishable stock of plaice has decreased considerably since the period 1985-1995 (figure 2.8.3). Fishable biomass indices from the years 1997-2001 measured on average only 17% of that which was measured at the beginning of SMB research cruises in 1985 and less than half of that which was measured in 1991. Indices have, though, rather increased since 2001.

CPUE in Danish seine on the main fishing grounds, extending from Stokksnes west and north to Horn, is calculated as bycatch in hauls in which landed plaice are more than 10% of the haul. According to catch logs on Danish seine boats, the



Mynd 2.8.4. **SKARKOLI**. Afli á sóknareiningu (kg í kasti) hjá dragnótabátum og í botnvörpu (kg/klst) 1991–2011.

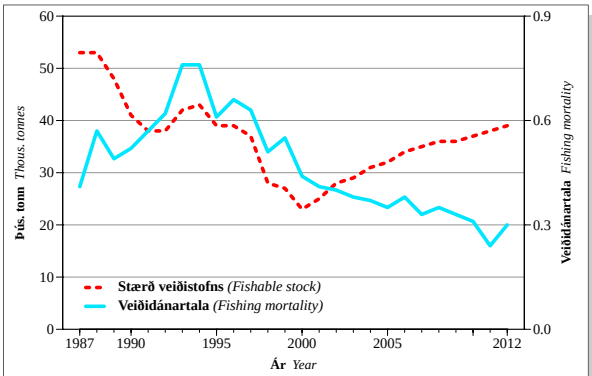
*Fig. 2.8.4. **PLAICE**. CPUE from seiners (kg/set) and bottom trawl vessels (kg/hour) in 1991–2011.*

CPUE in the aforementioned grounds decreased during the period 1991-2000, going from about 400 kg per haul to about 210 kg or haul, but it has increased in recent years and was 350 kg last year (figure 2.8.4).

CPUE from bottom trawlers (kg/h), where plaice catches were more than 25% of landings, decreased by about a third from 1991-2000, from 200 to 140 kg/h (figure 2.8.4). Since then, the landings have been increasing.

2.8.3. Stock status

Calculations on trends in stock size, built on an age-catch analysis, indicate that stocks decreased by more than half from 1993-2000 and reached an historical low around the year 2000 following a very high harvest rate and very poor recruitment. For the last 10 years, recruitment (number of age 3 fish) has been low but steady. Fishing mortality has, on the other hand, decreased by about half during this period and is now also at an historical low.



Mynd 2.8.5. **SKARKOLI**. Þróun stofnstærðar veiðistofns (> 30cm) 1987–2011 og fiskveiðidánartala 1987–2011 samkvæmt aldursaflagreiningu.

*Fig. 2.8.5. **PLAICE**. Fishable stock (> 30 cm) 1987–2011 and fishing mortality 1987–2011, based on CAEGIAN model.*

Tafla 2.8.1.
SKARKOLI. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 1991/92–2011/2012.

***PLAICE**. TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 1991/92–2011/2012.*

Fiskveiðiár *Quota year*	Tillaga *Recommended 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	

Coincidental to this decrease in fishing pressure, the biomass of the fishable stock has been increasing since 2000 and is now estimated at 40 thousand tonnes. Measurements of the size of year classes that are joining the fishable population are not available and therefore there is much uncertainty about the size of the up and coming cohorts.

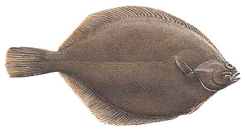
2.8.4. Projections and TAC recommendations for the quota year 2912/2913

Table 2.8.1 shows TAC recommendations from the Marine Research Institute (MRI) and the management policy decisions regarding total landings since 1991.

The MRI proposes that the 2012/2013 TAC for plaice be limited to 6 500 tonnes. Due to the assumption that recruitment will be similar to that of recent years and this proposal would reduce the fishing mortality to that which gives maximum sustainable yield from the stock.

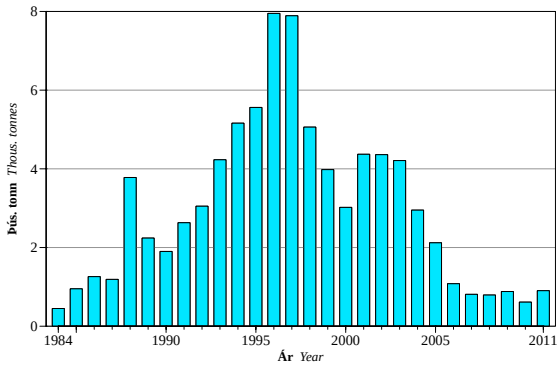
Furthermore, it is proposed that the spawning stock continue to be protected by area closures during the spawning season, as has been done since 2002.

2.9. DAB *Limanda limanda*



2.9.1. Catches and effort

Dab landings in 2011 were 903 tonnes. Up until the year 1984 dab was mainly caught as bycatch in harvesting of other species and was most often dcarded. Since 1984 landings of the species grew rather steadily and climaxed in 1996 and 1997 at about 8 000 tonnes (figure 2.9.1 and table 3.9.1). In the quota year 2010/2011 landings were about 810 tonnes, of which 600 tonnes was from the management area from Snæfellsnes south to Stokksnes.



Mynd 2.9.1. SANDKOLI. Heildarafli (þús. tonna) árin 1984–2011.

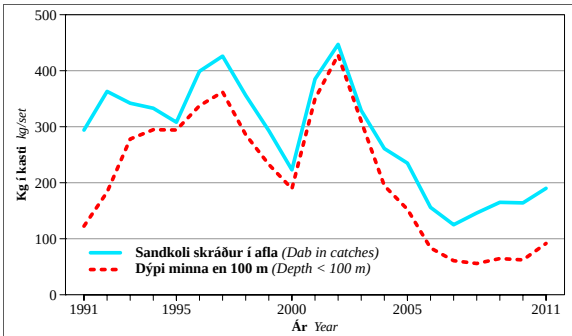
Fig. 2.9.1. DAB. Total landings in 1984–2011 (thous. tonnes).

Targeted dab fishing is heaviest in Faxi Bay, along Reykjanes Peninsula and along the southern coast to Stokksnes. Over 95% of landings are caught in Danish seine.

Dab CPUE in Danish seines in the area from Faxi Bay to Stokksnes decreased by half from 1997-2000 (figure 2.9.2) but increased again after 2001-2002. Since 2002 landings have fallen considerably.

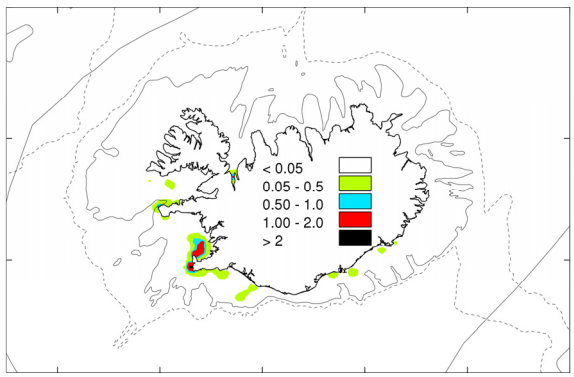
2.9.2. Stock status

Biomass indices of dab in the groundfish surveys (figure 2.9.3) have been very low for many years, but they are not considered a reliable measure of trends in the stock due to high variance and wide confidence intervals.



Mynd 2.9.2. SANDKOLI. Afli á sóknareiningu (kg í kasti) hjá dragnótabátum úr öllum köstum þar sem sandkolaafli er skráður og á dýpi minna en 100 m.

Fig. 2.9.2. DAB. CPUE (kg per set) from seiners, from sets where dab is recorded in the catch and depth is less than 100 m.

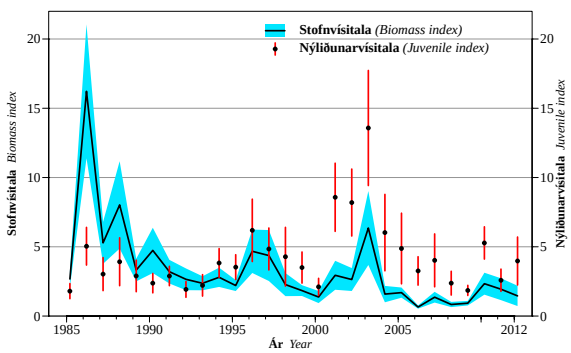


SANDKOLI. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

DAB. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).

Data about age disaggregated dab landings are available for the period 1993-2011. Estimates based on the age disaggregated landings show that year classes do last long in the fishable stock and that the fishing mortality rate has been very high in recent years. The catch consisted mostly of five and six year old fish, in other words, the cohorts from 2005 and 2006. Landings data suggest that both cohorts are very small.

The estimate of the fishable stock in the beginning of 2012 includes a great deal of uncertainty because very little data is available about the size of cohorts from 2007 and 2008 which are now joining the fishable stock. Preliminary indications from catch samples are that these cohorts are not large. Fishing mortality rate is also estimated to be rather high.



Mynd 2.9.3. SANDKOLI. Vísitölur veiðistofns (stofnþyngd) og nýliðun (fjöldi fiska) í stofnmælingu botnfiska í mars 1985–2012.

Fig. 2.9.3. DAB. Indices of fishable stock (biomass) and recruitment (number of fish) in annual groundfish survey in March 1985–2012.

2.9.3. Projections and TAC recommendations for the quota year 2012/2013

Table 2.9.1 shows recommendations from the Marine Research Institute (MRI), TAC management policy and dab landings since the quota year 1995/1996.

In quota years 1997/1998-2009/2010 dab landings were most often smaller than recommendations and much smaller than allocated TAC. It is likely that dab landings in the current quota year will be similar to those of last year, about 600 tonnes in the management area.

In light of the poor status of dab stocks, the MRI recommends that quota year TAC in 2012/2013 not exceed the amount of dab caught as bycatch in other harvests. Considering the status of the stock this recommended catch could amount to about 500 tonnes in quota year 2012/2013 in the defined management area from Snæfellsnes south and east to Stokksnes.

TAFLA 2.9.1.

SANDKOLI. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) á aflamarkssvæðinu fiskveiðiárin 1995/96–2011/2012.

DAB. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) from the quota area in the quota years 1995/96–2011/2012.*

Fiskveiðiár *Quota year*	Tillaga *Recommended 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	

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

2.10. LONG ROUGH DAB *Hippoglossoides platessoides*

2.10.1. Landings and effort

Up until 1987 long rough dab was mainly bycatch in other harvests and was most often discarded. For the first years after the beginning of the long rough dab fishery landings were less than 2 000 tonnes. From 1995-1997 landings increased to 5 400-6 400 tonnes, but landings have since decreased and totaled only 180 tonnes in 2011 (figure 2.10.1 and table 3.10.1). About 70-90% of long rough dab landings are caught in the management areas from Snæfellsnes south and east to Stokksnes.

CPUE in Danish seines on the main fishing grounds, in all hauls in which long rough dab was recorded, decreased in the years 1991-1997 from 990 kg to 380 kg (figure 2.10.2). Following an increase in the years 2000-2002, CPUE has been decreasing again and it was about 290 kg in the year 2011.

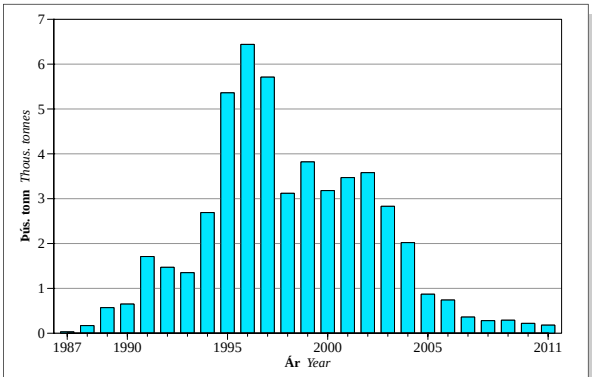
Although long rough dab are found all around Iceland, the main fishing grounds are small and surrounding a known spawning ground. The mainstay of the catch is older fish and because of sexual dimorphism nearly all fish caught are female.

2.10.2. Stock status

The biomass index from the spring groundfish surveys (SMB) indicate that the fishable stock has decreased considerably since 2003 (figure 2.10.2) and that it has hovered at an historical low in recent years.

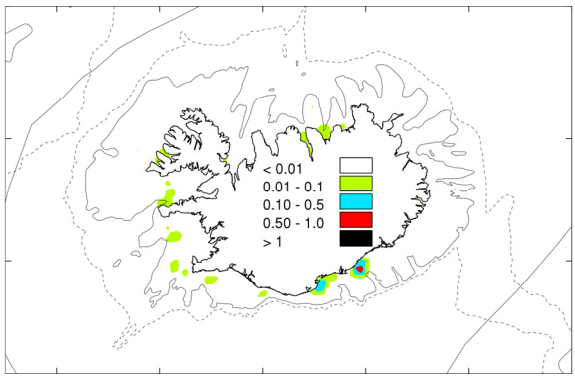
Biomass of young fish in SMB increased from 1989 and reached a climax in 1994, which suggests good recruitment in this period. After this, the recruitment index fell until 2006 but has increase somewhat in recent years.

There is some discrepancy between stock trends in catch diaries and those in groundfish surveys, although both show considerable decrease from 2002. The most likely explanation for this discrepancy is that fishing targets the oldest part of the spawning stock in very limited areas.



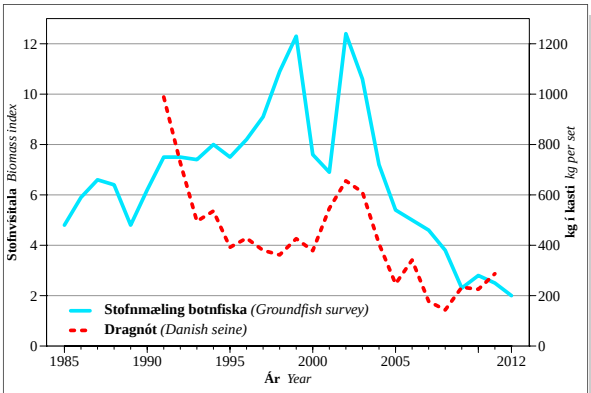
Mynd 2.10.1. **SKRÁPFLÚRA**. Heildarafli (þús. tonna) árin 1987–2011.

*Fig. 2.10.1. **LONG ROUGH DAB**. Total landings during the period 1987–2011 (thous. tonnes).*



SKRÁPFLÚRA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***LONG ROUGH DAB**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



Mynd 2.10.2. **SKRÁPFLÚRA**. Afli á sóknareiningu (kg í kasti) hjá dragnótabátum árin 1991–2011 og vísitala veiðistofns á suðursvæði í stofnmælingu botnfiska í mars árin 1985–2012.

*Fig. 2.10.2. **LONG ROUGH DAB**. CPUE (kg per set) from seiners during the period 1991–2011 and indices of the fishable stock abundance on the southern grounds in the groundfish survey since 1985.*

Effort and landings of long rough dab increased greatly at the end of the last century and CPUE decreased by about half at the same time. In 2002 and 2003 CPUE was proportionally high but in the years since it has remained close to an historical low. Large catches in 1995-2002 seem to have been due to a positive fluctuation in the stock size.

2.10.3. TAC recommendations for the quota year 2012/2013

Table 2.10.1 shows TAC recommendations from the Marine Research Institute of Iceland (MRI), allocated TAC and long rough dab landings from the management area from Snæfellsnes south to Stokksnes since the quota year 1995/1996.

CPUE and biomass indices indicate that the stock

has declined rapidly in recent years at the same time as landings were well within the allocated TAC. It is unlikely that this decline is mostly due to fishing pressure. On the other hand, it is clear that the status of the stock has worsened in recent years and although there are some indications of growing young fish, some years will pass before they have an effect on the fishable stock. In light of these trends of decrease, the MRI recommends that the long rough dab landed from the management area from Snæfellsnes to Stokksnes in quota year 2012/2013 should be equal to or less than the estimated amount that comes in as bycatch in other harvests. Considering the status of the stock this could be about 200 tonnes.

TAFLA 2.10.1.
SKRÁPFLÚRA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) á aflamarkssvæðinu fiskveiðiárin 1995/96–2011/12.

LONG ROUGH DAB. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) from the quota area in the quota years 1995/96–2011/12.*

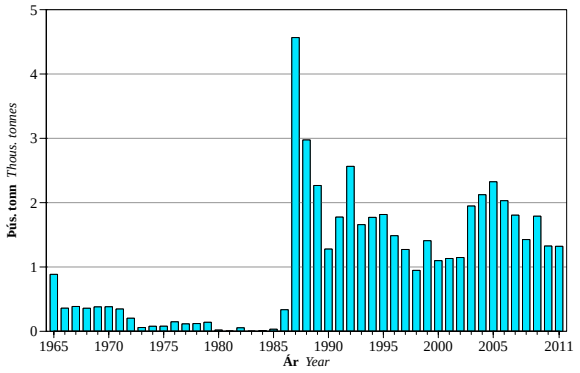
Fiskveiðiár *Quota year*	Tillaga *Recommended TAC*	Aflamark *National TAC*	Afli *Landings*
1995/96	5 000		5 300
1996/97	5 000		4 400
1997/98	5 000	5 000	3 400
1998/99	5 000	5 000	3 300
1999/00	5 000	5 000	2 800
2000/01	5 000	5 000	2 800
2001/02	5 000	5 000	2 500
2002/03	5 000	5 000	2 100
2003/04	5 000	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	

1) Engar beinar veiðar. Aflamark sem nemi áætluðum aukaafla við aðrar veiðar. *No direct fishery. TAC set no higher than that which would result from long rough dab bycatch in other fisheries.*

2.11. WITCH *Glyptocephalus cynoglossus*

2.11.1. Landings and effort

In the years 1950-1965 annual landings of witch from Icelandic waters was 600-1 400 tonnes and most of this was caught by foreign vessels (table 3.11.1). Over the next two decades, annual landings remained less than 400 tonnes but in 1987 began witch fishing on 10 Danish seine boats and witch landings were under 4 600 tonnes (figure 2.11.1 and table 3.11.1). In the years 1988-1996 annual landings were in the range of 1 300-3 000 tonnes. In the 1996/1997 quota year TAC was allocated for witch for the first time and since then the actual landings have been very close to the recommended levels. In 2011 landings totalled 1 300 tonnes of witch.



Mynd 2.11.1. **LANGLÚRA**. Heildarafli (þús. tonn) árin 1965–2011.

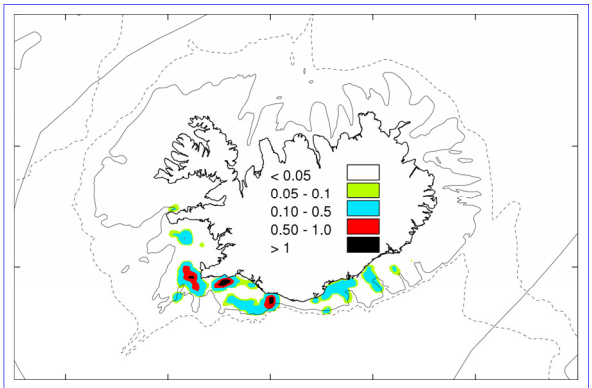
*Fig. 2.11.1. **WITCH**. Total landings since 1965 (thous. tonnes).*

The majority of Icelandic witch catches has been caught in Danish seines, but the proportion caught by Norway lobster fishermen has increased from one fourth in 2009 to one half in 2011. Witch is a very common bycatch in Norway lobster harvesting and comparison of the size structure of witch in the Norway lobster surveys by the Marine Research Institute of Iceland (MRI) and that in landings by lobster boats it is clear that there is a lot of small witch discarded by the latter.

CPUE in Danish seine (catch per haul in which witch is at least half of the haul catch) was just less than 1 000 kg per haul in 1987 but decreased until 1998 (figure 2.11.2) when it was over 330 kg per haul. From 1998-2006 CPUE doubled but it has decreased since and was 550 kg in 2011 (figure 2.11.2).

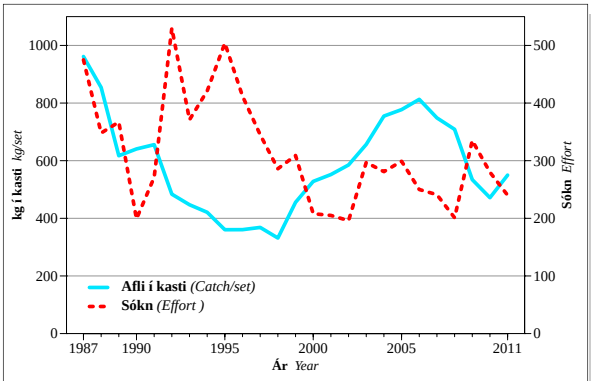
Direct fishing for witch was heavy from 1992-1995 but after that it decreased until the year 2000. For the last decade, direct targeting of the species has been steady, but it is difficult to estimate the actual amount removed from the stock as bycatch.

Measurements of age structure of witch in landings indicate that cohorts from 1998-2001 were



LANGLÚRA Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

WITCH. *Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



Mynd 2.11.2. **LANGLÚRA**. Sókn og afli á sóknareiningu (kg í kasti) hjá dragnótabátum 1987–2011.

*Fig. 2.11.2. **WITCH.** Effort and CPUE (kg per set) from seiners during the period 1987–2011.*

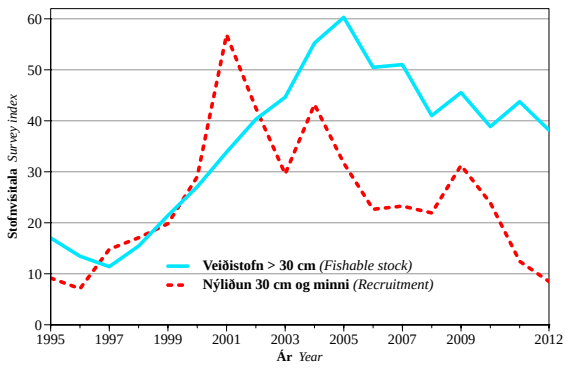
large. CPUE was high when these cohorts were the majority of the Fishable stock from 2003-2008. Year classes 2002-2006 were the largest proportion of landings last year.

2.11.2. Groundfish survey

The biomass index of fishable witch stock in the Norway lobster survey tripled in the years 1995-2005 (figure 2.11.3) and the spring groundfish survey (SMB) showed similar trends. After 2005 the witch biomass index in the Norway lobster survey decreased but hasn't changed much in the last 5 years.

The frequency index of young fish, 30 cm and smaller, in the Norway lobster survey increased considerably from 1995-2001, but has decreased since (figure 2.11.3). In the last three years the frequency index for young fish has been below average.

Witch join the fishable stock at the age of 3-4 and



Mynd 2.11.3. **LANGLÚRA**. Vísitölur veiðistofns (stærri en 30 cm) og ungfisks (30 cm og minni) í humarleiðangri 1995–2012.

*Fig. 2.11.3. **WITCH**. Abundance indices of fishable stock (> 30 cm) and juveniles (<= 30 cm) in Nephrops surveys 1995–2012.*

the largest proportion of witch that are caught are 5-7 years old. The results of the spring Norway lobster survey in 2012 confirm that year classes from 2007 and 2008 are small. In addition, the cohort from 2009 has been small two years in a row and the first measurements of the 2010 year class indicate that it is also weak. For these reasons, it is likely that recruitment will be poor in the coming years.

2.11.3. TAC recommendations for quota year 2012/2013

Table 2.11.1 shows MRI TAC recommendations, management policy decisions and witch landings since the year 1994/1995.

There is much uncertainty about the total biomass of witch. Measurements from the Norway lobster survey indicate that the size of the fishable stock has decreased over recent years and that little year classes from 2007-2010 will lead to further decline of the fishable stock in coming years. The MRI recommends a TAC of not more than 1 100 tonnes for the quota year 2012/2013.

TAFLA 2.11.1.
LANGLÚRA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 1994/95–2011/2012.

***WITCH**. TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 1994/95–2011/2012.*

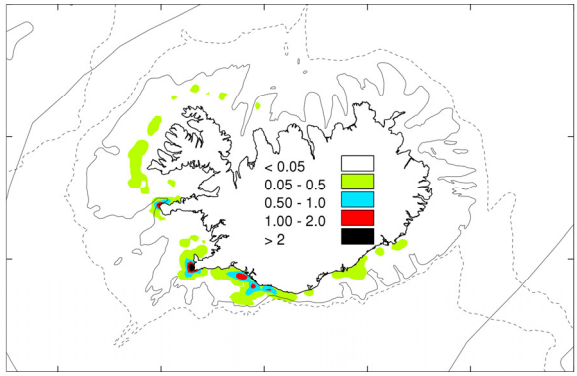
Fiskveiðiár *Quota year*	Tillaga *Recommended TAC*	Aflamark *National TAC*	Afli *Landings*
1994/95	1 500		1 760
1995/96	1 400		1 660
1996/97	1 200	1 200	1 260
1997/98	1 100	1 100	960
1998/99	1 100	1 100	1 160
1999/00	1 100	1 100	1 110
2000/01	1 100	1 100	1 160
2001/02	1 350	1 350	1 220
2002/03	1 500	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	-

2.12. LEMON SOLE *Microstomus kitt*

2.12.1. Landings, effort and stock indices

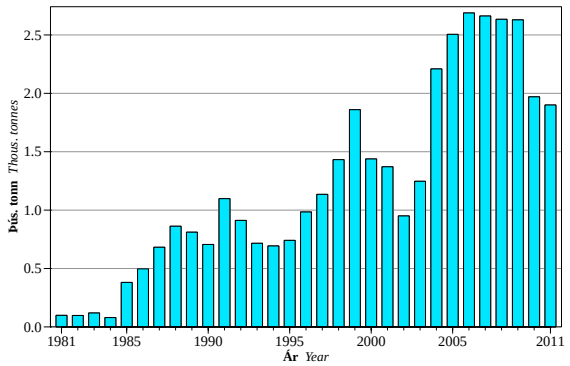
In the period 1951-1965 annual landings of lemon sole from Icelandic waters were 1 300-2 900 tonnes and foreign vessels caught the majority of landings (table 3.12.1). In 1966 a decline began and landings were negligible from 1977-1984. In 1985 direct targeting of lemon sole began again (figure 2.12.1) and that year just less than 400 tonnes were landed. Since then, landings have increased, reaching 2 700 tonnes in 2006, which is the largest catch from Icelandic waters since 1963. Landings in 2011 were 1 900 tonnes.

The vast majority of lemon sole are caught in bottom trawls and Danish seine, but a few other gears are used. In the main lemon sole grounds south and southwest of Iceland, CPUE from Danish seining (in which lemon sole was at least 25% of the haul) decreased from 350-400 kg in 1993-1998. In 1999 and 2000 CPUE from this area 280 kg but it has increased since then and has been 490-500 kg for the last three years.



ÞYKKVALÚRA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

LEMON SOLE. *Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*



Mynd 2.12.1. **ÞYKKVALÚRA.** Heildarafli (þús. tonn) árin 1981–2011.

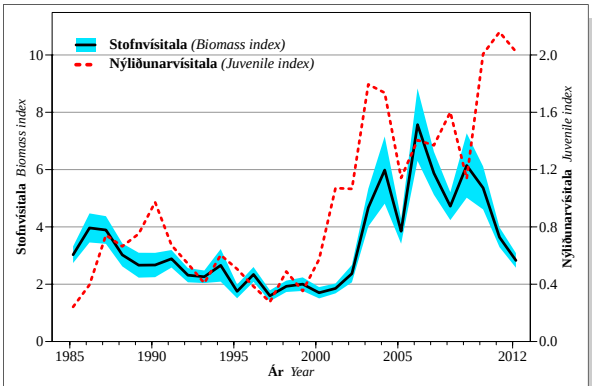
Fig. 2.12.1. ***LEMON SOLE.*** *Total landings during the period 1981–2011 (thous. tonnes).*

According to indices from the spring groundfish survey (SMB) the fishable stock of lemon sole decreased by about one third from 1985-2000. In 2004 the biomass index increased considerably and remained high until a further decrease over the last two years. Furthermore, the recruitment index has been high since 2001 (figure 2.12.2).

2.12.2. TAC recommendations for quota year 2012/2013

Table 2.12.1 shows recommendations from Marine Research Institute of Iceland (MRI), management policy decisions and lemon sole landings since 1999/200.

The yield capacity of the population is not known. Indices in SMB have decreased, but CPUE



Mynd 2.12.2. **ÞYKKVALÚRA.** Vísitala veiðistofns (í stofnþyngd) og ungfisks (minni en 20 cm) í stofnmælingu botnfiska í mars árin 1985–2012. Skyggða svæðið sýnir eitt staðalfrávik í mati á vísitölunni.

Fig. 2.12.2. ***LEMON SOLE.*** *Indices for fishable stock biomass and juveniles (number of fish <20 cm) in annual groundfish surveys in March 1985–2012. Shaded area shows one standard deviation in the estimate.*

TAFLA 2.12.1.
ÞYKKVALÚRA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 1999/2000–2011/2012.
LEMON SOLE. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 1999/2000–2011/2012.*

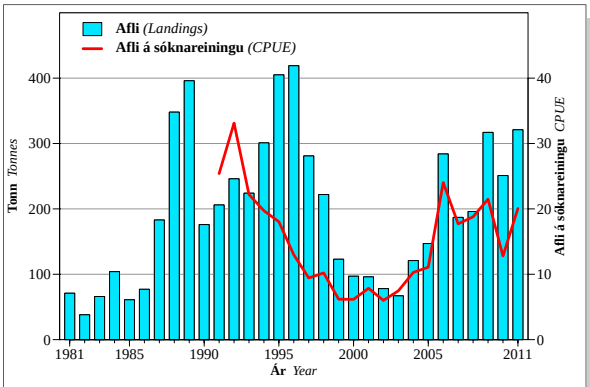
Fiskveiðiár *Quota year*	Tillaga *Recommended TAC*	Aflamark *National TAC*	Afli *Landings*
1999/2000	1 400	1 400	1 400
2000/2001	1 400	1 400	1 400
2001/2002	1 400	1 400	1 000
2002/2003	1 600	1 600	1 100
2003/2004	1 600	1 600	2 100
2004/2005	1 600	1 600	2 600
2005/2006	1 600	1 800	2 500
2006/2007	1 600	2 000	2 900
2007/2008	1 600	2 200	2 600
2008/2009	1 600	2 200	2 700
2009/2010	1 800	2 200	2 000
2010/2011	1 800	1 800	1 740
2011/2012	1 800	1 800	

are still high and it even appears that recruitment has been good in recent years. The effects of increased fishing pressure over the past few years are unclear. Age in catch analysis indicates that fishing mortality is high. It is desirable that fishing pressure be less than it has been because of the falling biomass indices in the SMB.

Taking these considerations into account, the MRI recommends a quota year 2012/2013 TAC of no more than 1 400 tonnes of lemon sole.

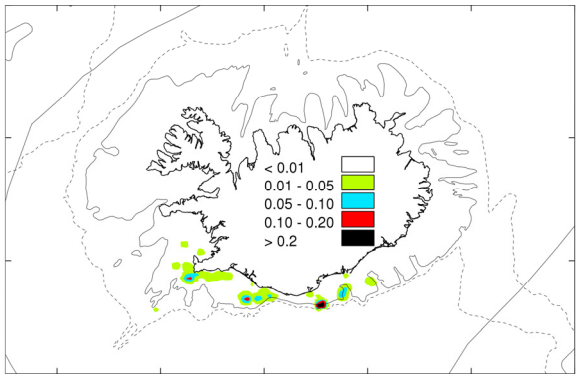
2.13. MEGRIM *Lepidorhombus whiffiagonis*

From 1951-1973 megrim landings were 400-700 tonnes and most of it was landed by foreign vessels (table 3.13.1). From 1974 landings decreased and were down to 40-100 tonnes in 1981-1986 (figure 2.13.1 and table 3.13.1). In the years since 1986 landings have been highly variable, reaching a maximum at 420 tonnes in 1996 and a minimum of 67 tonnes in 2003. Landings in 2011 were 321 tonnes.



Mynd 2.13.1. **STÓRKJAFTA**. Heildarafli (tonn) árin 1981–2011 og afli á sóknareiningu í dragnót (kg í kasti) 1991–2011.

*Fig. 2.13.1. **MEGRIM**. Total landings during the period 1981–2011 (tonnes) and CPUE (kg per set) from seiners during the period 1991–2011.*



STÓRKJAFTA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***MEGRIM**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

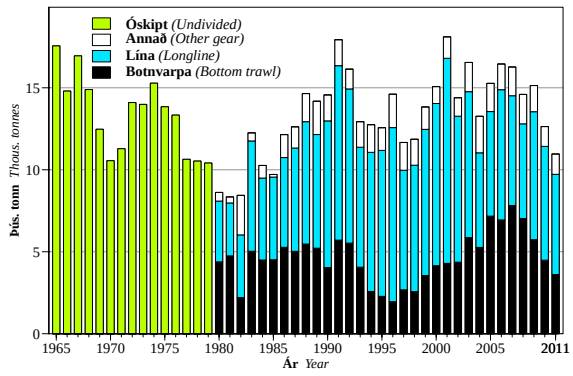
Megrim is mostly bycatch in Danish seine and lobster trawl, but some is caught in bottom trawls. CPUE in Danish seines (considering only hauls from deeper than 100 m and all megrim landings in Danish seines from Snæfellsnes south to Stokksnes) decreased from 1992 until 1999 and was rather little in 2003. Since then, CPUE has increased somewhat (figure 2.13.1). Population size, fishing pressure, and yield capacity are all unknown for megrim.

The Marine Research Institute does not recommend a TAC for megrim for the quota year 2012/2013.

2.14. ATLANTIC WOLFFISH *Anarhichas lupus*

2.14.1. Landings and effort

Atlantic wolffish landings in 2011 were almost 11 thousand tonnes, nearly 1 700 tonnes less than in 2010 (figure 2.14.1 and table 3.14.1). In the years 1980-1990 landings increased from 10 thousand tonnes to 15 thousand tonnes, and they remained near the mean for some years, with a short decrease in the 1990's and another decrease in the last two years. The proportion of landings caught by longline has been near to and above 50% while the proportion of landings from bottom trawl has fluctuated from 20-50%.

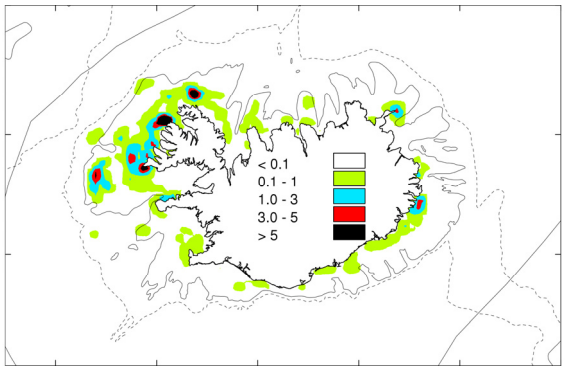


Mynd 2.14.1. STEINBÍTUR. Heildarafli (þús. tonna) árin 1965–2011 skipt eftir veiðarfærum frá 1979.

Fig. 2.14.1. ATLANTIC WOLFFISH. Total landings during the period 1965–2011(thous. tonnes) split by gear after 1979.

2.14.2. Groundfish survey

In the spring groundfish survey (SMB) the distribution of Atlantic wolffish is rather even throughout the research area, though the highest density is seen along the south of the region called the West Fjords. Atlantic wolffish appears first in the groundfish surveys at the age of one year old, which is about seven years before it joins the fishable stock. Figure 2.14.2 shows the fishable stock index and the recruitment index according to SMB. The recruitment index is calculated as the number of 20-40 cm Atlantic wolffish that are about 4-9 years old, but the fishable stock index is calculated as the biomass of Atlantic wolffish larger than 60 cm. According to the results of the SMB the fishable stock index dropped by more than half from 1985 until 1995 but then grew again with much variability and this year it is near to the historical average. Also, according to analysis of the SMB data recruitment was good from 1991-1998, but has decreased and the recruitment indices 2009-2012 were historically low. Increasing fishable stock indices from 1995-2008 are consistent with high recruitment indices the year before.



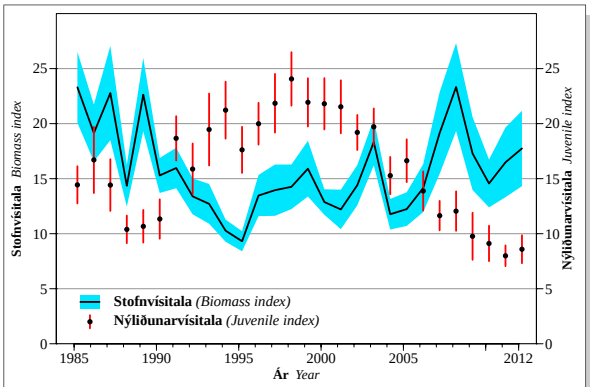
STEINBÍTUR. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

ATLANTIC WOLFFISH. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).

2.14.3. Stock status

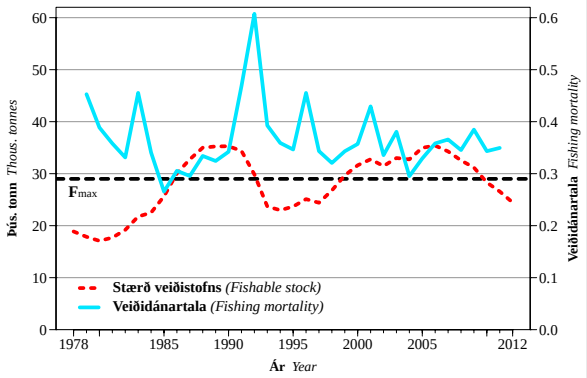
Estimation of the Atlantic wolffish stock size is done using the Gadget model (see Appendix 5.1). Figure 2.14.3 shows trends in the fishable stock and fishing mortality index for wolffish fully entered into the fishable stock. Estimated fishing mortality has been, since 1978, almost without exception higher than the fishing mortality index that would give maximum yield (Fmax=0.29) and in 2009-2011 it was about 0.36. The fishable stock has decreased by almost a third since 2006 and it is currently below the historical average. Due to very little recruitment in recent years (figure 2.14.2) the fishable stock can be expected to decrease still farther if there is not a serious reduction in fishing pressure.

An estimate of the Atlantic wolffish stock was also calculated with an ADAPT model (see Appendix 5.1). The results were very similar to those provided by the Gadget model.



Mynd 2.14.2. STEINBÍTUR. Vísitala veiðistofns (þyngd) og nýliðunarvísitala (fjöldi fiska milli 20 og 40 cm) í stofnmælingu botnfiska í mars árin 1985–2012.

Fig. 2.14.2. ATLANTIC WOLFFISH. Stock index (biomass) and recruitment index (number of fish between 20 and 40 cm) in annual groundfish survey in March during 1985–2012.



Mynd 2.14.3. **STEINBÍTUR**. Stærð veiðistofns (þús. tonna) 1978–2012 og veiðidánartala (F) 1979–2011 samkvæmt Gadget líkani.

*Fig. 2.14.3. **ATLANTIC WOLFFISH**. Fishable stock size (thous. tonnes) 1978–2012 and F 1979–2011 based on the Gadget model.*

2.14.4. TAC recommendation for quota year 2012/2013

Atlantic wolffish landings have exceeded recommended TAC for many years in a row (table 2.14.1) and fishing mortality has been higher than that required for maximum sustainable yield. It is likely that the yield capacity of the stock will decrease in the coming years when weak year classes join the fishable stock. The Marine Research Institute of Iceland (MRI) recommends that fishing mortality be decreased to that level that maximum sustainable yield is attained (Fmax=0.29) which means landings of no more than 7 500 tonnes of landed fish in the quota year 2012/2013. The MRI further reiterates previous recommendations that the spawning grounds at Látragrunn continue to be closed during spawning and hatching season.

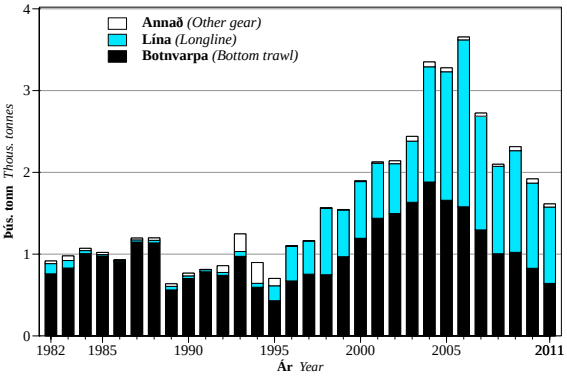
Tafla 2.14.1
STEINBÍTUR. Tillögur Hafrannsóknastofnunarinnar um afla-hámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 1996/97–2011/2012.
***ATLANTIC WOLFFISH.** TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 1996/97–2011/2012.*

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	15 453
2009/10	10 000	12 000	13 096
2010/11	8 500	12 000	11 675
2011/12	7 500	10 500	

2.15. SPOTTED WOLFFISH *Anarhichas minor*

2.15.1. Landings and effort

Spotted wolffish landings in 2011 were more than 1 600 tonnes, which is the smallest catch since 1999 (figure 2.15.1 and table 3.15.1). In the years 1982-1997 the spotted wolffish landings averaged almost 1 000 tonnes and most of it was caught in bottom trawl. After that period, landings increased steadily until they reached an historical maximum of 3 700 tonnes in 2006, before decreasing again. Since 1995 the proportion of landings caught by longline increased rapidly and in recent years more than half of the landings were caught using this gear. Almost half of the landings are caught in bottom trawls.

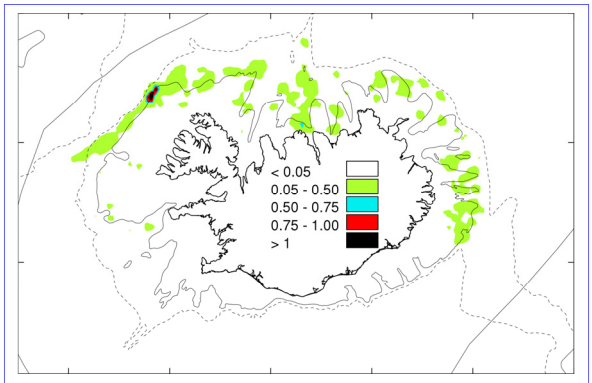


Mynd 2.15.1. **HLÝRI**. Heildarafli (þús. tonna) árin 1982–2011 skipt eftir veiðarfærum.

*Fig. 2.15.1. **SPOTTED WOLFFISH**. Total landings by gear during the period 1982–2011 (thous. tonnes).*

2.15.2. Groundfish survey

In the spring groundfish survey (SMB) most of the spotted wolffish is caught off the coast of the West and East Fjords at more than 100 m depth, though a good amount is also caught on the Northern Grounds. Spotted wolffish appears in the groundfish surveys at the age of one, about 4 years before entering the fishable stock. Figure 2.15.2 shows the recruitment indices and biomass indices according to the SMB and figure 2.15.3 shows the fishable stock index. The recruitment index is calculated as the number of 20-40 cm spotted wolffish that are from 2-4 years of age, the biomass index is the biomass of spotted wolffish larger than 10 cm and the fishable stock index is the biomass of wolffish larger than 60 cm.



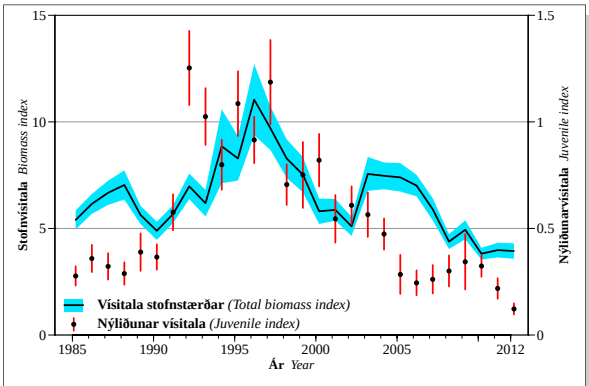
HLÝRI. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

SPOTTED WOLFFISH. *Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

The recruitment index was high in 1992-2000, but since then it has decreased and in 2012 it was at an historical low. The biomass index was high from 1994-1998, but has decreased considerably since then. The trend observable in the fishable stock index is akin to those of the total stock and it has been at an historical low from 2010-2012.

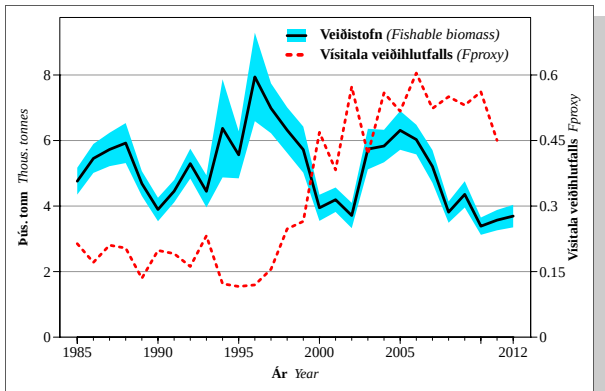
2.15.3. Stock status

According to analysis of the SMB data the spotted wolffish stock is at an historical low, as is



Mynd 2.15.2. **HLÝRI**. Heildarvísitala (þyngd) og nýliðunarvísitala (fjöldi fiska milli 20 og 40 cm) í stofnmælingu botnfiska í mars árin 1985–2012.

*Fig. 2.15.2. **SPOTTED WOLFFISH**. Stock index (biomass) and recruitment index (number of fish between 20 and 40 cm) in the annual groundfish survey in March 1985–2012.*



Mynd 2.15.3. **HLÝRI**. Vísitala veiðistofns (þyngd) í stofnmælingu botnfisks í mars 1985–2012 og vísitala veiðihlutfalls 1985–2011.

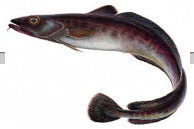
*Fig. 2.15.3. **SPOTTED WOLFFISH**. Fishable biomass index in the annual groundfish survey in March 1985–2012 and F_{proxy} in 1985–2011 .*

recruitment. in the years 1985-1997 mean catch was 1 000 tonnes, but in these years the size of the stock was rather stable and then growing, according to the SMB. Landings in 1998-2011 have been in the range of 1 500-3 700 tonnes and the harvest rate has been very high compared to the period from 1985-1997 (figure 2.15.3 and Appendix 5.1).

2.15.4. TAC recommendations for quota year 2012/2013

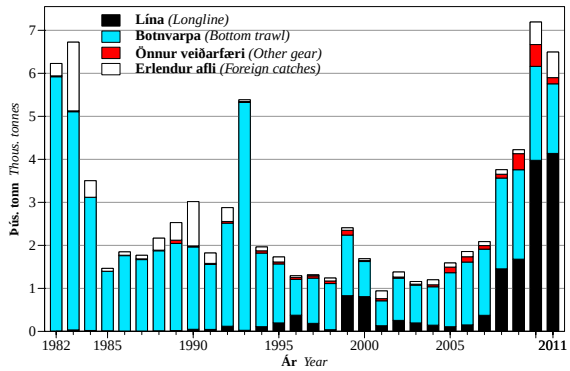
The fishing resistance of the spotted wolffish is little known and few studies are directed at the species, at this time. The Marine Research Institute of Iceland (MRI) considers it obvious that the landings of 1998 were above the yield capacity of the stock. The MRI recommends that a considerable decrease of effort targeting this stock is necessary and that total landings in quota year 2012/2013 do not exceed 900 tonnes. That level of catch should cause a harvest rate that is one half of where it has been in recent years.

2.16. BLUE LING *Molva dypterygia*



2.16.1. Landings and effort

Blue ling landings from Icelandic waters from 1982-2011 are shown in figure 2.16.1 and from 1966 in table 3.16.1. Blue ling landings were between 1 000-3 000 tonnes from 1985-2008 with the exception of 1981. The 2010 catch was 6 900 tonnes, which was the largest annual catch since 1981. Landings decreased to 6 500 tonnes in 2011, of which Icelandic vessels took 5 900 tonnes or about 90%.



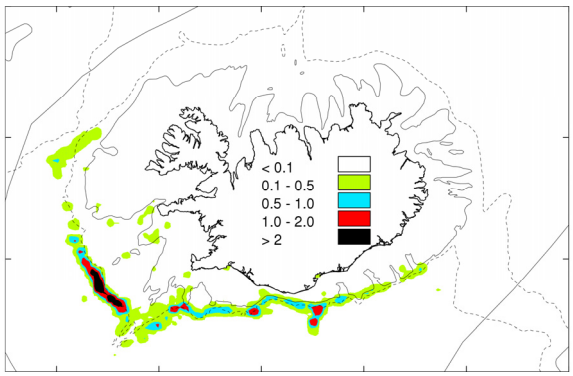
Mynd 2.16.1. **BLÁLANGA**. Heildarafli (þús. tonna) á Íslandsmiðum árin 1982–2011 skipt eftir veiðarfærum.

*Fig. 2.16.1. **BLUE LING**. Total landings from Iceland waters during the period 1982–2011 (thous. tonnes) divided by gear.*

Fishing targeting spawning blue ling occurred south of Vestmannaeyjar in the years 1980-1984 and Icelandic blue ling landings were about 8 000 tonnes in 1980 and 1981. Landing increase in 1993 is mostly due to temporary fishing on Franshóll at the edge of the EEZ east of the Reykjanes Ridge. This fishing targeting the spawning blue ling appears to have been far above the yield capacity of the stock. From 1993-2007 blue ling was mainly caught as bycatch in bottom trawls. From 2008-2010 the proportion of landings caught by longliners increased and in 2011 longline catches were about 70% of the total landings. The increase in longline as a proportion of the total can be explained as direct targeting of the species during the summer months. Blue ling is being caught in increasing amounts as bycatch in harvests of gold redfish and Greenland halibut fishing in the deep waters off the coast of the West Fjords, which is consistent with range extension of blue ling to the northwest in groundfish surveys.

2.16.2. Groundfish survey

According to the results of the fall and spring groundfish surveys, the blue ling stock increased after 2005 but last year there were indication that it might decrease sometime soon. Due to a labour strike, the fall groundfish survey (SMH) was cancelled in 2011, but the limited data that were collected that year indicate that the biomass of blue ling in the western area is similar to what it was in 2010. Indices from the spring groundfish survey (SMB) in 2012 show that blue ling stock is only about 25% of the index from 2010. The recruitment index from SMB 2012 is an historical low (figure 2.16.2). The SMH is considered to provide a more accurate estimate of blue ling than the SMB because the station locations in the SMH cover the distribution range of blue ling better than that of the SMB.

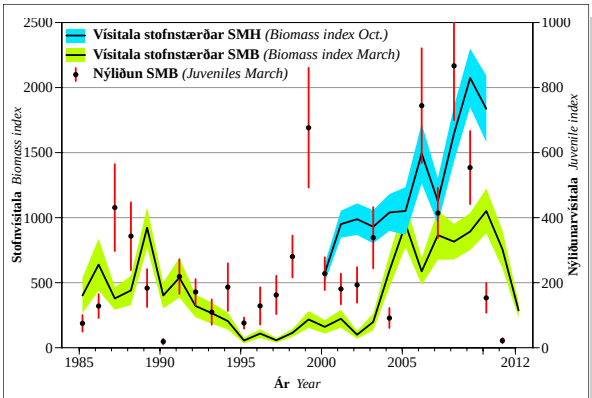


BLÁLANGA. Veiðisvæði við Ísland árið 2011. Öll veiðarfæri. Dökku svæðin sýna mestan afla (tonn/sjm^2).

***BLUE LING**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

2.16.3. Stock status

In recent months analysis of the stock with the Gadget model has been ongoing. The one limitation in the use of the Gadget model is that age structure data is lacking and therefore the model has to rely more heavily on assumptions of growth. For this



Mynd 2.16.2. **BLÁLANGA**. Stofnvísitala (þyngd) blálöngu 40 cm og stærri í stofnmælingu botnfiska í október 2000–2010 og mars 1985–2012 ásamt vísitölu ungfisks í mars.

*Fig. 2.16.2. **BLUE LING**. Biomass index in the annual groundfish survey in October 2000–2010 and in March 1985–2012. Recruitment index from March survey is also shown.*

reason, it is not possible to base policy recommendations solely on the results of this model. On the other hand, the model does follow the historical data fairly well and the results it provides show that the stock size of blue ling increased until 2009 but decreased again over the last three years. Fishing mortality has increased considerably over recent years, according to the model and it is currently well above that which can be considered sustainable.

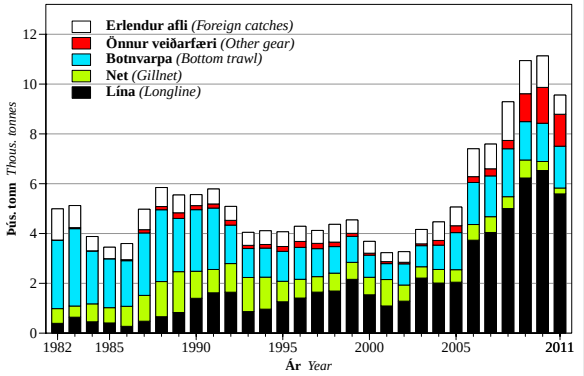
2.16.4. TAC recommendations for quota year 2012/2013

Since the fishing resistance of blue ling is unknown and few studies are directed at this species exploitation must be approached with caution. The Marine Research Institute (MRI) warns that the increased landings of the past few years are above the maximum sustainable yield and recommends that total landings in the coming quota year should not exceed 3 100 tonnes. A catch of this size would bring fishing mortality near to optimum according to the current stock assessment. In addition, the MRI recommends a continuation of the closure on the known spawning grounds south of the Vestmann Islands and on the Franshóll during spawning season from February 15-April 30 every year.

2.17. LING *Molva molva*

2.17.1. Landings and effort

The ling landings from Icelandic waters from 1982-2011 are shown in figure 2.17.1 and from 1950 in table 3.17.1. Landings were largest in 1971 or about 15 000 tonnes. From 1982-2005 landings were between 3 200 and 5 900 tonnes but have increased considerably since then and were about 11 000 tonnes in 2009 and 2010. Landings in 2011 was somewhat smaller at 9 600 tonnes. In the last three decades Icelanders have caught 85-90% of the total landings in Icelandic waters, but before that time



Mynd. 2.17.1. LANGA. Heildarafli (þús. tonna) og afli íslenskra skipa árin 1982–2011 skipt eftir veiðarfærum.

Fig. 2.17.1. LING. Landings from Icelandic waters during the period 1982–2011 (thous. tonnes) divided by gear.

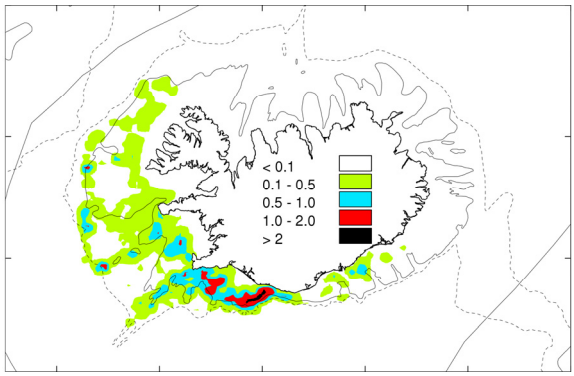
foreign vessels took a larger portion of the landings of ling (table 3.17.1).

The proportion of the landings represented by various gear types has changed considerably over the years. The proportion of landings caught by longline was 11% in 1982-1989 but increased to 55% in 2006. Gillnetting has fallen from 24% in 2000-2002 down to only 2% in 2011. Ling catch from bottom trawlers was 18% of the 2011 total, which has not changed much in recent years. CPUE has not been as high as it has for the last four years since the year 1991 when statutory registration of fishing logs began.

2.17.2. Stock status

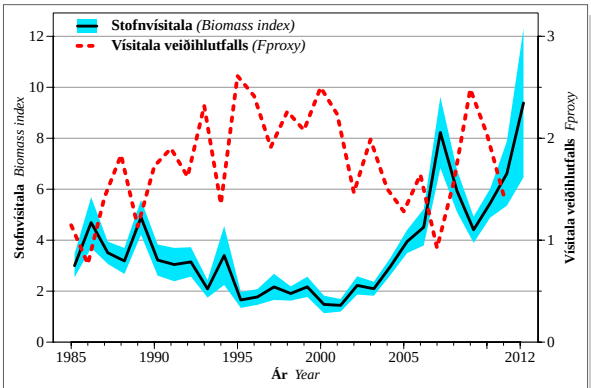
The biomass index of ling in the spring groundfish survey (SMB) decreased by more than half from 1985-2001, but has increased considerably since then. In 2007 and 2012 the biomass index was higher than it had ever been since the first groundfish survey (figure 2.17.2). The recruitment index has decreased a good deal from the high values from 2004-2010 but it is still high in relation to historical levels.

Fproxy (see Appendix 5.1) was rather high from



LANGA. Veiðisvæði við Ísland árið 2011. Öll veiðarfæri. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

LING. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).



Mynd. 2.17.2. LANGA. Stofnvísitala (þyngd) löngu 40 cm og stærri í stofnmælingu botnfiska í mars árin 1985–2012 og vísitala veiðihlutfalls (afli/stofnvísitölu).

Fig. 2.17.2. LING. Biomass index (>40 cm) in the annual groundfish survey in March during 1985–2012 and F_{proxy} (catch/index).

1994-2003 but decreased rapidly with growing biomass indices from 2004-2007 (figure 2.17.2). Fproxy in 2011 was near the average for the years 2004-2007.

In the last two years scientists have been working to develop a Gadget population model for ling. The most significant impediment with the use of this model is the lack of age data and for this reason it is impossible to base recommendations entirely on the results of the model. On the other hand, the model does follow obvious trends in the data and the results are that the stock size of ling has grown much in the last few years and the fishing mortality has decreased. In 2011 the fishing mortality rate was just above optimum.

2.17.3. Projections and TAC recommendations for quota year 2012/2012

Table 2.17.1 shows MRI TAC recommendations,

allocated TAC and total ling landings since quota year 1999-2000.

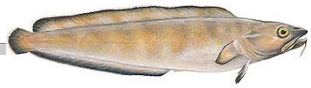
The results of the groundfish survey as well as the trends in CPUE indicate that the ling stock grew rapidly from 2000-2006 and has even increased since then. On the other hand, Fproxy increased substantially from 2007-2010, which was caused by effort far above the recommendations and allocated TAC. This extra fishing is both because of landings of foreign vessels and species conversion within the management system. The MRI recommends that in the quota year 2012/2013 ling landings should not exceed 12 000 tonnes, including landings by foreign vessels that average about 1 400 tonnes in the last four years. This recommendation aims to bring Fproxy back to where it was from 2004-2008. The results of the Gadget stock assessment indicates that this harvest rate is near optimum (F0.1).

Tafla 2.17.1.
LANGA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 1999/2000–2011/2012.

LING. TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 1999/2000–2011/2012.

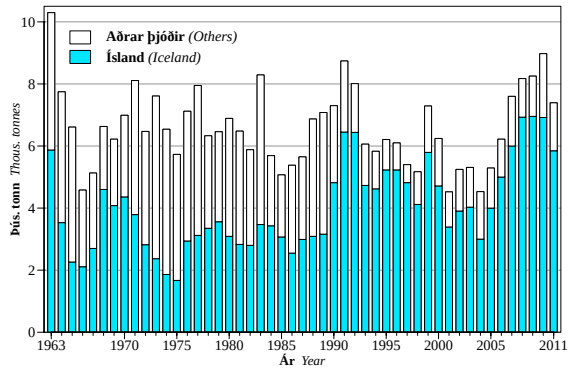
Fiskveiðiár *Quota year*	Tillaga *Rec TAC*	Aflamark *National TAC*	Afli Ísland Landings Iceland	Afli annarra Landings others	Heildarafli *Total landings*
1999/00	-	-	3 496	475	3 961
2000/01	-	-	3 182	359	3 451
2001/02	3 000	3 000	2 542	426	2 968
2002/03	3 000	3 000	3 137	578	3 715
2003/04	3 000	3 000	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			

2.18. TUSK *Brosme brosme*



2.18.1. Catch and effort

Tusk landings from Icelandic waters from 1963-2011 are shown in figure 2.17.1 and table 3.17.1. In 1963 landings were at an historical high of more than 10 thousand tonnes. For a very long time total landings were 5 000-8 000 tonnes and in 2011 they totalled 7 400 tonnes, which is almost 1 600 tonnes less than in 2010. Since 1991 Icelanders have landed 75-80% of the catch and Faeroese vessels have taken 20-25%. In 1990 Icelanders began directly targeting tusk, which had always been bycatch in other harvests. The Icelandic catch was over 5 800 tonnes in 2011. In the years 2004-2010 the Icelandic catch doubled, reaching about 7 000 tonnes in 2008-2010, which are the largest tusk landings in Icelandic history.



Mynd 2.18.1. **KEILA**. Heildarafli (þús. tonna) og afli Íslenskra skipa á Íslandsmiðum árin 1963–2011.

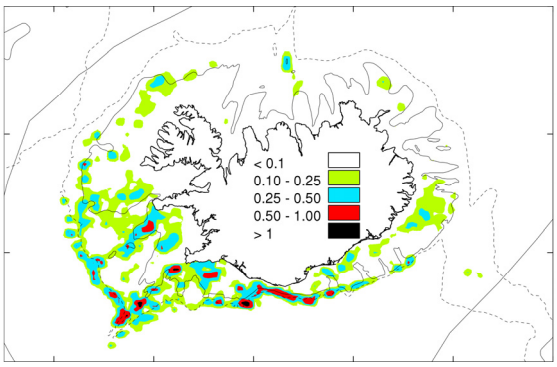
*Fig. 2.18.1. **TUSK**. Landings from Icelandic waters during the period 1963–2011 (thous. tonnes).*

In recent years the majority of tusk, 95% of landings, has been caught by longliners. The market demand for tusk seems to drive the push toward increased targeting of tusk and there are indications that fishing for tusk has increased in recent years.

2.18.2. Stock surveys

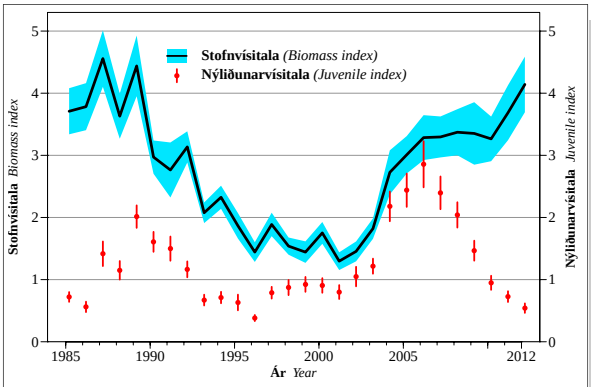
Tusk is caught at an average of almost half of the sampling stations of the spring groundfish survey (SMB). Tusk distribution is even and data are similar from year to year. Also, there is consistency between the SMB and the fall stock survey (SMH) although less tusk is caught in the latter. In the SMB tusk has even been found off the West Fjords and southeast of Iceland.

The fishable biomass index from the SMB decreased rapidly from 1989-1995 and remained low until 2001 (figure 2.18.1). From 2002-2006 it grew quickly and then was relatively steady until 2010, but some increase occurred in 2011 and 2012 compared to 2010. The biomass index of young fish



KEILA. Veiðisvæði keilu við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***TUSK**. Fishing grounds in 2011. All gears combined. Dark areas indicate highest catch (tonnes/nm^2).*



Mynd 2.18.2. **KEILA**. Vísitala veiðistofns (í þyngd, fiskar 40 cm og stærri) og fjöldavísitala ungkeilu (fjöldi fiska 40 cm og minni) í stofnmælingu botnfiska árin 1985–2012.

*Fig. 2.18.2. **TUSK**. Biomass index for fishable stock (biomass 40 cm and larger) and abundance index for juveniles (fish less than 40 cm) in annual groundfish surveys 1985–2012.*

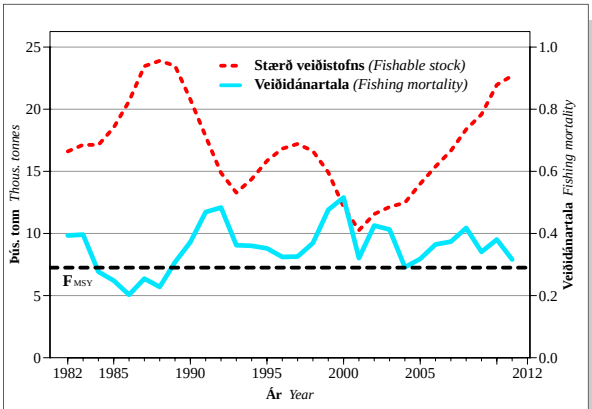
increased from 1996 until reaching an historical maximum in 2006. Since 2007 the young fish biomass index has decreased rapidly and is now as low as it was from 1993-1996.

2.18.3. Stock status

Recommendations from the International Council for the Exploration of the Sea (ICES) and the Marine Research Institute of Iceland (MRI) are based on the Gadget model (see Appendix 5.1).

Figure 2.17.3 shows trends in the fishable stock and fishing mortality of tusk that have fully joined the fishable stock. The fishing mortality index is estimated at 0.32. A fishing mortality index of 0.29 is considered to provide maximum sustainable yield (FMSY) but fishing mortality has usually been over that mark since 1982.

The fishable biomass was 15-25 thousand tonnes

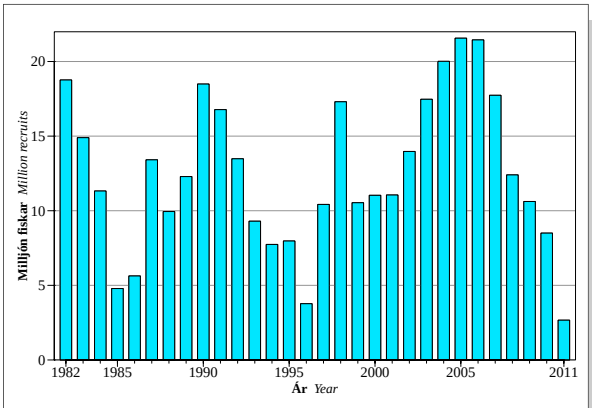


Mynd 2.18.3. Keila. Stærð veiðistofns (þús. tonna) 1982–2011 og veiðidánartala (F) 1982–2011.

Fig. 2.18.3. Tusk. Fishable stock size (thous. tonnes) 1982–2011 and F 1982–2011.

from 1980-1988, but decreased in the 1990's and was 10 thousand tonnes at the turn of the century. Over the last nine years the fishable stock has roughly doubled and is now near the historical maximum at 23 thousand tonnes.

Results of the Gadget model show that tusk recruitment (at age 3) was very good from 1998-2008, but since then has this index fallen and preliminary estimates of recruitment in 2011 indicate that the 2008 year class is the smallest since records began. This estimate is consistent with indications from the groundfish surveys. For this reason, it is likely that the fishable stock of tusk will decrease in the coming years.



Mynd 2.18.4. **KEILA**. Nýliðun við þriggja ára aldur 1982–2011.

*Fig. 2.18.4. **TUSK**. Recruitment at age 3 in 1982–2011.*

Tafla 2.18.1.
KEILA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og heildarafli (tonn) fiskveiðiárin 2001/2002–2011/2012.

***TUSK**. TAC recommended by the Marine Research Institute, national TAC and total landings (tonnes) in the quota years 2001/2002–2011/2012.*

Fiskveiðiár *Quota year*	Tillaga *Rec TAC*	Aflamark *National TAC*	Afli íslendinga Landings Iceland	Afli annara Landings others	Heildarafli *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			

Tusk is a rather slow-growing species with an annual growth of about 3-5 cm. Tusk enter the fishable stock at about 40 cm of length but do not reach sexual maturity until about 55 cm. Therefore, about 3-5 years pass between the time the fish enter the fishable population and the time they can start spawning. Heavy fishing can lead to only a small proportion of the stock being able to spawn.

2.18.4. Projections and TAC recommendations for quota year 2012/2013

Table 2.18.1 shows recommendations from the MRI, management policy decisions and tusk catches since quota year 2001/2002. Landings have most often been much higher than allocated TAC due to fishing activities of foreign vessels and landings being recorded as species other than what they are.

The MRI recommends that TAC for tusk in the quota year 2012/2013 should not exceed 6 700 tonnes, including landings from foreign vessels which average about one quarter of the total landings in the last five years. This recommendation is aimed at attaining maximum sustainable yield out of the stock. Furthermore, it is recommended that the closure of known tusk nursery grounds along the southeast and southern coast remain in effect.

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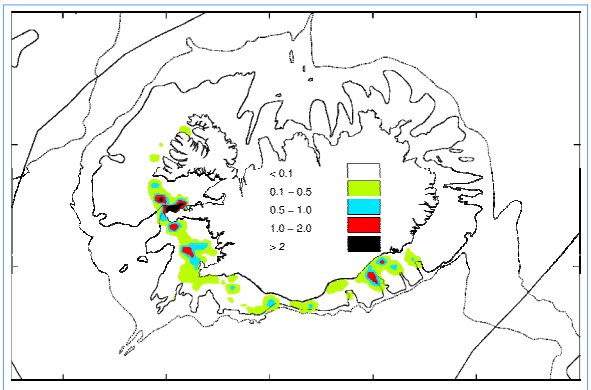
2.19. ANGLERFISH *Lophius piscatorius*

2.19.1. Catch, effort and distribution

In 2011 anglerfish landings totalled 3 200 tonnes, which is almost the same as landings in 2010 and therefore third highest annual landing from Icelandic waters (table 3.19.1 and figure 2.19.1). From 2000-2010 about half of landings were caught in gillnets and in 2011 this proportion increased to 62%. In addition, 36% was caught in Danish seine and trawls.

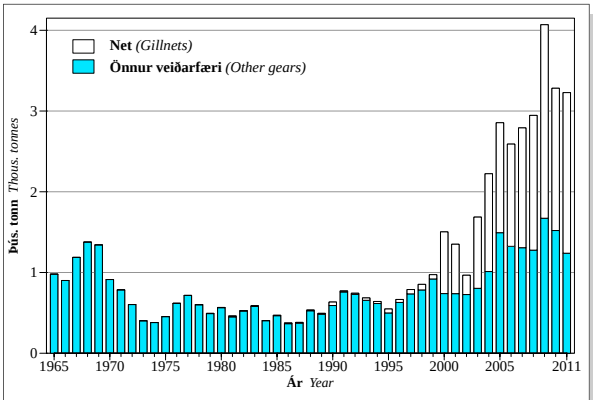
Since 2001 CPUE has increased in most gear types. In 2011 CPUE in Danish seine and lobster trawl was similar to that in 2010. The CPUE of gillnets is decreasing for the first time since direct targeting began in the year 2000. When recruitment was good for anglerfish, the proportion of young fish as bycatch in other gears than gillnets was high, especially in Norway lobster harvesting. This high proportion of young anglerfish has decreased substantially in recent years.

In the past, the prime fishing grounds for anglerfish were off the south and southeast coast. In recent years the prime grounds have been off the west coast, mostly near to Snæfellsnes. In 2011 72% of the landings came from west of Reykjanes Peninsula while only 28% came from the waters off the south coast. Data from the spring groundfish survey (SMB) show the same trend in distribution. This change in distribution is most likely a result of ocean warming in recent years. Along the west coast the highest proportion of anglerfish caught, 80%, were taken in gillnets in 2011.



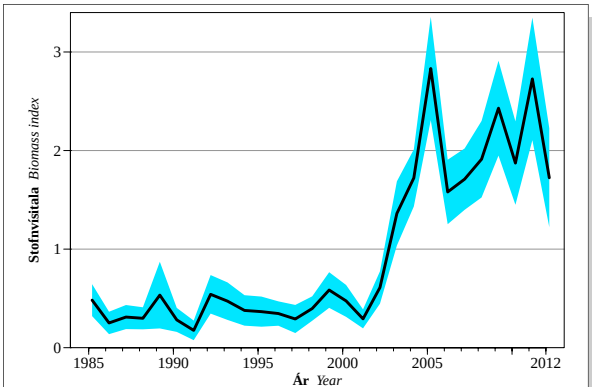
SKÖTUSELUR. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

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



Mynd 2.19.1. **SKÖTUSELUR**. Heildarafli (tonn) árin 1965–2011.

Fig. 2.19.1. ***ANGLERFISH.*** *Total landings (tonnes) during the period 1965–2011.*

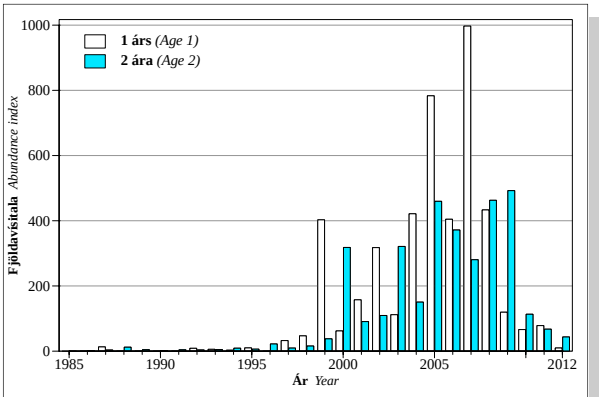


Mynd 2.19.2. **SKÖTUSELUR**. Vísitala veiðistofns (í þyngd, fiskar > 60 cm) í stofnmælingu botnfiska í mars árin 1985–2012. Skyggða svæðið sýnir eitt staðalfrávik í mati á vísitölunni.

Fig. 2.19.2. ***ANGLERFISH.*** *Biomass indices for fishable stock (> 60 cm) in annual groundfish surveys in March 1985–2012. Shaded area show one standard deviation in the estimate.*

2.19.2. Stock status

Anglerfish grow rapidly for the first 4-5 years of life and biomass indices show that the fishable biomass increased rapidly after the turn of the century (figure 2.19.2) due to recruitment (figure 2.19.3). Since then, the fishable biomass indices have remained high in relation to the period 1985-2000. The abundance indices for 1-2 year old fish



Mynd 2.19.3. **SKÖTUSELUR**. Vísitala ungfisks (eins og tveggja ára í fjölda) í stofnmælingu botnfiska í mars árin 1985–2012.

Fig. 2.19.3. ***ANGLERFISH.*** *Abundance indices for age 1 and 2 in annual groundfish surveys in March 1985–2012.*

(figure 2.19.3) indicate that the 2011 year class is small or similar to the cohorts from 2008-2010. Therefore, the last four year classes are thought to be small.

2.19.3. Projections and TAC recommendations for quota year 2012/2013

Table 2.19.1 shows TAC recommendations from the Marine Research Institute of Iceland (MRI) and anglerfish landings since quota year 2001/2002.

The results of the survey and CPUE indicate that the fishable stock is still rather large but is about to decrease. All of the cohorts from 2008-2011 are considered to be small and therefore the fishable stock will decline rapidly in the coming years if fishing remains at the intensity it has been in recent years. Recruitment for the last 4 years has been similar to what it was before the turn of the century but then the annual catches of anglerfish in the range of 500-700 tonnes.

The decrease that was measured in the fishable biomass in 2012 will continue unless a considerable decrease in effort occurs.

Taking the above into consideration, the MRI recommends that fishing pressure be decreased and that in the quota year 2012/2013 total landings be 1 500 tonnes. Also, the MRI proposes that a means of decreasing the amount of young anglerfish caught in trawls needs to be found.

Tafla 2.19.1.
SKÖTUSELUR. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) fiskveiðiárin 2001/2002–2011/2012.

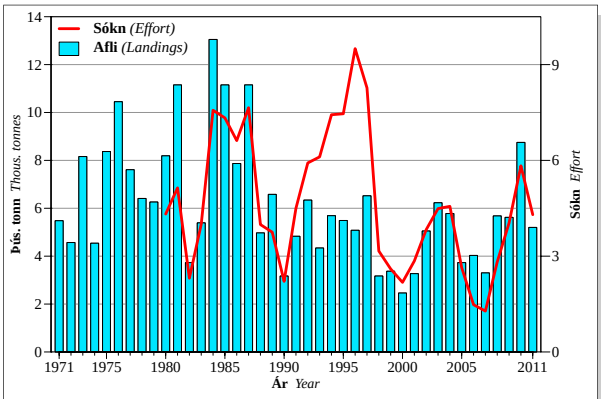
ANGLERFISH. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) in the quota years 2001/2002–2011/2012.*

Fiskveiðiár *Quota year*	Tillaga *Recommended 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	2 921
2008/09	2 500	3 000	3 709
2009/10	2 500	3 200	3 581
2010/11	2 500	3 000	3 376
2011/12	2 500	2 850	

2.20. LUMPFISH *Cyclopterus lumpus*

2.20.1. Catch and effort

In 2011 about 5 200 tonnes of female lumpfish were landed in Iceland, rather less than the 6 200 tonnes of lumpfish in bycatch during 1971-2010. Large fluctuations have occurred in female lumpfish landings over the last decade (figure 2.20.1 and table 3.20.1). Landings reached a climax in 1984 at about 13 thousand tonnes and a minimum in the year 2000 of about 2 500 tonnes. Harvesting mainly occurs in March-May around the country and targets sexually mature female lumpfish.



Mynd 2.20.1. **HROGNKELSI**. Heildarafli grásleppu (þús. tonna) árin 1971–2011 og sókn 1980–2011.

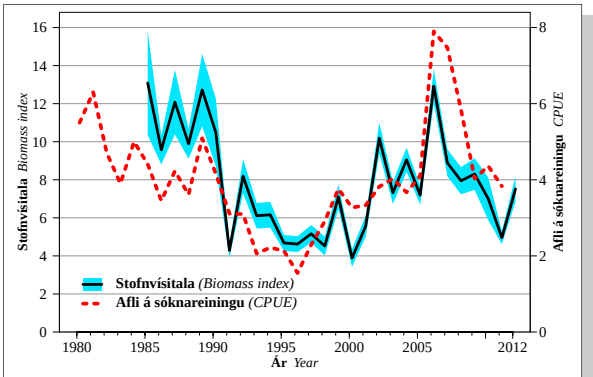
Fig. 2.20.1. ***LUMPFISH****. Total landings (thous. tonnes) of females 1971–2011 and effort* 1980–2011.

The length of the season is decided upon before fishing begins so a specific number of days is allotted for the harvesting. In addition to the limiting of the number of days there is a limited number of female lumpfish harvesting permits allocated. In 2011 and 2012 the season was limited to 50 continuous days. This management system is such that in addition to the status of the stock, the weather can have a serious effect on the yield of harvesting. Furthermore, the state of the market for lumpfish roe can affect effort. The variation in CPUE from one year to the next can thus be considerable (table 3.20.2 and figure 2.20.2).

Logbook data, which along with catch data from ports provide information about female lumpfish, are available from 1980. Effort (calculated by dividing total landings by catch per unit effort) reached a maximum between 1994 and 1997 but was at a minimum in 2007 (figure 2.20.1 and table 3.20.2). Since 2007 the allocation of more female lumpfish harvesting permits per year has led to a substantial increase in effort.

2.20.2. Stock survey

The estimation of trends in stock biomass is conducted using data from the March groundfish survey (SMB). Although lumpfish are considered to be pelagic many are caught in bottom trawls. Many more lumpfish are caught during the day than at night and most are sexually mature fish that are on their way to the spawning grounds. The calculation method of indices has been somewhat revised in that this year it includes all available gender analyses rather than relying solely on size classes. The same general trend is seen in biomass indices and CPUE during the female lumpfish season (figure 2.20.2).

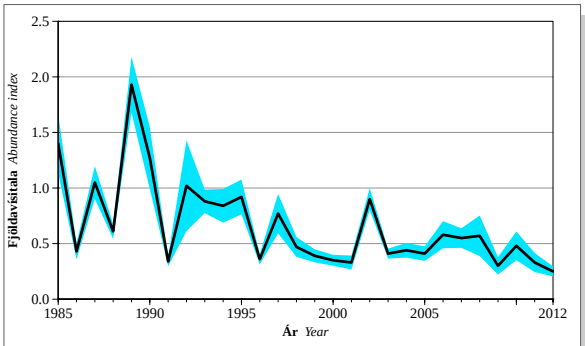


Mynd 2.20.2. **HROGNKELSI**. Stofnvísitala grásleppu (í þyngd) samkvæmt stofnmælingu botnfiska árin 1985–2012 og afli á sóknareiningu árin 1980–2011. Skyggða svæðið sýnir eitt staðalfrávik í mati vísitölunnar.

Fig. 2.20.2. ***LUMPFISH****. Biomass index of females from annual groundfish survey 1985–2012 and CPUE in female fishery 1980–2011. The shaded area shows one standard deviation of the index.*

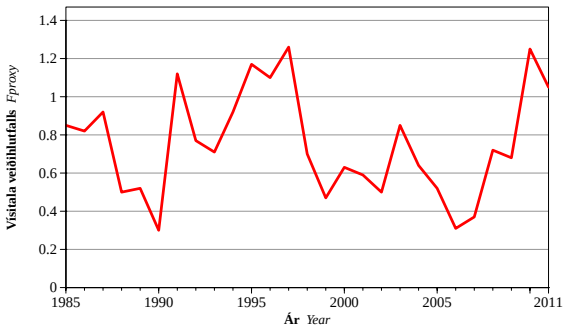
2.20.3. Stock status

Female lumpfish biomass indices decreased steadily from 2006-2011, but increased somewhat in 2011 and is near to the mean index from 1985-2011. The biomass index for male lumpfish in 2012 is, on



Mynd 2.20.3. **HROGNKELSI**. Stofnvísitala rauðmaga (í fjölda) samkvæmt stofnmælingu botnfiska árin 1985–2012. Skyggða svæðið sýnir eitt staðalfrávik í mati vísitölunnar.

Fig. 2.20.3. ***LUMPFISH****.* Abundance index of males from annual groundfish survey 1985–2012. The shaded area shows one standard deviation of the index.



Mynd 2.20.4. **HROGNKELSI**. Vísitala veiðihlutfalls grásleppu (afli/vísitölu) árin 1985–2011.

Fig. 2.20.4. ***LUMPFISH.*** Relative fishing mortality (landings/biomass index, or F_{proxy}) for females 1985–2011.

the other hand, at an historical low (figure 2.20.3). Fproxy (catch/biomass index, see Appendix 5.1) has been increasing since 2006 and is near to an historical maximum (figure 2.20.4).

2.20.4. Assumptions in recommendations

Recommendations from the Marine Research Institute of Iceland (MRI) aim to keep the harvest rate index below 0.75, which is the average from the period 1985-2011. Lumpfish are considered to be a rather short-lived species and they usually spawn only once and thus it is important that annual catches be based on biomass from the same year, rather than from the year before. With these considerations in mind, the MRI proposes a temporary recommendation for fishing next year, but the final recommendation will be given after data from the next survey are available, not later than April 1, 2013. Thus, the final advice will be given in the first half of the fishing season.

A temporary recommendation for fishing in the next year is calculated as the current year's biomass index multiplied by 0.225, but the final recommendation that comes next year will be based on that year's biomass index multiplied by 0.525 which will then be added to the temporary recommendation. The current biomass index is therefore given a value of 30% and that of next year 70% when they are used as a basis for recommendations. From this, one can see that if the biomass index changes little from one year to the next the final recommendation then leads toward Fproxy of 0.75 as is the aim. By incorporating two surveys, there are smaller fluctuations in the advice due to uncertainty in measurements.

These recommendations also aim to keep the female lumpfish biomass above the historical minimum. If the female lumpfish biomass index falls below the lowest historical point (from the year 2000) then it has a value of 0 in calculation of TAC. The final advice in that case would be based solely on biomass indices that are above this minimum multiplied by the above factor.

The MRI will in the following months present the ministry and interested parties with more detailed information about these calculations used for TAC proposals.

2.20.5. Recommendations for quota year 2012/2013

Lumpfish harvesting has been managed by limits on the length of the season, the number of nets allowed per boat and the number of permits. Although this has been fairly successful as a management strategy, there have been a few things that cause concern. They are the decrease in female lumpfish biomass index in recent years, increases in harvest rate index and low male lumpfish biomass. Furthermore, the collection and recording of data from lumpfish harvesting has been somewhat inaccurate compared to other fisheries in Icelandic waters. For these reasons, it is clear that a more defined fishing management policy is needed.

With all of this under consideration, the MRI recommends that preliminary TAC for female lumpfish in quota year 2012/2013 be no higher than 1 700 tonnes which should provide about 3 500 tonnes of salted roe, based on the female lumpfish biomass index from the 2012 SMB. The MRI will, at the end of SMB 2013 provide a final TAC recommendation for the quota year 2012/2013, based on the methodology described in section 2.20.4.

Furthermore, the MRI recommends that more efficiency is needed in recording and monitoring of male lumpfish harvesting and lumpfish as bycatch in other fisheries.

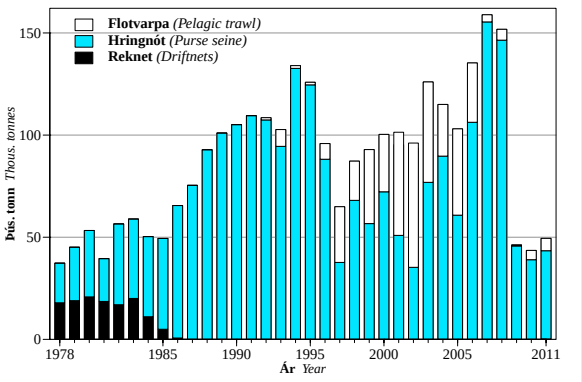
2.21. HERRING *Clupea harengus*

2.21.1. Summer spawning herring

Herring landings from 1978 through the quota year 2011/2012 are shown in figure 2.12.1 and landings since 1951 in table 3.21.1. Table 2.21.1 shows TAC recommendations from the Icelandic Marine Research Institute (MRI), TAC according to management policy and landings from 1990/1991.

Landings of summer spawning herring in the 2011/2012 season totalled about 49 thousand tonnes. Due to uncertainty about the likely trend of the biomass index during the current epidemic plaguing herring, no TAC was allocated in September of 2011, for the third year in a row. Following acoustic measurements in Breiðarfjörður at the end of October, the MRI recommended a TAC of 40 thousand tonnes. When policy makers decided on a TAC for the species 5 000 tonnes were added because of the herring in bycatch in the mackerel harvest.

Herring fishing did not begin in earnest until November when 38 thousand tonnes were caught, but fishing was closed in the first week of December. The majority of the landings were taken in and around Kiðeyjarsund in Breiðarfjörður as was the case four years previous. Nearly 6 000 tonnes were caught outside of Breiðafjörður, most of which was bycatch in the summer harvest of Norwegian-Icelandic mackerel. For the first time since 1986 drift nets were used in harvesting adult herring. The insignificant landings from these nets totalled only about 200 tonnes and were all taken in Breiðafjörður.

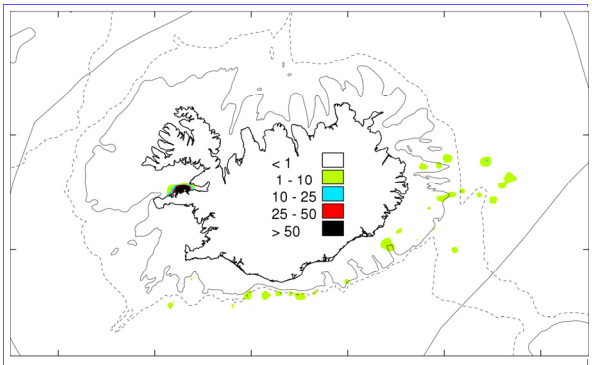


Mynd 2.21.1. **SÍLD**. Heildarafli (þús. tonna) skipt eftir veiðarfærum síðan 1978 (afli fiskveiðiárs frá 1991).

*Fig. 2.21.1. **HERRING**. Total landings by gear type (thous. tonnes) since 1978 (quota year since 1991).*

2.21.1.1. Age disaggregated landings and mean weight

Landings in numbers by age are shown in table 3.21.2. Cohorts from 2004 and 2005 comprised the highest proportion (16% and 14%) of landed



SÍLD. Veiðisvæði við Ísland fiskveiðiárið 2011/2012. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

HERRING. *Fishing grounds in fishing season 2011/2012. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

biomass but the proportions of cohorts from 2002, 2003, 2006, and 2007 were in the range of 10-12%.

Table 3.21.3 shows mean weight at age in landings. Mean weight in landings was high in all age classes in the last quota year, so it was similar to the past seven with the exception of quota year 2007/2008. Table 3.21.4 shows proportion mature and natural mortality since 1987. The high natural mortality index from 2009-2011 is the result of an epidemic of Ichthyophonus infection in the stock, but the infected proportion decreased in 2010 and 2011. In the estimation of the size of the spawning stock the same proportion mature was used for the entire period because the available data were not reliable as a basis for such an estimate.

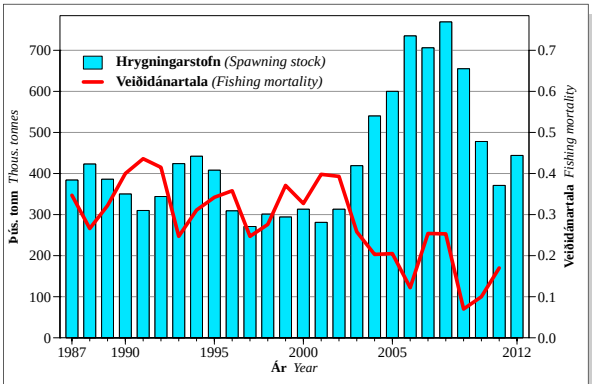
2.21.1.2. Acoustic surveys

Since 1973 the stock size of Icelandic summer spawning herring has been measured annually by acoustic survey. These measurements were conducted in November-December and/or January, at the end of the fishing season. The measurements in the quota year 2011-2012 were conducted in October, November and January in Breiðafjörður and in January the survey was extended to the distribution area outside of Breiðafjörður. The measurement from November was considered to be the most accurate model for the Breiðafjörður stock and was used in addition to measurements from other areas. In all, about 579 thousand tonnes of adult herring were measured, thereof 435 thousand tonnes in Breiðafjörður and 144 thousand tonnes offshore from Hornafjörður. About 71% of the herring measured in research cruise were full grown (>26 cm) but younger herring were most common at Mýrabug, offshore of Grindavík and in Stakksfjörður near Reykjanesbær. Most of the herring age two and older were from the 2008 cohort and this year class

was about 27% of the total number of fish. Next, the cohort from 2009 was about 19% of the total, year class 2007 about 12% and cohorts from 2004-2006 about 7-9% each.

Acoustic measurement of young herring was conducted within the fjords in the main herring grounds from Breiðafjörður north to Öxarfjörður in November. Furthermore, the infected proportion was estimated. The results of these measurements indicate that the 2010 cohort is small. The numbers of the 2010 year class were insignificant over the entire sampling region, but there was no infection to be seen in those fish that were found. Estimates of two year old herring by acoustic are not reliable in this case.

The infection in the herring stock seems to be in decline, especially in younger herring. Herring at age three and younger last fall were almost infection free and only about 18% of the age four fish were infected. The average infected proportion for the stock as a whole was 27%, in comparison to 32-43% each of the last three winters. The development of the infection in the affected portion of the stock over the winter also seems to be much slower than in recent years. This will be further investigated in the coming months and an evaluation of whether the mortality caused by the infection this year is less than the infection proportion suggests.



Mynd 2.21.2. **SÍLD**. Stærð hrygningarstofns (þús. tonn) á hrygningartíma árin 1987 til 2012 og meðalveiðidánartala (F) 5–10 ára síldar 1987–2011.

*Fig. 2.21.2. **HERRING**. Spawning stock biomass at spawning time during the period 1987 to 2012 (thous. tonnes) and weighted F_{5-10} 1987–2011.*

2.21.1.3. Stock status and projections

Analysis of the summer spawning herring was done with two different stock assessment models that both have their basis in age disaggregated landings and age distribution indices from acoustic surveys from 1987-2012. The results of the NFT-ADAPT analysis (see Appendix 5.1) were used as a basis for recommendations and projections, as in previous years. The reason for choosing this model is that there is high variation in the fishing pattern (fishing proportion by age) but NFT-ADAPT, like most models that are based on age-landing analysis, takes into account variable fishing pattern.

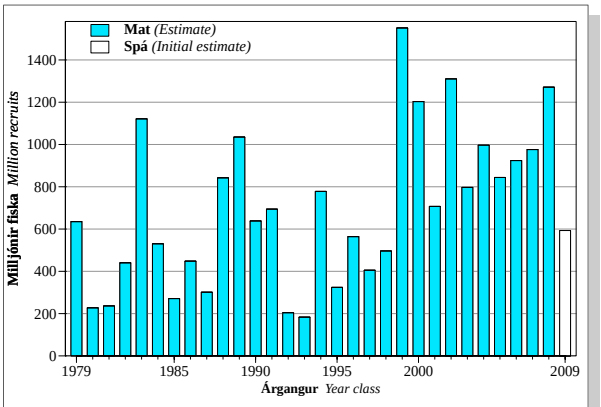
TAFLA 2.21.1.
SÍLD. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðun stjórnvalda og afli (þús. tonn) 1990/1991–2011/2012.

***HERRING**. TAC recommended by the Marine Research Institute, national TAC and landings in the quota years (thous. tonnes) 1990/1991–2011/2012.*

Ár *Year*	Tillaga *Recommended 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	

[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. *TAC was decided 70 thous. tonnes but because of transfers from the previous quota year the national TAC became 90 thous. tonnes.*

The size of the spawning stock is estimated to be 444 thousand tonnes in the beginning of 2010 (figure 2.21.2). Of this about 66 thousand tonnes (about 14% of the fishable stock biomass) are infected and will die in the first months of the year. For this reason, the 2012 spawning stock biomass at spawning time is expected to be 377 thousand tonnes. The fishing mortality in the last quota year (2011/2012) is estimated at 0.17. According to the stock assessment the structure of the spawning stock in 2012 is such that the 2008 year class is 51% of the



Mynd 2.21.3. **SÍLD**. Stærð síldarárganganna 1979–2009 sem fjöldi við þriggja ára aldur (í milljónum).

*Fig. 2.21.3. **HERRING**. Abundance of year classes 1979–2009 at age 3 (numbers in millions).*

TAFLA 2.21.2.
SÍLD. Áhrif mismunandi aflamarks á áætlaða stærð hrygningarstofns (þús. tonn) árið 2013.
HERRING. *Projection of spawning stock biomass (thous. tonnes) in 2013 for different management strategies.*

2012			2013				2014	
F[1)]	Afli *Catch*	Hrygn. stofn *Spawn. stock*	Aflamark *TAC*	*F*[1)]	Hrygn. stofn *Spawn. stock*	Stofn 3+ *Stock 3+*	Hrygn. stofn *Spawn. stock*	Stofn 3+ *Stock 3+*
0.17	49	444	67	0.22	377	513	421	493
			40	0.13	377	513	447	521
			50	0.16	377	513	437	510
			80	0.27	377	513	409	480

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

biomass, 2007 year class is about 13%, but the cohorts from 2002-2006 and 2009 are 3-6% each.

For many years, in analysis of the herring stock there was a tendency to overestimate the biomass and underestimate the fishing mortality index, but in the last four years it seems the opposite has happened so the stock biomass was underestimated. According to the current stock assessment, quota years 2005/2006, 2006/2007 and the last three were the only ones since 1986 when the fishing mortality index was below the optimum level that was desired. Due to how cautious the exploitation policy is, it seems that systematic overestimation does not have negative effects on the stock. There is still some uncertainty about the size of the stock as illustrated by inconsistency between the results of the acoustic surveys and the stock estimation models. Uncertainty about the fate of infected herring and the incubation period of the infection also cause uncertainty in estimation of stock size. Examination of the proportion of various infection stages in the stock and their development over the winter gives strong indications that the epidemic may be waning and that a stronger resistance to this infection seems to have developed in the stock. Similar results were attained from research by the MRI in the winter of 2010/2011, but it seems that now there is more evidence to support the conclusion.

2.21.1.4. TAC recommendations for quota year 2012/2013

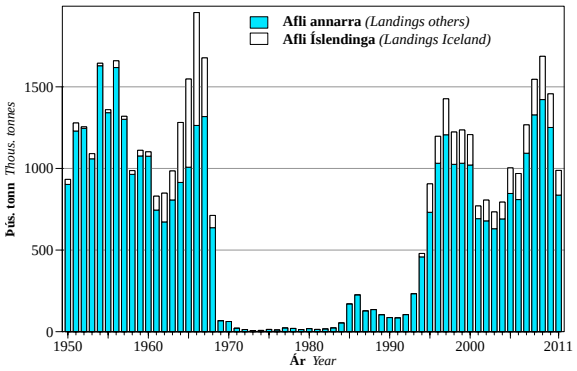
As has been described here, there is somewhat uncertainty about the stock assessment, which is obvious in the tendency in the past to overestimate the stock but to underestimate it in recent years. On the other hand, the infected proportion of the stock is decreasing and especially among younger fish. Uncertainty caused by this infection is less than it has been in recent years and the stock size is estimated to be above the cautionary limit. Considering these facts, the MRI recommends that landings be aiming toward optimum fishing effort (F=0.22) and total landings in the quota year 2012/2013 should be 67 thousand tonnes.

In the last quota year there was a regulation in effect that limited fishing of the herring stock to Breiðafjörður and Faxa Bay because of the proportion of nearly uninfected small herring offshore. If samples from the landings and/or results of research cruises show the same distribution patterns in the beginning of next year the MRI will evaluate whether or not it would be right to impose the same area limitations as were in place in the herring fishery in quota year 2012/2013.

2.21.2. Norwegian-Icelandic spring spawning herring

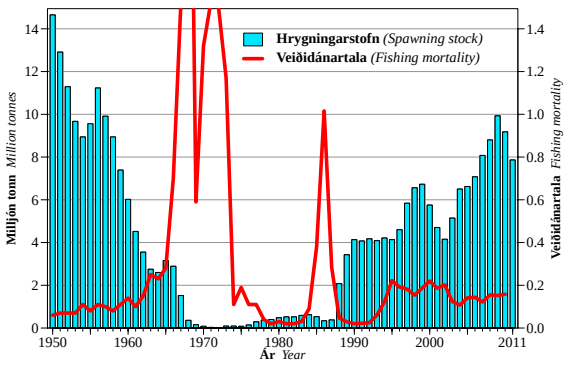
Total landings and Icelandic landings from the Norwegian-Icelandic herring stock during the period 1950-2011 are shown in figure 2.21.4 and table 3.21.5. Fishing of the population starting in 2002 was limited so that the fishing mortality index would not go over 0.125 according to an agreement between Norway, Russia, Iceland, Faeroes and the European Union. According to the agreement, from 2007 the Icelandic proportion of total landings is 14.51%.For the year 2011 the International Council for the Exploration of the Sea (ICES) advised that total landings should not exceed 988 thousand tonnes and therefore the Icelandic portion would be 143 thousand tonnes.

Icelandic landings in 2011 were more than 151 thousand tonnes. The majority of this (119 thousand tonnes) was caught within the Icelandic EEZ between June and November according to temporary estimates. Almost 15 thousand tonnes was caught within the Faeroese EEZ, almost 9 thousand tonnes in the Norwegian EEZ and over 8 thousand tonnes in international waters.



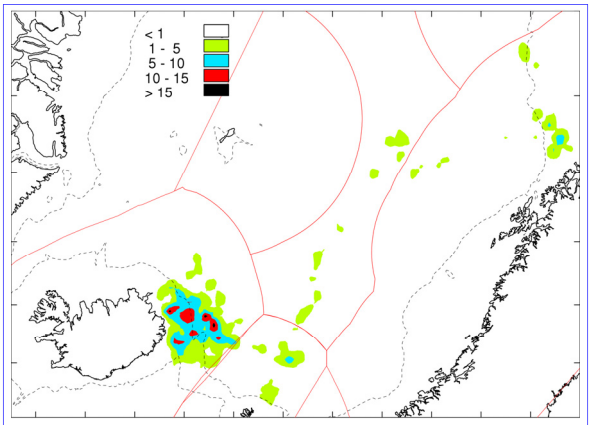
Mynd 2.21.4. **NORSK-ÍSLENSK VORGOTSSÍLD**. Heildarafli og afli Íslendinga (þús. tonna) árin 1950–2011.

*Fig. 2.21.4. **NORWEGIAN SPRING-SPAWNING HERRING**. Total landings (thous. tonnes) and Icelandic landings since 1950.*



Mynd 2.21.5. **NORSK-ÍSLENSK VORGOTSSÍLD**. Stærð hrygningarstofns í milljónum tonna árin 1950–2011 og vegin meðalveiðidánartala (F) 5–14 ára síldar 1950–2010.

*Fig. 2.21.5. **NORWEGIAN SPRING-SPAWNING HERRING**. Spawning stock size (million tonnes) since 1950 and weighted mean F_{5-14} 1950–2010.*



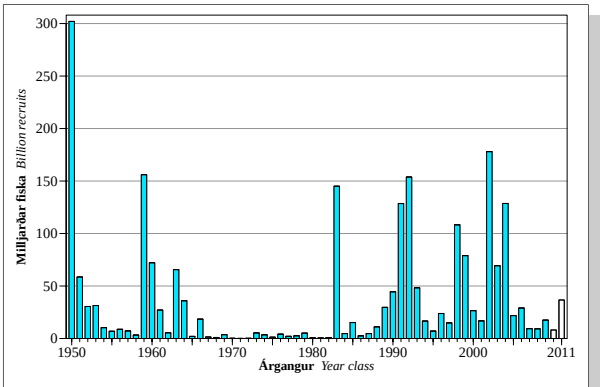
NORSK-ÍSLENSK VORGOTSSÍLD. Veiðisvæði íslenskra skipa árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

NORWEGIAN SPRING-SPAWNING HERRING. *Fishing grounds of the Icelandic fleet in 2011. Dark areas indicate highest catch (tonnes (nmi^2).*

According to the 2011 stock assessment, the spawning stock biomass was about 8 million tonnes. The year classes from 2002 and 2004 are by far the largest part of the spawning stock, representing 24% and 32%. All year classes after 2004 are estimated to be very small and therefore the spawning stock will continue to shrink despite a moderate catch rule being followed (figure 2.21.6).

ICES has advised that not more that 833 thousand tonnes be taken and the nations fishing this stock agreed to that catch limit. This catch limit is consistent with the goal of a long-time management policy of harvesting the Norwegian-Icelandic herring stock. The Icelandic allotment of total stock was 121 thousand tonnes.

Since the ICES workgroup on pelagic fishes



Mynd 2.21.6. **NORSK-ÍSLENSK VORGOTSSÍLD**. Stærð árganga frá 1950–2011 sem fjöldi við eins árs aldur (milljarðar).

*Fig. 2.21.6. **NORWEGIAN SPRING-SPAWNING HERRING.** Abundance for year classes 1950–2011 at age 1 (numbers in billions).*

meets in the autumn, a new stock biomass estimate and advised TAC will not be available until October of 2012.

2.22. CAPELIN *Mallotus villosus*

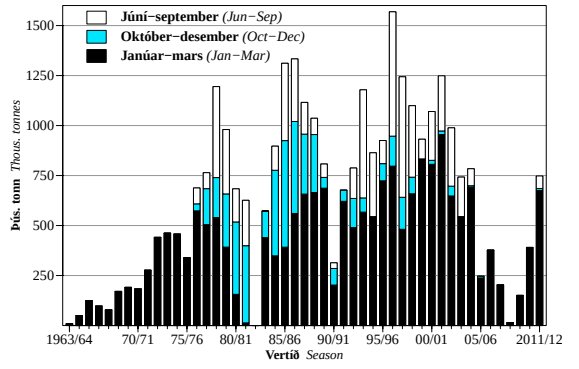
2.22.1. Catch and effort

In the beginning of July 2011 a capelin quota of 82 thousand tonnes was allotted to Norwegian, Greenlandic and Faeroese vessels under an international agreement. Furthermore, all fishing for capelin was banned within the Icelandic EEZ from July 6-September 30. Icelandic ships were allotted a 181 thousand ton preliminary quota starting on October 1. At the end of January 2012, following recommendations from Iceland's Marine Research Institute (MRI), the Ministry of Fisheries and Agriculture decided that final capelin quota for the 2011/2012 season would be 765 thousand tonnes.

Total landings after the season, which lasts from June–April and capelin landings, in the region of Iceland/Greenland/Jan Mayen, are shown in table 2.22.1 and figure 2.22.1.

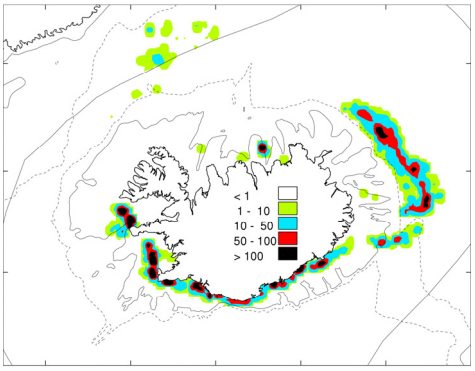
In the summer of 2011 63 thousand tonnes of capelin were caught but the summer harvest has not been conducted since 2004 (figure 2.22.1). Fall fishing began in October and about 9 thousand tonnes were caught before the end of the year. In the last 10 years little or no capelin fishing has been conducted in the fall. The total landings for summer and fall in 2011 were 72 thousand tonnes (table 3.22.1).

Winter capelin fishing commenced in the beginning of January 2012. Effort was catered to the northeast and east of Iceland in January. In all capelin landings in January were 196 thousand tonnes in January. In the second week of February the capelin ran into Mýrarbugt and the run reached Faxi Bay and Breiðafjörður around the end of February and beginning of March. In all about 325 thousand tonnes were caught in February and 155 thousand tonnes in March. Fishing ended in mid-March and the total landings from the winter were



Mynd 2.22.1. **LOÐNA**. Heildarafli og skipting afla á sumar, haust og vetur, vertíðarnar 1963/64–2011/12.

*Fig. 2.22.1. **CAPELIN**. Total landings and partitioning of the landings taken in summer, autumn and winter in the 1963/64–2011/12 fishing seasons.*



LOÐNA. Veiðisvæði við Ísland vertíðina 2011/2012. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

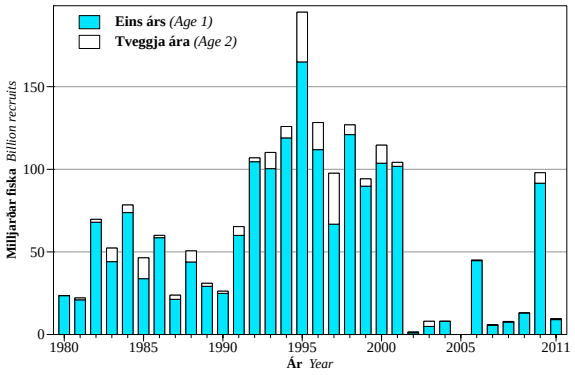
***CAPELIN**. Fishing grounds in 2011/2012 fishing season. Dark areas indicate highest catch (tonnes/nmi^2).*

675 thousand tonnes (table 3.22.1). Total landings in the quota year 2011/2012 were thus 747 thousand tonnes. In the quota year 2011/2012 the cohort from 2009 joined the fishable stock. This cohort was about 60% of the landings by number in the summer and fall harvests (table 3.22.2) and about 80% of landings by number in the winter harvest (table 3.22.3).

2.22.2. Acoustic surveys

Since about 1980 annual acoustic surveys have been conducted to investigate the distribution and abundance of capelin. Survey cruises directed at young capelin have been conducted from October–December. The results of these surveys have been used to calculate preliminary quotas for the next season. Surveys directed at adult capelin, that is the fishable stock, are usually conducted in the winter from January–February. The purpose of these surveys is to measure the biomass of the fishable stock and determine a final TAC for the current season.

In the fall of 2010 the acoustic survey of young capelin was connected with the fall stock survey (SMH) for the first time. For this reason, the acoustic survey was conducted somewhat earlier than usual. At this time of the year there is less ice on the capelin fishing grounds and nursery grounds and thus it is possible to survey a larger area. In the fall of 2010 a large amount of young capelin was found in the Greenland Strait and along eastern Greenland, which is consistent with the theory that since the beginning of the first decade of this century the distribution of capelin extends farther west than was previously believed. In the fall of 2011 the same kind of extended acoustic survey was planned but had to be delayed due to a labour strike on the MRI research vessels and so it began early in November. Sea ice was a hindrance and only the area off the

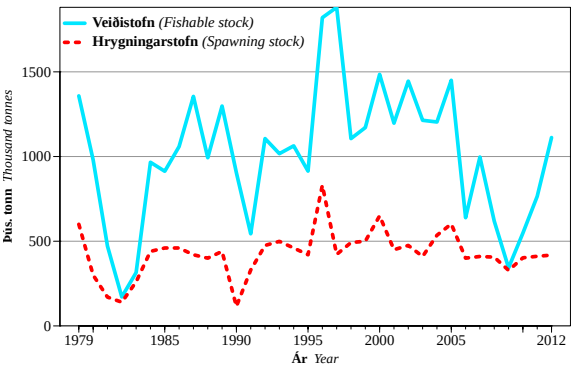


Mynd 2.22.2. **LOÐNA**. Mældur fjöldi ókynþroska 1 og 2 ára loðnu að hausti árin 1980–2011.

*Fig. 2.22.2. **CAPELIN**. Acoustically measured number of immature age 1 and 2 capelin in autumn 1980–2011.*

coast of the West Fjords and western end of the north coast could be surveyed. Young capelin biomass indices were so low (figure 2.22.2 and table 3.22.6) that it is not possible to recommend a preliminary quota for next season. In the beginning of February a survey was conducted to measure the biomass of young capelin, but as was the case in the previous survey cruise, only a limited area could be surveyed and indices were too low.

In the beginning of January 2012 an organized search for capelin was conducted in cooperation with fishing vessels and research ships. Following this search, the run was measured twice by researchers on the R/S Árni Friðriksson. The first measurement was conducted from January 5–13. The capelin were on the outside of the shelf from Strandagrunn in the west to Vopnafjarðargrunn in the east. West of Kolbeinseyjar Ridge was found mostly immature capelin. In all 1 100 thousand tonnes of spawning capelin were measured. From January 14–24 the run was measured a second time. In the area between Kolbeinseyjar Ridge and Norðfjarðardjúp over 1 000 thousand tonnes of spawning capelin were measured.



Mynd 2.22.3. **LOÐNA**. Stærð veiðistofns 1. janúar og stærð hrygningarstofns (þús. tonna) á hrygningartíma á vertíðunum 1978/79–2011/12.

*Fig. 2.22.3. **CAPELIN**. Abundance of the fishable stock 1 January in the 1978/79–2011/12 fishing seasons and the remaining spawning stock biomass at the end of each season (thous. tonnes).*

TAFLA 2.22.1.
LOÐNA. Endanlegar tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonn) 1984/85–2011/2012.
***CAPELIN**. TAC recommended by the Marine Research Institute, national TAC and landings (thous. tonnes) 1984/85–2011/2012.*

Vertíðir *Seasons*	Tillaga *Rec. TAC*	Aflamark *TAC*	Afli Íslendinga *Landings (Iceland)*	Afli annarra *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

After taking into consideration the amount of capelin that was caught between measurements, the fishable capelin stock in the beginning of the year is estimated to be the same in both measurements. With these measurements as a basis and because according to the catch rule 400 thousand tonnes of fish are supposed to be allowed to spawn, the MRI recommended a TAC for the 2011/2012 capelin season of 765 thousand tonnes.

Stock size in number by weight, both by age and maturity, is given in table 3.22.5. Since total landings were less than the TAC it is expected that 418 thousand tonnes spawned in the spring of 2012 (figure 2.22.3).

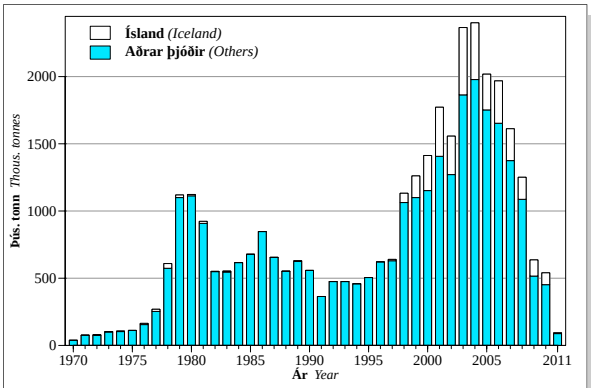
2.22.3. Recommendations

The next capelin season (2012/2013) should consist mostly of cohorts from 2010 and 2009. Since very little of immature capelin were measured in the fall of 2011 (figure 2.22.2 and table 3.22.6) there is no way to recommend a preliminary quota for 2012/2013, The MRI recommends that capelin fishing remain closed until the stock is measured successfully and the results indicate that fishing can be allowed without violating the catch rule that 400 thousand tonnes be left to spawn.

2.23. BLUE WHITING *Micromesistius poutassou*

2.23.1. Catch and cohort structure

Blue whiting landings in the Northeast Atlantic since 1970 are shown in figure 2.23.1 and in table 3.23.1. From 1970–1981 landings increased from 40 thousand tonnes to about 1.1 million tonnes. In following years landings decreased again remained rather stable from 1982–1997 in the range of 400–700 thousand tonnes. Then landings increased rapidly from 1998 and reached a high point in 2004 when the catch was 2.4 million tonnes. Landings have decreased since then. In 2010 the catch was 524 thousand tonnes and in 2011 it was only about 94 thousand tonnes.

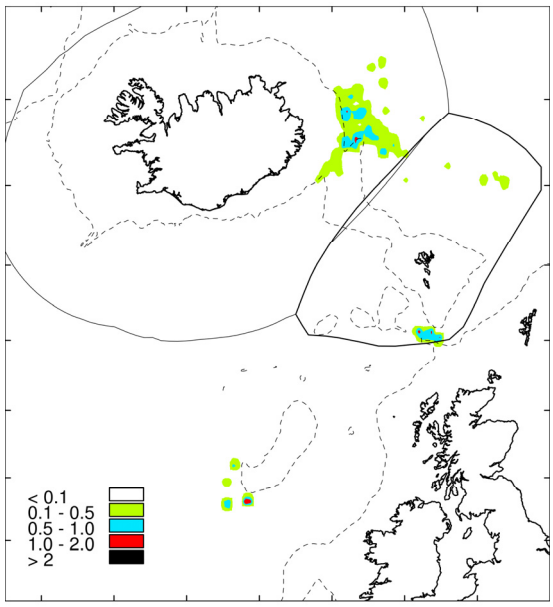


Mynd 2.23.1. **KOLMUNNI**. Heildarafli (þús. tonna) í NA-Atlantshafi árin 1970–2011.

*Fig. 2.23.1. **BLUE WHITING**. Total landings (thous. tonnes) 1970–2011 from the NE Atlantic Ocean.*

Icelandic landings increased quickly in the period 1997–2003, from over 10 thousand tonnes to 500 thousand tonnes, but they have decreased since. Icelandic landings in 2009 were 120 thousand tonnes, in 2010 about 88 thousand tonnes and almost 6 thousand tonnes in 2011. In the years 1995–2005 54–100% of the Icelandic landings were caught within the Icelandic EEZ, but in 2006 and 2007 more than 60% of the landings were caught in the Faeroese EEZ. In 2006 and 2007 20% of landings were caught in international waters west of the British Isles and in 2008–2011 almost all Icelandic landings were caught outside the Icelandic EEZ.

Data describing the age distribution of total landings for 2011 are not available, but in the total landings in 2010 cohorts from 2003–2005 were 65% of the number of caught fish. The largest proportion of the catch (28%) was of the 2004 cohort, about 10% of the number of fish caught was a year old, and less than this was caught from other cohorts. In 2009 most of the fishable stock consisted of cohorts from 2002–2005 and together they represented 81% of the catch.

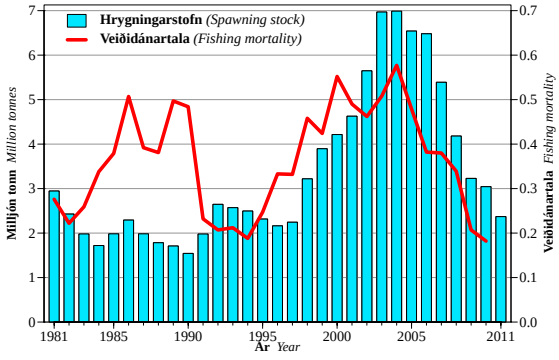


KOLMUNNI. Veiðisvæði íslenskra skipa árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***BLUE WHITING**. Fishing grounds of the Icelandic fleet in 2011. Dark areas indicate highest catch (tonnes/nmi^2).*

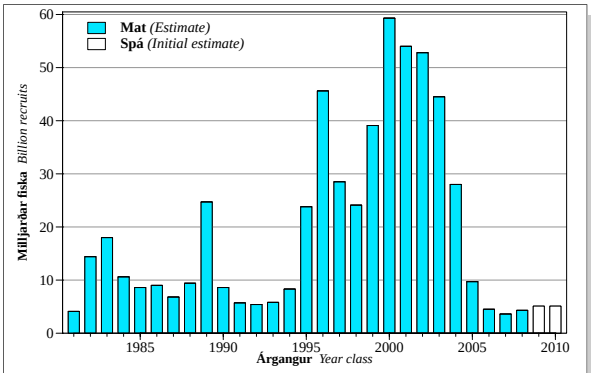
2.23.2. Stock status

In October each year an analysis of the blue whiting stock is conducted at the behest of the International Council for the Exploration of the Sea (ICES). The newest estimate of the stock size is thus from October 2011. According to that stock estimate, the spawning stock biomass increased from 2.2 million tonnes in 1996 to about 7 million tonnes in 2004 (figure 2.23.2) because of very large cohorts from 1995–2003 reaching maturity. Since then, the stock decreased quickly and is estimated to be about 2.4 million tonnes in 2011, just above the defined caution limit (2.25 million tonnes). The estimated



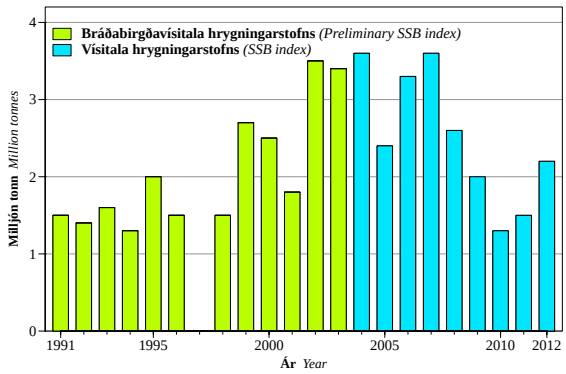
Mynd 2.23.2. **KOLMUNNI**. Stærð hrygningarstofns 1981–2011 og meðalveiðidánartala (F) 3–7 ára kolmunna 1981–2010.

*Fig. 2.23.2. **BLUE WHITING**. Spawning stock biomass 1981–2011 and mean F_{3-7} during 1981–2010.*



Mynd 2.23.3. **KOLMUNNI**. Mat á stærð árganga 1980–2010 við eins árs aldur (í milljörðum).

*Fig. 2.23.3. **BLUE WHITING**. Size of the 1980–2010 year classes. Number of recruits at age 1 (in billions).*



Mynd 2.23.4. **KOLMUNNI.** Niðurstöður bergmálsmælinga (endurskoðaðar vísitölur í þyngd) á stærð hrygningarstofns kolmunna 1991–2012. Vísitölur frá 2004–2012 eru reiknaðar með nýjum endurvarpsstuðli kolmunna en fyrir 2004 eru vísitölurnar endurskoðaðar til bráðabirgða.

*Fig. 2.23.4. **BLUE WHITING**. Acoustic biomass index at the spawning grounds. The indices from 2004–2012 are calculated with a new estimate of the target strength of blue whiting, but prior to 2004 the indices are preliminary.*

spawning stock biomass at the beginning of 2012 is the same as it was at the beginning of 2011. This is a decrease of nearly 66% in the period 2004–2012. Figure 2.23.2 shows the mean fishing mortality indices for three to seven year old blue whiting. These have decreased from 0.58 in 2004 to about 0.18 in 2010. The number of age one recruits in the years 1981–2010 is shown in figure 2.23.3. All year classes from 1996–2004 are thought to be large or very large and furthermore they are all estimated to be as large as or larger than the largest year class from 1980–1994. Estimates of year class size after 2004 indicate that they are all small.

Norway and Russia have estimated the size of the spawning stock with acoustic surveys in the spawning grounds west of the British Isles and near the Faeroes in March–April of every year since 1983. Since 2004 studies have been conducted with participation of many countries. Although results of acoustic surveys on pelagic fish are most often considered to measure the real stock size, this is believed to be untrue for blue whiting because there is some uncertainty about the species' reflection coefficient. For this reason, the results of acoustic surveys are used as indices that illustrate changes in stock size. In 2011 the reflection coefficient of blue whiting was reviewed and revised under the auspices of ICES. This new reflection coefficient was used in acoustic surveys of the spawning grounds in 2012 and older acoustic surveys were recalculated for consistency. However, the review of indices for the years up to 2004 is not complete. The results show that the spawning stock biomass indices have been in the range of 1.3–3.6 million tonnes from 2004–2012 (figure 2.23.4). The spawning stock biomass index calculated with the new reflection index is usually 32% of the old values. Furthermore, the indices are now closer to the results of the annual estimates of the size of the spawning stock. In the acoustic surveys in March–April 2010 there was some discrepancy between ships as to the timing of the survey and some areas were omitted. The biomass index for 2010 was about 50% lower than that from 2009. This index was not used in stock estimation in the fall of 2011. In March 2011 the biomass index of the spawning stock was 1.5 million tonnes and in March 2012 the temporary estimate was 2.2 million tonnes, which is a 47% increase since 2011. This new coefficient will be used in the next analysis of the stock in the fall of 2012.

2.23.3. Projections and TAC recommendations for 2013

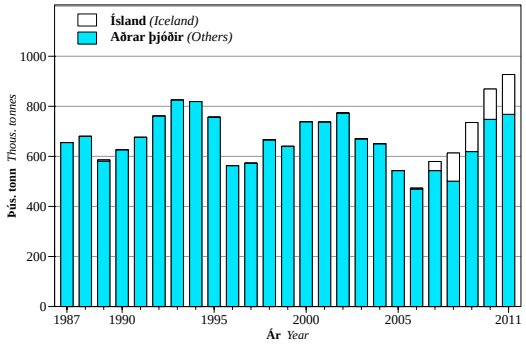
Due to high fishing pressure up until 2008 and poor recruitment in recent years the spawning stock has decreased very rapidly. ICES has recommended that no more than 391 thousand tonnes of blue whiting be landed in 2012. This corresponds to a fishing mortality of about 0.18 and is consistent with a precautionary stance and agreed upon exploitation plan that Icelanders, Norwegians, Faeroese, Russians and the European Union have drawn up about fishing of the blue whiting stock. The allotted Icelandic portion of the total landings for 2012 is about 60 thousand tonnes.

TAC recommendations from ICES for the year 2013 will be presented in October of 2012 at the close of the fall meeting of the advicory committee.

2.24. MACKEREL *Scomber scombrus*

2.24.1. Landings, effort, and year class organization

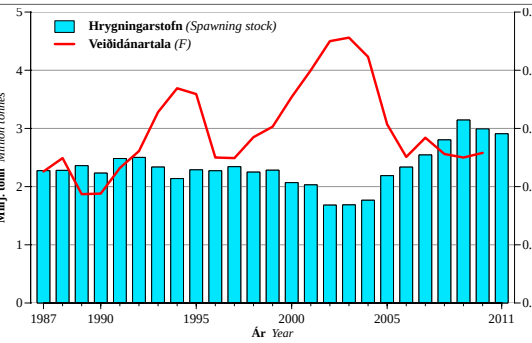
Landings of mackerel caught in the Northeastern Atlantic from the year 1987 are shown in figure 2.24.1 and table 3.24.1. Landings were relatively stable from 1987-2009, averaging 667 thousand tonnes, most at 825 thousand tonnes in 1993 and least at 473 thousand tonnes in 1996. Landings in 2010 were about 869 thousand tonnes and the landings in 2011 are expected to be about 927 thousand tonnes which is the largest catch since 1970.



Mynd 2.24.1. **MAKRÍLL**. Heildarafli (þús. tonna) árin 1987–2011.

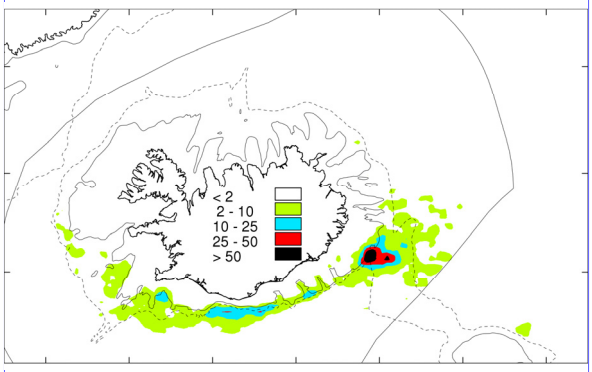
*Fig. 2.24.1. **MACKEREL**. Total landings (thous. tonnes) 1987–2011 from the NE Atlantic.*

The main fishing grounds for mackerel have been in the North Sea and around the British Isles. In that region, fishing is heaviest from fall and until sometime in spring. In the last few years, mackerel has been venturing into Icelandic waters in increasing numbers during the summer months and into the early fall. This increase is attributed to oceanic warming. In 2006 mackerel began appearing as bycatch in summer herring fishing in pelagic trawls off the eastern coast and then landings were about 4 000 tonnes. The next summer these catches



Mynd 2.24.2. **MAKRÍLL**. Stærð hrygningarstofns 1987–2011 og veiðidánartala (F) 4–8 ára makríls 1987–2010.

*Fig. 2.24.2. **MACKEREL**. Spawning stock biomass 1987–2011 and mean F_{4-8} during the period 1987–2010.*



MAKRÍLL. Veiðisvæði íslenskra skipa árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***MACKEREL**. Fishing grounds of the Icelandic fleet in 2011. Dark areas indicate highest catch (tonnes/nmi^2).*

increased to just over 36 thousand tonnes. From 2008-2011 catches continued to increase from 112 to 159 thousand tonnes and most of this was caught by direct fishing. The main mackerel grounds in Icelandic waters have been to the east and southeast but in addition landings increased from the southwest and western regions in 2010 and even more so in 2011. Only a very small portion of mackerel landings were taken from outside the Icelandic EEZ.

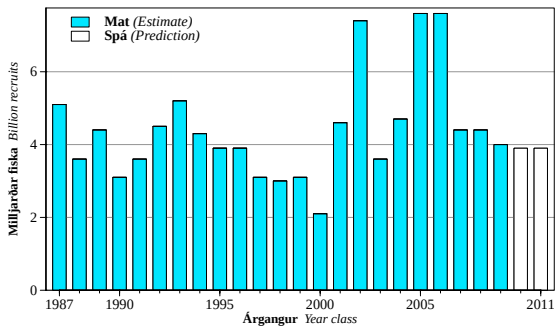
The age distribution of the landings in 2011 is not available. In 2010 the year classes from 2005 and 2006 were most common with about 25% and 30%, respectively, of the landings. The next most common year classes were from 2004 and 2007 which each represented 12% of landed fish.

2.24.2. Surveys

Since 1977 the amount of mackerel eggs have been estimated every third year during an internationally sponsored cruise that bridges the time period from January until July. In 2010 Faeroese and Icelandic researchers participated for the first time. The ocean region west of Europe was divided between the countries into sub-regions and 6 seasons and research began off the coast of Portugal in January.

The research cruise for the Marine Research Institute in Iceland was in June and took two weeks. The results of the cruise show that the main spawning grounds of mackerel are in traditional regions to the west of the British Isles, but spawning now extends farther north than is traditional, in fact, mackerel eggs were found well inside Icelandic waters. The results of the cruise are used in the following estimate of stock size.

In August, 2011, the MRI participated in an international cruise, for the third in a row, the



Mynd 2.24.3. **MAKRÍLL**. Mat á stærð árganga 1987–2011 (í milljörðum).

*Fig. 2.24.3. **MACKEREL**. Size of the 1987–2011 year classes at age 0 (in billions).*

purpose of which is to study the ecology, distribution and amount of pelagic fish in the ocean surrounding Iceland, the Faeroes and in the Norway Sea. Since these studies have only been ongoing for three years, their results are still not suitable to be used in the estimation of population size.

2.24.3. Status of the stock and recommendations

Assessment of the mackerel stock for ICES is done in the fall. According to this stock assessment the spawning stock has increased since 2003, when it was 1.7 million tonnes, to 3.1 million tonnes in 2009 (figure 2.24.2). In 2011 the spawning stock is estimated to be about 2.9 million tonnes and in 2012 about 2.7 million tonnes. Fishing mortality rate for the years 1987-2010 is shown on figure 2.24.2.

After a dramatic increase from 1998-2003, the fishing mortality has decreased but is it still above the precautionary fishing mortality level (Fpa) which is 0.23.

All of the year classes from 2001-2008, except 2003, are larger than the average size estimated for the period 1972-2008 (figure 2.24.3). Several factors cause uncertainty in the stock assessment, for instance, the size of immature year classes is poorly understood. There are also indications that the annual catches are actually considerably higher than official numbers suggest and this can cause poor estimates of the stock size when it is calculated from age-landings models.

ICES recommended that total annual catch for 2012 should be in the range 586-639 thousand tonnes, which means a fishing mortality rate of 0.20-0.22 (table 2.24.1). With such effort the spawning stock is predicted to be about 2.7 million tonnes in 2013. This is thought to follow a perspective of precaution. No agreement has been reached among the nations that fish this stock in terms of division of the total landings and landings in recent years has been well above the recommended total. ICES advice for 2013 will be presented in October 2012 at the close of the fall meeting of the advicory committee.

TAFLA 2.24.1.
MAKRÍLL. Tillögur Alþjóðahafrannsóknaráðsins um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (þús. tonna) 1998–2012.
MACKEREL. TAC recommended by ICES, national TAC and landings (thous. tonnes) 1998–2012.

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *Sum of National TAC*	Afli *Landings*
1998	498	549	667
1999	437	562	640
2000	642	612	739
2001	665	670	737
2002	694	683	773
2003	542	583	670
2004	545	532	650
2005	320–420	422	543
2006	373–487	444	473
2007	390–509	502	579
2008	349–456	458	611
2009	443–578	749[1)]	735
2010	527–572	866[1)]	869[2)]
2011	529–672	959[1)]	927[2)]
2012	586–639	-	

[1)] Ekkert samkomulag. *No agreement.*
[2)] Með áætluðu brottkasti. *Including estimated discards.*

2.25. PEARLSIDE *Maurolicus muelleri*

2.25.1. Fishing and biology

Experimental fishing with pelagic trawl for pearlside began in December of 2008 and a few tonnes were landed. Landings in 2009 were over 46 thousand tonnes, but have decreased since then and were over 9 thousand tonnes in 2011 almost all of which was caught in January and February. In all, 18 vessels landed pearlside in 2009 and ten vessels did so in 2010.

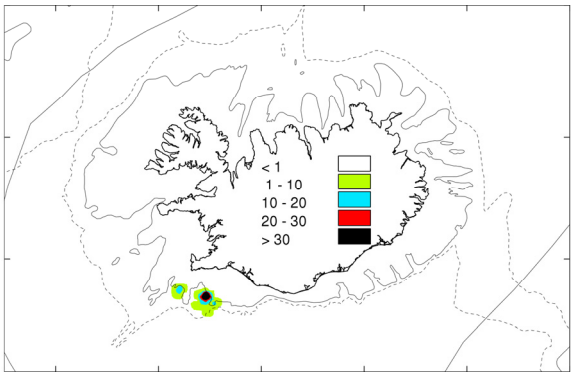
Pearlside is a very small fish of the family Sternoptychidae. It reaches maturity at the age of one year and is then about 2.5 cm in length; it can live to be 5 years old and reach a length of 9 cm. The range of pearlside in Icelandic waters is wide, reaching from waters off the west coast to the southeast coast. They spawn in the spring and summer in the northern portion of their range, of which the Icelandic range is part, but they spawn all year farther south.

Little is known about the distribution and biomass of pearlside, as is the case with other mesopelagic fish, but the northern distribution limit is thought to be marked by the reach of warm seawater. The northern limits in the Atlantic Ocean are therefore at Iceland and northern Norway. In the North Atlantic pearlside are found in the open ocean along with other mesopelagic fish like lanternfish (Myctophidae). Pearlside appears to mix with other mesopelagic fish in the Greenland Sea and in the Suðurdjúp in the summer. But little is known about the distribution of the species during the winter. It is likely that ocean currents have a strong effect on pearlside in the winter because of the small size of the fish.

2.25.2. Stock status

In January of 2010 Iceland's Marine Research Institute (MRI) sponsored a research cruise with the aim of mapping the distribution and biomass of pearlside in Icelandic waters with acoustic surveys. The institute expected that estimating biomass would be difficult because the reflection coefficient of pearlside was unknown.

The results of the cruise showed that pearlside is distributed from the west coast around the south coast to the eastern fjords. The highest biomass was found in the area where pearlside fishing boats were operating in and around Grindavíkurdjúp. In order to estimate the biomass of pearlside with desirable accuracy more research needs to be done to determine the reflection coefficient of the species; such studies have not been conducted in the Atlantic Ocean. Studies of the reflection coefficient of a related species in the Pacific Ocean have been completed. When that reflection coefficient is used to estimate the biomass of pearlside observed in the 2010 research cruise the calculated biomass is less than 250 thousand tonnes, thereof 140 tonnes in the area where fishing for the species is conducted southwest of Iceland. It seems as though the large portion of the stock is made up of two year classes: the older year class, the younger off the west coast of Iceland.



NORRÆNA GULLDEPLA. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

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

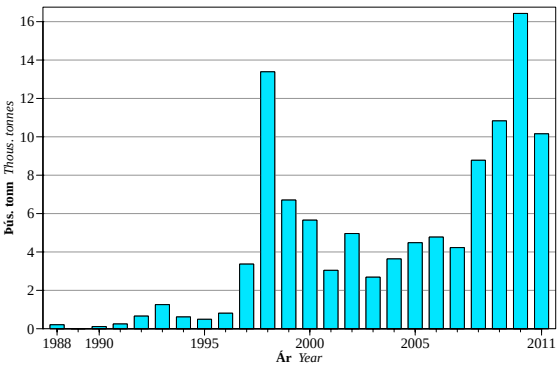
2.25.3. TAC recommendations for quota year 2012/2013

Since the stock biomass and yield capacity of pearlside are little known, as well as the species' importance as a food source for other fished stocks, the MRI recommends a precautionary exploitation of the stock in that landings not exceed the 30 thousand ton average from 2009–2010.

2.26. GREATER SILVER SMELT *Argentina silus*

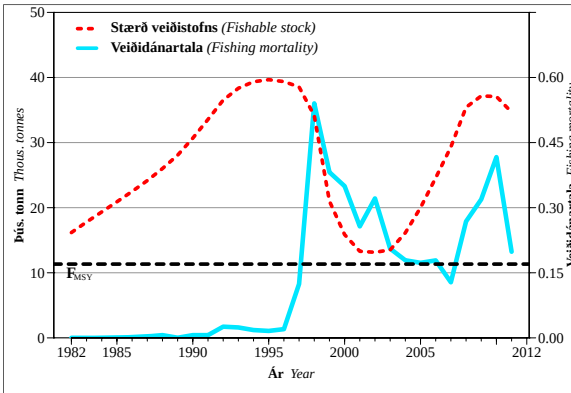
2.26.1. Catch and effort

Greater silver smelt have been caught near the bottom by bottom trawl for many years, especially as bycatch in the redfish harvest, and was usually discarded. In 1997 interest in greater silver smelt increased dramatically and many ships were allocated permits for experimental fishing with small-mesh bottom trawl. Landings increased from over 800 tonnes in 1996 to more than 13 thousand tonnes in 1998 (figure 2.26.1 and table 3.26.1) when direct fishing of the species was conducted in July. In the years 2000–2007 landings were in the range of 2 500–4 800 tonnes. Effort was increased in 2008 when landings reached 8 800 tonnes and the increase continued in following years: about 11 thousand tonnes in 2009 and over 16 thousand tonnes in 2010. In 2011 landings totalled over 10 thousand tonnes due to changes in management policy to control fishing effort.



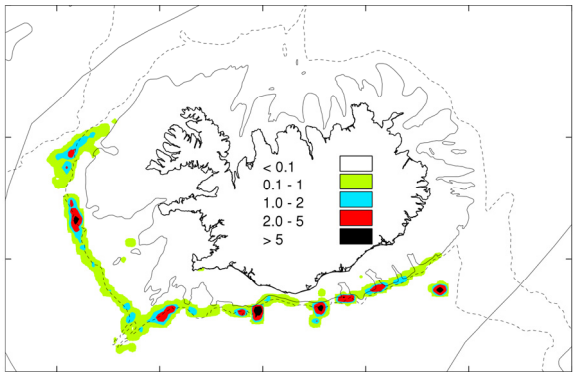
Mynd 2.26.1. **GULLLAX**. Heildarafli (þús. tonna) á Íslandsmiðum árin 1988–2010.

*Fig. 2.26.1. **GREATER SILVER SMELT**. Total landings from Icelandic waters during the period 1988–2010 (thous. tonnes).*



Mynd 2.26.2. **GULLLAX**. Stærð veiðistofns (þús. tonna) 1982–2011 og veiðidánartala (F) samkvæmt Gadget líkani.

*Fig. 2.26.2. **GREATER SILVER SMELT**.* Fishable stock size (thous. tonnes) 1982–2011 and F based on the Gadget model.



GULLLAX. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

***GREATER SILVER SMELT**. Fishing grounds 2011. Dark areas indicate highest catch (tonnes/nmi^2).*

2.26.2. Stock status

Greater silver smelt is a slow-growing species and the yield capacity is thought to be small. Data about the biomass and status of the stock in Icelandic waters are rather limited as well as its relationship with greater silver smelt in nearby waters.

Greater silver smelt is caught in the annual autumn groundfish survey (SMH). However, there is uncertainty in the indices from the survey because of the behaviour of the species. The smelt are caught often in a few large hauls but also swim up into the water column and for this reason it is difficult to collect reliable samples in bottom trawl. Due to a labour strike the groundfish survey was not completed in October of 2011, but the western survey area was sampled. Comparison with previous years showed that smelt in that area had decreased considerably from 2008.

In recent years emphasis has been placed on age analysis of smelt. There has been great change in the age structure of the landings in recent years. In 1998 the mean age in landings was 16 years but after 2008 the mean age has been 10 years.

In recent months a Gadget stock model has been in development for greater silver smelt. The largest hindrance of these calculations is the variation in biomass indices from year to year. Nevertheless, the model does follow the changes in age distribution; therefore it seems the model gives a realistic description of stock trends in Icelandic waters. According to the model, the stock grew until 1998, but then decreased rapidly following heavy fishing. After the turn of the century, the stock size levelled off before decreasing again after 2009. The fishing mortality index has also fluctuated much but has remained above optimum effort (F0.1=0.17) since 2007, despite a decrease in 2011.

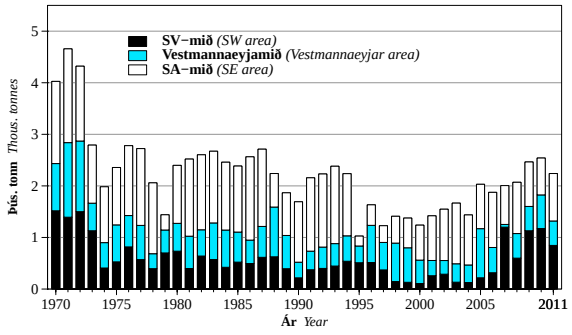
2.26.3. TAC recommendations for quota year 2012/2013

The MRI recommends that the fishing mortality index for greater silver smelt in quota year 2012/2013 aim at optimum effort according to the Gadget model (F=0.17) and that TAC not exceed 8 000 tonnes. In addition, the MRI repeats the previous advice that caution is necessary in exploitation of this stock and in management of fishing effort.

2.27. NORWAY LOBSTER *Nephrops norvegicus*

2.27.1. Catch and effort

In all 2 240 tonnes of Norway lobster were landed in 2011, 300 tonnes less than in 2010. CPUE (kg per haul hour in the period May–August, standardized using one trawl) was 71 kg in 2011, as compared to 76 kg and 80 kg in 2010 and 2009, respectively (table 3.27.2). Division of the Norway lobster catch by area is shown in table 3.27.2. In the south-western grounds 846 tonnes were caught, in the Vestmannaeyjar area catch was 474 tonnes and in the south-eastern grounds 920 tonnes. Landings were smaller in the south-west and Vestmannaeyjar area as compared to 2010, but increased by a third in the south-eastern grounds. Total CPUE was high in comparison with the historical record, which dates back to 1960, though substantially lower than the record years of 2007 and 2008 (figure 2.27.2).



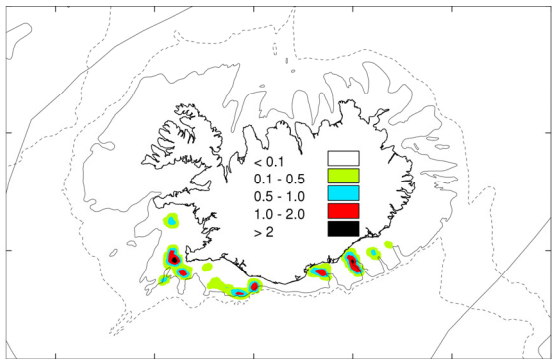
Mynd 2.27.1. **HUMAR**. Heildarafli (þús. tonn) árin 1970–2011.

*Fig. 2.27.1. **NEPHROPS**. Landings (thous. tonnes) 1970–2011.*

2.27.2. Stock survey

The biomass index of Norway lobster has decreased since the historical high was reached in 2008 (figure 2.27.2) and is now below the 25-year average. The biomass index has reflected the CPUE rather well but there was some inconsistency in 2011 due to low fishability in the stock survey, which is also true of 2012. In the stock survey the fishability of Norway lobster is highly variable between years because of variable light conditions (due to algae growth). According to the stock survey in May 2012, 10–11 year old lobsters (50–55 mm carapace length, 2001 and 2002 cohorts) were most abundant. The proportion that was 13 years of age (60 mm and larger), and in some areas even older lobsters, is still high. Of special note was the good recruitment of age 6–7 lobsters (year classes 2005 and 2006) in the Norway lobster grounds north of Eldey and in Skeiðarárdjúp. Indications of good recruitment were less noticeable in other areas.

Greatly increased effort around Vestmannaeyjar in 2005 and subsequent increases in CPUE were



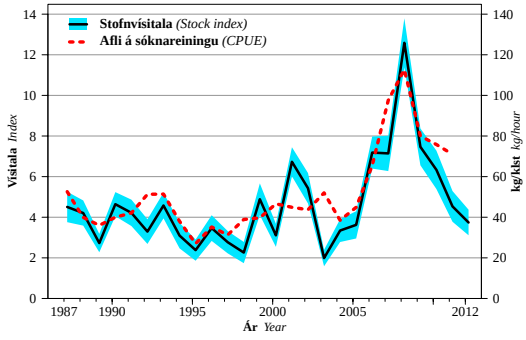
HUMAR. Veiðisvæði við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

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

supported by the year classes from 1994–1999, but targeted effort for them was rather less from 2001–2004. In the lobster survey in May 2006 indications of improving catch projections in the westernmost area near Reykjanes Peninsula, which had been poor for many years. Landings from the south-western area in 2007 and 2009–2011 were the highest since the beginning of the 1970's. Those catches consisted in large part of 10–15 year old lobsters but also older animals. Recruitment trends in the south-western area have been more obscure than those of most other areas. Increase in biomass because of year classes from the 1990's and even before 1990 did not translate to increased landings or CPUE until the year 2006 and even more so in 2007–2008. From the landings in recent years the conclusion can be reached that some sort of decrease of larger lobster is occurring, as is seen in fishing and stock surveys in 2011 and 2012.

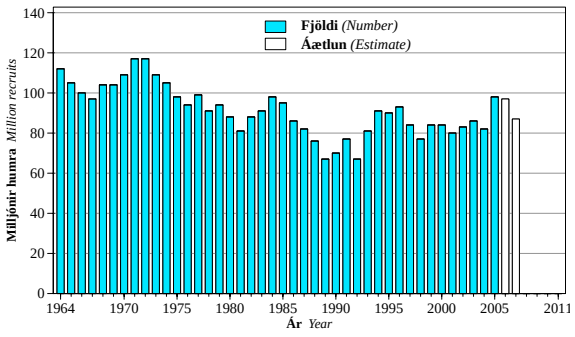
2.27.3. Stock status and projections

According to the stock estimates from landings by age analysis the year classes around 1990 were



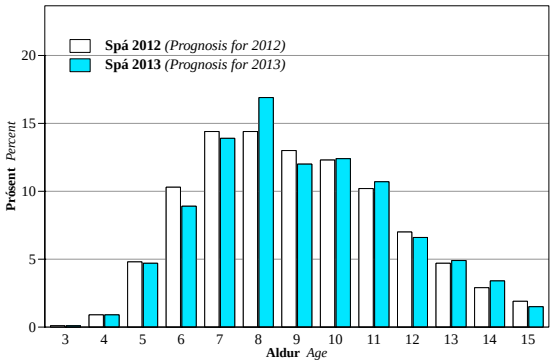
Mynd 2.27.2. **HUMAR**. Stofnvísitala humars 1987–2012 samkvæmt humarleiðöngrum og staðlaður afli á sóknareiningu 1987–2011.

*Fig. 2.27.2. **NEPHROPS**. Survey stock biomass indices in 1987–2012 and standardized CPUE during 1987–2011.*



Mynd 2.27.3. **HUMAR**. Stærð humarárganganna 1964–2007 við fimm ára aldur (í milljónum).

*Fig. 2.27.3. **NEPHROPS**. Size of year classes 1964–2007 at age 5 (in millions).*



Mynd 2.27.5. **HUMAR**. Spá um aldursdreifingu í aflanum (% af fjölda) 2012 og 2013.

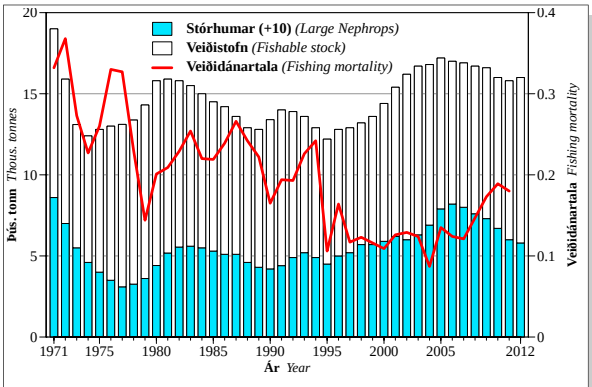
*Fig. 2.27.5. **NEPHROPS**. Prognosis of age distribution (% in numbers) of the 2012 and 2013 catches.*

below average (figure 2.27.3). The Norway lobster stock was then at a minimum and the catches were small in the years around and after 1995. With improved recruitment in year classes since 1994 landings increased and in the years 2007–2010 CPUE was at an historical maximum.

According to stock estimates the fishable stock is now about 16 000 tonnes, which is similar to the last two years. The fishing mortality indices since 1970 are shown in figure 2.27.3 and since 1982 in table 3.27.5. Since 1995, the aim has been to have fishing near optimum effort for the stock (F=0.15). Although this aim has mostly been met, fluctuations in biomass and/or variable local circumstances on the various fishing grounds have sometimes led to temporary unusually high fishing pressure on certain Norway lobster grounds.

Figure 2.27.5 shows projected age distributions in landings of Norway lobsters in 2012 and 2013. It is expected that seven and eight year old lobsters will comprise the majority of the landings by number in 2012 and 2013, that is year classes from 2004–2005. In landings by weight the 10–11 year old lobsters (year classes from 2001–2003) should represent the highest proportion in both years. It can be expected that in 2012 and 2013 the largest Norway lobsters will comes from the Vestmannaeyjar and south-western areas, as they did in 2011.

In projections of the stock size to the year 2014 (table 2.27.2) the size of year classes 2007–2008 are estimated using mean recruitment indices from the years 1995–2004. These year classes will join the fishable stock in 2013–2014. Then, it is expected that



Mynd 2.27.4. **HUMAR**. Stærð veiðistofns (6 ára og eldri) ásamt hluta stórhumars (10 ára og eldri) árin 1971–2012 (þús. tonna) og meðalveiðidánartala 6–13 ára humars.

*Fig. 2.27.4. **NEPHROPS**. Fishable stock (6+) and large category (10+) biomass during the period 1971–2012 (thous. tonnes), with average fishing mortality of ages 6–13.*

TAFLA 2.27.1.
HUMAR. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (tonn) árin 1984–2011/2012.

***NEPHROPS**. TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) 1984–2011/2012.*

Ár *Year*	Tillaga *Recommended TAC*	Aflamark *National TAC*	Afli alls *Total 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	2 100	2 100	2 200
1991/92[1)]	2 100	2 100	2 200
1992/93[1)]	2 200	2 400	2 400
1993/94[1)]	2 200	2 400	2 200
1994/95[1)]	2 200	2 200	1 000
1995/96[1)]	1 500	1 500	1 600
1996/97[1)]	1 500	1 500	1 200
1997/98[1)]	1 500	1 200	1 400
1998/99[1)]	1 200	1 200	1 400
1999/00[1)]	1 200	1 200	1 300
2000/01[1)]	1 400	1 400	1 400
2001/02[1)]	1 500	1 500	1 577
2002/03[1)]	1 600	1 600	1 687
2003/04[1)]	1 600	1 600	1 437
2004/05[1)]	1 500	1 500	2 035
2005/06[1)]	1 600	1 800	1 946
2006/07[1)]	1 700	1 800	1 946
2007/08[1)]	1 900	1 900	1 999
2008/09[1)]	2 200	2 200	1 999
2009/10[1)]	2 200	2 200	2 456
2010/11[1)]	2 100	2 100	2 259
2011/12[1)]	2 000	2 100	

[1)] Fiskveiðiárið september–ágúst. *Quota year September–August.*

mean weight at age will be as shown in table 3.27.6 and that landings in 2011/2012 will be 2 200 tonnes.

2.27.4. TAC recommendations for quota year 2012/2013

Table 2.27.1 shows TAC recommendations from the MRI, management policy decisions and Norway lobster landings since the year 1984. The lobster stock has increased over recent decades after a decline in the stock around the middle of the 1990's. Increased stock size can be traced to increased recruitment and moderate fishing pressure.

The MRI recommends that fishing effort aim at optimum effort (F=0.15) and that landings in the quota year 2012/2013 not exceed 1 900 tonnes.

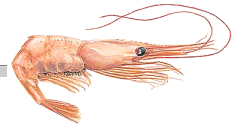
TAFLA 2.27.2.
HUMAR. Áhrif mismunandi aflahámarks á áætlaða stærð veiðistofnsins (tonn) árið 2014.

NEPHROPS. Projection of fishable stock biomass (tonnes) in 2014 for different management strategies.

2012			2013			2014
Stofn 6+ *Stock 6+*	$F^{1)}$	Afli *Catch*	Aflamark *TAC*	Stofn 6+ *Stock 6+*	$F^{1)}$	Stofn 6+ *Stock 6+*
16 000	0.18	2 200	1 700	16 100	0.13	16 700
			1 900	16 100	0.15	16 600
			2 100	16 100	0.18	16 300

[1)] F=Meðalveiðidánartala 6–13 ára humars.
Mean fishing mortality of age groups 6–13.

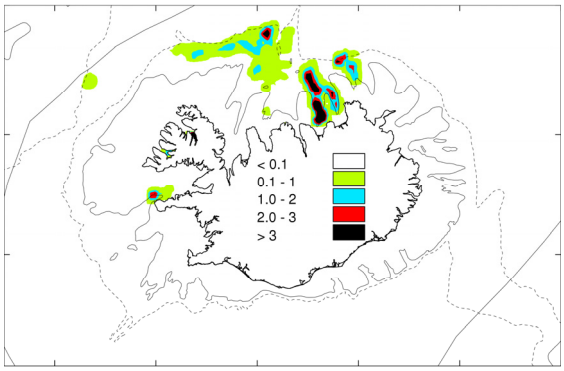
2.28. NORTHERN SHRIMP *Pandalus borealis*



2.28.1. Catch and effort

Northern shrimp fishing has been conducted in Icelandic waters with the 1940's, although for many years only a small area of inshore waters was fished. The offshore shrimp fishery began around the middle of the 1970's and quickly surpassed the inshore fishery in scale (figure 2.28.1 and table 3.28.1).

The shrimp fishery in Icelandic waters reached a climax in the years 1994–1997 when landings were over 70 thousand tonnes per year. After 1997 harvesting decreased very rapidly and reached a minimum in 2006 when landings were only 860 tonnes. Since there has been some increase in the landings and in 2011 the annual total was 7 700 tonnes.



RÆKJA. Veiðisvæði úthafsrækju við Ísland árið 2011. Dekkstu svæðin sýna mestan afla (tonn á sjm^2).

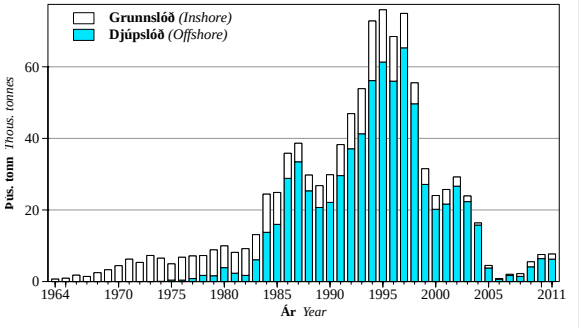
NORTHERN SHRIMP. *Fishing grounds in 2011. Dark areas indicate highest catch (tonnes nmi^2).*

2.28.2. Inshore northern shrimp

2.28.2.1. Status 2011/2012 and TAC for inshore landings in quota year 2012/2013

In table 3.28.2 can be found the landings by harvest area inshore since 1990/1991. In recent years fishing has been little to none outside of the area of Snæfellsnes and Arnarfjörður. In 2011 fishing was allowed in Ísafjarðardjúp and landings there were 1 400 tonnes. Figure 2.28.2 shows landings by area, and there it is also obvious that the northern shrimp stocks to the north of Iceland collapsed between 1997 and 2000, as is shown by both biomass indices and landings. The same thing happened in Ísafjarðardjúp in 2002–2004 and in Arnarfjörður in 2005–2007. On all of these harvesting grounds, predation by cod and haddock is counted to have had a significant part in the collapse of shrimp stocks.

Table 2.28.1 shows TAC recommendations from the Marine Research Institute (MRI), management policy decisions and total inshore northern shrimp landings from quota years 1984/1985–2011/2012. Evaluation of the shrimp stock status in coastal waters is based on the stock survey in April (around Snæfellsnes) and September/October (off the north and north-western coast). The MRI recommends that no preliminary quota be allotted for quota year 2012/2013 in areas other than around Snæfellsnes. The institute will present a further TAC recommendation at the end of area surveys in October 2012.



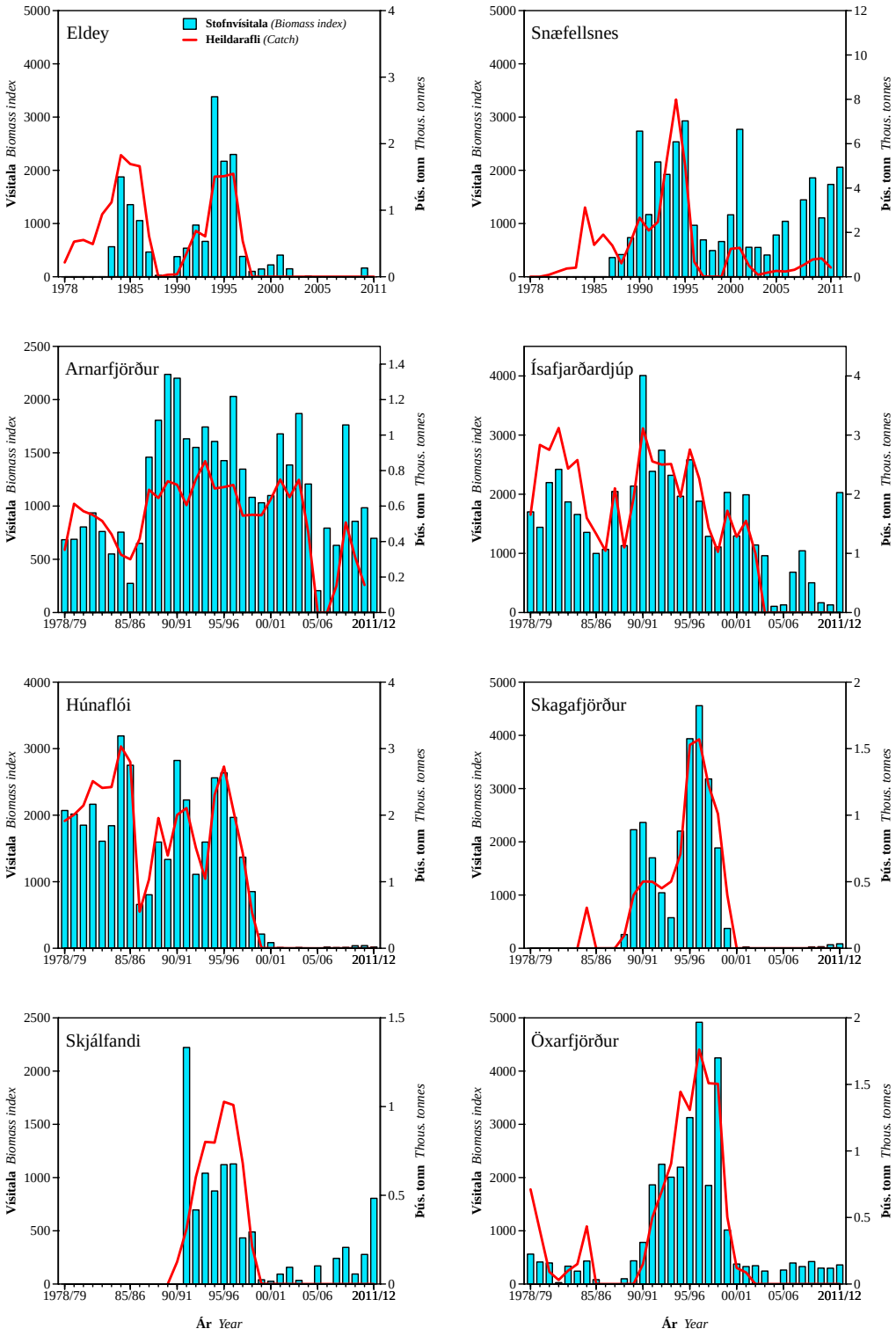
Mynd 2.28.1. **RÆKJA**. Heildarafli á Íslandsmiðum á grunnslóð og djúpslóð árin 1964–2011.

Fig. 2.28.1. ***NORTHERN SHRIMP.*** *Total catches in Icelandic waters from inshore and offshore areas during 1964–2011.*

Tafla 2.28.1.
RÆKJA Á GRUNNSLÓÐ. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (í tonnum) vertíðarnar 1984/85–2011/2012.

NORTHERN SHRIMP, INSHORE. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) 1984/85–2011/2012.*

Ár *Year*	Tillaga *Recommended TAC*	Aflamark *TAC*	Afli *Catch*
1984/85	7 200	7 400	7 400
1985/86	5 900	6 000	6 100
1986/87	2 900	3 000	2 600
1987/88	3 400	3 800	3 800
1988/89	3 500	3 800	3 800
1989/90	4 200	4 500	4 500
1990/91	6 800	6 900	7 000
1991/92	6 900	6 900	7 100
1992/93	7 400	7 400	7 400
1993/94	8 000	8 000	8 000
1994/95	9 100	9 100	9 100
1995/96	11 900	11 900	11 900
1996/97	10 000	10 000	10 000
1997/98	6 900	6 900	6 900
1998/99	4 900	4 900	4 900
1999/00	3 290	3 290	3 300
2000/01	2 500	2 500	2 500
2001/02	2 400	2 400	2 400
2002/03	1 950	1 950	1 700
2003/04	750	800	800
2004/05	650	650	700
2005/06	200	200	250
2006/07	200	200	300
2007/08	550	550	700
2008/09	900	900	1 400
2009/10	1 200	1 200	1 100
2010/11	850	850	1 400
2011/12	2 050	2 050	



Mynd 2.28.2. **RÆKJA**. Afli (lína) og vísitala stofnstærðar (súlur) á grunnslóð sumar/haust frá árinu 1978.

Fig. 2.28.2. ***NORTHERN SHRIMP****. Inshore catch (line) and biomass indices (columns) during summer/autumn since 1978.*

On the harvesting grounds around Snæfellsnes landings have been small in recent years. In 2010, 25 tonnes were caught within Breiðarfjörður and 103 tonnes in 2011. In Kolluáll 787 tonnes were caught in 2010 but only 311 tonnes in 20111. In Jökuldjúp the landings have been insignificant for many years except for the year 2000 when 1 100 tonnes were landed (figure 2.28.2). It is recommended that landings from the Snæfellsnes area be at the most 1 000 tonnes in the quota year 2012/2013. Although

the area is considered offshore shrimp grounds, it seems that the shrimp in Kolluáll and Jökuldjúp are more closely connected to the inshore stock in southern Breiðafjörður than the offshore stock. The MRI recommends that the Snæfellsnes grounds (Kolluáll, Jökuldjúp and Breiðafjörður) be closed to northern shrimp fishing when the maximum catch is landed.

The Eldey area has been closed to shrimp fishermen since the shrimp stock there collapsed in 1997 (figure 2.28.2). The area was not surveyed in 20111, but according to the stock survey in 2010, the northern shrimp stock in the Eldey area is still small.

According to the winter survey in 2011/2012, the northern shrimp stock in Arnarfjörður is below average (figure 2.28.2). Shrimp were encountered in Borgarfjörður so the distribution of the shrimp in the fall was similar to what it was in 2004. The amount of haddock was lower than it was in the fall of 2010 but there was more cod. There was a lot of cod and haddock fry, which turned out to be more than the reference indices. After the 2011 fall survey it was proposed that harvesting of shrimp would not be allowed while the fry biomass was as high as it seemed to be. Following a second survey in December, a harvest of 200 tonnes was allowed because the fry biomass had decreased to below the reference index.

According to the stock survey in September, the northern shrimp stock in Ísafjarðardjúp was above average. As with most inshore areas, the cod migration was heavy in 2003–2005. Large migrations of fish are considered to be the largest cause of the decrease in northern shrimp populations since 2007. In the fall of 2011 more cod were observed but fewer haddock than in previous years. A recommendation was made for a total allowable catch of 1 000 tonnes of northern shrimp in Ísafjarðardjúp for the quota year 2011/2012.

In Skjálfandi the biomass index in 2011 had increased considerably from previous years. No shrimp harvest has occurred there since 1998/1999. In the fall of 2011 there was a lot of young shrimp and the two youngest cohorts were strong. This gives some optimism about northern shrimp stocks recovering in Skjálfandi.

In the September survey of 2012 little change was noted in the size of shrimp stocks in Húnaflói, Skagafjörður and Öxarfjörður (figure 2.28.2). Northern shrimp stocks in these three areas have been at a minimum and no harvesting has been conducted for the last 11–13 seasons. These stock collapses were traced back to greatly increased migrations of fish in these areas. In general, there was a smaller or similar biomass of haddock in 2011 and haddock biomass was well under the average from 1996–2011 in these three areas. The biomass of cod was also around or below the 1996–2011 average for biomass.

Mean size of northern shrimp (number individuals/kg) by area is shown in table 3.28.4. In 2011, the smallest shrimp were found in Skagafjörður (390 indiv/kg) and in Skjálfandi (350 indiv/kg) but the largest shrimp were in Breiðafjörður (194 indiv/kg).

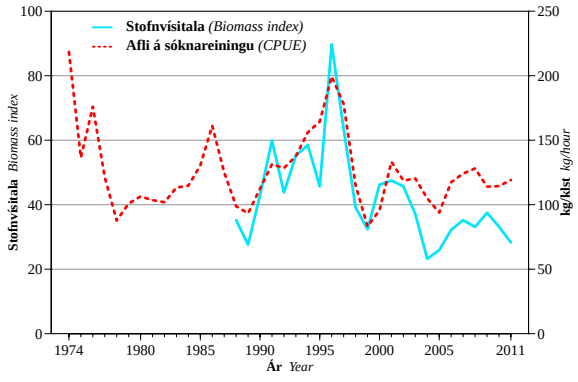
2.28.3. Offshore northern shrimp

2.28.3.1. Trends in fishing and landings

Offshore northern shrimp fishing to the north of Iceland began in the 1980's and were rather limited until 1984 when they increased substantially until reaching a climax in 1997 when over 65 thousand tonnes were landed. From 1998–1999 landings decreased from 49 thousand tonnes to 27 thousand tonnes and were from 20–27 thousand tonnes until 2003. In 2004 and 2005 landings decreased even more until 2006 when only 600 tonnes were landed (table 3.28.3). Since 2006, landings have increased and in 2011 the catch was 6 000 tonnes. For the last nine years total landings have been below the TAC. Offshore northern shrimp landings from individual sub-areas are shown in table 3.28.3.

CPUE (standardized for 1600 mesh trawl) have been variable since fishing began but reached a maximum in 1996 of 200 kg/h. Following this was a dramatic decrease in CPUE to 83 kg/h in 1999. In the years 2001–2003, CPUE increased rapidly and in 2011 it was near the average for the period 1988–2011, but that could be a result of decreased fishing pressure rather than growth of the stock. The average size of shrimp from 1997–2011 by area is shown in table 3.28.5. In 2011 offshore northern shrimp were smallest in Langanesdjúp (287 indiv/kg). The largest shrimp were measured at Rauða Torgið (146 indiv/kg) and Kolbeinsey (151 indiv/kg). The mean size varies mainly with the size of year classes in each area.

Rauða Torgið and Hali are outside the traditional



Mynd 2.28.3. **RÆKJA**. Afli á sóknareiningu (kg/klst.) 1974–2011 á helstu úthafsrækjusvæðum og stofnvísitala úthafsrækju 1988–2011.

Fig. 2.28.3. ***NORTHERN SHRIMP****. CPUE during 1974–2011 and biomass indices in 1988–2011 in major offshore fishing grounds.*

stock survey region. At Rauða Torgið northern shrimp landings have been as much as 1 400 tonnes and 2 000 tonnes at Hali. Hardly any shrimp fishing has been conducted in these areas since 2005, with the exception of 99 tonnes landed from Hali in 2009 (table 3.28.3).

2.28.3.2. Connection between fish and shrimp

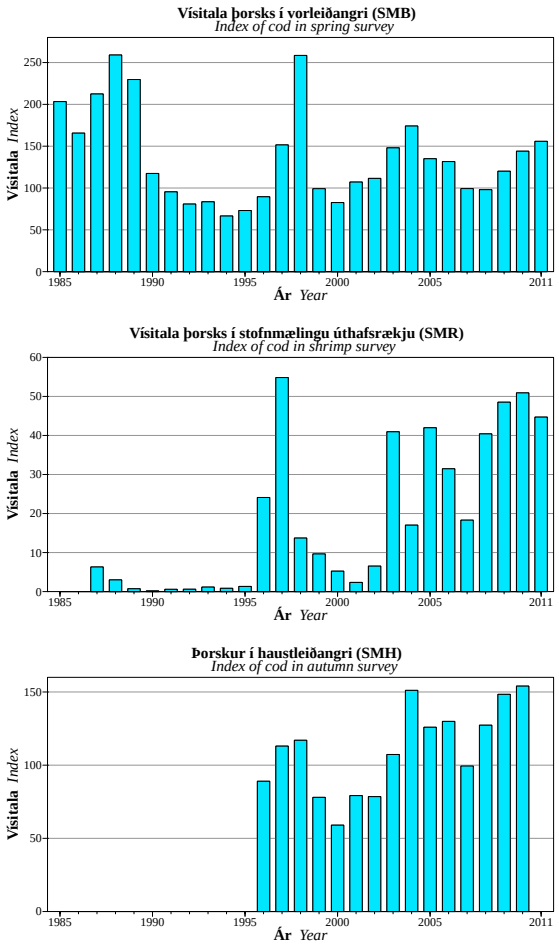
Predation by cod on shrimp is considered to have a powerful effect on the population size of northern shrimp and in order to be able to estimate predation there must be an estimate of the biomass of cod in the distribution range of shrimp. Figure 2.28.4 shows three different indices of the abundance of cod in the northern fishing grounds. That is, indices from the spring groundfish survey (SMB 1985–2011), indices of cod in northern shrimp surveys (SMR July–August, 1987–2011) and indices from fall stock surveys (SMH 1996–2010). Indices from the SMB and SMH give indication of the abundance of cod across all of the northern and eastern waters (from Norðurkanti to Berufjörður) in fall and winter. SMR indices show cod abundance on the shrimp grounds

Tafla 2.28.2.
ÚTHAFSRÆKJA. Tillögur Hafrannsóknastofnunarinnar um aflahámark, heildaraflamark samkvæmt ákvörðunum stjórnvalda og afli (í tonnum) árin 1987–2011/2012.

NORTHERN SHRIMP, OFFSHORE. *TAC recommended by the Marine Research Institute, national TAC and landings (tonnes) 1987–2011/2012.*

Ár *Year*	Tillaga *Recommended TAC*	Aflamark *TAC*	Afli *Catch*
1987[1)]	30 000	30 000	33 400
1988[1)]	30 000	30 000	24 500
1989[1)]	20 000	20 900	20 900
1990[1)]	22 000	24 600	24 400
1991[1)]	28 000	-	30 700
1991/92[2)]	35 000	40 000	34 200
1992/93[2)]	35 000	40 000	41 800
1993/94[2)]	40 000	52 000	53 200
1994/95[2)]	60 000	62 000	61 200
1995/96[2)]	40 000[3)]	63 000	65 000
1996/97[2)]	55 000	60 000	57 300
1997/98[2)]	70 000	75 000	60 900
1998/99[2)]	40 000[4)]	40 000	30 700
1999/00[2)]	20 000	20 000	20 700
2000/01[2)]	25 000	25 000	22 100
2001/02[2)]	35 000	35 000	27 400
2002/03[2)]	30 000	30 000	24 300
2003/04[2)]	20 000	20 000	18 000
2004/05[3)]	15 000[5)]	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	-	

[1)] Almanaksár. *Calendar year.*
[2)] Fiskveiðiár. *Quota year.*
[3)] Tillaga um upphafsafla. *Provisional TAC.*
[4)] Tillaga um leyfilegan hámarksafla var upphaflega 60 þús. tonn en var endurskoðuð í janúar 1999 og breytt í 40 þús. tonn. *Recommended TAC originally set at 60 thous. tonnes, but revised to 40 thous. tonnes in January 1999.*
[5)] Engin tillaga um hámarksafla en sagt að óbreytt sókn leiði af sér 15 þús. tonna afla. *No rec. TAC but unchanged effort gives 15 thous. tonnes.*



Mynd 2.28.4. **RÆKJA**. Þrjár vísbendingar um þorskgengd á rækjusvæðunum á Norður- og Austurmiðum.

Fig. 2.28.4. ***NORTHERN SHRIMP****. Three different indices that show the quantity of cod north and east of Iceland.*

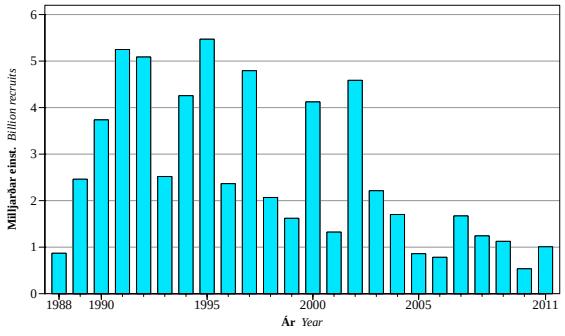
in deep water to the north and east in the summer.

Indices from SMR and SMB provide very different descriptions of the abundance of cod in the distribution range of northern shrimp. According to the SMR there was much more cod from 1996–2011 then from 1987–1995. In the period 1989–1995 hardly any cod was caught but at that time the offshore northern shrimp stock reached a climax. A great abundance of cod has been measured in the SMR and SMH in the last nine years.

The Greenland halibut is also considered to have an effect on the northern shrimp stock. Abundances of Greenland halibut in the SMR were much higher in the years 1987–1994 than in the years 1995–2008, but since 2009 the abundance of Greenland halibut has declined considerably.

2.28.3.3. Stock status

The biomass of northern shrimp in 2011 was lower than in 2010 and is nearly one quarter lower than the index from 2009. The biomass index is near the historical minimum. Despite the biomass index having decreased, the biomass of females has been



Mynd 2.28.5. **RÆKJA**. Nýliðun tveggja ára úthafsrækju (fjöldi) á svæðinu Norðurkantur–Héraðsdjúp árin 1988–2011.

Fig. 2.28.5. ***NORTHERN SHRIMP****. Recruitment indices of 2 year old shrimp in the area Norðurkantur–Héraðsdjúp during 1988–2011.*

constant between years. The spawning stock is, however below the average from 1998–2011. This could be a result of shrimp changing sex earlier in 2011 than in previous years.

The distribution of northern shrimp has changed over recent years. The biomass index of shrimp on the northern slope has fallen and not much shrimp have been found offshore from the north-east of Iceland in recent years. On the other hand, the biomass of shrimp near Grímsey has remained rather steady and in 2011 it was near the average of the period 1988–2011.

Recruitment begins with age two shrimp (figure 2.28.5). Since 2004 the recruitment index for shrimp has been far below average and all year classes from 2002–2009 are expected to be very small.

2.28.3.4. TAC recommendations for the quota year 2012/2013

The results of SMR in 2011 indicate that the stock is decreasing, predation by cod is still rather high and recruitment seems to be poor as has been the case in recent years. Increased abundance of Greenland halibut on the shrimp grounds have also led to further predation on northern shrimp.

Table 2.28.2 shows TAC recommendations from the MRI, management policy decisions and total northern shrimp landings since 1987. Targeted effort has increased in recent years and although the offshore fishery was opened in 2010, landings have been below TAC. Landings from the northern slope have been small in recent years, even though the largest shrimp are usually from that area. In 2011 Grímsey provided the largest catch of shrimp, but the shrimp there are smallest of all areas in Icelandic waters.

In light of the above analysis, the MRI recommends a lowering of the TAC to 5 000 tonnes of offshore northern shrimp in the quota year 2012/2013.

2.28.4. Northern shrimp fishing in other waters

The majority of the northern shrimp stock on the Dohrn Bank and along East Greenland is said to stay west of the mid line between Greenland and Iceland, which lies across the northernmost grounds of the Dohrn Bank. There are no international agreements about fishing management and catch sharing of this stock. Landings of all nations from East Greenland were almost 5 thousand tonnes in 2009 and almost 4 thousand tonnes in 2010, compared to more than 12 thousand tonnes on average from 1994–2003. Icelandic landings from the Dohrn bank have usually been highly variable because sea ice often closes the bank to fishing. The highest Icelandic catch from the Dohrn Bank was 2 900 tonnes in 1997. Icelanders have conducted almost no fishing on the Dohrn Bank since 2006. The Northwest Atlantic Fisheries Organization (NAFO) recommends that landings for the entire East Greenland region not exceed 12 400 tonnes in 2012. This is the same TAC as was set in 2004–2011. Stock status has been considered good since 1998.

In 1993 northern shrimp fishing began on the Flemish Cap, an international region east of Canada. Icelandic landings increased from 2 200 tonnes in 1993 to almost 21 thousand tonnes in 1996. In the years 1997–2006 landings were in the range of 3 600–9 300 tonnes (table 3.28.1). Since 2006 Icelandic ships have not fished the Flemish Cap.

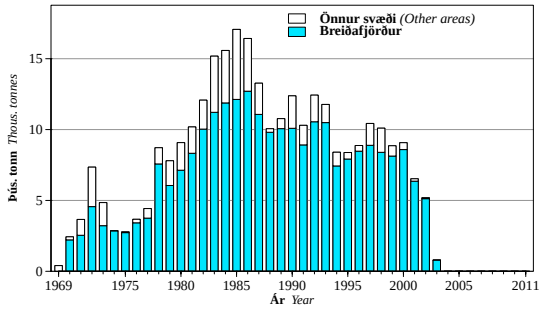
The northern shrimp fishery on the Great Banks began in 1993 but little was landed from there in the first two years. Some Faeroese vessels experimented with fishing there from 1996–1999 and in the year 2000 the NAFO set a 6 000 ton TAC for shrimp. Canadian ships were allocated 5 000 tonnes and other countries in the NAFO would have to split the other 1 000 tonnes. In this way each nation was allocated 67 tonnes. NAFO recommended that the TAC for the Great Banks would go up to 13 thousand tonnes for the years 2004 and 2005. This meant an increased TAC of 144 tonnes for each nation outside of Canada. The TAC was raised to 22 thousand tonnes for 2006–2007 after the NAFO decided that the upper limit of fishing was 12% of the fishable biomass index for the years 2002–2004. TAC for the year 2011 was 19 thousand tonnes.

TAC for Icelandic for the years 2006 and 2007 was 245 tonnes. Recorded landings for Icelandic ships for 2006 were 226 tonnes (table 3.28.1). In the years 2007–2009 there was no Icelandic catch recorded from the region. However, in 2010 landings totalled 185 tonnes and in 2011 the total was 124 tonnes (table 3.28.1).

2.29. ICELAND SCALLOP *Chlamys islandica*

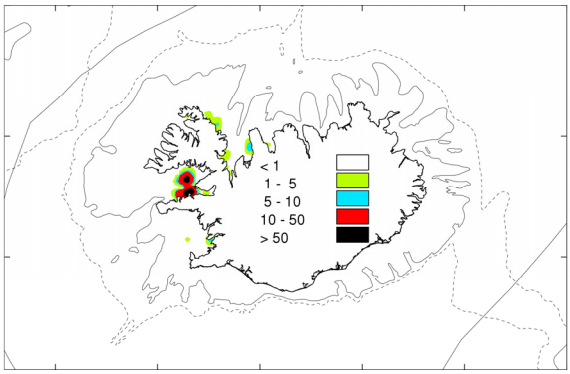
2.29.1. Catch and effort

Scallop harvesting was not allowed in the quota year 2011/2012, for the ninth year in a row. Total annual landings were usually 9 500 tonnes in the years 1996–2000, thereof 8 500 tonnes in Breiðafjörður (figure 2.29.1 and table 3.29.1). In the years 1996–1999 CPUE (catch per haul-hour with a single dredge) in Breiðafjörður about 1 600 kg but decreased to 709 kg in 2003, the last year of harvesting (figure 2.29.2).



Mynd 2.29.1. **HÖRPUDISKUR**. Heildarafli 1969–2011 eftir veiðisvæðum.

Fig. 2.29.1. ***ICELAND SCALLOP****. Landings 1969–2011 by fishing areas.*



HÖRPUDISKUR. Veiðisvæði við Ísland árin 1995–2003. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

ICELAND SCALLOP*. Fishing grounds in 1995–2003. Dark areas indicate highest catch (tonnes/nmi^2).*

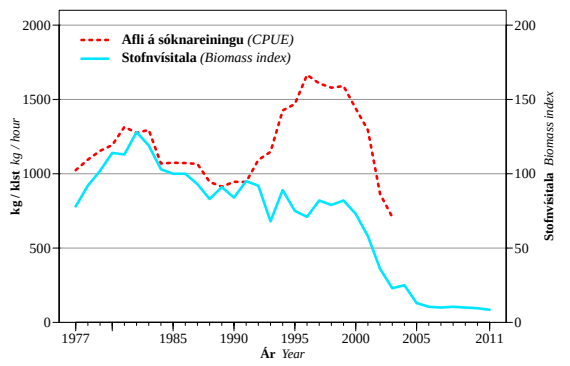
2.29.2. Stock status

According to the survey in Breiðafjörður in the fall of 2011, the fishable biomass index was still at a minimum or about 10% of the mean from 1993–2000. The first obvious decline of the biomass index was seen first in the stock survey in Breiðafjörður in April of 2001 when the fishable biomass index was 27% lower than the average from 1993–2000. This trend continued until 2006, but the biomass index has remained stable since then. The most prominent change from 2007 until 2011 is that the stock proportion of shells 60 mm and larger has increased and now there is a considerable amount of shells 80 mm and larger. Younger shells continue to decrease in number, of course all year classes from 2004–2010 are at historically low size. According to the results of liver studies in the fall of 2010 a greater increase in age one shells was expected but the stock survey in 2011 showed rather few such shells, though this year class might become more prevalent later. The liver parasite was estimated to be on the decline in 2011.

Simultaneous to the collapse of the stock, the distribution area shrank and natural mortality has remained high. Studies show a connection between population collapse and mortality other than fishing mortality. The likely causes of the collapse are an epidemic of liver infection by a single celled parasite in conjunction with tissue changes in the adductor muscle in the scallop. The infection also causes retarded development of reproductive tissues which most likely, along with a small spawning stock, has had a negative effect on recruitment. The mortality rate was higher with size/age of the shells, so had a worse effect on the fishable stock which is comprised of large shells (>60 mm). The increase in abundance of larger shells in 2007–2011 appears to be a result of decreased infection and therefore deaths in the stock. The muscle mass of scallops has also improved in recent years.

2.29.3. Projections and TAC recommendations for quota year 2012/2013

High variation has occurred in the size of the stock since the year 2000 when it was measured at an historical low. All year classes from 2004–2010 have been very small so there is no hope for an improved fishable stock in the coming years. The Marine Research Institute recommends that the scallop fishery remain closed for the quota year 2012/2013.



Mynd 2.29.2. **HÖRPUDISKUR**. Stofnvísitala í Breiðafirði árin 1977–2011 og afli á sóknareiningu hjá skelbátum á sama svæði 1977–2003.

Fig. 2.29.2. ***ICELAND SCALLOP****. Survey biomass index in Breiðafjörður 1977–2011 and CPUE from scallop boats in the same area during* 1977–2003.

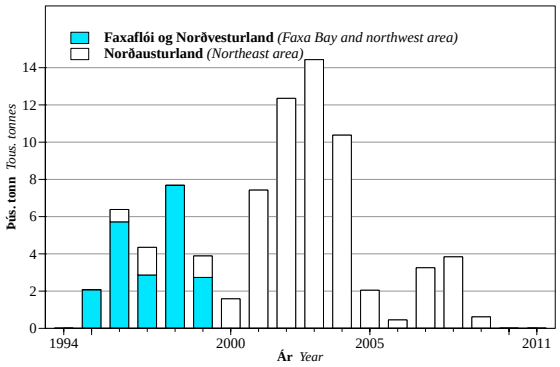
2.30. OCEAN QUAHOG *Arctica islandica*

2.30.1. Catch and effort

Harvesting of ocean quahogs for human consumption was conducted from 1988–1999 with some breaks and the main harvesting grounds stretch from Breiðafjörður to Skagatá. Landings were in the range of 1 100 to 7 700 tonnes (table 3.30.1). Harvesting in the region from Skagatá east to Ingólfshöfði began in 1996 and landings until the year 2005 were in the range of 700–14 400 tonnes (figure 2.30.1 and table 3.30.1). Harvesting has been insignificant from 2005 due to poor marketability and landings in 2011 were only 5 tonnes (table 3.30.1). CPUE according to fishing logs were similar from 2001–2008, 7 000–10 100 kg/h but effort was variable. In 2009 all fishing with hydraulic dredge ceased and all fishing was conducted with dry dredge.

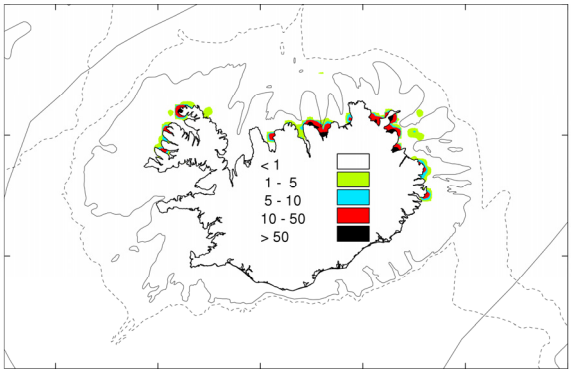
2.30.2. Stock status

Studies show the ocean quahogs are long-lived and slow-growing. The mainstay 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.



Mynd 2.30.1 **KÚFSKEL**. Afli á Íslandsmiðum eftir veiðisvæðum 1994–2011.

Fig. 2.30.1 ***OCEAN QUAHOG.*** *Landings from Icelandic fishing grounds by areas 1994–2011.*



KÚFSKEL. Veiðisvæði við Ísland árin 1998–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

OCEAN QUAHOG. *Fishing grounds in 1998–2011. Dark areas indicate highest catch (tonnes/nml^2).*

2.30.3. TAC recommendations for quota year 2012/2013

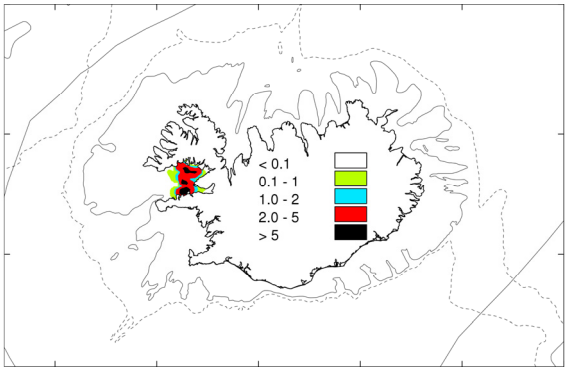
TAC has so far not been regionally restricted but as a precaution it has been proposed that for every 4–7 year period the landings not exceed 2.5% of the estimated amount of ocean quahog in each area. With these considerations in effect, the total landings of quahog, on those areas that have been studied, could be as much as 31 500 tonnes in the quota year 2012/2013.

2.31. COMMON WHELK *Buccinum undatum*

2.31.1. Catch and effort

Experimental harvesting of common whelk began in Breiðarfjörður in 1996 and landings totalled 500 tonnes that year. Since then landings have been variable because of market conditions, largest catch was 1 300 tonnes in 1997 but in 1998 and 2002 there was almost nothing landed. In the year 2003 effort increased again because of a very good market and landings went up to almost 1 000 tonnes in 2005. After that landings dropped off again and were only about 140 tonnes in 2010 (table 3.30.1). Effort increased again in 2011 and landings reached a total of over 500 tonnes.

Bycatch in each dragged trap in 2011 was 2.6 kg, compared to 3.3 kg in 2010. This was somewhat under the average for the period 1996–2005 which is 3.6 kg in dragged traps. Since the beginning of harvesting, the catch per trap has been in the range of 1.9-4.8 (table 3.31.1). Data show that CPUE is highly variable by season and harvest area as well as varying from year to year and when the most effort is conducted. In 2011 effort was relatively even over the course of the year and spread over a wider area of Breiðafjörður than in previous years.



BEITUKÓNGUR. Veiðisvæði við Ísland árið 2000–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

COMMON WHELK. *Fishing grounds in 2000–2011. Dark areas indicate highest catch (tonnes/nmi^2).*

2.31.2. Recommendations for quota year 2012/2013

As a result of additional effort targeting the stock, the Marine Research Institute recommended in 2011 that the aim should be to hold effort at the level of the decade average from the southern part of Breiðafjörður so that the TAC would not exceed 450 tonnes. The southern area is south of 65°15'N and west of 22°30'W. The yield capacity of the northern area of Breiðafjörður is not so well known, but data from the stock survey from 1998 indicate that the yield capacity of the northern area could be similar to or even more than that of the southern area. As a precaution and in light of the fact that the available data are 14 years old, the Marine Research Institute recommends a TAC in the current quota year in Breiðafjörður of not more than 750 tonnes. A survey cruise is planned for the end of the summer.

2.32. SEA CUCUMBER *Cucumaria frondosa*

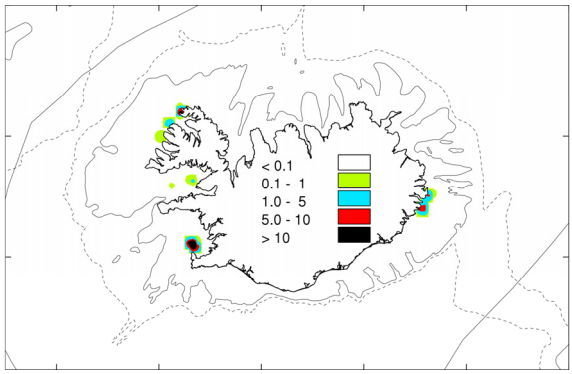
2.32.1. Catch and effort

Experimental harvesting of sea cucumbers for human consumption began in southern Breiðafjörður in 2003 but landings were small until 2008, when they were almost 1 000 tonnes (figure 2.32.1). Since then landings have increased and in all 2 700 tonnes were landed in 2011. The main harvesting grounds were in Faxi Bay (985 tonnes) and off the eastern coast (1 670 tonnes). CPUE in 2011 averaged about 1 100 kg/h, which is similar to that of the year before (table 3.32.1).

There were three harvesting areas defined:

- Western area: Reykjanes Lighthouse–Skagatá
- Northern area: Skagatá–Glettinganes
- Southern area: Glettinganes–Reykjanes Lighthouse

Three vessels have permits in each area. No harvesting is permitted in June and July because of spawning..

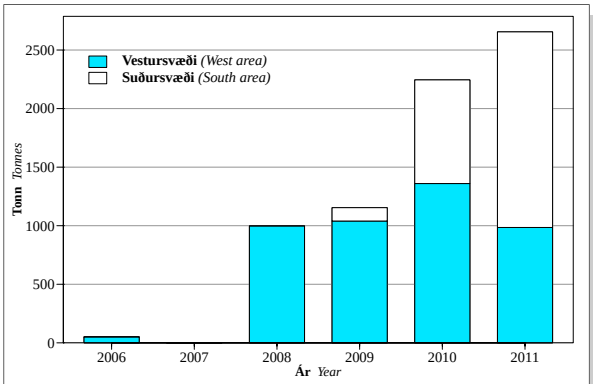


SÆBJÚGA. Veiðisvæði við Ísland árin 2008–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

SEA CUCUMBER. *Fishing grounds in 2008–2011. Dark areas indicate highest catch (tonnes/nmi^2).*

2.32.2. Stock status

Little is known about the distribution and biomass of sea cucumbers in Icelandic waters but the distribution is thought to be highly patchy. Biomass surveys have only been conducted on four harvesting grounds within one of the three defined areas. These are: the mouth of Aðalvík (3 100 tonnes) and on three tracks in Faxa Bay (in all over 15 000 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.



MYND 2.32.1 **SÆBJÚGA**. Afli á Íslandsmiðum eftir veiðisvæðum 2006–2011.

FIG. 2.32.1 ***SEA CUCUMBER.*** *Landings from Icelandic fishing grounds by areas 2006–2011.*

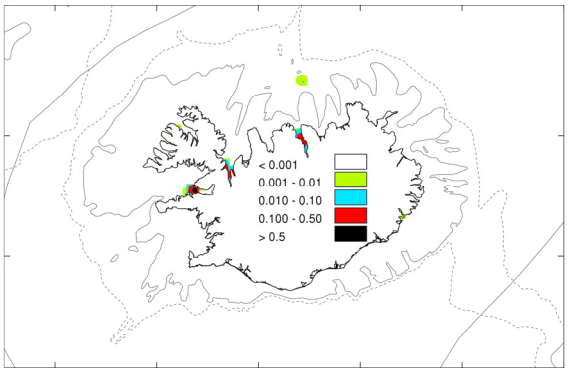
2.32.3. TAC recommendations for quota year 2012/2013

The Marine Research Institute (MRI) recommends that landings in the quota year 2012/2013 in each harvest ground within each defined area not go over 10% of the estimated stock size of the same area and that the number of permits allotted remain limited. As has been described, the institute has not completed a stock size estimate for all harvest grounds, which is increasing, but will continue to work toward this end in cooperation with some of the fishing vessels. If indications of changes in catch patterns on any of the defined areas the MRI will estimate stock size within each area. In continuation of their surveys the MRI will recommend a TAC for each harvest ground.

2.33. GREEN SEA URCHIN *Strongylocentrotus droebachiensis*

Green sea urchin harvesting began in Iceland in 1993. Harvesting reached a climax in 1994, and then landings were 1 500 tonnes. The following year landings were almost 1 000 tonnes and about 500 tonnes in 1996. The majority of landings were harvested in Breiðafjörður: about 800 tonnes in 1994 and 1995 and nearly 350 tonnes in 1996. In the years 1997–2003 harvesting mostly ceased. Although the decrease in landings is explained in most part by a poor market, many of the best harvest grounds were damaged by the harvesting process in the first years.

Harvesting of the green sea urchin began again in Breiðafjörður in 2004 and the harvest produced 40 tonnes. In 2007 the landings were about 130 tonnes and in 2010 and 2011 the totals were 146 and 144 tonnes, respectively (table 3.33.1). CPUE in Breiðafjörður was 381 kg in 2011 but it has fluctuated in the range of 380–480 kg since 2006. In the exploitation of 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 yield capacity of the green sea urchin in Icelandic waters and for this reason exploitation needs to be conducted and managed with caution.



ÍGULKER. Veiðisvæði við Ísland árin 1995–2011. Dekkstu svæðin sýna mestan afla (tonn/sjm^2).

SEA URCHIN. *Fishing grounds in 1995–2011. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).*

2.34. WHALES *Cetacea*

2.34.1. Whaling in Icelandic waters

Whaling has been conducted, with some breaks, in Icelandic waters since 1883. From 1948 whaling was limited to that which was processed at the whaling station in Hvalfjörður which supported four ships for the whaling season (June–September) for many years. In the years 1948–1985 the annual catch averaged 234 fin whales and 68 sei whales and from 1948–1982 82 sperm whales (which were protected in the North Atlantic in 1982).

Minke whale harvest was conducted by little motor boats for most of the last century. For many years the harvest was a small scale operation, a few dozen whales per year. In the years 1977–1985 the International Whaling Commission (IWC) governed the annual whaling quota for the area East Greenland/Iceland/Jan Mayen and most of these years, the Icelandic portion of the quota was about 200 whales (table 3.34.1).

In 1986 the IWC decision of a temporary ban on industrial whaling came into effect. In accordance with clauses in the whaling pact a limited number of fin and sei whales were caught for research purposes from 1986–1989. In addition, a total of 200 minke whales were caught for research purposes over the years 2003–2007.

In 2006 Icelandic industrial whaling began anew with quotas for minke and fin whales. In January of 2009 the government set a harvest rule that lay down a requirement that TAC of minke and fin whales in 2009–2013 would be equal to the number of whales that is recommended as safe by the Marine Research Institute (MRI).

2.34.2. Whale counts

The MRI, in cooperation with neighbouring countries in the North Atlantic, has participated in wide-ranging whale counts in the years 1987, 1989, 1995, 2001 and 2007. Since 1995 the organization of the surveys and analysis of the results have been overseen by the North Atlantic Marine Mammal Commission (NAMMCO), in addition to the results being presented within the scientific committee of the IWC. These surveys have been the main basis for stock assessment of minke and fin whales in Icelandic waters under the auspices of the scientific committees of NAMMCO and IWC. Fin whales have increased considerably in number since 1987, especially west of Iceland. The results of the surveys also show a significant increase in the abundance of humpback whales. Minke whales have, on the other hand, dropped in abundance over recent years. The next whale count is planned for 2015.

2.34.3. Stock status and harvest recommendations

2.34.3.1. Minke *(Balenoptera acutorostrata)*

Available data indicate that in the North Atlantic Ocean there are at least three minke populations with summer distributions along West Greenland and Canada, East Greenland/Iceland/Jan Mayen (Mid-Atlantic population) and Norway (Northeast Atlantic population).

According to whale counts in 2001 there were 43 600 minke whales (95% confidence interval 30 200–43 600) outside of the Icelandic shelf in the survey area of Icelandic and Faeroese vessels.

A simple comparison of data from the four aerial counts that were conducted annually in mid-summer in the years 1986–2001 indicates that the population has been steady or grown slightly in this period.

The results of the aerial survey from the summer of 2007 indicate, on the other hand, that far fewer minke whales were on the Icelandic shelf than in the previous survey or about 20 800 animals (95% confidence interval; 9 800–37 000 animals). Recounting in Faxa Bay indicated much higher density than the earlier survey in the same year, which could mean that the whales were somewhat later than usual in arriving. Due to inclement weather, surveys from ships were not possible for large areas outside the Icelandic shelf as had been planned and thus, it is not possible to say whether or not high density there could explain low density closer to land. The nominal lowest estimate from the ship survey was 10 800 minke whales (95% confidence interval 4 700–19 300 animals).

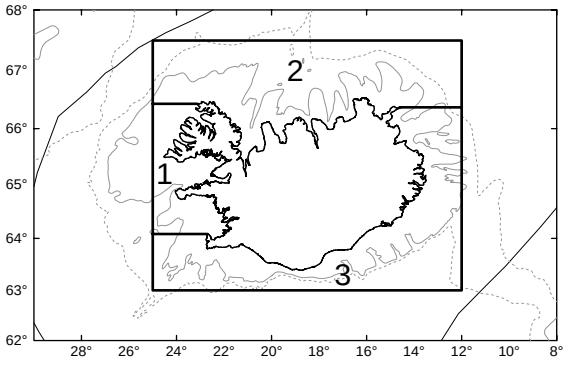
Aerial surveys in the summer of 2008 which covered only Faxa Bay indicated similar density as in older surveys, that is to say much more than in 2007. However, the survey of the entire Icelandic shelf region in the summer of 2009 suggested an abundance of 9 600 animals (95% confidence interval 5 300–14 400), even lower than the 2007 survey.

The scientific committee of NAMMCO discussed the above results at its annual meetings in the years 2008–2010 and concluded that in this case the surveys reflected a temporary change in the distribution of the species rather than a dramatic decrease in the population. The scientist concluded that the very limited whaling conducted in Icelandic waters since 2003 could not explain these variations.

According to previous assessments from the NAMMCO scientific committee of the status of the Mid-Atlantic population of minke whales, the stock

size is near to that which it was before whaling began. The whaling that has been conducted in the last century has therefore had little effect on the stock size.

Due to the uncertainty about the population size of minke whales and the likelihood of mixing between areas, it is desirable to spread whaling effort within the Icelandic shelf area based on what is known about minke distribution according to whale surveys. For this reason, the MRI recommends dividing the Icelandic shelf region into three areas (figure 2.34.1) with the following proportions of



Mynd 2.34.1. **HREFNA**. Skipting íslenska landgrunnsins í þrjú undirsvæði.

*Fig. 2.34.1. **MINKE WHALE**. Division of the Icelandic continental shelf into three subareas.*

Iceland's total quota:

1. Western area from a line drawn directly west of Garðskagi to a line directly west of Straumnes (up to 45%)
2. Northern area from the line at Straumnes to a line drawn directly eastward from Fontur on Langanes (up 45%)
3. Eastern/southern area between the line at Fontur to Garðskagi (up to 60%).

In 2010, the NAMMCO scientific committee assessed the status and potential yield of the minke whale population in Icelandic waters. As a partial basis for the assessment, which uses the RMP fishing management system that has been developed by the IWC, were the results of the surveys from 1987, 2001, 2007 and 2009. According to this assessment, annual catches of 216 minke whales are sustainable and there is consistency with a precautionary approach. According to the revised assessment in 2011, based on the final survey results from 2007 and 2009, the annual sustainable catch is as many as 229 animals. In the same vein, an annual catch of 121 minke whales in the sub-area around Jan Mayen (CM), but that is in part within the Icelandic EEZ. If whaling is conducted in that sub-area, whaling activities of all nations will have to be taken into account. This recommendation is consistent with that of the NAMMCO scientific committee.

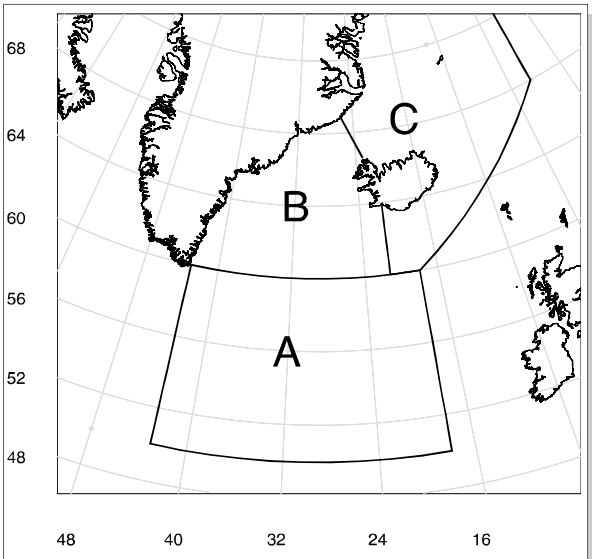
Minke whaling has, in recent years, led to landings of less than one third of the recommended TAC. Based on the above assessments the MRI recommends that annual catches for the years 2013 and 2014 be at the most 229 minkes in the Icelandic shelf region (CIC) and 121 minkes in the CM area.

2.34.3.2. Fin whale *(Balaenoptera physalus)*

The management of fin whaling in the North Atlantic includes the division of the Ocean into seven management areas: 1) Nova Scotia, 2) Newfoundland/Labrador, 3) West Greenland, 4) East Greenland/Iceland (EGI), 5) Northern Norway, 6) Western Norway/Faeroes, and 7) British Isles/Spain/ Portugal.

According to surveys from 1987 and 1989 and previous markings near the coast of Canada the estimated population size of fin whales in the North Atlantic was at least 50 thousand whales, thereof about 16 thousand in the area East Greenland/ Iceland/Jan Mayen (EGI stock area). According to the survey in 2001, about 14 thousand fin whales were in the area between East Greenland and Iceland (figure 2.34.2, areas A and B) and about 23 700 (CV 0.13) fin whales in all in the EGI stock area. Comparison of surveys show that fin whales have increased in number since regular surveys began in 1987, especially to the west of Iceland.

In 2003 the NAMMCO scientific committee conducted an assessment of the status of fin whale populations in the North Atlantic in which data from the 2001 survey was used as a basis. According to this assessment, the EGI population is near to the size it is thought to have had before whaling began. Due to uncertainty about population structure, the committee decided, as a precautionary approach, to base their advice on the assumption that a separate



Mynd 2.34.2. **LANGREYÐUR**. Skipting Austur-Grænlands/Íslands-stofns (EGI) langreyðar í þrjú undirsvæði.

*Fig. 2.34.1. **FIN WHALE**. Division of the East Greenland/Iceland stock of fin whales into three subareas.*

sub-population inhabits the traditional whaling grounds to the west of Iceland (area B in figure 2.34.2). The scientific committee concluded that annual catches of 150 fin whales on the traditional whaling grounds west of Iceland (area B) in the next 20 years would not reduce the fin whale population in the area.

The results of the 2007 survey indicate that 20 600 fin whales (95% confidence interval 15 100–26 500) were in the EGI area. This estimate is not significantly different to that from 2001. In the period 2007–2009 the IWC scientific committee conducted a formal assessment of the fin whale populations in the North Atlantic according to the management system of the council (RWP). The results of this assessment are consistent with the above assessments, but the IWC doesn't usually provide formal advice about potential yield while their own temporary whaling ban is in effect. A special working group of researchers within the IWC discussed the status and potential yield of the fin whale population in Icelandic waters in 2010 and the scientific committee of NAMMCO performed an assessment of the population last April. The estimate of potential yield is based on RMP fishery management model and takes into account the surveys from 1987, 1989, 1995, 2001 and 2007. According to the assessment, annual whaling of as many as 154 fin whales is sustainable on the traditional whaling grounds west of Iceland (area B in figure 2.34.1) and is consistent with a precautionary approach.

In accordance with management advice of NAMMCO, the MRI recommended that annual whaling in this area be limited to a maximum of 154 fin whales in 2011 and 2012. No new data have become available that give reason to change the above advice and the MRI recommends that whaling in 2013 and 2014 also be limited to 154 fin whales.

2.34.3.3. Sei whale *(Balaenoptera borealis)*

According to the 1995 survey there about 9 200 sei whales in the survey area in the North Atlantic, thereof, about 8 800 in the Icelandic EEZ. Due to the southerly distribution of the species the 1989 survey is thought to have counted the majority of the population, or about 10 500 sei whales to the west and southwest of Iceland.

For many decades until 1988 sei whales of the Mid North Atlantic population were hunted only from Iceland. It is likely that the population sustained this harvest, consisting of only 0.6% of the estimated population. The potential yield of the population has not been estimated nor have harvest rules been developed fully enough to allocate a TAC. Such an assessment is, however, on the schedule of the IWC scientific committee.

2.35. SEALS *Phocidae*

2.35.1. Seal hunting

Two species of seal are permanent inhabitants of Icelandic waters: harbour seals and grey seals. In addition, there are a few migratory species that come regularly into Icelandic waters.

Seal hunting occurs around the country, in addition to a good number that get caught accidentally in fishing nets (table 3.35.1). In the last century hunting was mostly limited to spring pups (harbour seals) and fall pups (grey seals) for their skins, but older seals and migratory seals were sometimes hunted. The seal hunt decreased sharply in the end of the 1970's following a crash in the foreign market for seal skins. With the formation of the Ring Worm Committee in 1982, which began to pay a bounty for seals, hunting increased again and this time the target was more often older seals. At first, the bounty was paid for any hunted seal but from 1990 only grey seals got the bounty. After this change, hunting of harbour seals dropped off except in 1992 and 1993 when some were taken for scientific sampling. Since 1986 the decline in seal hunting has been steady and since 2002 the recorded seal harvest (including bycatch in fishing boats) has been under 1 000 animals.

There is no data describing the trends of number of seals as bycatch. In seal hunt data from previous years no distinction was made between purposefully hunted seals and numbers killed as bycatch. In addition, usually only seals that were sold or traded for bounty were recorded. Therefore, numbers of animals killed for personal use and bycatch that was not turned in for bounty were not recorded.

All marine mammals that are killed in fishing operations are supposed to be recorded in statutory fishing logs. Since 2002 there has been a special emphasis placed on instructing the crews of gillnet boats about the recording of mammals killed but annually only 2–7% of them report seals in nets. Digital recording of catch and bycatch became available in 2008 but it seems that recording of marine mammals has not improved. In light of this, it is likely that the record of seals as bycatch is a bare minimum estimate.

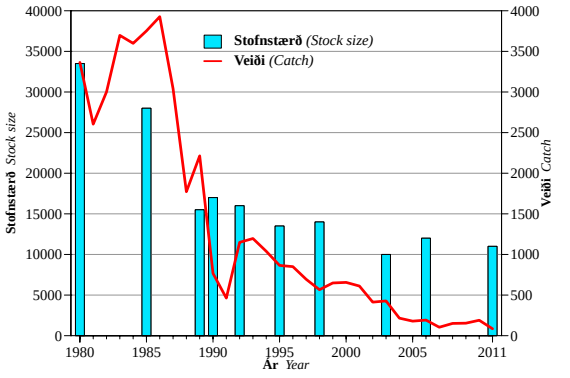
In 2011, 396 seals were reported, of which 224 were bycatch. Direct hunting has decreased rather steadily since the mid 1980's when over 6 000 animals were taken annually. Spring pup hunts (harbour seals) were similar to the year 2010, in all 50 animals and 18 older harbour seals were killed. In addition, 17 harbour seals were reported as bycatch. The grey seal hunt was 107 animals and 7 were reported as bycatch.

No hunting of other species was reported, but word-of-mouth reports about two bearded seals, one ringed seal, sex harp seals and 188 unidentified seals in bycatch. It is very important that these recordings be improved so estimates are possible of fishing mortality, status and trends in the populations. As in previous years, Norwegian seal hunting vessels were given permits to conduct some limited scientific hunting of harp seals and hooded seals in the Icelandic EEZ in 2011. The hunt was conducted far to the north of Iceland and the catch was reported in Norwegian fishing data.

2.35.2. Status and hunting resistance of seal populations in Icelandic waters

2.35.2.1. Harbour seal (*Phoca vitulina*)

Harbour 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 harbour seals. The population was estimated at 11 000 animals (95% confidence interval 8 000–16 000), which is unchanged from the summers of 2003 and 2006 (figure 2.35.1). The populations was estimated at 34 thousand animals in the 1980 survey and decreased annually by about 4% on average until 2006. The most rapid decline in the harbour seal population occurred in the 1980's when it decreased but about 10 000 animals. In the 1990's the decline slowed at the same time as hunting decreased. On the other hand, very little is known about mortality due to unintentional killing of seals by people, greatly increases uncertainty about trends in the population. In 2010 management goals were drafted for the harbour seal population in Iceland at the behest of



Mynd 2.35.1. **LANDSELUR**. Heildarveiði landsels og áætluð stærð landselastofnsins frá 1980.

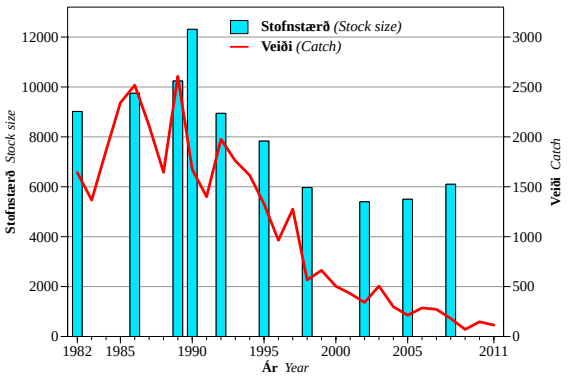
*Fig. 2.35.1. **HARBOUR SEAL**. Total catch and estimated stock size since 1980.*

the government. Thereby the choice was made to aim toward keeping the population at or above where it was in 2006 when it was estimated to be 12 thousand animals. If the population drops below this level measures will be immediately taken to reverse the decline if possible. In the coming years the population must be monitored, in part by counting every 2–3 years, in order to follow the management goals.

2.35.2.2. Grey seal (*Halichoerus grypus*)

Grey seal pups have not been counted since 2008 and 2009. The estimate calculated then was 1 539 animals (95% confidence interval 4 600–7 600). The population reached an historical low in 2002 when the number of animals was estimated to be 5 500 and it had decreased considerably since 1990 when the estimated population was about 12 000 animals (figure 2.35.2). The method was improved and thus it is unsafe to read the 2002 results as an increase but there was an increase of about 6% (4.5–7.9) per year from 2005–2009. Most of the increase was observed in Breiðafjörður where the pup population went from 645 to 859 pups. It is clear that the harvest mortality in the 1990's was above the yield capacity of the population, but less hunting was conducted in recent years (figure 2.35.2).

In 2005 the government decided on a management policy for grey seals that aims at keeping the population to at least 4 100 animals, where it was in 2004. If the population drops below this level measures will be taken immediately to reverse the decline. A grey seal pup count is planned for the fall of 2012.



Mynd 2.35.2. **ÚTSELUR**. Heildarveiði og áætluð stofnstærð frá 1982.

*Fig. 2.35.2. **GREY SEAL**. Total catch and estimated stock size since 1982.*

3. TÖFLUR *Tables*

TAFLA 3.1.1
Þorskur. Afli (í tonnum) á Íslandsmiðum 1905–2011.
***Cod**. Landings (in tonnes) from Icelandic waters 1905–2011.*

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	1959	284 259	168 245	452 504
1906	48 302	58 441	106 743	1960	295 668	169 355	465 023
1907	53 868	62 838	116 706	1961	233 874	141 042	374 916
1908	58 259	66 704	124 963	1962	221 820	165 056	386 876
1909	56 670	58 831	115 501	1963	232 839	177 211	410 050
1910	71 007	62 595	133 602	1964	273 584	160 021	433 605
1911	75 114	77 762	152 876	1965	233 483	160 153	393 636
1912	75 499	79 477	154 976	1966	223 974	132 781	356 755
1913	79 870	95 110	174 980	1967	193 449	151 573	345 022
1914	53 473	135 025	188 498	1968	227 594	153 476	381 070
1915	66 030	70 069	136 099	1969	281 680	124 731	406 411
1916	68 848	43 975	112 823	1970	302 875	167 882	470 757
1917	61 413	23 305	84 718	1971	250 324	202 728	453 052
1918	62 093	41 073	103 156	1972	225 354	173 174	398 528
1919	76 766	79 967	156 733	1973	238 898	144 548	383 446
1920	82 766	127 972	210 738	1974	238 066	136 704	374 770
1921	90 632	128 735	219 367	1975	264 975	106 016	370 991
1922	103 436	175 568	279 004	1976	280 831	67 018	347 849
1923	127 320	116 328	243 648	1977	329 676	10 374	340 050
1924	161 797	158 004	319 801	1978	319 648	10 742	330 390
1925	166 538	165 698	332 236	1979	360 080	7 984	368 064
1926	126 890	174 304	301 194	1980	428 344	6 000	434 344
1927	164 783	178 295	343 078	1981	460 579	8 080	468 659
1928	177 328	186 943	364 271	1982	382 297	6 090	388 387
1929	201 074	197 738	398 812	1983	293 890	6 166	300 056
1930	261 278	237 157	498 435	1984	281 481	2 341	283 822
1931	224 504	258 898	483 402	1985	322 810	2 457	325 267
1932	208 081	277 207	485 288	1986	365 852	2 781	368 633
1933	247 329	270 946	518 275	1987	389 808	2 445	392 257
1934	223 729	214 840	438 569	1988	375 741	2 335	378 076
1935	182 926	218 965	401 891	1989	353 630	2 324	355 954
1936	102 354	181 232	283 586	1990	333 348	2 042	335 390
1937	111 285	186 531	297 816	1991	306 689	1 871	308 560
1938	131 965	179 351	311 316	1992	266 662	1 105	267 767
1939	136 782	61 569	198 351	1993	251 170	809	251 979
1940	147 347	-	147 347	1994	177 919	890	178 809
1941	156 242	-	156 242	1995	168 685	739	169 424
1942	173 146	-	173 146	1996	181 052	606	181 658
1943	186 017	-	186 017	1997	202 745	408	203 153
1944	216 677	-	216 677	1998	241 545	1 087	242 632
1945	211 849	4 098	215 947	1999	258 658	1 394	260 052
1946	199 165	38 772	237 937	2000	234 362	1 325	235 687
1947	200 242	45 955	246 197	2001	234 085	1 289	235 374
1948	213 177	80 157	293 334	2002	207 466	1 311	208 777
1949	221 419	93 135	314 554	2003	200 443	7 108	207 551
1950	197 433	152 922	350 355	2004	220 057	7 532	227 589
1951	183 252	165 230	348 482	2005	207 972	5 612	213 584
1952	237 314	162 629	399 943	2006	193 413	2 863	196 276
1953	263 516	262 545	526 061	2007	166 912	3 710	170 622
1954	306 191	241 339	547 530	2008	143 785	2 794	146 579
1955	315 438	222 692	538 130	2009	181 309	1 112	182 421
1956	292 586	188 123	480 709	2010	167 632	1 521	169 153
1957	247 087	204 822	451 909	2011	169 638	2 062	171 700
1958	284 407	224 276	508 683				

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.1.2

Þorskur. Skipting aflans í fjölda eftir aldri (í milljónum) á árunum 1955–2011.

Cod. *Landings in numbers by age (millions) in the years 1955–2011.*

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	10.690	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

TAFLA 3.1.3

Þorskur. Meðalþyngd í afla eftir aldri (g) á árunum 1955–2012.

Cod. *Weight at age from commercial catches (g) in the years 1955–2012.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1955	827	1307	2157	3617	4638	5657	6635	6168	8746	8829	10086	14584
1956	1080	1600	2190	3280	4650	5630	6180	6970	6830	9290	10965	12954
1957	1140	1710	2520	3200	4560	5960	7170	7260	8300	8290	10350	13174
1958	1210	1810	3120	4510	5000	5940	6640	8290	8510	8840	9360	13097
1959	1110	1950	2930	4520	5520	6170	6610	7130	8510	8670	9980	11276
1960	1060	1720	2920	4640	5660	6550	6910	7140	7970	10240	10100	12871
1961	1020	1670	2700	4330	5530	6310	6930	7310	7500	8510	9840	14550
1962	990	1610	2610	3900	5720	6660	6750	7060	7540	8280	10900	12826
1963	1250	1650	2640	3800	5110	6920	7840	7610	8230	9100	9920	11553
1964	1210	1750	2640	4020	5450	6460	8000	9940	9210	10940	12670	15900
1965	1020	1530	2570	4090	5410	6400	7120	8600	12310	10460	10190	17220
1966	1170	1680	2590	4180	5730	6900	7830	8580	9090	14230	14090	17924
1967	1120	1820	2660	4067	5560	7790	7840	8430	9090	10090	14240	16412
1968	1170	1590	2680	3930	5040	5910	7510	8480	10750	11580	14640	16011
1969	1100	1810	2480	3770	5040	5860	7000	8350	8720	10080	11430	13144
1970	990	1450	2440	3770	4860	5590	6260	8370	10490	12310	14590	21777
1971	1090	1570	2310	2980	4930	5150	5580	6300	8530	11240	14740	17130
1972	980	1460	2210	3250	4330	5610	6040	6100	6870	8950	11720	16000
1973	1030	1420	2470	3600	4900	6110	6670	6750	7430	7950	10170	17000
1974	1050	1710	2430	3820	5240	6660	7150	7760	8190	9780	12380	14700
1975	1100	1770	2780	3760	5450	6690	7570	8580	8810	9780	10090	11000
1976	1350	1780	2650	4100	5070	6730	8250	9610	11540	11430	14060	16180
1977	1259	1911	2856	4069	5777	6636	7685	9730	11703	14394	17456	24116
1978	1289	1833	2929	3955	5726	6806	9041	10865	13068	11982	19062	21284
1979	1408	1956	2642	3999	5548	6754	8299	9312	13130	13418	13540	20072
1980	1392	1862	2733	3768	5259	6981	8037	10731	12301	17281	14893	19069
1981	1180	1651	2260	3293	4483	5821	7739	9422	11374	12784	12514	19069
1982	1006	1550	2246	3104	4258	5386	6682	9141	11963	14226	17287	16590
1983	1095	1599	2275	3021	4096	5481	7049	8128	11009	13972	15882	18498
1984	1288	1725	2596	3581	4371	5798	7456	9851	11052	14338	15273	16660
1985	1407	1971	2576	3650	4976	6372	8207	10320	12197	14683	16175	19050
1986	1459	1961	2844	3593	4635	6155	7503	9084	10356	15283	14540	15017
1987	1316	1956	2686	3894	4716	6257	7368	9243	10697	10622	15894	12592
1988	1438	1805	2576	3519	4930	6001	7144	8822	9977	11732	14156	13042
1989	1186	1813	2590	3915	5210	6892	8035	9831	11986	10003	12611	16045
1990	1290	1704	2383	3034	4624	6521	8888	10592	10993	14570	15732	17290
1991	1309	1899	2475	3159	3792	5680	7242	9804	9754	14344	14172	20200
1992	1289	1768	2469	3292	4394	5582	6830	8127	12679	13410	15715	11267
1993	1392	1887	2772	3762	4930	6054	7450	8641	10901	12517	14742	16874
1994	1443	2063	2562	3659	5117	6262	7719	8896	10847	12874	14742	17470
1995	1348	1959	2920	3625	5176	6416	7916	10273	11022	11407	13098	15182
1996	1457	1930	3132	4141	4922	6009	7406	9772	10539	13503	13689	16194
1997	1484	1877	2878	4028	5402	6386	7344	8537	10797	11533	10428	12788
1998	1230	1750	2458	3559	5213	7737	7837	9304	10759	14903	16651	18666
1999	1241	1716	2426	3443	4720	6352	8730	9946	11088	12535	14995	15151
2000	1308	1782	2330	3252	4690	5894	7809	9203	10240	11172	13172	17442
2001	1499	2050	2649	3413	4766	6508	7520	9055	8769	9526	11210	13874
2002	1294	1926	2656	3680	4720	6369	7808	9002	10422	13402	9008	16893
2003	1265	1790	2424	3505	4455	5037	5980	7819	8802	10712	12152	13797
2004	1257	1771	2323	3312	4269	5394	5872	7397	10808	11569	13767	12955
2005	1194	1712	2374	3435	4392	5201	6200	5495	7211	9909	12944	18151
2006	1070	1614	2185	3052	4347	5177	5382	5769	6258	5688	7301	15412
2007	1083	1556	2144	2754	3920	5255	6272	6481	7142	6530	9724	10143
2008	1162	1627	2318	3120	3846	5367	6771	7648	8282	11181	14266	17320
2009	1109	1680	2204	3206	4098	4884	6744	8505	10126	12108	12471	15264
2010	1131	1769	2334	3161	4422	5498	6552	7945	8913	10090	10417	13489
2011	1163	1795	2615	3471	4469	5992	6863	7850	8810	9797	13534	13033
2012[1)]	1201	1793	2490	3606	4545	6017	8059	7850	8810	9797	13534	13033

[1)] Áætlað. *Estimated.*

TAFLA 3.1.4

Þorskur. Meðalþyngd kynþroska þorsks eftir aldri (g) í stofni 1955–2012. Mat á meðalþyngd kynþroska þorsks 4–7 ára er byggð á stofnmælingu botnfiska í mars en fyrir 8 ára og eldri er stuðst við gögn úr afla.

Cod. *Weight at age of mature cod (g) in the stock 1955–2012. For ages 4–7, the estimate 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	1019	1833	3183	4128	5657	6635	6168	8746	8829	10086	14584
1956	1248	1862	2886	4138	5630	6180	6970	6830	9290	10965	12954
1957	1334	2142	2816	4058	5960	7170	7260	8300	8290	10350	13174
1958	1412	2652	3969	4450	5940	6640	8290	8510	8840	9360	13097
1959	1521	2490	3978	4913	6170	6610	7130	8510	8670	9980	11276
1960	1342	2482	4083	5037	6550	6910	7140	7970	1020	10100	12871
1961	1303	2295	3810	4922	6310	6930	7310	0750	8510	9840	14550
1962	1256	2218	3432	5091	6660	6750	7060	7540	8280	10900	12826
1963	1287	2244	3344	4548	6920	7840	7610	8230	9100	9920	11553
1964	1365	2244	3538	4850	6460	8000	9940	9210	10940	12670	15900
1965	1193	2184	3599	4815	6400	7120	8600	12310	10460	10190	17220
1966	1310	2202	3678	5100	6900	7830	8580	9090	14230	14090	17924
1967	1420	2261	3579	4948	7790	7840	8430	9090	10090	14240	16412
1968	1240	2278	3458	4486	5910	7510	8480	10750	11580	14640	16011
1969	1412	2108	3318	4486	5860	7000	8350	8720	10080	11430	13144
1970	1131	2074	3318	4325	5590	6260	8370	10490	12310	14590	21777
1971	1225	1964	2622	4388	5150	5580	6300	8530	11240	14740	17130
1972	1139	1878	2860	3854	5610	6040	6100	6870	8950	11720	16000
1973	1108	2100	3168	4361	6110	6670	6750	7430	7950	10170	17000
1974	1334	2066	3362	4664	6660	7150	7760	8190	9780	12380	14700
1975	1381	2363	3309	4850	6690	7570	8580	8810	9780	10090	11000
1976	1388	2252	3608	4512	6730	8250	9610	11540	11430	14060	16180
1977	1491	2428	3581	5142	6636	7685	9730	11703	14394	17456	24116
1978	1430	2490	3480	5096	6806	9041	10860	13068	11982	19062	21284
1979	1526	2246	3519	4938	6754	8299	9312	13130	13418	13540	20072
1980	1452	2323	3316	4681	6981	8037	10731	12301	17281	14893	19069
1981	1288	1921	2898	3990	5821	7739	9422	11374	12784	12514	19069
1982	1209	1909	2732	3790	5386	6682	9141	11963	14226	17287	16590
1983	1247	1934	2658	3645	5481	7049	8128	11009	13972	15882	18498
1984	1346	2207	3151	3890	5798	7456	9851	11052	14338	15273	16660
1985	1375	1750	2709	3454	6372	8207	10320	12197	14683	16175	19050
1986	1597	2882	3246	4581	6155	7503	9084	10356	15283	14540	15017
1987	1584	2423	3522	4905	6257	7368	9243	10697	10622	15894	12592
1988	1475	2261	3277	4398	6001	7144	8822	9977	11732	14156	13042
1989	1494	2338	3429	4686	6892	8035	9831	11986	10003	12611	16045
1990	1035	2170	2798	4422	6521	8888	10592	10993	14570	15732	17290
1991	1283	2039	2747	3397	5680	7242	9804	9754	14344	14172	20200
1992	1336	2094	3029	3753	5582	6830	8127	12679	13410	15715	11267
1993	1363	2309	3235	4109	6054	7450	8641	10901	12517	14742	16874
1994	1728	2254	3340	4514	6262	7719	8896	10847	12874	14742	17470
1995	1635	2345	3186	4489	6416	7916	10273	11022	11407	13098	15182
1996	1753	2490	3531	4273	6009	7406	9772	10539	13503	13689	16194
1997	1347	2267	3746	5245	6386	7344	8537	10797	11533	10428	12788
1998	1516	2261	3263	4474	7737	7837	9304	10759	14903	16651	18666
1999	1467	1932	2996	3961	6352	8730	9946	11088	12535	14995	15151
2000	1355	1915	2881	4319	5894	7809	9203	10240	11172	13172	17442
2001	1550	2071	2694	4131	6508	7520	9055	8769	9526	11210	13874
2002	1590	2259	3120	3984	6369	7808	9002	10422	13402	9008	16893
2003	1338	2215	2988	4169	5037	5980	7819	8802	10712	12152	13797
2004	1453	2099	3057	3757	5394	5872	7397	10808	11569	13767	12955
2005	1119	1897	2963	3874	5201	6200	5495	7211	9909	12944	18151
2006	1383	1998	2905	4385	5177	5382	5769	6258	5688	7301	15412
2007	1264	2022	2580	4078	5255	6272	6481	7142	6530	9724	10143
2008	1841	2227	2924	3920	5367	6771	7648	8282	11181	14266	17320
2009	1440	2027	2871	3909	4884	6744	8505	10126	12108	12471	15264
2010	1586	2153	3150	4207	5498	6552	7945	8913	10090	10417	13489
2011	2465	2664	3214	4545	5992	6863	7850	8810	9797	13534	13033
2012[1)]	1700	2603	3711	4511	6017	8059	7850	8810	9797	13534	13033

[1)] Áætlað. *Estimated.*

TAFLA 3.1.5

Þorskur. Hlutfall kynþroska eftir aldri í stofnmælingu að vorlagi 1985–2012.

Cod. *Sexual maturity at age in the spring survey in the years 1985–2012.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1985	0.00	0.02	0.19	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	0.89	0.78	1.00	0.98	1.00	1.00	1.00
1988	0.01	0.03	0.23	0.51	0.45	0.68	0.94	0.95	0.97	0.82	1.00	1.00
1989	0.01	0.03	0.14	0.37	0.65	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	0.27	0.40	0.81	0.92	0.89	1.00	1.00	1.00	1.00	1.00
1993	0.01	0.09	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	0.99	1.00	1.00	1.00
1995	0.01	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	0.69	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	0.93	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	0.07	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	0.01	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	0.01	0.11	0.28	0.50	0.79	0.81	0.95	0.99	1.00	1.00	1.00	1.00
2006	0.00	0.02	0.29	0.45	0.75	0.87	0.74	1.00	1.00	1.00	1.00	1.00
2007	0.01	0.03	0.16	0.50	0.69	0.80	0.86	0.96	0.92	1.00	1.00	1.00
2008	0.00	0.04	0.28	0.55	0.73	0.83	0.85	0.95	0.74	1.00	1.00	1.00
2009	0.00	0.02	0.13	0.46	0.69	0.88	0.74	0.63	0.89	1.00	1.00	1.00
2010	0.00	0.02	0.06	0.38	0.82	0.87	0.93	0.82	0.58	1.00	1.00	1.00
2011	0.00	0.01	0.14	0.43	0.73	0.92	0.94	0.96	1.00	1.00	1.00	1.00
2012	0.00	0.03	0.13	0.41	0.73	0.89	0.96	0.85	1.00	1.00	1.00	1.00

TAFLA 3.1.6.
Þorskur. Aldurskiptar vísitölur (í fjölda) úr stofnmælingum botnfiska.
Cod. *Age disaggregated indices (in numbers) from groundfish trawl surveys.*

Stofnmæling í mars. *March survey.*

Ár	Aldur *Age*								
Year	1	2	3	4	5	6	7	8	9
1985	16.54	110.48	35.41	48.25	64.59	22.95	15.26	5.04	3.39
1986	15.07	60.58	95.95	22.46	21.51	27.44	7.17	2.80	0.93
1987	3.65	28.29	104.44	82.67	21.41	12.76	12.94	2.79	0.98
1988	3.45	7.06	72.51	103.56	69.54	8.39	6.41	7.23	0.67
1989	4.04	16.40	22.06	79.90	74.16	39.11	4.85	1.71	1.42
1990	5.56	11.79	26.10	14.18	27.91	35.22	16.74	1.75	0.58
1991	3.95	16.02	18.20	30.24	15.49	18.94	22.45	4.91	0.94
1992	0.71	16.91	33.60	18.95	16.66	6.87	6.35	5.78	1.49
1993	3.57	4.77	30.87	36.79	13.53	10.61	2.42	2.03	1.40
1994	14.40	14.96	9.04	26.91	22.43	6.09	3.96	0.80	0.53
1995	1.08	29.31	24.80	9.06	24.53	18.44	4.02	1.91	0.38
1996	3.72	5.46	42.72	29.71	13.22	15.35	15.10	4.20	1.14
1997	1.18	22.26	13.59	56.82	29.85	9.96	9.47	7.31	0.61
1998	8.07	5.38	30.00	16.19	63.32	29.98	7.00	5.77	3.32
1999	7.40	33.10	7.03	42.64	13.33	24.82	11.99	2.60	1.47
2000	18.89	27.71	55.16	7.00	30.79	8.69	8.82	4.57	0.56
2001	12.29	23.54	36.56	38.39	5.08	15.85	3.55	2.16	0.89
2002	0.91	38.63	41.48	40.67	37.25	7.45	8.98	1.66	0.81
2003	11.18	4.22	46.62	36.91	29.17	17.73	4.11	4.78	1.13
2004	7.01	26.45	8.11	64.57	38.41	27.81	15.92	3.03	3.21
2005	2.69	17.80	41.72	9.97	46.43	25.01	12.12	6.47	1.01
2006	9.10	7.43	25.07	40.55	11.72	31.56	11.62	4.10	1.62
2007	5.67	19.01	9.07	22.87	30.04	10.10	11.39	6.11	2.45
2008	6.75	12.41	23.03	9.86	22.38	22.95	9.44	8.02	3.05
2009	21.97	12.63	16.58	22.80	15.68	26.01	16.69	4.85	3.14
2010	18.69	21.54	18.92	18.12	24.64	14.13	18.35	9.91	3.26
2011	3.58	23.00	27.58	20.14	23.06	26.56	14.66	13.33	5.02
2012	20.37	11.02	39.31	56.94	42.02	31.24	28.36	10.79	7.06

Stofnmæling í október. *October survey.*

Ár	Aldur *Age*										
Year	0	1	2	3	4	5	6	7	8	9	10
1996	0.32	6.69	3.57	20.00	13.98	5.40	7.44	6.26	1.60	0.31	0.09
1997	2.13	0.67	16.89	6.83	29.57	15.76	4.09	3.62	2.36	0.25	0.17
1998	6.75	5.92	2.63	15.62	7.36	16.01	16.03	5.20	2.24	1.27	0.20
1999	12.00	8.61	14.54	5.68	23.38	7.42	9.94	4.05	0.59	0.34	0.36
2000	3.91	4.60	13.17	15.25	3.71	11.15	3.49	2.61	1.11	0.34	0.28
2001	0.31	7.11	11.51	19.53	21.13	3.30	6.73	1.60	0.76	0.17	0.03
2002	1.04	0.92	13.72	16.11	23.39	15.94	5.41	4.77	1.11	0.61	0.08
2003	1.89	5.16	2.68	25.66	16.98	13.22	8.99	1.89	2.55	0.38	0.10
2004	0.37	3.67	16.28	6.92	29.86	18.85	11.73	7.38	1.88	1.65	0.23
2005	0.58	2.15	9.03	20.37	6.82	25.62	10.88	3.86	1.91	0.29	0.31
2006	0.33	4.51	4.52	16.28	23.04	7.67	13.93	6.12	2.05	1.02	0.16
2007	0.29	3.73	9.82	4.93	11.73	15.68	6.34	5.91	3.14	0.76	0.50
2008	2.44	5.30	11.88	15.19	7.66	17.57	18.51	5.67	5.61	1.50	0.79
2009	0.93	7.04	8.30	13.14	18.11	12.39	16.46	10.22	3.15	2.75	0.84
2010	0.59	10.78	18.82	16.18	15.52	17.96	9.81	11.21	6.81	2.29	1.20
2011	-	-	-	-	-	-	-	-	-	-	-

TAFLA 3.1.7

Þorskur. Fjöldi þriggja ára nýliða í milljónum, stærð hrygningarstofns á hrygningartíma í þús. tonna, viðmiðunarstofn í upphafi árs, afli í þús. tonna, veiðihlutfall (afli/viðmiðunarstofn) og fiskveiðidánartala (meðaltal 5–10 ára þorsks). 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 in millions, spawning stock biomass (thous. tonnes) at spawning time, fishable stock, landings (thous. tonnes), harvest rate (landings/fishable stock), and fishing mortality (average from 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[1)] *Recruitment*	Hrygningarstofn [2)] *SSB*	Viðmiðunarstofn (4+)[3)] *Biomass 4+*	Afli *Landings*	Veiðihlutfall *Harvest rate*	Fiskveiðidánartala *Fishing mortality*
1955	152	940	2359	545	22%	0.29
1956	153	794	2083	487	23%	0.29
1957	171	774	1880	455	24%	0.31
1958	221	874	1866	517	27%	0.35
1959	289	853	1828	459	25%	0.32
1960	154	709	1754	470	27%	0.37
1961	193	467	1496	377	25%	0.36
1962	129	569	1492	389	26%	0.38
1963	178	508	1316	409	31%	0.46
1964	204	451	1219	437	35%	0.55
1965	216	318	1023	387	36%	0.58
1966	229	277	1032	353	33%	0.59
1967	320	256	1103	336	30%	0.56
1968	172	222	1223	382	31%	0.72
1969	248	314	1326	403	31%	0.56
1970	181	331	1337	475	35%	0.61
1971	189	242	1098	444	39%	0.68
1972	139	222	997	395	40%	0.69
1973	273	245	844	369	43%	0.70
1974	179	187	918	368	39%	0.76
1975	261	168	895	365	41%	0.81
1976	367	138	955	346	36%	0.75
1977	143	199	1289	340	26%	0.59
1978	228	212	1297	330	26%	0.48
1979	243	304	1397	366	26%	0.45
1980	140	357	1490	432	29%	0.49
1981	140	264	1242	465	36%	0.66
1982	132	167	970	380	38%	0.73
1983	233	130	791	298	37%	0.71
1984	139	141	914	282	32%	0.64
1985	140	172	928	323	35%	0.67
1986	330	198	854	365	42%	0.77
1987	261	150	1030	390	37%	0.86
1988	176	172	1033	378	37%	0.89
1989	89	171	1003	363	36%	0.72
1990	130	214	841	335	41%	0.70
1991	107	161	698	308	44%	0.80
1992	175	153	550	265	47%	0.85
1993	135	124	595	251	42%	0.87
1994	78	154	576	178	31%	0.63
1995	151	179	557	169	30%	0.51
1996	165	159	670	181	27%	0.51
1997	88	190	782	203	26%	0.55
1998	162	211	720	244	33%	0.65
1999	71	184	731	260	35%	0.75
2000	172	167	590	235	38%	0.76
2001	162	162	687	234	33%	0.75
2002	159	197	728	208	28%	0.63
2003	179	186	739	208	28%	0.58
2004	80	202	799	227	28%	0.58
2005	156	231	722	213	30%	0.55
2006	134	221	700	196	28%	0.54
2007	92	204	680	170	25%	0.51
2008	135	268	697	146	22%	0.39
2009	125	254	798	181	22%	0.38
2010	131	299	849	169	20%	0.32
2011	171	367	944	172	18%	0.28
2012	174	419	1070			
2013	108					
2014	182					

[1)] Nýliðun við þriggja ára aldur. *Recruitment at age 3.*
[2)] Hrygningarstofn reiknaður út frá meðalþyngdum og kynþroskahlutfalli fengnum úr stofnmælingu í mars. *Spawning stock biomass calculated using mean weights at age and maturity from survey data*.
[3)] Stofn 4 ára og eldri reiknaður út frá meðalþyngdum í afla. *Biomass (4+) calculated using mean weights from catch data.*

TAFLA 3.1.8.

Þorskur. Stofnstærð í fjölda eftir aldri (í milljónum) 1955–2012. Feitletraðar tölur sýna fjölda að meðtalinni áætlaðri Grænlandsgöngu.
Cod. *Stock abundance in numbers by age (millions) 1955–2012. 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	87	9.2	7.8	8.1	2.6
1956	329	208	153	120	150	135	72	22	15	8	51.7	5.4	4.7	4.8
1957	431	270	171	119	82	96	85	44	13	9	4.6	29.6	3.2	2.7
1958	230	353	221	129	79	51	60	52	**35**	8	5.1	2.6	17.4	1.9
1959	288	189	289	161	82	48	31	35	**52**	19	4.1	2.7	1.5	10.3
1960	192	236	154	216	105	51	30	19	21	**37**	10.6	2.3	1.6	1.0
1961	265	157	193	114	140	64	31	18	10	11	19.1	5.4	1.3	1.0
1962	305	217	129	144	75	89	40	18	**24**	6	5.7	10.0	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	5	1.6	1.8	0.5	0.8
1966	257	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	248	130	155	65	33	**41**	5	1	0.7	0.2	0.2	0.1
1970	208	230	181	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	319	179	199	62	43	20	12	4	3	2.7	0.5	0.2	0.0
1975	214	449	261	131	118	31	20	8	4	1	0.9	0.7	0.1	0.1
1976	340	175	367	192	79	58	14	8	3	1	0.3	0.2	0.2	0.1
1977	363	278	143	281	121	42	27	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	5	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	285	132	112	77	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	187	72	43	20	15	5	1	1.9	0.4	0.1	0.1
1985	389	403	140	110	125	40	21	8	5	2	0.5	0.8	0.2	0.1
1986	262	319	330	109	71	67	19	8	3	2	0.8	0.2	0.4	0.1
1987	133	214	261	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	159	89	137	128	77	12	4	2	1	0.3	0.1	0.1	0.1
1990	260	130	130	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	1	0.4	0.1	0.0	0.0
1992	116	165	175	80	61	21	16	14	4	1	0.2	0.1	0.0	0.0
1993	225	95	135	129	48	28	7	5	4	1	0.2	0.1	0.1	0.0
1994	247	184	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	165	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	129	49	54	24	5	3	2	0.3	0.1	0.0	0.0
2000	237	197	172	55	88	27	23	9	2	1	0.6	0.1	0.0	0.0
2001	266	194	162	133	38	49	12	9	3	1	0.4	0.2	0.0	0.0
2002	119	218	159	124	90	21	22	5	3	1	0.2	0.1	0.1	0.0
2003	232	98	179	125	86	52	11	10	2	1	0.3	0.1	0.0	0.0
2004	200	190	80	142	88	51	26	5	4	1	0.4	0.1	0.0	0.0
2005	138	164	156	63	100	52	24	12	2	2	0.3	0.2	0.1	0.0
2006	201	113	134	124	46	61	26	12	5	1	0.7	0.1	0.1	0.0
2007	187	165	92	107	90	29	32	13	5	2	0.4	0.3	0.1	0.0
2008	196	153	135	73	78	58	16	16	6	2	0.9	0.1	0.1	0.0
2009	255	160	125	108	55	**65**	36	9	8	3	1.0	0.4	0.1	0.1
2010	259	209	131	99	81	37	39	20	5	4	1.5	0.6	0.2	0.0
2011	162	212	171	105	75	57	24	22	11	3	2.3	0.9	0.3	0.1
2012	272	132	174	136	79	53	37	14	13	6	1.5	1.5	0.5	0.2

TAFLA 3.1.9

Þorskur. Veiðidánartala eftir aldri á árunum 1955–2011.

Cod. *Fishing mortality by age in the years 1955–2011.*

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	0.30	0.34	0.36	0.34	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	0.39	0.33	0.33
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	0.48	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	0.43	0.43
1966	0.09	0.25	0.34	0.38	0.49	0.62	0.78	0.92	1.01	0.79	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	0.56	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	0.48	0.48
1987	0.06	0.27	0.55	0.82	0.90	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	0.83	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	0.60	0.48	0.48
1991	0.09	0.30	0.56	0.81	0.88	0.94	0.84	0.77	0.70	0.68	0.57	0.57
1992	0.10	0.32	0.60	0.87	0.92	1.00	0.89	0.80	0.73	0.70	0.60	0.60
1993	0.14	0.31	0.55	0.80	0.89	1.03	1.02	0.93	0.89	0.85	0.75	0.75
1994	0.09	0.24	0.38	0.53	0.68	0.76	0.71	0.69	0.64	0.63	0.54	0.54
1995	0.06	0.20	0.32	0.42	0.57	0.62	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	0.15	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	0.66	0.78	0.81	0.81	0.79	0.77	0.71	0.71
1999	0.04	0.18	0.40	0.65	0.75	0.87	0.92	0.89	0.87	0.85	0.79	0.79
2000	0.06	0.18	0.39	0.63	0.75	0.89	0.96	0.95	0.95	0.92	0.88	0.88
2001	0.07	0.19	0.38	0.58	0.70	0.85	0.98	1.00	1.02	0.99	0.96	0.96
2002	0.04	0.16	0.34	0.48	0.60	0.70	0.81	0.86	0.86	0.84	0.81	0.81
2003	0.03	0.15	0.33	0.50	0.57	0.64	0.69	0.75	0.73	0.74	0.69	0.69
2004	0.03	0.14	0.33	0.53	0.58	0.65	0.68	0.73	0.71	0.72	0.67	0.67
2005	0.03	0.13	0.29	0.48	0.55	0.62	0.66	0.71	0.69	0.71	0.66	0.66
2006	0.03	0.12	0.26	0.46	0.54	0.62	0.67	0.72	0.71	0.72	0.68	0.68
2007	0.03	0.11	0.23	0.38	0.49	0.59	0.66	0.72	0.73	0.75	0.71	0.71
2008	0.02	0.09	0.18	0.29	0.40	0.47	0.48	0.51	0.48	0.50	0.43	0.43
2009	0.03	0.09	0.19	0.31	0.40	0.46	0.46	0.47	0.43	0.43	0.37	0.37
2010	0.03	0.08	0.16	0.26	0.36	0.40	0.37	0.39	0.34	0.35	0.29	0.29
2011	0.03	0.08	0.15	0.23	0.33	0.35	0.30	0.32	0.25	0.26	0.19	0.19

TAFLA 3.1.10
Þorskur. Forsendur í framreikningi á þróun stofnsins árin 2012–2013.
Náttúrulegur dánarstuðull, M=0.2.
Cod. *Input parameters for catch and stock projection for the years 2012–2013.*
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 at age*
	2012	2012–2013	2012–2013	2012–2013	2012–2013
3	173.803	0.085	1.201	1.017	0.004
4	136.016	0.262	1.793	1.700	0.029
5	78.908	0.494	2.490	2.603	0.127
6	53.051	0.807	3.606	3.711	0.414
7	36.782	1.110	4.545	4.511	0.728
8	13.967	1.238	5.914	6.017	0.890
9	12.868	1.150	7.743	8.059	0.963
10	6.480	1.202	7.850	7.850	0.850
11	1.527	0.951	8.810	8.810	1.000
12	1.495	0.951	9.797	9.797	1.000
13	0.545	0.951	13.534	13.534	1.000
14	0.219	0.951	13.033	13.033	1.000

Stofnstærð:	Stofnstærð í milljónum fiska í ársbyrjun 2012.
Veiðimynstur:	Hlutfallsleg veiðidánartala hvers aldursflokks. Meðaltal áranna 2009–2011.
Hlutfall kynþroska:	Kynþroskahlutföll árið 2012.
Meðalþyngd:	Meðalþyngd eftir aldri 2012 er byggð á spáðum gildum út frá SMB mælingum frá 2012.
Stock size:	*Stock size in millions in 2012.*
Selectivity:	*Relative fishing mortality on each age group. Average for the years 2009–2011.*
Maturity at age:	*Maturity at age in 2012.*
Mean weight:	*Mean weight at age in the catches are estimated from survey weights in 2012.*

TAFLA 3.1.11.
Þorskur. Mat á stærð árganga við þriggja ára aldur og árlegt endurmat.
***Cod**. Retrospective pattern of recruitment estimates at age 3 (in millions).*

Úttektarár *Year of asessment*	Stærð árganga við þriggja ára aldur (í milljónum). *Year class at age 3 (in millions).*																					
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1991	130																					
1992	155	100																				
1993	137	73	130																			
1994	155	60	130	180																		
1995	183	60	110	210	130																	
1996	182	60	115	195	85	150																
1997	168	79	125	195	90	157	110															
1998	165	80	166	210	100	165	90	170														
1999	157	82	178	228	101	173	83	206	170													
2000	151	73	162	202	88	170	72	212	195	204												
2001	146	73	158	165	81	158	46	185	170	185	175											
2002	146	74	161	165	83	155	54	181	165	175	210	80										
2003	144	74	148	181	82	156	58	185	166	167	207	69	196									
2004	143	76	149	176	84	156	63	183	166	162	198	68	171	153								
2005	137	76	152	167	85	161	67	180	170	168	193	69	168	133	110							
2006	137	76	152	167	85	162	68	177	161	161	190	61	164	127	88	166						
2007	136	76	152	166	86	162	68	176	160	161	185	64	155	123	81	145	135					
2008	136	76	152	166	86	163	70	177	160	162	178	66	147	122	79	137	116	139				
2009	137	76	152	166	86	162	70	176	160	163	179	72	154	135	82	133	115	121	218			
2010	135	77	151	165	88	161	70	172	162	160	180	79	156	132	87	133	127	126	171	177		
2011	135	77	151	165	88	161	71	172	161	159	179	80	156	134	91	133	123	129	168	178	107	
2012	135	78	151	165	88	162	71	172	162	159	179	80	156	134	92	135	125	131	171	174	108	182

TAFLA 3.1.12.
Þorskur. Mat á stærð viðmiðunarstofns (þús. tonn) á líðandi stund (feitletrað), spá og árlegt endurmat.
***Cod**. Retrospective pattern of fishable biomass estimates (4+, thous. tonnes).*

Úttektarár *Year of asessment*	Ár *Year*																					
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1991	850	870	850																			
1992	**640**	640	630	540																		
1993	611	**630**	610	550	560																	
1994	565	570	**590**	510	560	690																
1995	536	573	632	**560**	580	760	830															
1996	547	591	650	620	**675**	814	792	850														
1997	540	583	619	612	694	**889**	851	909	897													
1998	548	594	624	619	761	950	**975**	1028	956	999												
1999	552	599	618	614	773	993	952	**1031**	945	1046	1150											
2000	546	582	588	566	692	865	806	843	**756**	866	1007	1140										
2001	547	580	577	553	673	786	710	709	527	**577**	638	745										
2002	547	581	579	557	680	795	722	717	547	640	**680**	756										
2003	539	572	581	548	656	794	720	730	559	663	704	**765**	914									
2004	537	571	580	555	657	786	715	717	570	680	727	737	**854**	785								
2005	547	590	575	553	669	785	719	729	583	694	746	767	854	**760**	823							
2006	546	590	574	553	668	784	718	730	587	694	731	741	818	715	**753**	750						
2007	546	589	574	553	668	783	717	730	588	693	729	740	807	703	675	**649**	572					
2008	546	590	574	553	668	783	718	731	591	698	735	748	805	705	668	629	**590**	647				
2009	547	590	574	553	668	782	718	731	591	696	732	746	805	714	687	663	663	**702**	722			
2010	550	595	576	557	670	783	720	730	589	686	728	739	801	723	701	679	685	793	**846**	902		
2011	550	595	576	557	670	782	720	730	589	687	728	739	799	722	701	680	695	794	840	**969**	1081	
2012	550	595	576	557	670	782	720	731	590	687	728	739	799	722	700	680	697	798	849	944	**1070**	**1193**

TAFLA 3.2.1
Ýsa. Afli (í tonnum) á Íslandsmiðum 1950–2011.
Haddock. *Landings (in tonnes) from Icelandic waters 1950–2011.*

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[1)]	49 231	207	49 438

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.2.2

Ýsa. Skipting aflans í fjölda eftir aldri (í milljónum) á árunum 1979–2011.
Haddock. *Landings in numbers by age (millions) in the years 1979–2011.*

Ár	Aldur *Age*							
Year	2	3	4	5	6	7	8	9+
1979	0.149	1.908	3.762	6.057	9.022	1.743	0.438	0.168
1980	0.595	1.385	11.481	4.298	3.798	3.732	0.544	0.128
1981	0.010	0.514	4.911	16.900	5.999	2.825	1.803	0.225
1982	0.107	0.245	3.149	10.851	14.049	2.068	1.000	0.926
1983	0.034	1.010	1.589	4.596	9.850	8.839	0.766	0.487
1984	0.241	1.069	4.946	1.341	4.772	3.742	4.076	0.318
1985	1.320	1.728	4.562	6.796	0.855	1.682	1.914	2.199
1986	1.012	4.223	4.068	4.686	5.139	0.494	0.796	1.297
1987	1.939	8.308	6.965	2.728	2.042	1.094	0.132	0.504
1988	0.237	9.831	15.164	5.824	1.304	1.084	0.609	0.279
1989	0.188	2.474	22.560	9.571	3.196	0.513	0.556	0.285
1990	1.857	2.415	8.628	23.611	6.331	0.816	0.150	0.141
1991	8.617	2.145	5.397	7.342	14.103	2.648	0.338	0.067
1992	5.405	10.693	5.721	4.610	3.691	5.209	0.999	0.136
1993	0.769	12.333	12.815	2.968	1.722	1.425	2.239	0.381
1994	3.198	3.343	28.258	10.682	1.469	0.726	0.358	0.755
1995	4.015	7.323	5.744	23.927	5.769	0.615	0.290	0.518
1996	3.090	10.552	7.639	4.468	12.896	2.346	0.208	0.204
1997	1.364	3.939	10.915	4.895	2.610	5.035	0.719	0.133
1998	0.279	8.257	5.667	7.856	2.418	1.422	1.897	0.306
1999	1.434	1.550	17.243	4.516	4.837	0.915	0.620	0.545
2000	2.659	6.317	2.352	13.615	1.945	1.706	0.324	0.414
2001	2.515	11.098	6.954	1.446	6.262	0.675	0.478	0.199
2002	1.082	10.434	15.998	5.099	1.131	3.149	0.262	0.269
2003	0.401	6.352	16.265	12.548	2.968	0.748	1.236	0.161
2004	1.597	4.063	17.652	19.358	8.871	1.940	0.471	0.644
2005	2.405	9.450	6.929	25.421	13.778	4.584	0.809	0.488
2006	0.241	10.038	21.246	6.646	18.840	7.600	2.180	0.525
2007	0.782	3.884	42.224	22.239	3.354	9.952	2.740	0.700
2008	2.316	4.508	9.706	53.022	11.014	1.717	3.033	1.007
2009	1.066	3.185	4.886	8.892	35.011	5.733	0.726	1.890
2010	0.121	6.032	7.061	4.806	6.766	17.503	1.874	0.882
2011	0.253	1.584	11.797	5.080	2.853	3.983	6.220	0.677

TAFLA 3.2.3

Ýsa. Meðalþyngd eftir aldri (g) í stofni á árunum 1979–2012.

Haddock. *Mean weight at age (g) in the stock in the years 1979–2012.*

Ár	Aldur *Age*							
Year	2	3	4	5	6	7	8	9
1979[1)]	185	481	910	1409	1968	2496	3077	3300
1980[1)]	185	481	910	1409	1968	2496	3077	3300
1981[1)]	185	481	910	1409	1968	2496	3077	3300
1982[1)]	185	481	910	1409	1968	2496	3077	3300
1983[1)]	185	481	910	1409	1968	2496	3077	3300
1984[1)]	185	481	910	1409	1968	2496	3077	3300
1985	244	568	1187	1673	2371	2766	3197	3331
1986	239	671	1134	1943	2399	3190	3293	3728
1987	162	550	1216	1825	2605	3030	3642	3837
1988	176	457	974	1830	2695	3102	3481	3318
1989	182	441	887	1510	2380	3009	3499	3195
1990	184	457	840	1234	1965	2675	3052	3267
1991	176	501	1003	1406	1884	2496	3755	3653
1992	157	503	894	1365	1891	2325	2936	3682
1993	168	384	878	1492	1785	2562	2573	3266
1994	181	392	680	1235	1766	1717	2977	2131
1995	167	440	755	1065	1857	2689	5377	1306
1996	174	453	813	1076	1477	2171	2426	4847
1997	174	424	817	1221	1425	1915	2390	3692
1998	203	415	753	1241	1747	1996	2342	3076
1999	206	480	715	1189	1956	2366	2782	2922
2000	179	552	889	1159	1767	2612	2917	3132
2001	190	490	1056	1437	1509	2169	2765	3300
2002	172	475	889	1460	1949	2137	1990	3709
2003	230	412	801	1268	1873	3139	2343	3301
2004	176	556	807	1282	1690	2454	3236	2942
2005	153	448	920	1188	1564	2128	2808	2550
2006	127	333	736	1145	1512	1944	2232	3272
2007	170	350	615	1053	1514	1786	2073	2198
2008	179	382	595	868	1295	1828	2201	2340
2009	139	442	687	882	1141	1495	1920	2574
2010	150	392	773	942	1190	1468	1829	2086
2011	175	442	757	1129	1304	1583	1865	2107
2012	202	481	801	1145	1481	1910	2074	2356

[1)] Meðaltal áranna 1985–2002. *Average 1985–2002.*

TAFLA 3.2.4

Ýsa. Meðalþyngd í afla eftir aldri (g) á árunum 1979–2012.

Haddock. *Weight at age from commercial catches (g) in the years 1979–2012.*

Ár	Aldur *Age*							
Year	2	3	4	5	6	7	8	9+
1979	620	960	1410	2030	2910	3800	4560	5544
1980	837	831	1306	2207	2738	3188	3843	4644
1981	584	693	1081	1656	2283	3214	3409	4354
1982	289	959	1455	1674	2351	3031	3481	3928
1983	320	1006	1496	1921	2371	2873	3678	4401
1984	691	1007	1544	2120	2514	3027	2940	3938
1985	652	1125	1811	2260	2924	3547	3733	4122
1986	336	1227	1780	2431	2771	3689	3820	4319
1987	452	1064	1692	2408	3000	3565	4215	4181
1988	362	780	1474	2217	2931	3529	3781	4430
1989	323	857	1185	1996	2893	4066	3866	4860
1990	269	700	1054	1562	2364	3414	4134	4686
1991	288	699	979	1412	1887	2674	3135	4589
1992	313	806	1167	1524	1950	2357	3075	4130
1993	303	705	1333	1875	2386	2996	3059	3467
1994	337	668	1019	1717	2391	2717	3280	3173
1995	351	746	1096	1318	2044	2893	3049	3331
1996	311	787	1187	1560	1849	2670	3510	3668
1997	379	764	1163	1649	1943	2342	3020	3285
1998	445	724	1147	1683	2250	2475	2834	3372
1999	555	908	1101	1658	2216	2659	2928	3245
2000	495	978	1333	1481	2119	2696	3307	3671
2001	541	945	1456	1731	1832	2243	3020	3757
2002	564	928	1253	1737	2219	2230	2911	3745
2003	498	922	1283	1704	2274	2744	2635	3220
2004	559	1006	1258	1579	2044	2809	3123	3141
2005	339	886	1265	1506	1916	2323	3028	3055
2006	402	749	1093	1495	1758	2163	2555	3260
2007	510	748	988	1346	1840	2062	2350	2685
2008	383	636	857	1125	1575	2149	2417	2764
2009	452	841	960	1131	1352	1757	2364	2652
2010	447	756	1092	1294	1448	1685	2188	2534
2011	588	905	1122	1455	1688	1914	2094	2599
2012[1)]	520	889	1219	1520	1782	2085	2194	2387

[1)] Áætlað. *Estimated.*

TAFLA 3.2.5

Ýsa. Hlutfall kynþroska eftir aldri á árunum 1979–2012.

Haddock. *Proportion mature by age in the years 1979–2012.*

Ár *Year*	Aldur *Age* 2	3	4	5	6	7	8	9
1979[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1980[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1981[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1982[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1983[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1984[1)]	0.08	0.30	0.54	0.72	0.82	0.87	0.90	0.96
1985	0.02	0.14	0.54	0.58	0.76	0.77	0.96	0.93
1986	0.02	0.20	0.41	0.67	0.84	0.88	0.95	0.99
1987	0.02	0.14	0.43	0.54	0.78	0.78	1.00	0.97
1988	0.01	0.22	0.39	0.77	0.79	0.93	0.91	1.00
1989	0.04	0.20	0.53	0.73	0.82	1.00	1.00	1.00
1990	0.11	0.33	0.63	0.81	0.84	0.92	0.88	1.00
1991	0.06	0.22	0.59	0.74	0.82	0.89	0.50	1.00
1992	0.05	0.23	0.42	0.80	0.90	0.90	0.86	1.00
1993	0.12	0.36	0.48	0.67	0.90	0.98	0.91	0.87
1994	0.25	0.31	0.57	0.76	0.85	1.00	0.91	1.00
1995	0.12	0.48	0.38	0.75	0.75	0.61	0.98	1.00
1996	0.19	0.36	0.59	0.65	0.79	0.74	0.95	0.91
1997	0.09	0.44	0.59	0.68	0.75	0.78	0.88	1.00
1998	0.03	0.45	0.67	0.77	0.73	0.85	0.90	1.00
1999	0.05	0.40	0.68	0.72	0.75	0.89	0.76	0.92
2000	0.11	0.26	0.63	0.81	0.87	0.87	1.00	0.78
2001	0.09	0.38	0.52	0.75	0.90	0.92	0.92	1.00
2002	0.05	0.29	0.63	0.80	0.93	0.93	1.00	1.00
2003	0.06	0.35	0.68	0.87	0.92	0.95	1.00	1.00
2004	0.04	0.36	0.57	0.83	0.91	1.00	1.00	1.00
2005	0.02	0.23	0.56	0.75	0.93	0.94	0.97	1.00
2006	0.03	0.12	0.46	0.62	0.74	0.92	1.00	1.00
2007	0.08	0.21	0.42	0.68	0.77	0.88	0.96	1.00
2008	0.03	0.26	0.42	0.62	0.83	0.87	0.90	0.98
2009	0.02	0.30	0.47	0.58	0.85	0.89	1.00	0.97
2010	0.03	0.19	0.62	0.78	0.79	0.89	0.93	1.00
2011	0.04	0.18	0.43	0.82	0.82	0.84	0.90	0.97
2012	0.11	0.17	0.44	0.63	0.82	0.90	0.85	0.91

[1)] Meðaltal áranna 1985–2002. *Average 1985–2002.*

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
1985	28.1	32.7	18.3	23.6	26.4	3.7	10.9	4.8	5.5	0.5
1986	123.9	108.5	59.0	12.8	16.3	13.1	1.0	2.7	1.2	2.3
1987	21.8	338.3	147.5	44.1	7.7	7.5	4.7	0.4	0.6	0.4
1988	15.8	40.7	184.8	88.9	22.9	1.3	2.2	1.8	0.2	0.2
1989	10.6	23.3	41.2	146.6	45.1	12.9	0.8	0.8	0.4	0.3
1990	70.5	31.8	26.7	38.8	92.8	30.9	3.4	0.9	0.2	0.0
1991	89.7	145.9	41.4	17.7	20.2	32.9	7.6	0.3	0.1	0.1
1992	18.1	211.4	137.8	35.4	16.9	13.8	16.3	2.2	0.2	0.1
1993	30.0	37.8	245.0	87.2	11.2	3.8	1.7	4.5	0.9	0.0
1994	58.5	61.3	39.8	142.3	42.2	6.9	2.9	1.4	4.4	0.2
1995	35.9	82.5	47.0	19.8	69.5	7.7	1.3	0.1	0.3	0.0
1996	95.3	66.3	120.0	36.8	19.6	40.7	5.8	0.6	0.1	0.1
1997	8.6	119.3	50.8	53.3	10.9	7.4	10.9	1.4	0.1	0.0
1998	23.1	18.0	107.9	28.2	23.5	4.9	3.5	4.6	0.3	0.0
1999	80.7	85.5	25.5	98.7	13.0	9.8	1.4	1.8	1.0	0.1
2000	60.6	90.1	44.6	8.4	25.2	3.1	1.6	0.4	0.2	0.5
2001	81.3	147.7	115.4	22.1	4.1	10.6	0.9	0.6	0.0	0.1
2002	20.8	298.7	200.7	112.5	23.2	3.5	7.5	0.3	0.3	0.1
2003	111.6	97.5	282.5	244.9	113.5	18.0	2.6	4.5	0.5	0.8
2004	325.9	291.6	70.8	208.7	109.3	34	6.8	1.2	0.8	0.0
2005	57.9	698.3	289.4	44.6	157.2	57.5	15.7	3.4	0.3	0.2
2006	39.3	88.7	575.9	179.1	19.1	62.9	16.4	6.7	0.7	0.3
2007	34.0	65.6	88.6	436.4	85.7	7.9	21.6	4.7	2.1	0.1
2008	88.5	68.0	71.7	75.6	222.8	30.0	3.5	7.5	1.6	0.3
2009	10.5	111.2	53.8	41.5	41.9	105.6	12.9	2.2	3.1	0.4
2010	15.2	27.7	138.2	29.9	18.3	20.6	31.6	2.9	0.5	0.7
2011	8.8	27.6	24.8	77.4	14.0	5.9	9.4	14.9	1.2	0.3
2012	12.5	14.9	31.3	27.2	58.3	5.2	2.9	5.3	6.9	0.8

TAFLA 3.2.7

Ýsa. Aldursskiptar vísitölur úr stofnmælingu botnfiska að hausti.

Haddock. *Age disaggregated indices from the groundfish survey in autumn.*

Ár	Aldur *Age*									
Year	0	1	2	3	4	5	6	7	8	9
1996	16.1	460.9	109.8	85.8	18.5	7.8	18.3	1.6	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
1998	209.1	81.1	32.5	133.4	19.8	15.8	5.3	5.4	1.9	0.0
1999	178.6	397.4	66.9	28.6	97.1	11.9	10.4	0.5	2.1	0.3
2000	56.2	162.3	260.1	45.8	8.2	28.7	2.0	3.2	0.1	0.3
2001	47.0	387	282.1	170.2	35.7	4.1	13.9	0.7	1.0	0.0
2002	150.6	85.2	237.8	197.5	98.5	19.3	3.0	2.3	1.0	0.1
2003	316.5	343.8	147.8	252.4	169.2	56.7	9.5	2.4	0.7	0.0
2004	189.4	713	348.5	51.2	160.3	70.6	17.0	4.0	0.8	0.5
2005	91.1	74.2	560.4	182.1	27.3	96.5	26.7	10.4	1.9	0.0
2006	85.9	124.1	117.6	510.4	108.5	13.8	40.4	9.8	3.9	1.5
2007	203.4	93.8	78.5	92.8	340.6	58.7	8.5	12.4	3.8	0.6
2008	95.3	201.8	93.9	68.4	87.9	198.9	16.8	2.9	3.5	0.2
2009	52.8	47.5	269.5	68.2	31.0	48.5	96.8	9.5	1.5	2.2
2010	37.2	43.3	56.6	143.4	30.6	14.4	23.7	37.2	4.8	0.9
2011	-	-	-	-	-	-	-	-	-	-

TAFLA 3.2.8

Ýsa. Fjöldi tveggja ára nýliða í milljónum, stærð hrygningarstofns á hrygningartíma í þús. tonna, viðmiðunarstofn í upphafi árs, fiskveiðidánarstuðlar (meðaltal 4–7 ára ýsu) og afli í þús. tonna.
Haddock. *Recruitment in millions, spawning stock biomass (thous. tonnes) at spawning time, fishable stock, fishing mortality (average from ages 4–7) and landings (thous. tonnes).*

Ár *Year*	Nýliðun[1)] *Recruitment*	Hrygningarstofn [2)] *SSB*	Stofn 3+[3)] *Biomass 3+*	Meðal veiðidánartala (F_{4-7}) *Average fishing mortality*	Afli *Landings*
1979	81	96	162	0.521	55
1980	37	117	192	0.398	51
1981	10	142	207	0.542	64
1982	43	137	180	0.444	69
1983	29	113	148	0.508	66
1984	21	83	113	0.515	48
1985	43	67	102	0.537	51
1986	87	60	96	0.739	49
1987	164	46	105	0.584	41
1988	49	69	154	0.675	54
1989	30	100	168	0.676	63
1990	27	111	146	0.611	67
1991	92	90	123	0.664	55
1992	175	66	106	0.728	47
1993	38	71	130	0.669	48
1994	47	83	128	0.641	60
1995	73	85	124	0.661	61
1996	36	70	108	0.675	57
1997	103	59	87	0.624	44
1998	18	64	97	0.627	41
1999	50	64	91	0.685	45
2000	117	64	91	0.636	42
2001	156	70	115	0.462	40
2002	188	99	168	0.461	50
2003	50	147	220	0.404	61
2004	152	181	253	0.492	85
2005	386	177	259	0.525	97
2006	83	143	299	0.582	98
2007	43	162	296	0.553	110
2008	45	158	247	0.488	103
2009	110	141	190	0.506	82
2010	24	111	162	0.487	64
2011	23	91	138	0.446	49
2012	14	83	121		
2013	22				

[1)] Nýliðun við tveggja ára aldur. *Recruitment at age 2*.
[2)] Hrygningarstofn reiknaður út frá meðalþyngdum og kynþroskahlutfalli úr stofnmælingu í mars. *Spawning stock biomass calculated using mean weights at age and maturity from March survey.*
[3)] Stofnstærð 3 ára og eldri reiknuð út frá meðalþyngdum í stofnmælingum botnfiska í mars. *Biomass of fishable stock (3+) calculated using mean weights from March survey.*

TAFLA 3.2.9

Ýsa. Stofnstærð í fjölda eftir aldri (í milljónum) og stærð hrygningarstofns og stofns 3 ára og eldri (þús. tonna) á árunum 1979–2012.

Haddock. *Stock abundance in numbers by age (millions), spawning biomass and biomass of age 3 and older (thous. tonnes) in the years 1979–2012.*

Ár *Year*	Aldur *Age* 2	3	4	5	6	7	8	9+	Hrygningar-stofn *Spawning stock*	Stofn 3+ *Stock 3+*
1979	80.9	117.3	27.7	19.6	20.4	3.4	0.8	0.4	96	16
1980	37.4	66.1	94.3	19.3	10.5	8.6	1.2	0.4	117	19
1981	10.4	30.1	52.9	66.8	11.9	5.2	3.6	0.7	142	20
1982	42.8	8.5	24.2	38.9	39.4	4.3	1.7	1.7	137	18
1983	29.3	34.9	6.8	16.9	22.0	19.6	1.7	1.0	113	14
1984	20.6	24.0	27.7	4.1	9.7	9.1	8.0	1.1	83	11
1985	42.8	16.6	18.7	18.2	2.1	3.6	4.1	3.5	67	10
1986	86.5	33.8	12.0	11.1	8.7	1.0	1.4	2.4	60	96
1987	164	69.9	23.9	6.2	4.9	2.5	0.4	1.3	46	10
1988	48.7	132.5	49.7	13.3	2.6	2.2	1.1	0.7	69	15
1989	29.8	39.7	99.6	27.0	5.6	0.9	0.8	0.7	100	16
1990	27.1	24.2	30.3	61.2	13.4	1.7	0.3	0.4	111	14
1991	92.3	20.5	17.6	17.0	28.7	5.3	0.6	0.3	90	12
1992	175.1	67.8	14.8	9.6	7.2	10.7	1.9	0.4	66	10
1993	38.4	138.5	45.8	7.0	3.7	2.6	4.1	0.8	71	13
1994	46.8	30.8	102.2	25.9	3.0	1.4	0.8	1.7	83	12
1995	72.9	35.5	22.2	58.1	11.5	1.1	0.5	1.0	85	12
1996	36.3	56.0	22.4	13.0	25.9	4.2	0.4	0.5	70	10
1997	102.5	27.0	36.3	11.4	6.6	9.6	1.3	0.4	59	87
1998	18.0	82.7	18.5	19.9	4.9	3.0	3.3	0.6	64	97
1999	50.2	14.5	60.2	10.0	9.1	1.8	1.2	1.2	64	91
2000	117.3	39.8	10.4	33.7	4.1	3.1	0.7	0.8	64	91
2001	156.0	93.6	26.8	6.4	15.3	1.6	1.0	0.6	70	11
2002	188.1	125.5	66.6	15.7	3.9	6.8	0.7	0.7	99	16
2003	49.9	153	93.3	40.1	8.2	2.2	2.8	0.6	147	22
2004	151.8	40.5	119.5	61.7	21.5	4.1	1.1	1.5	181	25
2005	385.8	122.8	29.5	81.9	33.0	9.5	1.6	1.1	177	25
2006	83.0	313.7	92.0	17.8	44.0	14.5	3.7	1.0	143	29
2007	43.0	67.8	247.8	56.1	8.6	19.0	5.0	1.4	162	29
2008	44.5	34.5	52.0	164.	25.8	4.0	6.6	2.1	158	24
2009	110.1	34.4	24.2	33.8	86.8	11.2	1.7	3.5	141	19
2010	24.0	89.2	25.3	15.4	19.6	39.4	4.0	1.8	111	16
2011	23.1	19.6	67.6	14.3	8.2	9.9	16.4	2.2	91	13
2012	13.5	18.7	14.6	44.6	7.1	4.2	4.5	9.0	83	12

TAFLA 3.2.10
Ýsa. Veiðidánartala eftir aldri á árunum 1979–2011.
Haddock. *Fishing mortality by age in the years 1979–2011.*

Ár	Aldur *Age*								Meðaltal 4–7
Year	2	3	4	5	6	7	8	9	*Mean 4–7*
1979	0.002	0.018	0.162	0.419	0.669	0.833	0.990	0.553	0.521
1980	0.018	0.023	0.144	0.282	0.508	0.657	0.685	0.561	0.398
1981	0.001	0.019	0.108	0.328	0.813	0.920	0.793	0.463	0.542
1982	0.003	0.032	0.156	0.369	0.501	0.751	1.056	0.903	0.444
1983	0.001	0.032	0.301	0.357	0.683	0.692	0.706	0.643	0.508
1984	0.013	0.051	0.220	0.449	0.784	0.607	0.825	0.493	0.515
1985	0.035	0.122	0.315	0.532	0.582	0.719	0.737	1.314	0.537
1986	0.013	0.148	0.467	0.625	1.048	0.816	0.937	0.976	0.739
1987	0.013	0.141	0.389	0.669	0.620	0.657	0.530	0.500	0.584
1988	0.005	0.086	0.411	0.665	0.811	0.815	0.998	0.557	0.675
1989	0.007	0.071	0.288	0.498	1.003	0.917	1.552	0.682	0.676
1990	0.079	0.117	0.379	0.556	0.736	0.772	0.769	0.794	0.611
1991	0.109	0.123	0.413	0.651	0.783	0.811	0.890	0.473	0.664
1992	0.035	0.192	0.555	0.762	0.827	0.768	0.858	0.973	0.728
1993	0.022	0.104	0.370	0.635	0.736	0.934	0.933	0.842	0.669
1994	0.078	0.128	0.365	0.608	0.769	0.821	0.643	0.786	0.641
1995	0.063	0.259	0.337	0.607	0.804	0.895	0.971	0.856	0.661
1996	0.099	0.233	0.473	0.480	0.798	0.950	0.912	0.790	0.675
1997	0.015	0.176	0.404	0.641	0.579	0.873	0.900	0.819	0.624
1998	0.017	0.117	0.413	0.575	0.781	0.738	1.025	1.041	0.627
1999	0.032	0.126	0.380	0.689	0.878	0.792	0.870	0.806	0.685
2000	0.025	0.193	0.286	0.591	0.737	0.930	0.740	0.933	0.636
2001	0.018	0.140	0.337	0.286	0.603	0.620	0.745	0.568	0.462
2002	0.006	0.096	0.308	0.445	0.381	0.710	0.523	0.650	0.461
2003	0.009	0.047	0.214	0.425	0.508	0.469	0.685	0.345	0.404
2004	0.012	0.118	0.178	0.426	0.611	0.753	0.616	0.645	0.492
2005	0.007	0.089	0.301	0.42	0.620	0.758	0.849	0.809	0.525
2006	0.003	0.036	0.295	0.530	0.640	0.864	1.073	1.057	0.582
2007	0.020	0.065	0.209	0.577	0.564	0.864	0.927	0.821	0.553
2008	0.059	0.156	0.231	0.440	0.638	0.642	0.715	0.810	0.488
2009	0.011	0.108	0.253	0.344	0.590	0.839	0.626	0.870	0.506
2010	0.006	0.078	0.370	0.424	0.481	0.675	0.743	0.731	0.487
2011	0.012	0.094	0.214	0.499	0.482	0.587	0.542	0.438	0.446

TAFLA 3.2.11

Ýsa. Forsendur í framreikningi á þróun stofnsins árin 2012–2014.
Náttúrulegur dánarstuðull M=0.2.

Haddock. *Input parameters for catch and stock projection for the years 2012–2014.*
Natural mortality coefficient, M=0.2.

Aldur *Age*	Stofnstærð *Stock size*	Veiðimynstur *Selectivity*			Kynþroskahlutfall *Proportion mature*		Meðalþyngd (g) *Mean weight (g)*	
	2012	2012	2013	2014	2013	2014	2013	2014
2	13.515	0.048	0.026	0.032	0.019	0.026	158	177
3	18.702	0.251	0.250	0.182	0.291	0.215	499	428
4	14.594	0.583	0.619	0.615	0.648	0.663	880	902
5	44.648	0.903	0.923	0.945	0.826	0.850	1258	1346
6	7.099	1.139	1.145	1.162	0.904	0.919	1633	1751
7	4.165	1.375	1.313	1.278	0.940	0.950	1974	2121
8	4.517	1.421	1.326	1.278	0.962	0.964	2377	2434
9	7.825	1.421	1.326	1.278	0.968	0.975	2522	2782
10	0.813	1.421	1.326	1.278	0.974	0.977	2764	2903

Stofnstærð:	Stofnstærð í milljónum fiska í ársbyrjun 2012.
Veiðimynstur:	Hlutfallsleg veiðidánartala hvers aldursflokks, áætlað út frá meðalþyngd í stofni.
Hlutfall kynþroska:	Hlutfall kynþroska eftir aldri, áætlað út frá meðalþyngd í stofni.
Meðalþyngd:	Meðalþyngd í stofni, spáð út frá meðalþyngdum í stofnmælingu í mars 2012 og miðað við áætlaðan vöxt árið 2012.
Stock size:	*Stock size in millions in 2012.*
Selectivity:	*Relative fishing mortality on each age group predicted from mean weight at age in stock.*
Maturity at age:	*Maturity at age predicted from mean weight at age in the stock.*
Mean weight:	*Mean weight at age in the stock predicted from mean weight at age in the groundfish survey in March 2012 and predicted growth in the year 2012.*

TAFLA 3.3.1
Ufsi. Afli (í tonnum) á Íslandsmiðum 1955–2011.
Saithe. *Landings (in tonnes) in Icelandic waters 1955–2011.*

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[1)]	50 386	737	51 123

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.3.2

Ufsi. Skipting aflans í fjölda eftir aldri (í milljónum) á árunum 1980–2011.

Saithe. *Catch in numbers at age (millions) in the years 1980–2011.*

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

TAFLA 3.3.3
Ufsi. Meðalþyngd eftir aldri (g) í afla á árunum 1980–2012.
Saithe. *Weight at age (g) in catches in the years 1980–2012.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	1428	1983	2667	3689	5409	6321	7213	8565	9147	9617	10066	11041
1981	1585	2037	2696	3525	4541	6247	6991	8202	9537	9089	9351	10225
1982	1547	2194	3015	3183	5114	6202	7256	7922	8924	10134	9447	10535
1983	1530	2221	3171	4270	4107	5984	7565	8673	8801	9039	11138	9818
1984	1653	2432	3330	4681	5466	4973	7407	8179	8770	8831	11010	11127
1985	1609	2172	3169	3922	4697	6411	6492	8346	9401	10335	11027	10644
1986	1450	2190	2959	4402	5488	6406	7570	6487	9616	10462	11747	11902
1987	1516	1715	2670	3839	5081	6185	7330	8025	7974	9615	12246	11656
1988	1261	2017	2513	3476	4719	5932	7523	8439	8748	9559	10824	14099
1989	1403	2021	2194	3047	4505	5889	7172	8852	10170	10392	12522	11923
1990	1647	1983	2566	3021	4077	5744	7038	7564	8854	10645	11674	11431
1991	1224	1939	2432	3160	3634	4967	6629	7704	9061	9117	10922	11342
1992	1269	1909	2578	3288	4150	4865	6168	7926	8349	9029	11574	9466
1993	1381	2143	2742	3636	4398	5421	5319	7006	8070	10048	9106	11591
1994	1444	1836	2649	3512	4906	5539	6818	6374	8341	9770	10528	11257
1995	1370	1977	2769	3722	4621	5854	6416	7356	6815	8312	9119	11910
1996	1229	1755	2670	3802	4902	5681	7182	7734	9256	8322	10501	11894
1997	1325	1936	2409	3906	5032	6171	7202	7883	8856	9649	9621	10877
1998	1347	1972	2943	3419	4850	5962	6933	7781	8695	9564	10164	10379
1999	1279	2106	2752	3497	3831	5819	7072	8078	8865	10550	10823	11300
2000	1367	1929	2751	3274	4171	4447	6790	8216	9369	9817	10932	12204
2001	1280	1882	2599	3697	4420	5538	5639	7985	9059	9942	10632	10988
2002	1308	1946	2569	3266	4872	5365	6830	7067	9240	9659	10088	11632
2003	1310	1908	2545	3336	4069	5792	7156	8131	8051	10186	10948	11780
2004	1467	1847	2181	2918	4017	5135	7125	7732	8420	8927	10420	10622
2005	1287	1888	2307	2619	3516	5080	6060	8052	8292	8342	8567	10256
2006	1164	1722	2369	2808	3235	4361	6007	7166	8459	9324	9902	9636
2007	1140	1578	2122	2719	3495	4114	5402	6995	7792	9331	9970	10738
2008	1306	1805	2295	2749	3515	4530	5132	6394	7694	9170	9594	11258
2009	1412	1862	2561	3023	3676	4596	5651	6074	7356	8608	9812	10639
2010	1287	1787	2579	3469	4135	4850	5558	6289	6750	7997	9429	10481
2011	1175	1801	2526	3680	4613	5367	5685	6466	6851	7039	8268	8958
2012[1)]	1291	1629	2390	3298	4623	5680	6570	6276	6986	7881	9170	10026

[1)] Áætlað. *Estimated.*

TAFLA 3.3.4

Ufsi. Meðalþyngd eftir aldri (g) í stofnmælingu í mars á árunum 1985–2012.

Saithe. *Mean weight at age (g) in spring survey in the years 1985–2012.*

Ár	Aldur *Age*						
Year	3	4	5	6	7	8	9
1985	960	1675	2149	3134	4078	5173	4555
1986	839	1407	2270	3317	4764	6007	7278
1987	866	1155	1725	3425	4245	6037	6887
1988	777	1431	2012	2787	4342	5389	7448
1989	642	1399	1786	2812	3691	5086	6303
1990	741	1254	2136	2614	4436	6021	6860
1991	789	1357	1866	2665	2943	4749	4718
1992	876	1384	2009	2976	3820	4285	6149
1993	761	1460	2062	2944	3758	4866	4383
1994	853	1607	2770	3387	4721	6199	7424
1995	742	1230	2324	3642	4271	6130	5655
1996	899	1327	1972	2740	5262	5105	4072
1997	740	1303	1780	2732	4229	5754	7620
1998	841	1155	1799	2530	3933	5378	5487
1999	774	1465	2131	2873	3547	5532	8010
2000	821	1352	2227	2712	3616	3875	5906
2001	767	1517	2124	3392	4224	5133	5517
2002	739	1264	2196	3366	4592	5388	6552
2003	603	1183	1888	2678	3676	5311	8896
2004	822	1219	1808	2690	4075	5443	8197
2005	671	1376	1833	2341	3469	5521	6553
2006	650	1170	2035	2537	3120	4089	6020
2007	600	1155	1755	2480	3251	3591	4960
2008	692	1206	1795	2322	3585	4517	5510
2009	689	1427	2042	2563	3256	4960	5377
2010	777	1307	2183	2921	3705	4647	6951
2011	609	1211	2200	3077	3855	4788	5693
2012	699	1063	1719	2734	4179	5470	6769

TAFLA 3.3.5

Ufsi. Hlutfall kynþroska eftir aldri í stofnmælingu í mars á árunum 1985–2012. Aldurshópar yngri en 4 ára taldir ókynþroska og eldri en 9 ára að fullu kynþroska.

Saithe. *Proportion mature at age in spring survey in the years 1985–2012. Age groups younger than 4 considered immature and more than 9 years old fully mature.*

a) Mæld gildi í stofnmælingu. *Observations in survey.*

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

b) Spáð gildi með kynþroskalíkani. *Prediction from maturity model.*

Ár	Aldur *Age*					
Year	4	5	6	7	8	9
1985	0.10	0.21	0.40	0.61	0.79	0.90
1986	0.09	0.19	0.36	0.57	0.76	0.89
1987	0.08	0.17	0.32	0.54	0.74	0.87
1988	0.07	0.15	0.30	0.50	0.71	0.86
1989	0.06	0.14	0.28	0.48	0.69	0.84
1990	0.06	0.14	0.27	0.48	0.69	0.84
1991	0.06	0.14	0.28	0.48	0.69	0.84
1992	0.06	0.14	0.28	0.49	0.70	0.85
1993	0.07	0.15	0.30	0.51	0.71	0.86
1994	0.07	0.16	0.32	0.53	0.73	0.87
1995	0.08	0.18	0.34	0.55	0.75	0.88
1996	0.09	0.19	0.36	0.58	0.77	0.89
1997	0.10	0.21	0.39	0.60	0.79	0.90
1998	0.11	0.23	0.42	0.64	0.81	0.91
1999	0.13	0.26	0.46	0.68	0.83	0.92
2000	0.15	0.30	0.51	0.71	0.86	0.94
2001	0.17	0.33	0.55	0.74	0.88	0.94
2002	0.19	0.36	0.58	0.77	0.89	0.95
2003	0.20	0.38	0.59	0.78	0.89	0.95
2004	0.20	0.37	0.59	0.77	0.89	0.95
2005	0.18	0.35	0.57	0.76	0.88	0.95
2006	0.17	0.33	0.54	0.74	0.87	0.94
2007	0.15	0.30	0.51	0.71	0.86	0.94
2008	0.14	0.28	0.48	0.69	0.84	0.93
2009	0.13	0.27	0.47	0.68	0.84	0.92
2010	0.13	0.26	0.46	0.68	0.83	0.92
2011	0.13	0.26	0.46	0.68	0.83	0.92
2012	0.13	0.27	0.47	0.68	0.84	0.92

TAFLA 3.3.6

Ufsi. Aldursskiptar vísitölur úr stofnmælingu botnfiska í mars 1985–2012.

Saithe. *Age disaggregated indices from the groundfish survey in March 1985–2012.*

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	3.95	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

TAFLA 3.3.7

Ufsi. Fjöldi þriggja ára nýliða í milljónum, hrygningarstofn og veiðistofn í þús. tonna í upphafi árs 1980–2012. Afli í þús. tonna, veiðihlutfall (afli/veiðistofn) og fiskveiðidánartala (meðaltal fyrir 4–9 ára) árin 1980–2011.

Saithe. *Recruitment as 3-year-olds in millions, spawning stock biomass and fishable stock in thous. tonnes in 1980–2012. Landings in thous. tonnes, harvest rate (landings/fishable stock), and fishing mortality (average for ages 4–9) in 1980–2011.*

Ár *Year*	Nýliðun *Recruitment*	Hrygningarstofn *SSB*	Veiðistofn 4+ *Biomass 4+*	Afli *Landings*	Veiðihlutfall *Harvest rate*	Fiskveiðidánartala *Fishing mortality*
1980	28	122	312	58	19%	0.29
1981	20	130	305	59	19%	0.26
1982	22	149	294	69	23%	0.30
1983	32	147	270	58	22%	0.24
1984	42	149	287	63	22%	0.23
1985	35	142	299	57	19%	0.25
1986	67	138	318	65	20%	0.28
1987	92	127	335	81	24%	0.35
1988	50	123	416	77	19%	0.32
1989	32	126	398	82	21%	0.31
1990	21	134	378	98	26%	0.35
1991	30	144	336	102	30%	0.37
1992	15	138	288	80	28%	0.37
1993	20	115	231	72	31%	0.40
1994	18	96	187	64	34%	0.45
1995	30	71	153	49	32%	0.46
1996	26	62	149	40	27%	0.41
1997	17	61	156	37	24%	0.37
1998	9	66	153	32	21%	0.30
1999	30	69	131	31	24%	0.31
2000	31	72	142	33	23%	0.33
2001	53	80	161	32	20%	0.28
2002	62	100	216	42	19%	0.30
2003	71	126	274	52	19%	0.30
2004	24	147	315	65	21%	0.27
2005	70	153	279	69	25%	0.29
2006	38	156	301	76	25%	0.32
2007	18	146	267	64	24%	0.30
2008	28	138	234	70	30%	0.35
2009	45	124	211	61	29%	0.33
2010	43	114	219	54	25%	0.29
2011	61	112	234	51	22%	0.26
2012	25	121	265			
2013	30					

TAFLA 3.3.8

Ufsi. Stofnstærð í fjölda eftir aldri (í milljónum) á árunum 1980–2012.

Saithe. *Stock abundance in numbers at age (millions) in the years 1980–2012.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	28.214	46.848	30.902	10.288	8.147	3.701	1.299	0.721	0.662	0.506	0.336	0.123
1981	20.155	22.725	35.222	21.183	6.270	4.641	1.956	0.708	0.381	0.379	0.290	0.192
1982	21.576	16.262	17.240	24.602	13.320	3.711	2.569	1.113	0.392	0.227	0.225	0.172
1983	32.219	17.369	12.194	11.753	14.857	7.502	1.935	1.382	0.580	0.222	0.128	0.127
1984	41.793	26.024	13.254	8.621	7.540	9.013	4.278	1.132	0.788	0.353	0.135	0.078
1985	35.448	33.780	19.924	9.435	5.595	4.639	5.229	2.542	0.657	0.487	0.218	0.083
1986	66.675	28.629	25.758	14.065	6.039	3.384	2.637	3.048	1.445	0.399	0.296	0.133
1987	91.974	53.738	21.598	17.783	8.675	3.490	1.820	1.460	1.640	0.839	0.231	0.172
1988	50.353	73.844	39.738	14.303	10.234	4.604	1.694	0.917	0.709	0.875	0.448	0.124
1989	31.990	40.492	55.062	26.775	8.471	5.627	2.333	0.888	0.464	0.392	0.484	0.247
1990	20.823	25.748	30.333	37.459	16.114	4.751	2.920	1.249	0.460	0.262	0.221	0.273
1991	29.548	16.720	19.050	20.109	31.382	8.573	2.313	1.474	0.608	0.246	0.140	0.118
1992	14.788	23.693	12.282	12.441	11.308	16.190	4.021	1.128	0.691	0.316	0.128	0.073
1993	19.805	11.863	17.443	8.059	7.051	5.891	7.684	1.982	0.535	0.362	0.165	0.067
1994	17.613	15.859	8.654	11.228	4.424	3.532	2.667	3.625	0.897	0.270	0.183	0.083
1995	29.748	14.062	11.390	5.392	5.840	2.074	1.476	1.168	1.515	0.424	0.127	0.086
1996	25.535	23.738	10.070	7.055	2.777	2.704	0.854	0.637	0.481	0.706	0.198	0.059
1997	16.772	20.441	17.283	6.456	3.847	1.380	1.212	0.399	0.286	0.240	0.353	0.099
1998	8.609	13.253	14.479	11.226	3.863	2.079	0.670	0.564	0.190	0.135	0.113	0.167
1999	30.031	6.848	9.644	9.819	7.121	2.255	1.113	0.346	0.297	0.099	0.071	0.059
2000	30.844	23.856	4.956	6.484	6.155	4.093	1.184	0.563	0.178	0.152	0.051	0.036
2001	53.098	24.458	17.142	3.294	4.002	3.466	2.093	0.583	0.282	0.089	0.076	0.025
2002	61.999	42.316	17.936	11.768	2.124	2.388	1.907	1.115	0.315	0.152	0.048	0.041
2003	71.167	49.281	30.702	12.105	7.417	1.230	1.265	0.975	0.580	0.163	0.079	0.025
2004	24.399	56.609	35.862	20.821	7.679	4.330	0.658	0.654	0.513	0.303	0.085	0.041
2005	69.513	19.084	37.657	22.898	12.816	4.723	2.678	0.403	0.383	0.282	0.167	0.047
2006	38.478	54.117	12.430	23.444	13.692	7.657	2.838	1.590	0.227	0.202	0.149	0.088
2007	17.674	29.832	34.587	7.565	13.659	7.970	4.485	1.641	0.871	0.116	0.103	0.076
2008	27.706	13.746	19.342	21.415	4.495	8.110	4.760	2.646	0.921	0.456	0.061	0.054
2009	45.244	21.359	8.562	11.414	12.043	2.525	4.587	2.654	1.391	0.446	0.221	0.029
2010	43.207	35.008	13.530	5.156	6.569	6.925	1.462	2.619	1.434	0.696	0.223	0.110
2011	61.388	33.662	22.878	8.457	3.097	3.943	4.180	0.872	1.488	0.761	0.370	0.118
2012	25.092	48.101	22.577	14.751	5.265	1.927	2.465	2.586	0.517	0.831	0.425	0.206

TAFLA 3.3.9
Ufsi. Veiðidánartala eftir aldri á árunum 1980–2011.
Saithe. *Fishing mortality by age in the years 1980–2011.*

Ár	Aldur *Age*											
Year	3	4	5	6	7	8	9	10	11	12	13	14
1980	0.016	0.085	0.178	0.295	0.363	0.438	0.407	0.438	0.358	0.358	0.358	0.358
1981	0.015	0.076	0.159	0.264	0.324	0.391	0.364	0.391	0.320	0.320	0.320	0.320
1982	0.017	0.088	0.183	0.304	0.374	0.451	0.420	0.451	0.369	0.369	0.369	0.369
1983	0.014	0.070	0.147	0.244	0.300	0.362	0.336	0.362	0.296	0.296	0.296	0.296
1984	0.013	0.067	0.140	0.232	0.286	0.344	0.320	0.344	0.282	0.282	0.282	0.282
1985	0.014	0.071	0.148	0.246	0.303	0.365	0.340	0.365	0.299	0.299	0.299	0.299
1986	0.016	0.082	0.170	0.283	0.348	0.420	0.391	0.420	0.344	0.344	0.344	0.344
1987	0.020	0.102	0.212	0.353	0.433	0.523	0.486	0.523	0.428	0.428	0.428	0.428
1988	0.018	0.094	0.195	0.324	0.398	0.480	0.447	0.480	0.393	0.393	0.393	0.393
1989	0.017	0.089	0.185	0.308	0.378	0.456	0.424	0.456	0.374	0.374	0.374	0.374
1990	0.019	0.101	0.211	0.351	0.431	0.520	0.484	0.520	0.426	0.426	0.426	0.426
1991	0.021	0.109	0.226	0.376	0.462	0.557	0.518	0.557	0.456	0.456	0.456	0.456
1992	0.020	0.106	0.221	0.368	0.452	0.545	0.507	0.545	0.446	0.446	0.446	0.446
1993	0.022	0.115	0.241	0.400	0.491	0.593	0.551	0.593	0.485	0.485	0.485	0.485
1994	0.025	0.131	0.273	0.454	0.558	0.673	0.626	0.673	0.551	0.551	0.551	0.551
1995	0.026	0.134	0.279	0.464	0.570	0.687	0.639	0.687	0.563	0.563	0.563	0.563
1996	0.023	0.117	0.245	0.406	0.499	0.602	0.560	0.602	0.493	0.493	0.493	0.493
1997	0.035	0.145	0.232	0.314	0.416	0.522	0.565	0.544	0.551	0.551	0.551	0.551
1998	0.029	0.118	0.188	0.255	0.338	0.425	0.459	0.443	0.448	0.448	0.448	0.448
1999	0.030	0.123	0.197	0.267	0.354	0.445	0.481	0.463	0.469	0.469	0.469	0.469
2000	0.032	0.131	0.209	0.283	0.374	0.471	0.509	0.490	0.496	0.496	0.496	0.496
2001	0.027	0.110	0.176	0.239	0.316	0.397	0.430	0.414	0.419	0.419	0.419	0.419
2002	0.030	0.121	0.193	0.262	0.347	0.436	0.471	0.454	0.460	0.460	0.460	0.460
2003	0.029	0.118	0.188	0.255	0.338	0.425	0.459	0.443	0.448	0.448	0.448	0.448
2004	0.046	0.208	0.249	0.285	0.286	0.281	0.292	0.336	0.399	0.399	0.399	0.399
2005	0.050	0.229	0.274	0.314	0.315	0.309	0.321	0.371	0.439	0.439	0.439	0.439
2006	0.055	0.248	0.297	0.340	0.341	0.335	0.348	0.401	0.476	0.476	0.476	0.476
2007	0.051	0.233	0.279	0.321	0.321	0.315	0.328	0.378	0.448	0.448	0.448	0.448
2008	0.060	0.273	0.327	0.376	0.377	0.370	0.384	0.443	0.525	0.525	0.525	0.525
2009	0.056	0.257	0.307	0.352	0.353	0.347	0.360	0.416	0.493	0.493	0.493	0.493
2010	0.050	0.225	0.270	0.310	0.310	0.305	0.317	0.365	0.433	0.433	0.433	0.433
2011	0.044	0.199	0.239	0.274	0.275	0.270	0.280	0.323	0.383	0.383	0.383	0.383

TAFLA 3.3.10

Ufsi. Forsendur í framreikningi á þróun stofnsins árin 2013–2014.
Náttúrulegur dánarstuðull M=0.2.

Saithe. *Input parameters for catch and stock projection for the years 2013–2014.*
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*	Kynþroskahlutfall *Maturity at age*
	2012	2012–2013	2012–2014	2012–2014
3	25.092	0.11	1.291	0.00
4	48.101	0.52	1.629	0.13
5	22.577	0.62	2.390	0.27
6	14.751	0.72	3.298	0.47
7	5.265	0.72	4.623	0.68
8	1.927	0.70	5.680	0.84
9	2.465	0.73	6.570	0.93
10	2.586	0.84	6.276	1.00
11	0.517	1.00	6.986	1.00
12	0.831	1.00	7.881	1.00
13	0.425	1.00	9.170	1.00
14	0.206	1.00	10.026	1.00

Stofnstærð: Stofnstærð í milljónum fiska í ársbyrjun 2012.

Veiðimynstur: Hlutfallsleg fiskveiðidánartala hvers aldursflokks. Valferill metinn í stofnlíkani fyrir árin 2004–2011.

Meðalþyngd í afla og stofni: Meðalþyngd 4–9 ára spáð út frá meðalþyngd sama aldursflokks í afla 2011 og meðalþyngd í stofnmælingu 2012. Meðalþyngd annarra aldurshópa spáð út frá meðaltali í afla síðustu þriggja ára. Spágildi fyrir 2012 einnig notuð 2013–2014.

Hlutfall kynþroska: Jafnaður meðalkynþroski eftir aldri í stofnmælingu 2012.

Stock size: *Stock size in millions in 2012.*

Selectivity: *Relative fishing mortality on each age group. Selectivity estimated in separable stock model for the period 2004–2011.*

Mean weight at age in catch: *Mean weight of ages 4–9 predicted from weight at age in landings of same year class in 2011 and weight at age in spring survey 2012. Mean weight of other ages predicted from the average of last three years of catch weights. Predicted values for 2012 also used for 2013–2014.*

Maturity at age: *Smoothed maturity at age from the spring survey 2012.*

TAFLA 3.4.1

Gullkarfi. Afli (í tonnum) á Íslandsmiðum ásamt heildarafla (Ísland, Grænland, Færeyjar) 1978–2011.
Golden redfish. *Landings (in tonnes) of Sebastes marinus from Icelandic waters and total landings (Iceland, Greenland, Faeroes) 1978–2011.*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals Íslandsmið *Total Iceland*	Önnur svæði *Other areas*	Samtals *Total*
1978	29 625	1 675	31 300	17 829	49 129
1979	54 805	1 811	56 616	20 598	77 214
1980	59 931	2 121	62 052	27 125	89 177
1981	74 107	1 721	75 828	26 149	101 977
1982	96 772	1 127	97 899	32 530	130 429
1983	86 164	1 248	87 412	19 090	106 502
1984	83 999	767	84 766	11 354	96 120
1985	66 801	511	67 312	11 556	78 868
1986	67 242	530	67 772	9 576	77 348
1987	68 636	576	69 212	7 915	77 127
1988	79 834	638	80 472	9 517	89 989
1989	51 523	329	51 852	5 198	57 050
1990	62 677	479	63 156	3 476	66 632
1991	49 392	285	49 677	6 687	56 364
1992	50 968	496	51 464	4 246	55 710
1993	45 356	534	45 890	4 460	50 350
1994	38 417	252	38 669	3 846	42 515
1995	40 995	521	41 516	3 249	44 765
1996	33 249	309	33 558	3 039	36 597
1997	36 100	242	36 342	3 419	39 761
1998	36 481	290	36 771	3 054	39 825
1999	39 461	363	39 824	2 216	42 040
2000	40 758	429	41 187	2 363	43 550
2001	34 634	433	35 067	2 259	37 326
2002	48 454	116	48 570	2 522	51 092
2003	36 461	116	36 577	2 643	39 220
2004	31 421	265	31 686	1 765	33 451
2005	42 404	189	42 593	2 736	45 329
2006	41 363	158	41 521	690	42 211
2007	38 276	88	38 364	772	39 136
2008	45 416	122	45 538	713	46 251
2009	38 294	148	38 442	735	39 177
2010	36 030	125	36 155	2 493	38 648
2011[1)]	42 462	143	42 605	2 252	44 857

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.5.1

Djúpkarfi. Afli (í tonnum) á Íslandsmiðum 1978–2011.
Demersal deep sea redfish. *Landings (in tonnes) of Sebastes mentella from Icelandic waters 1978–2011.*

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[1)]	12 922	-	12 922

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.5.2

Úthafskarfi – efri og neðri stofnar. Afli (í tonnum) á Íslandsmiðum ásamt heildarafla (Grænlandshaf og aðliggjandi hafsvæði) 1982–2011 samkvæmt gögnum Alþjóðahafrannsóknaráðsins.

Pelagic deep sea redfish – shallow and deep stocks. *Landings (in tonnes) of S. mentella from Icelandic waters and total catches (Irminger Sea and adjacent waters) 1982–2011 according to ICES data.*

	Úthafskarfi – efri stofn *Shallow pelagic S. mentella*			Úthafskarfi – neðri stofn *Deep pelagic S. mentella*		
Ár *Year*	Íslandsmið *Iceland*	Önnur mið *Other areas*	Samtals *Total*	Íslandsmið *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	4 637	25 408	30 045
2009	400	2 315	2 715	16 428	36 026	52 006
2010	160	2 258	2 419	8 407	50 660	59 067
2011	-	568	568	0	47 497	47 497

TAFLA 3.5.3

Úthafskarfi – efri stofn. Afli (í tonnum) mismunandi þjóða 1982–2011.

Pelagic deep sea redfish – shallow stock. *Landings (in tonnes) of S. mentella by nations 1982–2011.*

Ár *Year*	Ísland *Iceland*	Rússland *Russia*	Þýskaland *Germany*	Færeyjar *Faeroes*	Grænland *Greenland*	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	62	1 597	-	319	-	-	36	-	8	-	-	-	2 059
2009	404	649	-	87	-	-	1 438	-	138	-	-	-	2 715
2010	243	567	-	653	-	12	16	377	551	-	-	-	2 419
2011	405	-	-	162	-	-	-	-	-	-	-	-	568

[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 (í tonnum) mismunandi þjóða 1982–2011.

Pelagic deep sea redfish – deep stock. *Landings (in tonnes) of S. mentella by nations 1982–2011.*

Ár *Year*	Ísland *Iceland*	Rússland *Russia*	Þýskaland *Germany*	Færeyjar *Faeroes*	Grænland *Greenland*	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	6 723	15 106	-	2 632	1 170	571	1 179	1 733	749	-	-	219	30 045
2009	15 125	25 309	-	3 403	1 519	-	2 907	1 596	2 613	-	1 355	178	54 006
2010	14 551	22 803	-	3 195	1 932	2 388	7 801	2 203	2 228	-	1 963	3	59 067
2011	12 265	22 364	1 787	2 028	-	1 066	4 361	1 433	1 348	-	845	-	47 497

[1)] Búlgaría, Kanada, Frakkland, Japan, Holland, Pólland, Bretland, Úkraína.
Bulgaria, Canada, France, Japan, Netherlands, Poland, United Kingdom, Ukraine.

TAFLA 3.6.1
Grálúða. Afli (í tonnum) árin 1961–2011.
Greenland halibut. *Landings (in tonnes) 1961–2011.*

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) [2] *Icelandic waters (Va)* [2]			Önnur svæði (XII, XIV,Vb,VI) [2] *Other areas (XII, XIV,Vb, VI)* [2]		
Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Færeyjar *Faeroes*	Austur-Grænland *East Greenland*	Önnur svæði[3] *Other areas*[3]	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	1195	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[1]	13 216	856	1 489	10 761	124	26 446

[1] Bráðabirgðatölur. *Provisional figures.*
[2] Svæðaskipting Alþjóðahafrannsóknaráðsins. *ICES statistical areas.*
[3] Afli á svæði XII og VI. *ICES statistical areas XII and VI.*

TAFLA 3.7.1
Lúða. Afli (í tonnum) á Íslandsmiðum 1950–2011.
Halibut. *Landings (in tonnes) from Icelandic waters 1950–2011.*

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[1)]	526	23	549

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.8.1

Skarkoli. Afli (í tonnum) á Íslandsmiðum 1950–2011.
Plaice. *Landings (in tonnes) from Icelandic waters 1950–2011.*

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[1)]	4 943	-	4 943

[1)]Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.9.1
Sandkoli. Afli (í tonnum) á Íslandsmiðum árin 1984–2011.
Dab. *Landings (in tonnes) from Icelandic waters 1984–2011.*

Ár *Year*	Afli *Catch*
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[1)]	903

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.10.1
Skrápflúra. Afli (í tonnum) á Íslandsmiðum 1987–2011.
Long rough dab. *Landings (in tonnes) from Icelandic waters 1987–2011.*

Ár *Year*	Afli *Catch*
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[1)]	176

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.11.1
Langlúra. Afli (í tonnum) á Íslandsmiðum 1950–2011.
Witch. *Landings (in tonnes) from Icelandic waters 1950–2011.*

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	2 564	-	2 564
1993	1 658	-	1 658
1994	1 771	-	1 771
1995	1 816	-	1 816
1996	1 486	-	1 486
1997	1 272	-	1 272
1998	947	-	947
1999	1 408	-	1 408
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	1 426	-	1 426
2009	1 789	-	1 789
2010	1 325	-	1 325
2011[1)]	1 321	-	1 321

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.12.1

Þykkvalúra. Afli (í tonnum) á Íslandsmiðum árin 1951–2011.

Lemon sole. *Landings (in tonnes) from Icelandic waters 1951–2011.*

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)]	1 900		1 900

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.13.1
Stórkjafta. Afli (í tonnum) á Íslandsmiðum árin 1951–2011.
Megrim. *Landings (in tonnes) from Icelandic waters 1951–2011.*

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[1)]	321		321

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.14.1

Steinbítur. Afli (í tonnum) á Íslandsmiðum 1950–2011.

Atlantic wolffish. *Landings (in tonnes) from Icelandic waters in 1950–2011.*

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	16 053	82	16 135
1993	12 859	70	12 929
1994	12 693	53	12 746
1995	12 527	36	12 563
1996	14 578	30	14 608
1997	11 646	19	11 665
1998	11 842	42	11 859
1999	13 720	107	13 827
2000	15 045	25	15 070
2001	17 953	150	18 103
2002	14 297	93	14 390
2003	16 440	105	16 545
2004	13 183	76	13 259
2005	15 193	75	15 268
2006	16 404	43	16 447
2007	16 188	76	16 264
2008	14 550	45	14 595
2009	15 130	43	15 173
2010	12 559	28	12 627
2011[1)]	10 945	13	10 958

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.15.1

Hlýri. Afli (í tonnum) á Íslandsmiðum 1965–2011.

Spotted wolffish. *Landings (in tonnes) from Icelandic waters in 1965–2011.*

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	1 247	-	1 247
1994	897	-	897
1995	703	-	703
1996	1 104	-	1 104
1997	1 164	-	1 164
1998	1 569	-	1 569
1999	1 546	-	1 546
2000	1 895	2	1 897
2001	2 126	1	2 127
2002	2 126	15	2 141
2003	2 404	36	2 440
2004	3 329	21	3 350
2005	3 262	16	3 278
2006	3 644	11	3 655
2007	2 724	1	2 725
2008	2 099	-	2 099
2009	2 313	1	2 314
2010	1 920	1	1 921
2011[1)]	1 614	-	1 614

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.16.1

Blálanga. Afli (í tonnum) á Íslandsmiðum 1966–2011.

***Blue ling**. Landings (in tonnes) from Icelandic waters in 1966–2011.*

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	6 377	523	6 900
2011[1)]	5 903	594	6 497

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.17.1
Langa. Afli (í tonnum) á Íslandsmiðum 1950–2011.
Ling. *Landings (in tonnes) from Icelandic waters 1950–2011.*

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[1)]	8 789	768	9 557

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.18.1

Keila. Afli (í tonnum) á Íslandsmiðum 1963–2011.

Tusk. *Landings (in tonnes) from Icelandic waters 1963–2011.*

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[1)]	5 845	1 545	7 390

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.19.1

Skötuselur. Afli (í tonnum) á Íslandsmiðum 1965–2011.
Anglerfish. *Landings (in tonnes) from Icelandic waters 1965–2011.*

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	1 503	-	1 503
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[1)]	3 228	-	3 228

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.20.1

Grásleppa. Heildarafli og framleiðsla grásleppuhrogna árin 1971–2011 (í tunnum).
Lumpfish. *Landings (tonnes) of females and production of roe (barrels) during 1971–2011.*

Ár *Year*	Grásleppuafli *Female catch*	Hrognaframleiðsla *Roe production*
1971	5 481	9 381
1972	4 573	16 746
1973	8 163	9 311
1974	4 539	17 160
1975	8 365	21 431
1976	10 447	15 618
1977	7 613	13 150
1978	6 410	12 842
1979	6 260	16 793
1980	8 186	22 878
1981	11 152	7 658
1982	3 733	11 047
1983	5 385	26 773
1984	13 051	9 381
1985	11 152	22 878
1986	7 874	16 153
1987	11 152	22 878
1988	4 973	10 202
1989	6 581	13 500
1990	3 169	6 501
1991	4 826	9 900
1992	6 338	13 002
1993	4 338	8 899
1994	5 685	11 662
1995	5 489	11 260
1996	5 083	10 427
1997	6 520	13 375
1998	3 165	6 493
1999	3 373	6 919
2000	2 458	5 042
2001	3 271	6 710
2002	5 047	10 354
2003	6 230	12 780
2004	5 782	11 861
2005	3 731	7 654
2006	4 026	8 259
2007	3 301	6 772
2008	5 684	11 660
2009	5 615	11 519
2010	8 750	17 950
2011	5 196	10 657

Heimild: Landssamband smábátaeigenda.
Source: National Association of Small Boat Owners.

TAFLA 3.20.2

Hrognkelsi. Afli á sóknareiningu (CPUE) og sókn árin 1980–2011 og stofnvísitala grásleppu og fjöldavísitala rauðmaga árin 1985–2012.

Lumpfish. *Catch per unit effort (CPUE) and derived effort 1980–2011 and female biomass and male abundance indices 1985–2012.*

Ár *Year*	Afli á sóknareiningu *CPUE*	Sókn *Effort*	Vísitala grásleppu *Female index*	Vísitala rauðmaga *Male index*
1980	5.5	4.3		
1981	6.3	5.1		
1982	4.7	2.3		
1983	3.9	4.0		
1984	5.0	7.6		
1985	4.4	7.3	13.1	1.4
1986	3.5	6.6	9.6	0.4
1987	4.2	7.7	12.1	1.1
1988	3.6	4.0	9.9	0.6
1989	5.1	3.7	12.7	1.9
1990	4.2	2.2	10.5	1.3
1991	3.1	4.5	4.3	0.3
1992	3.1	5.9	8.2	1.0
1993	2.1	6.1	6.1	0.9
1994	2.2	7.4	6.2	0.8
1995	2.1	7.5	4.7	0.9
1996	1.6	9.5	4.6	0.4
1997	2.3	8.3	5.2	0.8
1998	2.9	3.2	4.5	0.5
1999	3.8	2.6	7.1	0.4
2000	3.3	2.2	3.9	0.4
2001	3.3	2.8	5.6	0.3
2002	3.8	3.8	10.2	0.9
2003	4.0	4.5	7.3	0.4
2004	3.7	4.6	9.1	0.4
2005	4.1	2.6	7.2	0.4
2006	7.9	1.5	12.9	0.6
2007	7.5	1.3	8.9	0.5
2008	5.8	2.8	7.9	0.6
2009	4.0	4.0	8.3	0.3
2010	4.4	5.8	7.0	0.5
2011	3.8[1)]	4.3[1)]	5.0	0.3
2012			7.5	0.2

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.21.1

Íslensk sumar- og vorgotssíld. Afli (í tonnum) á Íslandsmiðum 1951–2011/2012.

Icelandic summer- and spring-spawning herring. *Landings (in tonnes) in Icelandic waters 1951–2011/2012.*

	Íslensk sumargotssíld *Icelandic summer-spawning herring*		**Íslensk vorgotssíld** *Icelandic spring-spawning herring*
Ár *Year*	Afli *Catch*	Metið brottkast *Estimated discard*	Afli *Catch*
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	43 533	-	-
2011/2012	49 446	-	-

[1)] Frá 1990/1991 fiskiveiðiárið september–ágúst. *From 1990/1991 quota year September–August.*

TAFLA 3.21.2

Síld. Skipting aflans í fjölda eftir aldri (í milljónum) á vertíðunum 1987/88–2011/2012.

Herring. *Landings in numbers by age (millions) in the fishing seasons 1987/88–2011/2012.*

Ár	Aldur *Age*													
Year	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
1987/88	0.029	3.144	44.590	60.285	20.622	19.751	46.240	15.232	13.963	10.179	13.216	6.224	4.723	2.280
1988/89	0.879	4.757	41.331	99.366	69.331	22.955	20.131	32.201	12.349	10.250	7.378	7.284	4.807	1.957
1989/90	3.974	22.628	26.649	77.824	188.654	43.114	8.116	5.897	7.292	4.780	3.449	1.410	0.844	0.348
1990/91	12.567	14.884	56.995	35.593	79.757	157.225	30.248	8.187	4.372	3.379	1.786	0.715	0.446	0.565
1991/92	37.085	88.683	49.081	86.292	34.793	55.228	110.132	10.079	4.155	2.735	2.003	0.519	0.339	0.416
1992/93	16.144	94.86	122.626	38.381	58.605	27.921	38.420	53.114	11.592	1.727	1.757	0.153	0.376	0.001
1993/94	2.467	51.153	177.780	92.680	20.791	28.560	13.313	19.617	15.266	4.254	0.797	0.254	0.001	0.001
1994/95	5.738	134.616	113.290	142.876	87.207	24.913	20.303	16.301	15.695	14.680	2.936	1.435	0.244	0.195
1995/96	4.555	20.991	137.232	86.864	109.140	76.780	21.361	15.225	8.541	9.617	7.034	2.291	0.621	0.235
1996/97	0.717	15.969	40.311	86.187	68.927	84.660	39.664	14.746	8.419	5.836	3.152	5.180	1.996	0.574
1997/98	2.008	39.240	30.141	26.307	36.738	33.705	31.022	22.277	8.531	3.383	1.141	10.296	0.947	2.524
1998/99	23.655	45.390	175.529	22.691	8.613	40.898	25.944	32.046	14.647	2.122	2.754	2.150	1.070	1.011
1999/00	5.306	56.315	54.779	140.913	16.093	13.506	31.467	19.845	22.031	12.609	2.673	2.746	1.416	2.514
2000/01	17.286	57.282	136.278	49.289	76.614	11.546	8.294	16.367	9.874	11.332	6.744	2.975	1.539	1.104
2001/02	27.486	42.304	86.422	93.597	30.336	54.491	10.375	8.762	12.244	9.907	8.259	6.088	1.491	1.259
2002/03	11.698	80.863	70.801	45.607	54.202	21.211	42.199	9.888	4.707	6.520	9.108	9.355	3.994	5.697
2003/04	24.477	211.495	286.017	58.120	27.979	25.592	14.203	10.944	2.230	3.424	4.225	2.562	1.575	1.370
2004/05	23.144	63.355	139.543	182.45	40.489	13.727	9.342	5.769	7.021	3.136	1.861	3.871	0.994	1.855
2005/06	6.088	26.091	42.116	117.910	133.437	27.565	12.074	9.203	5.172	5.116	1.045	1.706	2.110	0.757
2006/07	52.567	118.526	217.672	54.800	48.312	57.241	13.603	5.994	4.299	0.898	1.626	1.213	0.849	0.933
2007/08	10.817	94.250	83.631	163.294	61.207	87.541	92.126	23.238	11.728	7.319	2.593	4.961	2.302	1.420
2008/09	10.427	38.830	90.932	79.745	107.644	59.656	62.194	54.345	18.130	8.240	5.157	2.680	2.630	1.178
2009/10	5.431	21.856	35.221	31.914	18.826	22.725	10.425	9.213	9.549	2.238	1.033	0.768	0.406	0.298
2010/11	1.476	8.843	22.674	29.492	24.293	14.419	17.407	10.045	7.576	8.896	1.764	1.105	0.672	0.555
2011/12	0.521	9.357	24.621	20.046	22.869	23.706	13.749	16.967	10.039	7.623	7.745	1.441	0.618	0.785

TAFLA 3.21.3

Síld. Meðalþyngd eftir aldri (g) á vertíðunum 1987/88–2011/2012.

Herring. *Mean weight at age (g) in the fishing seasons 1987/88–2011/2012.*

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

TAFLA 3.21.4
Síld. Hlutfall kynþroska og náttúrulegur dánarstuðull eftir aldri fyrir árin 1987–2011.
Herring. *Proportion mature and natural mortality by age for the years 1987–2011.*

	Aldur *Age*											
	2	3	4	5	6	7	8	9	10	11	12	13+
Hlutfall kynþroska *Proportion mature*	0	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*	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
Náttúrulegur dauði *Natural mortality 2011*	0.15	0.20	0.63	0.62	0.60	0.54	0.56	0.59	0.56	0.44	0.45	0.45

TAFLA 3.21.5

Norsk-íslensk vorgotssíld. Afli Íslendinga og annara þjóða (í tonnum) frá 1950 –2011.
Norwegian spring-spawning herring. *Icelandic landings (tonnes) and total catch of other nations since 1950.*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1950	30 700	902 300	933 000
1951	48 900	1 228 900	1 277 800
1952	9 200	1 245 600	1 254 800
1953	31 500	1 042 900	1 074 400
1954	15 200	1 629 300	1 644 500
1955	18 100	1 341 700	1 359 800
1956	41 200	1 618 200	1 659 400
1957	18 200	1 300 300	1 318 500
1958	22 600	963 700	986 300
1959	34 500	1 076 600	1 111 100
1960	26 700	1 075 100	1 101 800
1961	85 000	745 100	830 100
1962	176 200	672 400	848 600
1963	177 500	807 000	984 500
1964	367 400	914 400	1281 800
1965	540 000	1 007 700	1 547 700
1966	691 400	1 263 600	1 955 000
1967	359 300	1 317 900	1 677 200
1968	75 200	637 000	712 200
1969	600	67 200	67 800
1970	-	62 300	62 300
1971	-	21 100	21 100
1972	-	13 161	13 161
1973	-	7 017	7 017
1974	-	7 619	7 619
1975	-	13 713	13 713
1976	-	10 436	10 436
1977	-	22 706	22 706
1978	-	19 824	19 824
1979	-	12 864	12 864
1980	-	18 577	18 577
1981	-	13 736	13 736
1982	-	16 655	16 655
1983	-	23 054	23 054
1984	-	53 532	53 532
1985	-	169 872	169 872
1986	-	225 256	225 256
1987	-	127 306	127 306
1988	-	135 301	135 301
1989	-	103 830	103 830
1990	-	86 411	86 411
1991	-	84 683	84 683
1992	-	104 448	104 448
1993	-	232 457	232 457
1994	21 146	458 082	479 228
1995	174 109	731 392	905 501
1996	164 957	1 055 326	1 220 283
1997	220 040	1 206 467	1 426 507
1998	197 789	1 025 342	1 223 131
1999	203 381	1 032 052	1 235 433
2000	186 035	1 021 166	1 207 201
2001	77 693	688 443	766 136
2002	127 197	680 598	807 795
2003	117 910	632 167	750 077
2004	102 787	690 879	793 666
2005	156 466	846 777	1 003 243
2006	159 545	809 413	968 958
2007	173 621	1 093 372	1 266 993
2008	217 602	1 328 054	1 545 656
2009	265 480	1 421 891	1 687 371
2010	205 864	1 277 136	1 483 000
2011[1)]	151 074	836 926	988 000

[1)] Bráðabirgðatölur. *Provisional figures*.

TAFLA 3.22.1
Loðna. Aflinn (þús. tonna) 1963–2012.
Capelin. *Landings (thous. tonnes) 1963–2012.*

	Vetur (jan-mar) *Winter (Jan–Mar)*					**Sumar og haust (jún–des)** *Summer and autumn (Jun–Dec)*						
Ár *Year*	Ísland *Iceland*	Noregur *Norway*	Færeyjar *Faeroes*	Græn-land *Green-land*	Samtals vertíð *Season total*	Ísland *Iceland*	Noregur *Norway*	Færeyjar *Faeroes*	Græn-land *Green-land*	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[1)]	577	46	30	22	675							

[1)] Bráðabirgðatölur. *Provitional figures.*

TAFLA 3.22.2

Loðna. Skipting aflans í fjölda eftir aldri (í milljörðum) og heildaraflinn í fjölda og þyngd (þús. tonna) um sumar og haust (jún–des) á árunum 1978–2011.

Capelin. *Landings in numbers by age (billions) and nominal landings by number and weight (thous. tonnes) in summer and autumn (Jun–Dec) 1978–2011.*

Ár	Aldur *Age*				Samtals fjöldi	Samtals þyngd
Year	1	2	3	4	*Total number*	*Total weight*
1978	-	21.4	12.2	-	33.6	655.0
1979	0.6	29.4	6.1	-	36.1	588.0
1980	4.9	17.2	5.4	-	27.5	527.6
1981	0.6	27.9	2.0	-	30.5	613.0
1982	-	-	-	-	0.0	0.0
1983	0.6	7.2	0.8	-	8.6	133.4
1984	0.5	9.8	7.8	0.1	18.2	548.5
1985	0.8	25.6	15.4	0.2	42.0	919.7
1986	-	10.0	23.3	0.5	33.8	772.9
1987	-	27.7	6.7	-	34.4	458.6
1988	0.3	13.6	5.4	-	19.3	371.4
1989	1.7	6.0	1.5	-	9.2	121.0
1990	0.8	5.9	1.0	-	7.7	111.2
1991	0.3	2.7	0.4	-	3.4	56.0
1992	1.7	14	2.1	-	17.8	298.1
1993	0.2	24.9	5.4	0.2	30.7	611.6
1994	0.6	15.0	2.8	-	18.4	324.1
1995	1.5	9.7	1.1	-	12.3	205.7
1996	0.2	25.2	12.7	0.2	38.3	773.8
1997	1.8	33.4	10.2	0.4	45.8	763.7
1998	0.9	25.1	2.9	-	28.9	440.5
1999	0.3	4.7	0.7	-	5.7	102.4
2000	0.2	12.9	3.3	0.1	16.5	265.1
2001	-	17.6	1.2	-	18.8	294.0
2002	-	18.3	2.5	-	20.8	339.7
2003	0.3	11.8	1.0	-	13.1	198.5
2004	-	5.3	0.5	-	5.8	92.0
2005	-	0.4	-	-	0.4	9.0
2006	-	-	-	-	0.0	0.0
2007	-	-	-	-	0.0	0.0
2008	-	-	-	-	0.0	0.0
2009	-	-	-	-	0.0	0.0
2010	+	0.2	+	-	0.3	5.4
2011	-	2.5	1.6	-	4.1	72.1

TAFLA 3.22.3

Loðna. Skipting aflans í fjölda eftir aldri (í milljörðum) og heildaraflinn í fjölda og þyngd (þús. tonna) jan–mar á árunum 1979–2012.

Capelin. *Landings in numbers by age (billions) and nominal landings by number and weight (thous. tonnes) in winter (Jan–Mar) 1979–2012.*

Ár	Aldur *Age*				Samtals fjöldi	Samtals þyngd
Year	2	3	4	5	*Total number*	*Total weight*
1979	1.0	20.8	4.8	0.1	26.7	539.9
1980	1.3	17.6	3.5	-	22.4	392.1
1981	1.7	7.1	1.9	-	10.7	156.0
1982	-	0.8	0.1	-	0.9	13.2
1983	-	-	-	-	0.0	0.0
1984	2.1	18.1	3.4	-	23.6	439.6
1985	0.4	9.1	5.4	-	14.9	348.5
1986	0.1	9.8	6.9	0.2	17.0	391.8
1987	-	6.9	15.5	-	22.4	560.5
1988	-	23.4	7.2	0.3	30.9	657.2
1989	0.1	22.9	7.8	-	30.8	665.1
1990	1.4	24.8	9.6	0.1	35.9	686.8
1991	0.5	7.4	1.5	-	9.4	202.4
1992	2.7	29.4	2.8	-	34.9	621.1
1993	0.2	20.1	2.5	-	22.8	489.6
1994	0.6	22.7	3.9	-	27.2	567.1
1995	1.3	17.6	5.9	-	24.8	539.8
1996	0.6	27.4	7.7	-	35.7	723.6
1997	0.9	29.1	11.0	-	41.0	797.1
1998	0.3	20.4	5.4	-	26.1	481.3
1999	0.5	31.2	7.5	-	39.2	658.9
2000	0.3	36.3	5.4	-	42.0	830.3
2001	0.4	27.9	6.7	-	35.0	806.2
2002	0.1	33.1	4.2	-	37.4	955.0
2003	0.1	32.2	1.9	-	34.2	648.0
2004	0.6	24.6	3.0	-	28.2	542.9
2005	0.1	31.5	3.1	-	34.7	692.1
2006	0.1	10.4	0.3	-	10.8	238.0
2007	0.3	19.5	0.5	-	20.3	376.8
2008	0.5	10.6	0.4	-	11.5	202.4
2009	0.1	0.6	0.1	-	0.8	15.1
2010	0.7	5.3	0.9	+	6.9	150.7
2011	0.1	16.2	0.6	-	17.0	385.2
2012	0.6	25.0	6.1	+	31.8	674.4

TAFLA 3.22.4

Loðna. Meðalþyngd (g) kynþroska loðnu að hausti af árgöngum 1978–2009.
Capelin. *Mean weight (g) in autumn of mature capelin of the 1978–2009 year classes.*

Árgangur *Year class*	2 ára *Age 2*	3 ára *Age 3*
1978	-	24.0
1979	19.2	24.1
1980	16.5	22.5
1981	16.1	25.7
1982	15.8	23.8
1983	15.5	24.1
1984	18.1	25.8
1985	17.9	23.4
1986	15.5	25.5
1987	18.0	25.5
1988	18.1	25.4
1989	16.3	22.6
1990	16.5	23.3
1991	16.2	23.6
1992	16.0	20.5
1993	15.3	20.6
1994	15.8	20.3
1995	14.3	18.8
1996	14.1	20.6
1997	16.8	24.7
1998	17.1	23.9
1999	16.3	22.0
2000	15.9	24.0
2001	16.9	21.6
2002	16.1	24.2
2003	21.3	19.4
2004	15.9	-
2005	15.1	22.4
2006	18.6	23.8
2007	20.0	24.0
2008	19.0	24.4
2009	18.7	-
Meðaltal *Average*	16.9	23.2

TAFLA 3.22.5

Loðna. Stofnstærð í fjölda eftir aldri og kynþroska (í milljörðum) miðað við 1. janúar 1979–2012. Taflan sýnir einnig þyngd kynþroska og ókynþroska loðnu (þús. tonna) og stærð hrygningarstofns í lok vertíðar.

Capelin. *Stock abundance in numbers by age and maturity groups (billions) on 1 January 1979–2012. Also shown is biomass (thous. tonnes) of the immature and maturing stock components and the spawning stock size at the end of the fishing season.*

Ár *Year*	Fjöldi ókynþroska *Number immature*			Fjöldi kynþroska *Number mature*				Samtals þyngd *Total weight*		Hrygningarstofn *Spawning stock*	
	Aldur 2 *Age 2*	Aldur 3 *Age 3*	Alls *Total*	Aldur 3 *Age 3*	Aldur 4 *Age 4*	Aldur 5 *Age 5*	Alls *Total*	Ókynþroska *Immature*	Kynþroska *mature*	Fjöldi *Number*	Þyngd *Weight*
1979	137.6	12.8	150.4	51.8	14.8	0.3	66.9	1028	1358	29.0	600
1980	50.6	13.8	64.4	53.4	3.6	0.2	57.2	502	980	17.5	300
1981	55.3	3.5	58.8	16.3	4.9	-	21.2	527	471	7.7	170
1982	41.2	3.0	44.2	8.0	0.5	-	8.5	292	171	6.8	140
1983	123.7	12.6	136.3	14.3	2.0	-	16.3	685	315	13.5	260
1984	105.0	35.7	140.7	39.8	7.6	0.1	47.5	984	966	21.6	440
1985	211.6	34.3	245.9	25.2	15.6	0.3	41.1	1467	913	20.7	460
1986	83.2	83.9	167.1	34.5	10.5	0.2	45.2	1414	1059	19.6	460
1987	131.9	25.6	157.5	22.1	37.0	0.2	59.1	1003	1355	18.3	420
1988	120.5	31.2	151.3	34.1	11.7	-	45.8	1083	993	18.5	400
1989	67.8	20.1	87.9	48.8	16.0	0.3	64.8	434	1298	22.0	440
1990	53.9	8.6	62.5	31.2	12.1	-	43.3	291	904	5.5	115
1991	98.9	8.6	107.5	22.3	4.5	-	26.8	501	544	16.3	330
1992	111.6	8.1	119.7	54.8	5.3	-	60.1	487	1106	25.8	475
1993	124.6	13.9	138.5	46.5	3.5	-	50.0	622	1017	23.6	499
1994	121.3	16.9	138.2	50.5	4.6	-	55.1	573	1063	24.8	460
1995	188.1	29.5	217.6	35.1	8.7	-	43.8	696	914	19.2	420
1996	165.2	37.9	203.1	75.5	20.1	-	95.6	800	1820	42.8	830
1997	160.0	24.1	184.1	72.4	24.8	-	97.2	672	1881	21.8	430
1998	138.8	29.5	168.3	50.1	7.9	-	58.0	621	1106	27.6	492
1999	140.9	16.1	157.0	53.2	16.0	-	69.3	585	1171	29.5	500
2000	115.8	20.5	136.3	68.2	10.0	-	78.2	535	1485	34.2	650
2001	122.2	21.0	161.2	46.3	10.5	-	56.8	655	1197	21.3	450
2002	117.3	7.6	126.6	59.3	10.5	-	69.8	510	1445	22.9	475
2003	109.4	9.4	105.1	58.4	2.9	-	61.3	487	1214	20.7	410
2004	134.6	11.4	143.5	54.2	6.2	-	60.4	597	1204	28.2	535
2005	48.0	2.9	50.9	86.6	7.5	-	72.5	570	1450	36.3	602
2006	81.7	2.1	83.8	29.4	1.9	-	31.3	761	639	18.8	400
2007	55.8	1.1	56.9	52.5	1.4	-	53.9	515	997	19.1	410
2008	26.1	4.0	30.1	32.5	0.7	-	33.2	283	619	22.2	406
2009	37.3	6.4	43.7	14.5	2.6	+	17.1	413	343	17.3	328
2010	74.3	2.9	77.2	21.5	4.2	+	25.7	704	548	21.5	410
2011	92.2[1)]	12.0[1)]	104.2[1)]	36.2	1.9	-	38.1	985[1)]	765	22.3	411
2012	27.3[1)]	12.5[1)]	39.8[1)]	46.4	7.9	-	54.4	335[1)]	1112	20.7	418

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.22.6

Loðna. Mældur fjöldi (í milljörðum) ókynþroska 1 og 2 ára loðnu í haustleiðöngrum (okt–des).
Capelin. *Abundance (numbers in billions) of immature 1 and 2 age groups from acoustic autumn surveys (Oct–Dec).*

Ár *Year*	Aldur 1 *Age 1 - Acoustics*	Aldur 2 *Age 2 - Acoustics*
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[1)]	24.9	1.3
1991	60.0	5.3
1992	104.6	2.3
1993	100.4	9.8
1994	119	6.9
1995	165	30.1
1996	111.9	16.4
1997	66.8	30.8
1998	121	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

[1)] Mæling ógild vegna hafíss. *Invalid survey due to ice conditions.*

TAFLA 3.23.1

Kolmunni. Afli Íslendinga og annarra þjóða (í tonnum) í Norðaustur-Atlantshafi 1970–2011.

Blue whiting. *Icelandic landings (tonnes) and total catch of other nations in the Northeast Atlantic during the years 1970–2011.*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1970	-	37 949	37 949
1971	-	75 599	75 599
1972	634	76 861	77 495
1973	3 212	99 804	103 016
1974	4 349	103 164	107 513
1975	1 297	110 748	112 045
1976	8 789	155 188	163 977
1977	15 778	252 958	268 736
1978	34 777	573 933	608 710
1979	19 096	1 099 502	1 118 898
1980	9 934	1 112 630	1 122 564
1981	15 021	907 959	922 980
1982	1 689	548 954	550 643
1983	7 077	546 267	553 344
1984	105	615 464	615 569
1985	-	678 214	678 214
1986	-	847 145	847 145
1987	-	654 718	654 718
1988	-	552 264	552 264
1989	4 977	625 339	630 316
1990	-	558 128	558 128
1991	-	364 008	364 008
1992	-	474 592	474 592
1993	-	475 198	475 198
1994	-	457 696	457 696
1995	369	504 807	505 176
1996	302	620 802	621 104
1997	10 464	629 217	639 681
1998	64 863	1 067 087	1 131 950
1999	160 530	1 100 500	1 261 030
2000	260 183	1 152 267	1 412 450
2001	365 101	1 406 709	1 771 810
2002	286 381	1 270 569	1 556 950
2003	501 493	1 863 827	2 365 320
2004	422 079	1 978 711	2 400 790
2005	265 515	1 752 825	2 018 340
2006	314 768	1 641 472	1 956 240
2007	236 357	1 375 913	1 612 270
2008	159 306	1 092 544	1 251 850
2009	120 202	514 776	634 978
2010	87 942	436 179	524 121
2011[1)]	5 882	88 118	94 000

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.24.1

Makríll. Afli Íslendinga og annarra þjóða (í tonnum) í Norðaustur-Atlantshafi 1987–2011.
Mackerel. *Icelandic landings (tonnes) as well as total catch of other nations in the Northeast Atlantic during the years 1987–2011.*

Ár *Year*	Ísland *Iceland*	Aðrar þjóðir *Other nations*	Samtals *Total*
1987	-	654 805	654 805
1988	-	680 492	680 492
1989	-	584 532	589 509
1990	-	627 511	627 511
1991	-	667 883	667 883
1992	-	760 351	760 351
1993	-	825 036	825 036
1994	-	821 395	821 395
1995	-	755 431	755 800
1996	1	563 519	563 611
1997	931	568 682	569 613
1998	288	666 376	666 664
1999	144	640 167	640 311
2000	1	738 608	738 608
2001	1	737 461	737 462
2002	53	772 852	772 905
2003	122	669 478	669 600
2004	1	650 221	650 221
2005	363	543 123	543 486
2006	4 222	468 430	472 652
2007	36 518	542 861	579 379
2008	112 837	498 226	611 063
2009	116 164	618 725	734 889
2010	122 034	747 417	869 451
2011[1)]	159 263	767 737	927 000

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.26.1

Gulllax. Afli (í tonnum) á Íslandsmiðum 1985–2011.
Greater silver smelt. *Landings (in tonnes) from Icelandic waters 1985–2011.*

Ár *Year*	Ísland *Iceland*
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	4 593
2001	2 478
2002	4 357
2003	2 686
2004	3 637
2005	4 481
2006	4 775
2007	4 226
2008	8 778
2009	10 829
2010	16 428
2011[1)]	10 155

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.27.1

Humar. Afli (í tonnum) á Íslandsmiðum árin 1951–2011.
***Nephrops**. Landings (in tonnes) from Icelandic waters 1951–2011.*

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[1)]	2 240	-	2 240

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.27.2

Humar. Afli og afli á togtíma eftir svæðum árin 1970–2011.

Nephrops. *Landings and catch per hour by area and total during 1970–2011.*

Ár *Year*	**SV-mið** (Jökuldjúp–Selvogsleir)		**Selvogsbanki–Háfadjúp**		**SA-mið** (Skaftárdjúp–Lónsdjúp)		**Alls** *Total*	
	Tonn *Tonnes*	kg/klst *kg/hour*	Tonn *Tonnes*	kg/klst *kg/hour*	Tonn *Tonnes*	kg/klst *kg/hour*	Tonn *Tonnes*	kg/klst *kg/hour*
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[1)]	846	65.7	474	65.9	920	89.1	2 240	71.0

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.27.3

Humar. Skipting aflans í fjölda eftir aldri (í milljónum) á árunum 1982–2011.

Nephrops. *Landings in numbers by age (millions) in the years 1982–2011.*

Ár	Aldur *Age*													
Year	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	0.10
1983	0.11	0.73	4.49	6.81	6.64	6.65	4.74	5.01	3.79	1.77	1.16	0.63	0.34	0.21
1984	0.26	1.45	4.74	5.97	6.86	6.18	4.01	3.41	3.20	1.53	1.27	0.80	0.47	0.55
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	0.22
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	0.23	0.11
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	0.36
1988	0.09	0.73	2.70	4.53	6.04	6.18	5.25	3.99	2.53	1.19	0.89	0.47	0.37	0.25
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	0.23
1990	0.09	1.09	5.44	7.15	5.93	4.42	2.78	2.13	1.57	0.83	0.63	0.42	0.33	0.31
1991	0.04	0.87	4.88	7.98	9.07	6.99	3.83	2.86	1.91	0.84	0.61	0.37	0.26	0.21
1992	0.01	0.45	3.13	6.33	8.38	8.32	4.91	3.13	2.02	0.91	0.55	0.30	0.19	0.13
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	0.27
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	0.19
1995	0.06	0.53	1.71	2.07	2.26	2.58	1.89	1.78	1.37	0.71	0.44	0.38	0.24	0.14
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	0.28
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	0.27
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	0.42
1999	0.03	0.18	1.26	2.65	3.63	4.01	2.83	2.10	1.65	0.78	0.54	0.37	0.28	0.26
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	0.26
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	0.38
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	0.79
2003	0.07	0.26	1.04	3.31	3.61	3.02	2.14	1.90	1.77	1.13	1.04	0.88	0.78	0.94
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	0.71
2005	0.03	0.22	1.76	3.45	3.94	5.16	4.61	3.54	2.65	1.38	0.77	0.56	0.45	0.41
2006	0.01	0.22	1.19	2.83	4.14	4.29	3.59	3.31	2.60	1.29	0.88	0.58	0.42	0.43
2007	0.02	0.13	0.82	1.85	2.96	3.90	2.82	2.58	2.48	1.61	1.14	0.99	0.84	1.33
2008	0.02	0.24	1.21	2.42	3.50	4.00	3.65	3.43	2.69	1.57	1.02	0.95	0.73	0.84
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	1.81
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	1.99
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	1.33

TAFLA 3.27.4

Humar. Stofnstærð í fjölda eftir aldri (í milljónum) og stærð veiðistofnsins í þúsundum tonna á árunum 1982–2012.
Nephrops. *Stock abundance in numbers by age (millions) and fishable stock in thousand tonnes in the years 1982–2012.*

Ár	Aldur *Age*														Veiðistofn 6+
Year	3	4	5	6	7	8	9	10	11	12	13	14	15	16	*Fishable stock*
1982	141.11	111.90	99.20	74.29	58.99	45.88	30.36	20.53	13.90	6.04	4.50	4.39	1.12	0.45	15.73
1983	132.83	115.46	90.73	76.33	55.22	41.68	30.34	19.64	12.65	8.22	3.79	2.82	3.31	0.77	15.51
1984	122.75	108.65	93.87	70.23	56.35	39.23	28.14	20.57	11.58	6.96	5.14	2.06	1.74	2.40	14.96
1985	131.26	100.27	87.65	72.57	52.12	39.95	26.56	19.43	13.77	6.61	4.32	3.06	0.98	1.00	14.53
1986	136.51	107.42	81.29	68.42	54.71	37.46	26.78	17.11	12.30	8.34	4.22	2.64	2.00	0.50	14.22
1987	147.62	111.76	87.55	63.62	50.26	37.04	23.91	17.20	10.30	7.11	5.75	2.59	1.69	1.43	13.57
1988	142.99	120.81	91.12	69.48	47.32	34.54	22.86	14.70	10.08	5.45	4.36	3.75	1.57	1.04	12.87
1989	130.55	116.99	98.25	72.17	52.80	33.30	22.71	13.99	8.45	5.98	3.39	2.77	2.64	0.95	12.84
1990	124.05	106.82	95.11	77.41	55.65	39.09	22.70	15.42	8.77	4.59	3.80	2.04	1.80	1.85	13.46
1991	113.85	101.49	86.47	72.96	56.93	40.22	28.02	16.09	10.71	5.76	3.01	2.54	1.29	1.17	14.00
1992	100.64	93.18	82.31	66.39	52.55	38.45	26.64	19.49	10.60	7.05	3.96	1.92	1.75	0.82	13.86
1993	105.51	82.38	75.88	64.57	48.65	35.48	24.00	17.39	13.13	6.86	4.95	2.75	1.30	1.27	13.56
1994	116.26	86.34	67.14	59.88	48.67	34.11	22.80	15.01	10.73	7.96	4.35	3.25	1.79	0.78	12.88
1995	100.47	95.08	69.88	52.92	45.37	34.93	22.45	14.65	8.88	5.98	5.04	2.65	2.22	1.15	12.19
1996	121.71	82.21	77.36	55.67	41.46	35.11	26.27	16.68	10.39	6.04	4.26	3.73	1.83	1.60	12.82
1997	136.41	99.58	66.65	60.54	41.76	30.16	25.02	18.98	11.60	6.71	4.03	2.74	2.49	1.16	12.87
1998	134.97	111.66	81.07	52.33	46.35	30.96	22.10	18.85	14.11	8.19	4.78	2.72	1.82	1.78	13.16
1999	139.06	110.50	91.25	65.11	40.55	34.79	22.35	16.07	13.74	10.01	5.84	3.20	1.67	1.11	13.57
2000	126.22	113.82	90.31	73.57	50.92	29.93	24.87	15.75	11.26	9.76	7.50	4.30	2.29	1.11	14.39
2001	115.14	103.31	93.02	72.87	58.79	39.69	22.03	18.35	10.90	7.54	7.14	5.54	3.11	1.61	15.38
2002	126.13	94.26	84.39	75.37	58.27	46.01	29.93	16.02	12.91	6.99	5.06	5.03	3.97	2.19	16.24
2003	126.34	103.26	77.02	67.49	59.71	45.69	35.40	22.72	11.23	8.79	4.62	3.19	3.28	2.61	16.70
2004	120.14	103.38	84.30	62.11	52.27	45.63	34.69	27.05	16.89	7.60	6.17	2.85	1.82	1.99	16.77
2005	124.53	98.34	84.14	67.22	48.51	38.61	33.27	26.31	20.58	12.70	5.62	4.59	1.95	1.14	17.21
2006	128.93	101.93	80.31	67.29	51.93	36.17	26.96	23.09	18.35	14.46	9.15	3.90	3.25	1.20	17.03
2007	122.85	105.55	83.25	64.68	52.55	38.78	25.75	18.84	15.92	12.67	10.7	6.70	2.68	2.29	16.90
2008	147.18	100.57	86.31	67.44	51.31	40.38	28.26	18.54	13.10	10.79	8.92	7.72	4.59	1.44	16.75
2009	146.39	120.48	82.12	69.57	53.03	38.85	29.46	19.85	12.09	8.30	7.42	6.39	5.46	3.10	16.65
2010	130.00	119.81	98.41	66.07	54.81	40.39	27.96	20.77	13.16	7.24	5.17	4.99	4.14	3.43	16.01
2011	130.00	106.42	97.88	79.31	51.78	41.67	29.15	19.69	13.80	8.20	4.22	3.13	2.85	2.36	15.79
2012	130.00	106.42	86.90	78.79	62.37	39.45	30.36	20.79	13.24	8.67	5.07	2.49	1.68	1.53	15.99

TAFLA 3.27.5

Humar. Veiðidánartala eftir aldri á árunum 1982–2011.

Nephrops. *Fishing mortality by age in the years 1982–2011.*

Ár	Aldur *Age*														Meðaltal 6–13
Year	3	4	5	6	7	8	9	10	11	12	13	14	15	16	*Average 6–13*
1982	0.00	0.01	0.06	0.10	0.15	0.21	0.24	0.28	0.33	0.27	0.27	0.08	0.17	0.29	0.23
1983	0.00	0.01	0.06	0.10	0.14	0.19	0.19	0.33	0.40	0.27	0.41	0.28	0.12	0.35	0.25
1984	0.00	0.02	0.06	0.10	0.14	0.19	0.17	0.20	0.36	0.28	0.32	0.55	0.35	0.29	0.22
1985	0.00	0.01	0.05	0.08	0.13	0.20	0.24	0.26	0.30	0.25	0.29	0.23	0.47	0.28	0.22
1986	0.00	0.01	0.05	0.11	0.19	0.25	0.24	0.31	0.35	0.17	0.29	0.25	0.13	0.28	0.24
1987	0.00	0.00	0.03	0.10	0.18	0.28	0.29	0.33	0.44	0.29	0.23	0.30	0.28	0.32	0.27
1988	0.00	0.01	0.03	0.08	0.15	0.22	0.29	0.35	0.32	0.28	0.25	0.15	0.30	0.30	0.24
1989	0.00	0.01	0.04	0.06	0.10	0.18	0.19	0.27	0.41	0.25	0.31	0.23	0.16	0.31	0.22
1990	0.00	0.01	0.07	0.11	0.13	0.13	0.15	0.17	0.22	0.22	0.20	0.26	0.23	0.20	0.17
1991	0.00	0.01	0.06	0.13	0.19	0.21	0.16	0.22	0.22	0.17	0.25	0.17	0.25	0.22	0.20
1992	0.00	0.01	0.04	0.11	0.19	0.27	0.23	0.19	0.24	0.15	0.17	0.19	0.12	0.19	0.19
1993	0.00	0.01	0.04	0.08	0.16	0.24	0.27	0.28	0.30	0.26	0.22	0.23	0.30	0.27	0.23
1994	0.00	0.01	0.04	0.08	0.13	0.22	0.24	0.33	0.39	0.26	0.30	0.18	0.24	0.32	0.24
1995	0.00	0.01	0.03	0.04	0.06	0.09	0.10	0.14	0.19	0.14	0.10	0.17	0.13	0.14	0.11
1996	0.00	0.01	0.05	0.09	0.12	0.14	0.13	0.16	0.24	0.20	0.24	0.21	0.26	0.21	0.16
1997	0.00	0.01	0.04	0.07	0.10	0.11	0.08	0.10	0.15	0.14	0.19	0.21	0.14	0.30	0.12
1998	0.00	0.00	0.02	0.06	0.09	0.13	0.12	0.12	0.14	0.14	0.20	0.29	0.30	0.30	0.12
1999	0.00	0.00	0.02	0.05	0.10	0.14	0.15	0.16	0.14	0.09	0.11	0.14	0.21	0.30	0.12
2000	0.00	0.00	0.01	0.02	0.05	0.11	0.10	0.17	0.20	0.11	0.10	0.12	0.15	0.30	0.11
2001	0.00	0.00	0.01	0.03	0.05	0.08	0.12	0.15	0.24	0.20	0.15	0.14	0.15	0.30	0.13
2002	0.00	0.00	0.02	0.03	0.04	0.06	0.08	0.16	0.19	0.21	0.26	0.23	0.22	0.50	0.13
2003	0.00	0.00	0.02	0.06	0.07	0.08	0.07	0.09	0.19	0.15	0.28	0.36	0.30	0.50	0.12
2004	0.00	0.01	0.03	0.05	0.10	0.12	0.08	0.07	0.09	0.10	0.10	0.18	0.27	0.50	0.09
2005	0.00	0.00	0.02	0.06	0.09	0.16	0.17	0.16	0.15	0.13	0.16	0.14	0.29	0.50	0.14
2006	0.00	0.00	0.02	0.05	0.09	0.14	0.16	0.17	0.17	0.10	0.11	0.18	0.15	0.50	0.12
2007	0.00	0.00	0.01	0.03	0.06	0.12	0.13	0.16	0.19	0.15	0.13	0.18	0.42	1.00	0.12
2008	0.00	0.00	0.02	0.04	0.08	0.12	0.15	0.23	0.26	0.17	0.13	0.15	0.19	1.00	0.15
2009	0.00	0.00	0.02	0.04	0.07	0.13	0.15	0.21	0.31	0.27	0.20	0.24	0.27	1.00	0.17
2010	0.00	0.00	0.02	0.04	0.07	0.13	0.15	0.21	0.27	0.34	0.30	0.36	0.36	1.00	0.19
2011	0.00	0.00	0.02	0.04	0.07	0.12	0.14	0.20	0.27	0.28	0.33	0.43	0.43	0.95	0.18

TAFLA 3.27.6

Humar. Forsendur í framreikning á þróun stofnsins árin 2013–2014.
Náttúrulegur dánarstuðull M=0.2.

Nephrops. *Input parameters for catch and stock projection for the years 2013–2014.*
Natural mortality coefficient, M=0.2.

Aldur *Age*	Stofnstærð *Stock size*	Veiðimynstur *Selectivity*	Meðalþyngd (g) *Mean weight (g)*
3	130.00	0.00	8
4	106.42	0.01	14
5	86.90	0.05	23
6	78.79	0.12	34
7	62.37	0.22	46
8	39.45	0.35	60
9	30.37	0.42	75
10	20.79	0.60	89
11	13.24	0.80	104
12	8.67	0.85	119
13	5.07	1.00	131
14	2.49	1.00	145
15	1.68	1.00	159
16	1.53	1.00	175

Stofnstærð:	Stofnstærð í milljónum 2012.
Veiðimynstur:	Hlutfallsleg veiðidánartala hvers aldursflokks 2011.
Meðalþyngd:	Út frá sambandi lengdar og þyngdar.
Stock size:	*Stock size in millions in 2012.*
Selectivity:	*Relative fishing mortality on each age group in 2011.*
Mean weight:	*From length-weight regression.*

TAFLA 3.28.1

Rækja. Afli (í tonnum) íslenskra skipa eftir svæðum árin 1955–2011.

Northern shrimp. *Landings (in tonnes) of the Icelandic fleet by area in 1955–2011.*

	Íslandsmið *Icelandic waters*			Önnur veiðisvæði *Other areas*			
Ár *Year*	Djúpslóð *Offshore*	Grunnslóð *Inshore*	Samtals *Total*	Flæmingjagrunn *Flemish Cap*	Miklibanki *Grand Bank*	Barentshaf *Barents Sea*	Samtals *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	6 097	7 005	13 102	-	-	-	13 102
1984	13 761	10 655	24 416	-	-	-	24 416
1985	15 983	8 911	24 894	-	-	-	24 894
1986	28 837	6 994	35 831	-	-	-	35 831
1987	33 466	5 170	38 636	-	-	-	38 636
1988	25 353	4 393	29 746	-	-	-	29 746
1989	20 699	6 086	26 785	-	-	-	26 785
1990	22 125	7 709	29 834	-	-	-	29 834
1991	29 600	8 657	38 257	-	-	-	38 257
1992	37 102	9 800	46 902	-	-	-	46 902
1993	41 283	12 598	53 881	2 243	-	-	56 124
1994	56 150	16 642	72 792	2 300	-	-	75 097
1995	61 334	14 589	75 923	7 622	-	-	83 545
1996	55 996	12 465	68 461	20 681	-	-	89 142
1997	65 298	9 617	74 915	6 381	-	514	81 811
1998	49 667	5 847	55 514	6 572	-	642	62 728
1999	27 142	4 374	31 516	9 277	-	2 295	43 088
2000	20 196	3 839	24 035	8 912	97	705	33 749
2001	21 653	4 072	25 725	5 265	55	-	31 045
2002	26 656	2 548	29 204	5 741	55	-	35 000
2003	22 332	1 576	23 908	4 715	133	-	28 756
2004	15 799	560	16 359	3 567	105	-	20 026
2005	3 792	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	6 404	1 144	7 548	-	185	-	7 733
2011[1)]	6 270	1 407	7 677	-	124	574	8 375

[1)] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.28.2

Rækja. Afli rækju á grunnslóð í tonnum eftir svæðum fiskveiðiárin 1990/91–2010/2011.

Northern shrimp. *Inshore landings by area (tonnes) in the quota years 1990/91–2010/2011.*

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	0	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	312	1	-	-	-	-	-	1	-	25	787	18	1 144
2010/11	155	835	-	-	-	2	-	1	-	103	311	-	1 407

[1] Veiðisvæðið við Snæfellsnes. *Refered to as Snæfellsnes area.*

TAFLA 3.28.3

Rækja. Afli úthafsrækju Íslandsmiðum í tonnum eftir svæðum árin 1991–2011.

Northern shrimp. *Offshore landings in Icelandic waters by area (tonnes) during the period 1991–2011.*

Ár *Year*	Dohrnbanki	Hali	Norðurkantur	Við Sporðagrunn	Skagafjarðardjúp	Við Kolbeinsey	Eyjafjarðaráll	Við Grímsey	Við Sléttugrunn	Langanesdjúp	Bakkaflóadjúp	Héraðsdjúp	Brattikantur	Eilífðarkantur	Rauða torgið	Önnur svæði *Other areas*	Samt. *Total*
1991	469	821	10 488	3 820	884	6 801	1 089	3 243	555	37	156	839	123	1	274	-	29 600
1992	1 751	899	8 649	3 036	1 263	6 837	1 270	5 882	762	90	2 071	4 260	65	5	154	108	37 102
1993	2 553	975	10 875	1 894	2 720	5 113	2 573	7 726	1 581	664	1 074	2 962	55	24	280	214	41 283
1994	1 426	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	56 150
1995	1 150	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	61 334
1996	566	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	55 996
1997	2 856	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	65 298
1998	1 421	502	12 878	561	1 747	7 697	920	5 768	5 762	2 802	1 425	6 692	600	127	765	-	49 667
1999	769	17	5 214	1 523	2 562	4 756	1 881	4 957	1 858	179	712	1 214	44	25	1 419	12	27 142
2000	132	6	3 477	4 223	1 603	2 499	745	2 230	1 622	188	486	1 868	57	37	1 021	2	20 196
2001	9	2	2 119	893	1 825	2 255	1 207	3 854	4 656	979	866	2 586	98	4	299	1	21 653
2002	1 231	357	9 909	2 040	3 028	3 905	1 074	2 172	1 855	154	50	338	1	11	531	-	26 656
2003	703	15	7 321	510	1 671	3 950	504	4 120	2 307	177	6	779	20	2	247	-	22 332
2004	411	178	5 030	494	1 970	3 438	682	1 961	1 498	82	-	2	-	-	53	-	15 799
2005	29	2	863	11	387	938	97	943	518	-	1	-	4	-	-	-	3 792
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	4	3	1 351	10	107	2 354	83	1 448	1 032	10	-	-	-	5	1	-	6 404
2011[1]	68	-	955	37	110	1110	230	2772	1050	-	-	-	3	-	3	-	6 270

[1] Bráðabirgðatölur. *Provisional figures.*

TAFLA 3.28.4
Rækja. Meðalfjöldi í kg á rækjusvæðunum árin 1990–2011.
Northern shrimp. *Mean number per kg by area in the period 1990–2011.*

Fisk-veiðiár	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	244	347	399	323	439	402	266	590	200	223	-
1991	289	344	338	375	364	245	234	-	213	253	-
1992	322	370	353	267	344	254	203	-	188	228	-
1993	334	356	439	278	303	299	231	660	205	253	-
1994	322	409	266	335	348	266	246	-	221	269	-
1995	280	389	403	394	305	291	213	505	201	283	291
1996	287	384	354	356	265	264	200	464	205	262	265
1997	295	375	356	337	266	254	242	411	211	278	344
1998	342	405	373	375	292	256	291	397	230	263	243
1999	319	378	495	335	302	245	248	(494)	227	257	289
2000	370	403	442	327	267	302	255	(337)	195	218	377
2001	378	373	396	471	367	341	239	336	239	247	315
2002	347	391	336	349	272	489	203	370	196	245	243
2003	343	406	(487)	359	277	305	-	419	196	223	228
2004	346	314	304	492	251	291	189	(346)	171	201	(171)
2005	355	387	290	(370)	310	279	-	-	189	182	-
2006	298	359	359	-	-	283	-	-	193	191	-
2007	308	282	321	(581)	380	288	-	-	158	171	-
2008	306	293	320	516	296	421	-	-	194	170	226
2009	350	298	376	445	315	285	-	726	185	195	237
2010	359	340	428	500	385	300	199	-	181	237	-
2011	394	342	361	390	416	350	-	-	194	261	234

[1)] Veiðisvæðið við Snæfellsnes. *Referred to as Snæfellsnes area.*

Fjöldi er byggður á stofnmælingu úthafsrækju á svæðunum Norðurkantur–Héraðsdjúp. Tölur innan sviga merkja að sýni voru færri en 5.
Numbers from the offshore areas Norðurkantur–Héraðsdjúp are survey data. Numbers in parentheses indicate samples of less than 5.

TAFLA 3.28.5
Rækja. Meðalfjöldi í kg á úthafsrækjusvæðunum árin 1990–2011.
Northern shrimp. *Mean number per kg by offshore areas in the period 1990–2011.*

Ár *Year*	Dohrnbanki	Hali	Norðurkantur	Við Sporðagrunn	Skagafjarðardjúp	Við Kolbeinsey	Eyjafjarðaráll	Við Grímsey	Við Sléttugrunn	Langanesdjúp	Bakkaflóadjúp	Héraðsdjúp	Brattikantur	Eilífðarkantur	Rauða torgið	Lónsdjúp	Rósagarður	Grindavíkurdjúp
1990	88	-	181	224	241	181	225	272	231	215	218	242	(198)	(169)	162	-	-	-
1991	103	-	162	198	258	184	186	305	242	201	234	280	(131)	(124)	164	-	-	-
1992	92	150	161	250	333	182	301	375	268	240	378	311	(183)	-	130	-	-	-
1993	102	160	178	226	280	192	247	395	261	228	284	240	-	-	112	(237)	(86)	145
1994	(93)	161	193	238	319	168	167	423	281	218	337	348	-	-	179	-	-	179
1995	(74)	179	193	259	360	203	261	390	366	263	360	349	-	-	152	-	-	(134)
1996	105	148	176	216	258	190	198	289	283	282	243	244	-	-	158	-	-	-
1997	86	171	195	190	244	222	197	329	304	295	314	282	-	-	153	-	-	-
1998	91	190	196	220	233	201	184	289	281	316	335	279	(252)	-	194	-	-	-
1999	107	165	185	213	260	193	193	292	296	282	267	294	-	-	169	-	(87)	-
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	-	-	(373)
2002	90	143	171	241	307	188	187	315	392	326	253	282	-	-	171	-	-	-
2003	89	181	178	208	246	225	210	274	356	352	271	279	-	-	199	-	-	-
2004	80	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	-	-	-

Fjöldi er byggður á stofnmælingu úthafsrækju á svæðunum Norðurkantur–Héraðsdjúp. Tölur innan sviga merkja að sýni voru færri en 5.
Numbers from the offshore areas Norðurkantur–Héraðsdjúp are survey data. Numbers in parentheses indicate samples of less than 5.

TAFLA 3.29.1
Hörpudiskur. Afli (í tonnum) eftir svæðum 1969–2011.
Iceland scallop. *Landings (in tonnes) by area 1969–2011.*

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	-	-	-	-	-	-	-	-	-	0
2005	-	-	-	-	-	-	-	-	-	0
2006	-	-	-	-	-	-	-	-	-	0
2007	-	-	-	-	-	-	-	-	-	0
2008	-	-	-	-	-	-	-	-	-	0
2009	-	-	-	-	-	-	-	-	-	0
2010	-	-	-	-	-	-	-	-	-	0
2011	-	-	-	-	-	-	-	-	-	0

TAFLA 3.30.1
Kúfskel. Afli (í tonnum) eftir svæðum á árunum 1987–2011.
Ocean quahog. *Landings (in tonnes) by area in 1987–2011.*

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
-				
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

TAFLA 3.31.1
Beitukóngur. Afli ásamt afla á sóknareiningu (kg í gildru) í Breiðafirði árin 1996–2011.
Common whelk. *Landings (in tonnes) and CPUE (kg per hauled pot) in Breiðafjörður 1996–2011.*

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	-	-
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

TAFLA 3.32.1
Sæbjúga. Afli (í tonnum) ásamt afla á togtíma (kg) á eftir svæðum 2006–2011.
Sea cucumber. *Landings (in tonnes) and CPUE (kg/hour) by area 2006–2011.*

	Svæði *Area*				Svæði *Area*			
Ár *Year*	Vestur *West*	Norður *North*	Suður *South*	Heildarafli *Total landings*	Vestur *West*	Norður *North*	Suður *South*	Meðalafli á sóknareiningu *Mean CPUE*
2006	50	-	-	50	-	-	-	-
2007	-	-	-	-	-	-	-	-
2008	998	-	-	998	-	-	-	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

TAFLA 3.33.1
Ígulker. Afli (í tonnum) og afli á togtíma (kg) árin 1993–2011.
Sea urchin. *Landings (in tonnes) and CPUE (kg/hour) in 1993–2011.*

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	406
2009	140	483
2010	146	405
2011	144	381

TAFLA 3.34.1

Hvalir. Veiðar við Ísland (fjöldi) 1948–2011.

Whales. *Number of whales caught by the Icelandic whaling fleet 1948–2011.*

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

[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.*

TAFLA 3.35.1

Selir. Selveiði við Ísland (fjöldi) 1962–2011 og fjöldi veiðimanna frá 1982.
Seals. *Number of seals caught at Iceland 1962–2011 and sealers from 1982.*

Ár *Year*	Heildar-veiði *Total catch*	Landsels-kópar *Harbour pups*	Útsels-kópar *Grey seal pups*	Eldri landselur *Older harbour*	Eldri útselur *Older grey*	Annað *Other*	Eldri land-/útselur *Older harbour/grey*	Ógreint *Unspeci-fied*
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 *Year*	Heildar-veiði *Total catch*	Landsels-kópar *Harbour pups*	Útsels-kópar *Grey pups*	Eldri landselur *Older harbour*	Eldri útselur *Older grey*	Annað *Others*	Landselur aldur óþekktur *Harbour age unknown*	Útselur aldur óþekktur *Grey age unknown*	Fjöldi veiðimanna[5)] *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 (10)
2003[4)]	938	405	253	11	252	5	12	-	46 (5)
2004[4)]	524	140	96	6	202	6	70	4	32 (17)
2005[4)]	395	120	85	1	128	1	58	2	25 (17)
2006[4)]	482	100	99	-	112	4	92	75	18 (11)
2007[4)]	384	72	84	-	185	6	32	5	16 (12)
2008[4)]	342	33	57	1	123	11	117	-	24 (4)
2009[4)]	318	57	-	-	-	93	97	71	
2010[4)]	451	66	98	1	-	114	123	49	24(45)
2011[4)]	396	50	107	18	-	197	17	7	

[1)] Byggt á gögnum um verslun og útfluting selskinna. Heimild: Teitur Arnlaugsson, Rannsóknastofnun fiskiðnaðarins 1973. *Based on trade and export statistics on seal skin.*

[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 lumpsucker 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. Fjöldi netabáta sem skráð hafa seli sem meðafla í sviga. *Number of seal hunters and lumpsucker fishermen who report seal bycatch. Number of gillnet vessels reporting seal bycatch in parentheses.*

5. APPENDICES

5.1. Methods for estimation of stock size of fish populations

As has been discussed in previous reports about the status of fished stocks and catch recommendations one of the main results of the working group who reviewed the data and stock assessment methods for cod in Icelandic waters in 2000 was that each year a variety of methods should be used in stock assessment, preferably by external experts. Results from the different methods would then be compared. There was no guideline set in the beginning to describe how the final method would be chosen, but it was decided that it would be better to hold to methods that produced results near the middle of the range of likely results. Thus, all methods used in analysis are part of the basis of the final outcome. The choice of a final estimate could even be based on data that are not used in the stock assessment model, for instance information from logbooks from fishing vessels.

In the estimation of stock size and analysis of survey results various models are used. Most of them are based on commercial and survey catch at age. The difference is often whether or not the model considers the skew in age disaggregated landings or not, whether attempts are made to estimate catchability of surveys or fleets, whether they calculate forward or backward in time, how models weight various data and what age groupings the models use. Most often such age-structured models are divided into two classes:

1. Models that calculate backward in time and do not account observation error in the commercial catch at age. This kind of model (VPA) has for many years been used to estimate a great many stocks in the North Atlantic.
2. Models that calculate forward in time and do not follow the catch at age exactly, rather they minimize the objective function which is a measurement of consistency between data (commercial and survey catch at age) and predictions of the model that are based on the data. This kind of model is efficient in projections and usually gives more information about observation error in the data than does the VPA model. Often this model is considered a statistical catch-at-age model.

The main models that the Marine Research Institute (MRI) used in estimation of fish stocks in 2012 are:

1. ADAPT. Assessment method based on VPA. Both in-house programs and a version developed in Canada are used and it is possible to add to this an estimation of confidence limits and more that is usually not included in methods based on VPA.
2. Time Series Analysis. A method developed by mathematician Guðmundur Guðmundsson. This method has been used for the Iceland saithe and cod stocks for many years, in addition to herring, haddock, and redfish in recent years. It has also been used in other regions than Iceland. The model is classified as a statistical catch-at-age model but it is not suitable for calculating forward in time in the present version.
3. EXCAM. A statistical catch-at-age model developed by the MRI. This model returns stock estimates, recruitment estimates and projections.
4. ADCAM. Statistical catch-at-age model developed by the MRI to examine harvest rules. The model can be used for stock assessments, recruitment estimates and projections.
5. Gadget (BORMICON). A multispecies model that was originally developed by the MRI and has been in continuous development under a research grant from the European Union in recent years in cooperation with the larger marine research institutions in Europe. In this model both length and age of the fish are taken into account, which is helpful in examining the effect of size dependent predation on mean weight at age, estimate growth, migrations, cannibalism and more; but it also works well in estimating population size when there is little or no age data but a good deal of length measurements. In the model the catch at age is not used directly rather the length and age measurements from fishing are part of the objective function which is minimized.

So, there are many varied models that are used. When there is a choice to be made about which model to use as a basis for stock assessment there is consideration of aspects such as if there has been much discussion of a particular model in the literature and whether the discussion is positive. When so many models are calculated there is also the question of where the results of a particular one lie in relation to the others. If there is a significant difference between models, the ones whose results lie on the outer edges of the range of results is only

used when there is a very strong argument for doing so.

Above, it is made clear that many of the available models return estimates of uncertainty, both in stock estimates and projections. Usually this uncertainty is underestimated because not all factors are taken into account, such as variation in natural mortality, variable growth rates or wrong assumptions. Recently, a strong emphasis has been placed on review of these extra uncertainty factors, but this effort is still in its infancy. In estimation of unknown quantities improved understanding can be gained by understanding the uncertainty in the data and while uncertainty in age-structured models seems most often underestimated that estimation can often be used in comparison of methods of analysis.

In many cases, traditional assessment methods, like those listed above, are not possible. In such situations, changes in harvest rate can be approximated with the use of Fproxy. To calculate Fproxy the ratio between total landings and biomass indices is examined. If the ratio between these two remains unchanged from one year to another it is an indication that the fishing mortality has not changed between years. The main assumption behind calculations of Fproxy is that the biomass index is descriptive of the stock size of the given species.

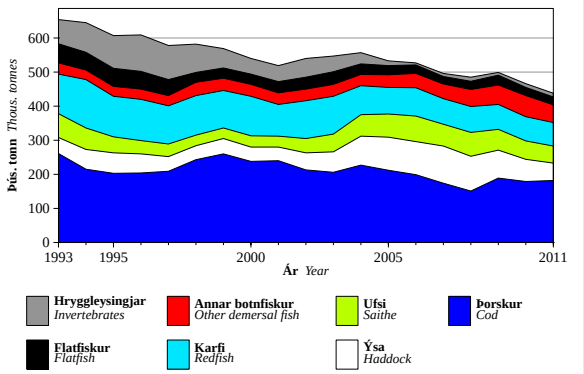
5.2. Fishing and dispersal of landings in Icelandic waters in 2011

The Icelandic fishing fleet is very diverse, with everything from little one-man fishing boats to huge factory ships with dozens of crew. More than 1 600 ships and boats participated in fishing in Icelandic waters in 2011 and they landed in all 1.1 million tonnes of fish, which is 100 thousand tonnes more than in 2010. Of this total, 730 thousand tonnes were pelagic fish (capelin, herring, blue whiting, mackerel and pearlside) which is 115 thousand tonnes more than in 2010 (figure 5.2.1).

There are many different gears used, but there are a few that are used for the main portion of the total landings. In fishing of groundfish the main gears are: bottom trawl, longline, handline, gillnets and Danish seine. For pelagic fishing the most common gears are seine and pelagic trawl and for pelagic redfish only the pelagic trawl is used. Figures 5.2.3–5.2.5 show the distribution of landings of cod, haddock and saithe by gear for 2011 along with length distribution of catches from the same gears. Furthermore, the total landings from each gear are shown as it has been recorded in landing reports. Figure 5.2.6 shows the effort of Icelandic fishing vessels in Icelandic waters with various fishing gears.

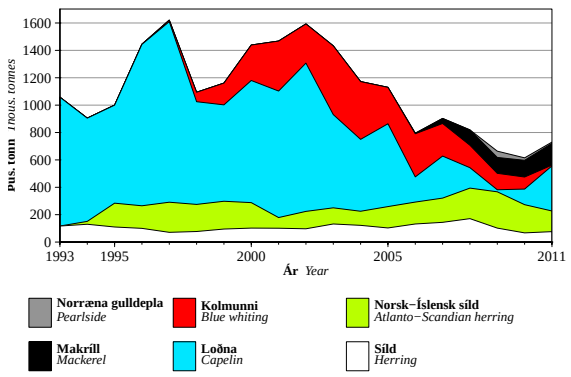
In figure 5.2.3 shows that fishing grounds for cod are vary based on what gear is used. Longline and handline are mostly used in coastal areas and inshore fishing but bottom trawls are used offshore. Furthermore, the length distribution of cod is different according to the gear used. The largest cod are caught in gillnets while the smallest cod are caught on longlines and handlines. Bottom trawl catches tend to be larger fish than longling and handline.

The fishing fleet has changed a lot in recent decades because of technological advancements and vessel renewals so it is difficult to analyse changes in



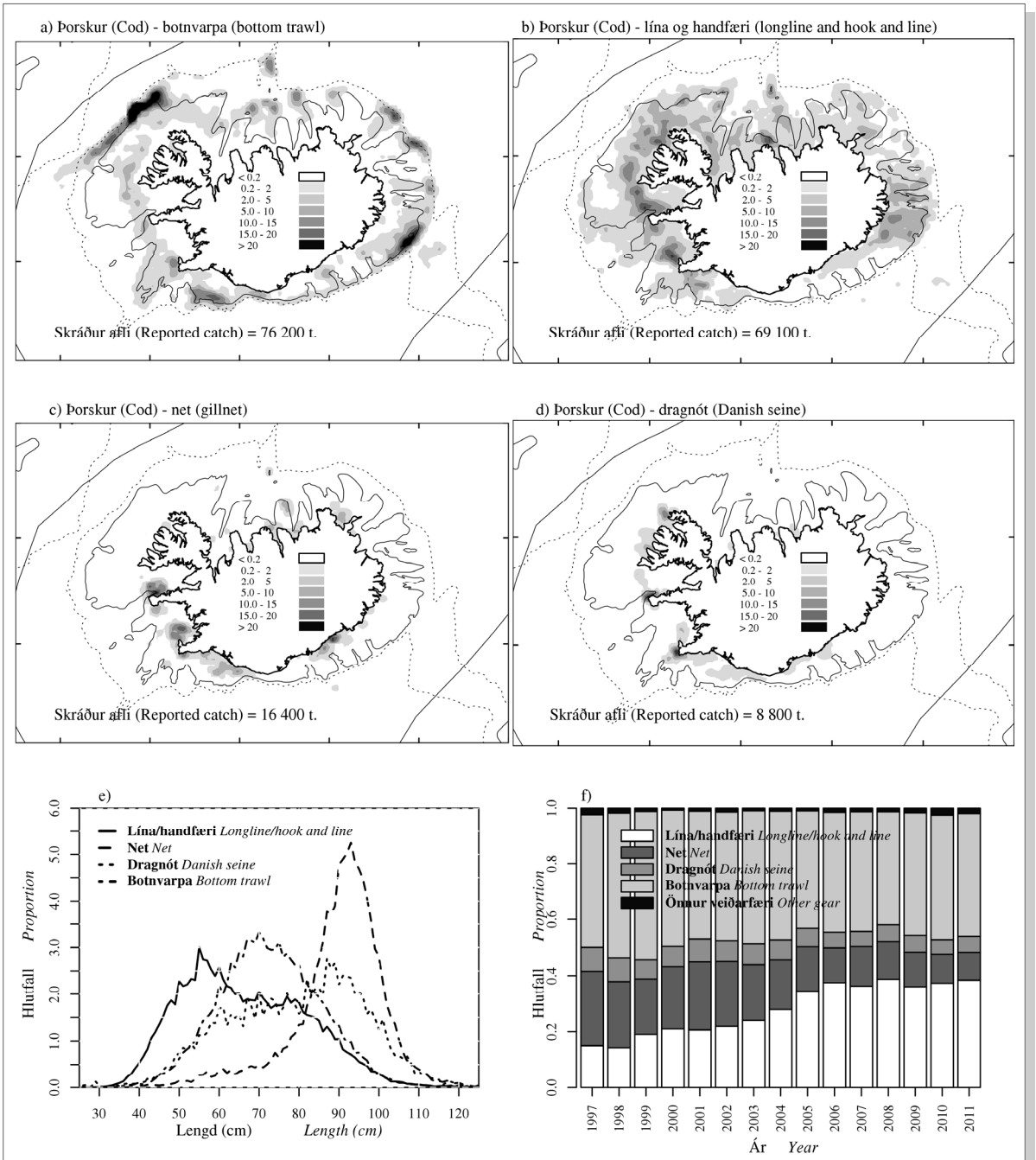
Mynd 5.2.1. Heildarafli íslenska fiskveiðiflotans 1993–2011 skipt eftir helstu tegundum og tegundahópum botnfisks og hryggleysingja.

Fig. 5.2.1. Total landings of the Icelandic fisheries 1993–2011 divided by main taxinomic groups of demersal fishes and invertebrates.



Mynd 5.2.2. Heildarafli íslenska fiskveiðiflotans 1993–2011 skipt eftir helstu tegundum uppsjávarfisks.

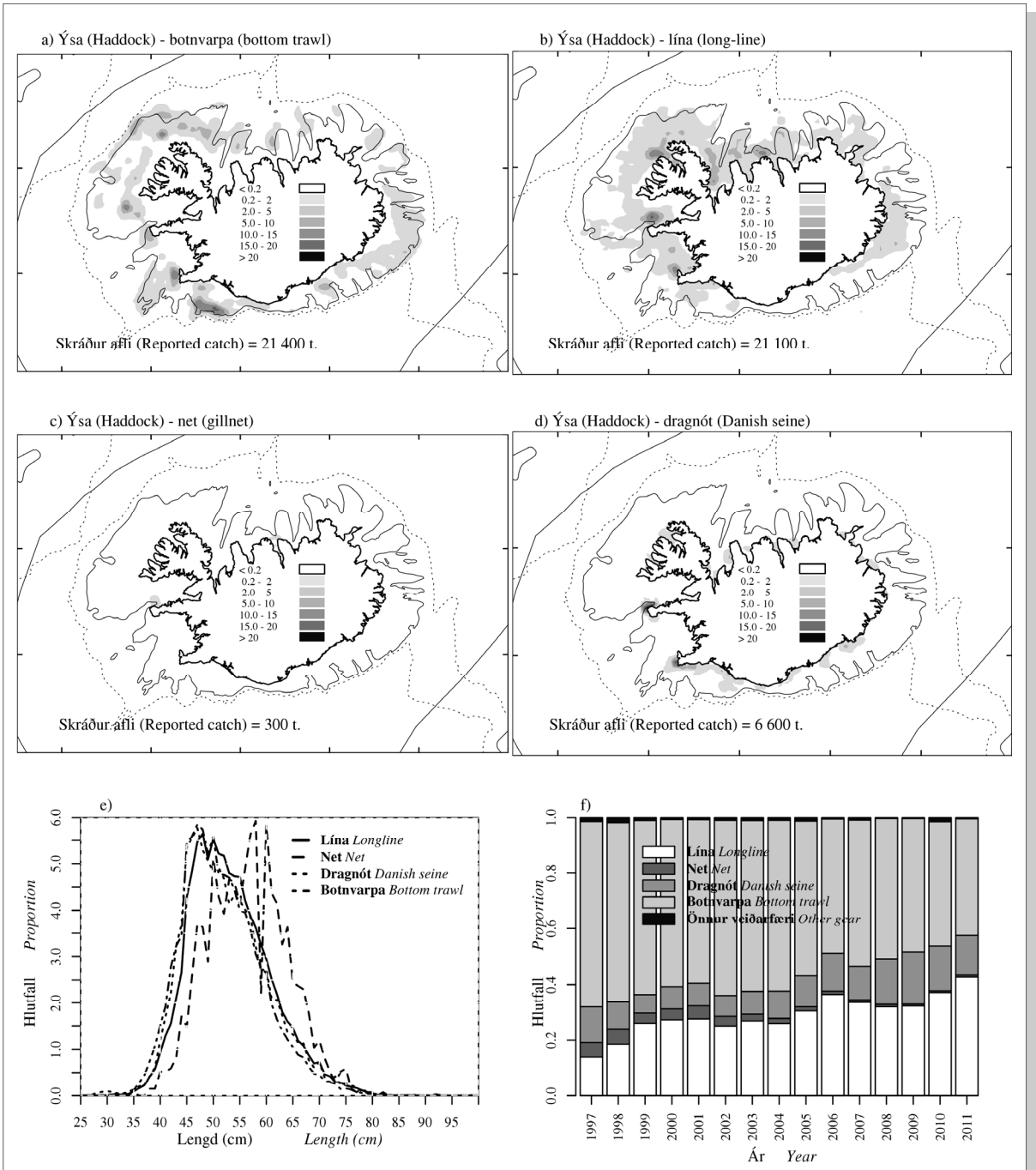
Fig. 5.2.2. Total landings of the Icelandic fisheries 1993–2011 divided by main species of pelagic fishes.



Mynd 5.2.3. Veiðisvæði þorsks árið 2011 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með botnvörpu (a), línu og handfærum (b), netum (c) og dragnót (d) eru sýndar ásamt lengdardreifingum afla úr sömu veiðarfærum (e) og hlutfallslegur afli mismunandi veiðarfæra frá árinu 1997 (f).

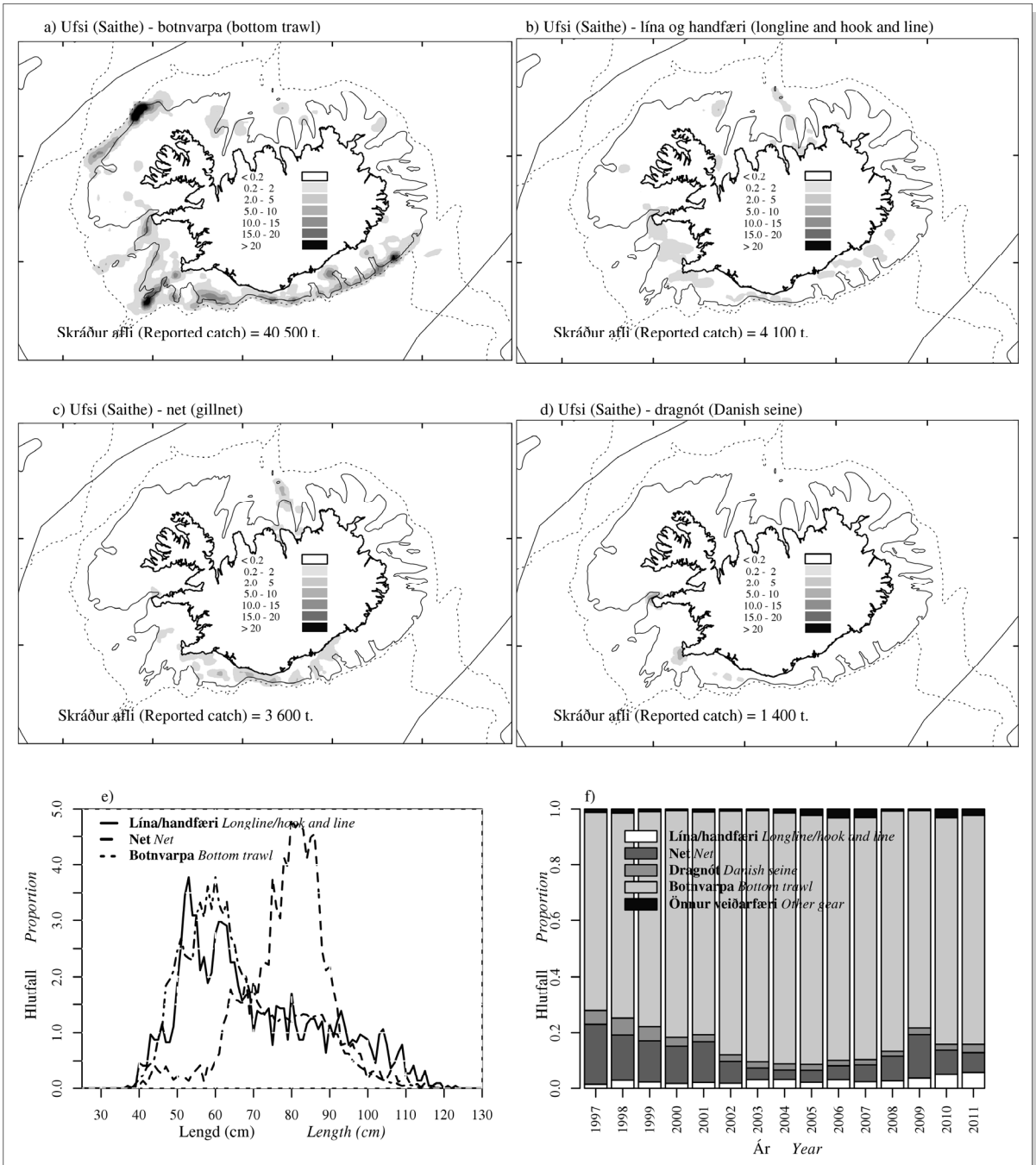
Fig. 5.2.3. Location of cod catches in 2011 with bottom trawl (a), longline and hook and line (b), gillnet (c) and Danish seine (d), length distributions from the catches in 2011 (e) and proportion of the catches by fishing gear since 1997 (f).

landings over long periods. For this reason, the importance of landing reports in stock assessments decreased in recent years and the importance of stock surveys has increased. However, landing reports are always taken into account and if there is inconsistency between stock assessments and catch data landing reports help to explain the discrepancy.



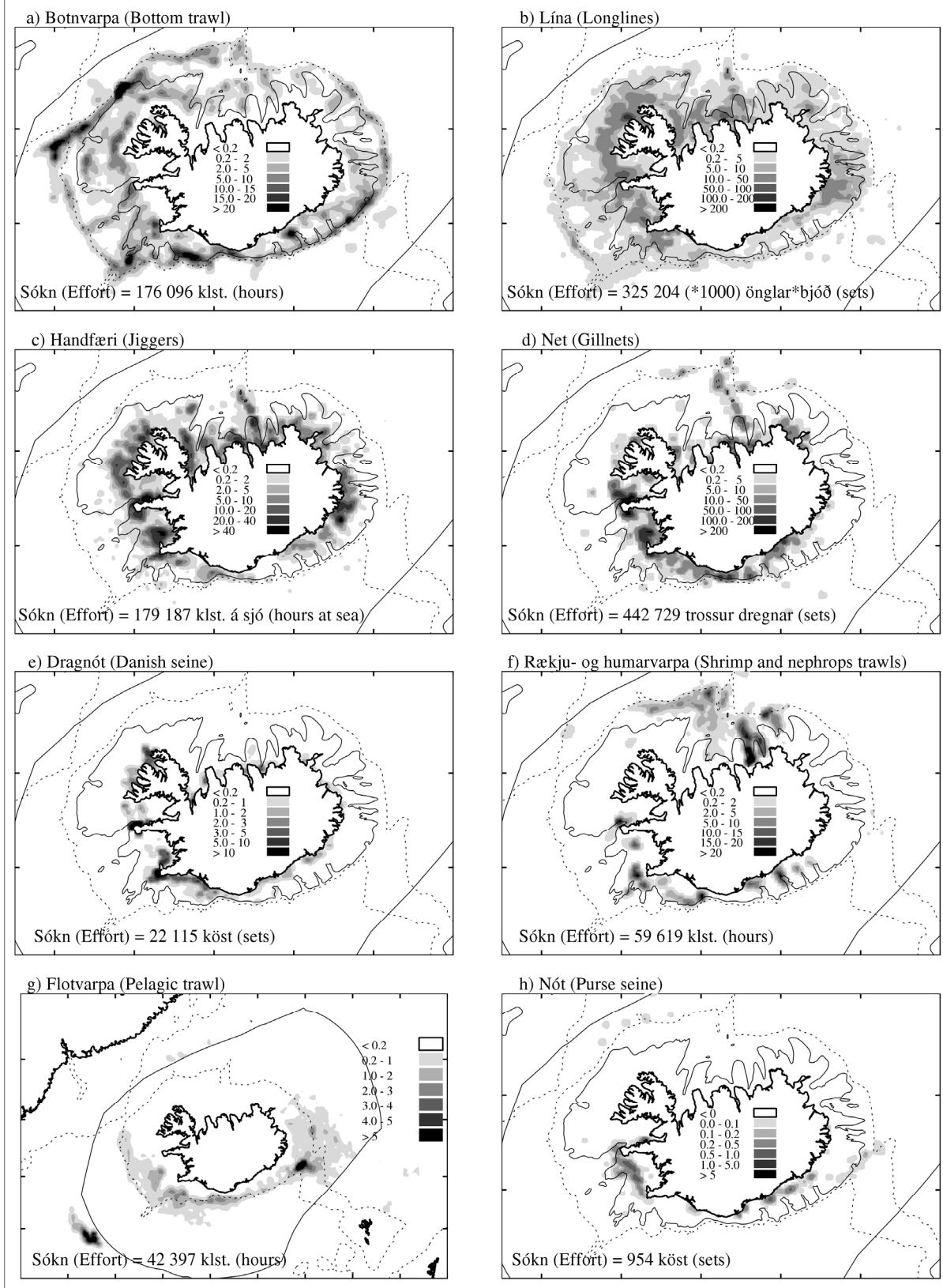
Mynd 5.2.4. Veiðisvæði ýsu árið 2011 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með botnvörpu (a), línu og handfærum (b), netum (c) og dragnót (d) eru sýndar ásamt lengdardreifingum afla úr sömu veiðarfærum (e) og hlutfallslegur afli mismunandi veiðarfæra frá árinu 1997 (f).

Fig. 5.2.4. Location of haddock catches of in 2011 with bottom trawl (a), longline (b), gillnet (c) and Danish seine (d), length distributions from the catches in 2011 (e) and proportion of the catches by fishing gear since 1997(f).



Mynd 5.2.5. Veiðisvæði ufsa árið 2011 samkvæmt upplýsingum úr aflaskýrslum. Veiðar með botnvörpu (a), línu og handfærum (b), netum (c) og dragnót (d) eru sýndar ásamt lengdardreifingum afla úr sömu veiðarfærum (e) og hlutfallslegur afli mismunandi veiðarfæra frá árinu 1997 (f).

Fig. 5.2.5. Location of saithe catches in 2011 with bottom trawl (a), longline and hook and line (b), gillnet (c) and Danish seine (d), length distributions from the catches in 2011 (e) and proportion of the catches by fishing gear since 1997 (f).



Mynd 5.2.6. Sókn íslenskra fiskiskipa á Íslandsmiðum árið 2011 sem nota botnvörpu (a, klst. veitt), línu (b, önglar), handfæri (c, klst. á sjó), net (d, trossur dregnar), dragnót (e, fjöldi kasta), rækju- og humarvörpur (f, klst. veitt) flotvörpu (g, klst. veitt), og nót (h, fjöldi kasta).

Fig. 5.2.6. Effort of the Icelandic fishing fleet in Icelandic waters using bottom trawl (a, hours fished), longline (b, hooks), jiggers (c, hours at sea), gillnet (d, number of sets), Danish seine (e, number of sets), shrimp and Nephrops trawls (f, hours fished), pelagic trawl (g, hours fished), and purse seine (h, number of sets) in 2011.