

# MEGRIM – STÓRKJAFTA

## *Lepidorhombus whiffiagonis*

### GENERAL INFORMATION

Megrim is a demersal species on a sandy or muddy substrate, occurring at depths ranging from 40-400 m, but is most common at 100-200 m. Its distribution is confined to the relatively warm waters south and west of Iceland. In Icelandic waters the females can reach 70 cm in length, but males just about 60 cm. Size at sexual maturity differs between the sexes. At the length of 32 cm about half the males have reached maturity, females reach that level at 42 cm.

### THE FISHERY

Main fishing grounds for megrim are in the south-east, south and south-west of Iceland, with smaller fishing grounds in the west of the island. There is no target fishery for megrim in Iceland, it is only taken as by-catch, particularly in demersal seine and *Nephrops* trawl. Seiners dominate the coastal fishery, while trawlers catch them deeper and further offshore. Megrim fishing grounds in 2008-2016, as reported by mandatory electronic logbooks are shown on Figure 1.

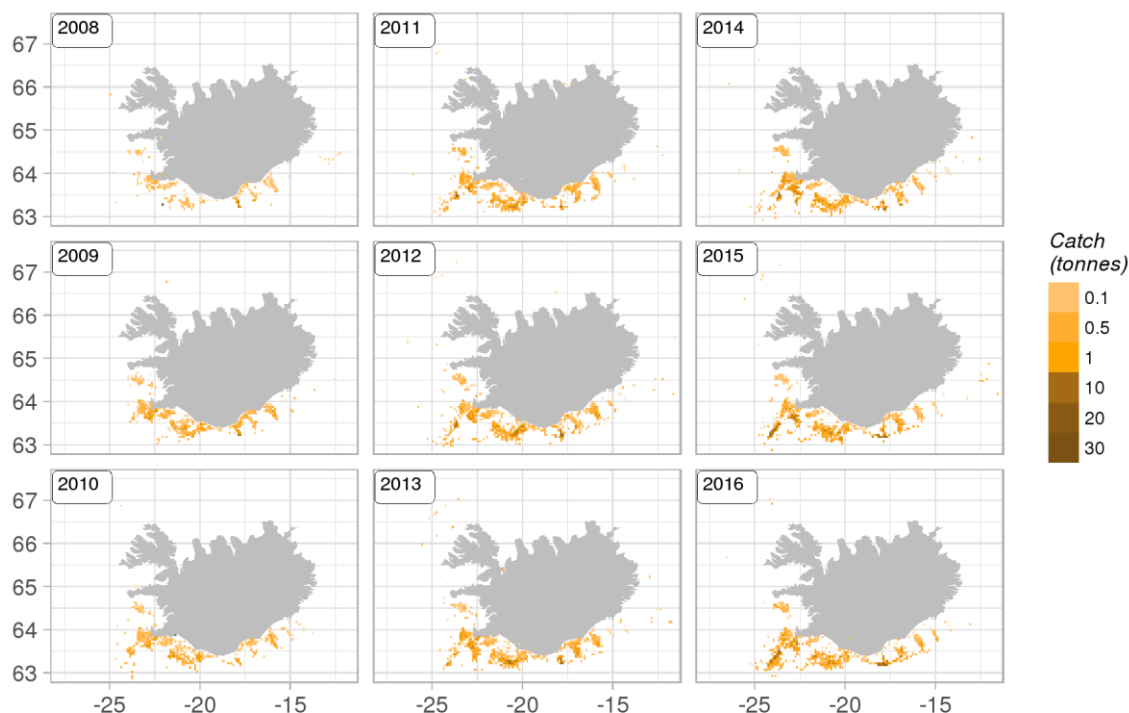
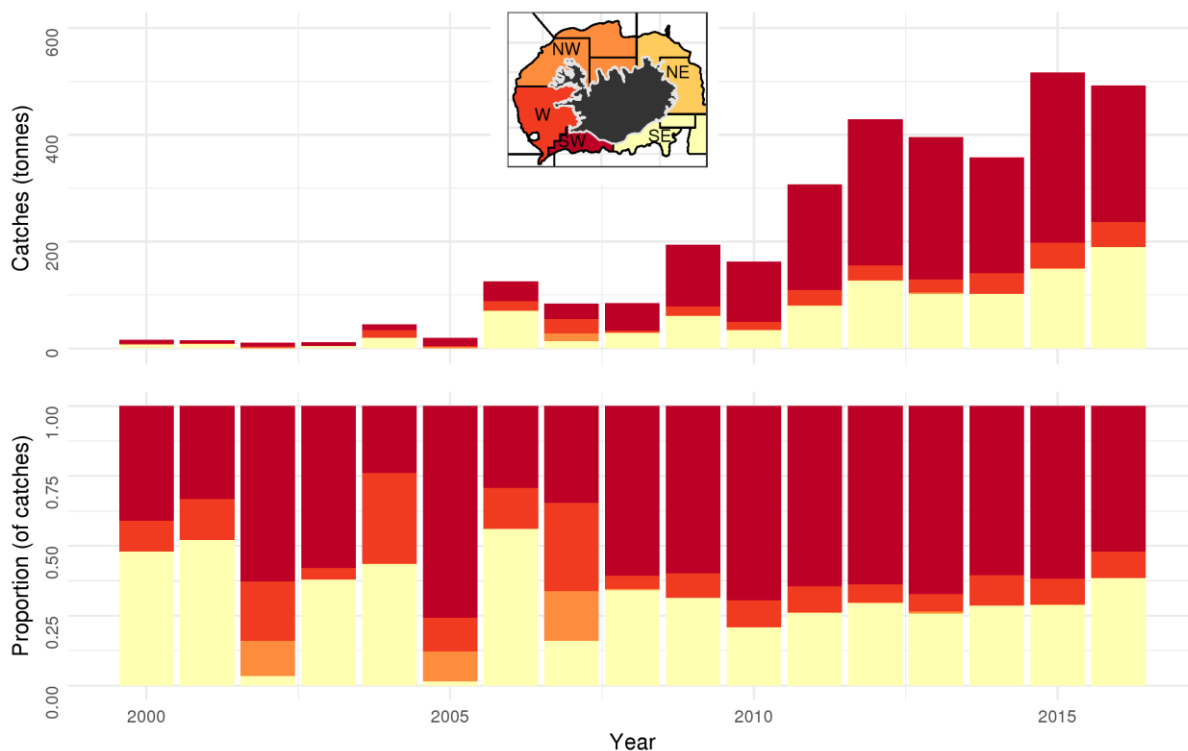


Figure 1. Megrim. Geographical distribution of the Icelandic fishery since 2008. Reported catch from logbooks. Mynd 1. Stórkjafsta. Útbreiðsla veiða á Íslandsmiðum frá 2008 samkvæmt aflagagbókum.

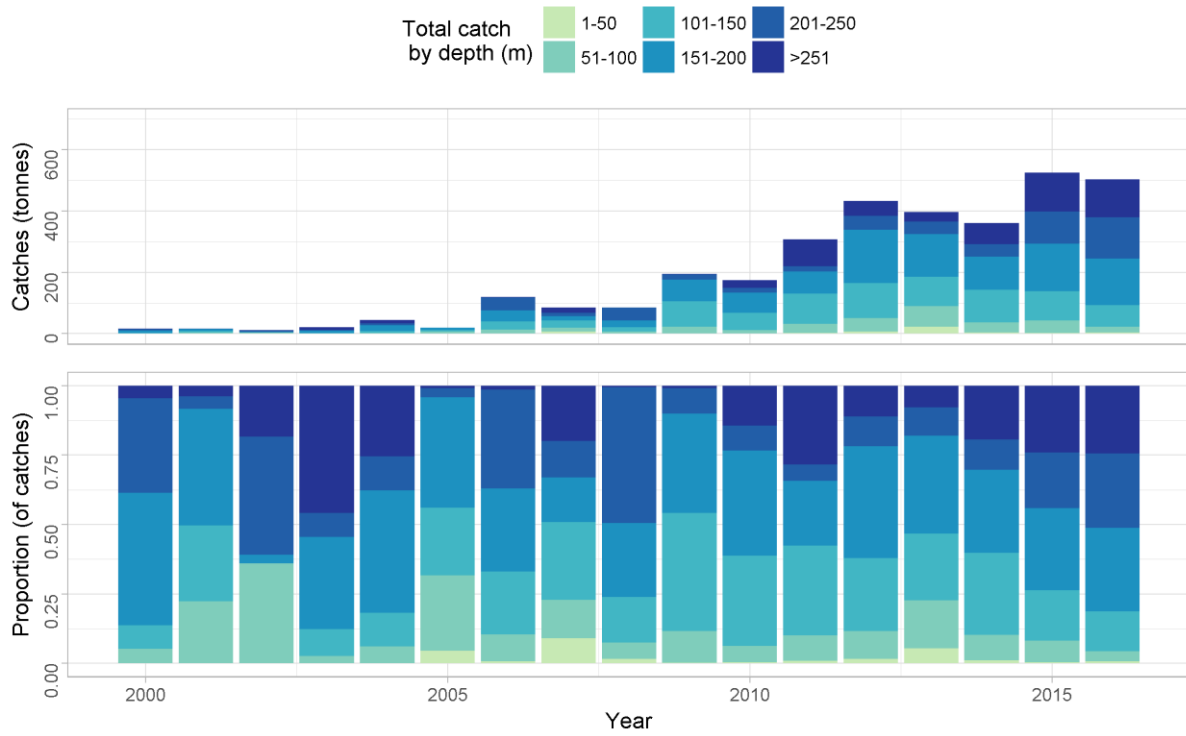
According to logbook entries, the main fishing grounds of megrim have been in the south-western waters of Iceland with over half the catch in most years, followed by the south-eastern waters (Figure 2). Spatial distribution of Icelandic megrim fishery is relatively stable, with around 90% of megrim caught off the south coast. In recent years, catches have been increasing. Before 2009, megrim was poorly registered in logbooks and as Figure 2 is based on those data, much of the catch from 2000-2008 is missing from the figure (Figure 2).



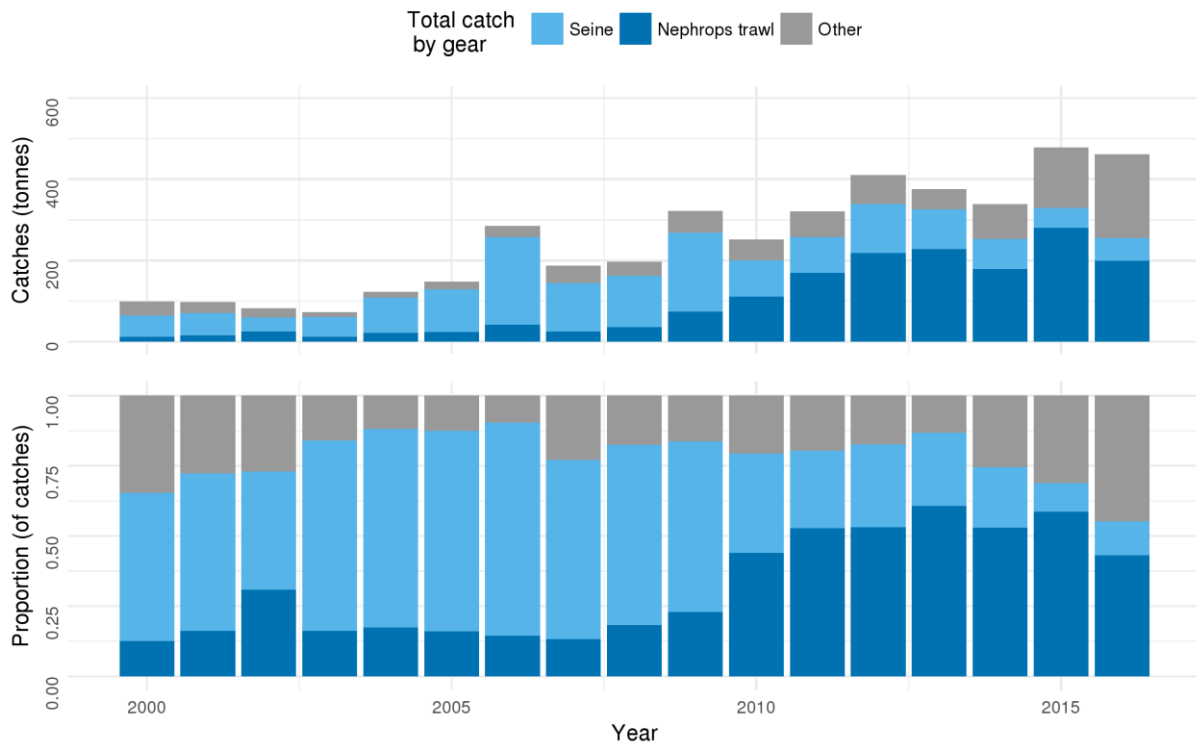
**Figure 2. Megrim. Spatial distribution of the Icelandic fishery by fishing area from 2000-2016. All gears combined.**  
*Mynd 2. Stórkjäfta. Útbreiðsla veiða á íslensku veiðisvæði árin 2000-2016. Öll veiðarfæri samanlagt.*

Megrim is caught in relatively deep water for a flatfish, with most of the catch (50-80%) taken between 100-250 meters depth (Figure 3).

Megrim in Icelandic fishing grounds are mainly caught in demersal seine and *Nephrops* trawl (Figure 4, Table 1). Catch in *Nephrops* trawl has been increasing in the past few years, while catches from demersal seine have been decreasing. In 2016, approximately 52% of landed megrim was fished in *Nephrops* trawl. In the past two years, catches from other fishing gear, i.e demersal trawl, have been relatively high. Since 2000, the number of boats landing over one tonne of megrim has remained relatively similar between years, whereas total catches have been increasing in the past few years (Table 1).



**Figure 3. Megrim. Depth distribution catches according to logbooks.**  
*Mynd 3. Stórkjafra. Afli samkvæmt afladagbókum, skipt eftir dýpi.*



**Figure 4. Megrim. Total catch (landings) by fishing gear since 2000.**  
*Mynd 4. Stórkjafra. Landaður afli eftir veiðarfærum frá 2000.*

**Table 1. Megrím. Number of Icelandic vessels landing catch of 1000 kg or more of megrím, and all landed catch divided by gear type.**

**Tafla 1. Stórkjafa. Fjöldi íslenskra skipa sem landað hafa yfir 1000 kg af skarkola og allur landaður afli eftir veiðarfærum.**

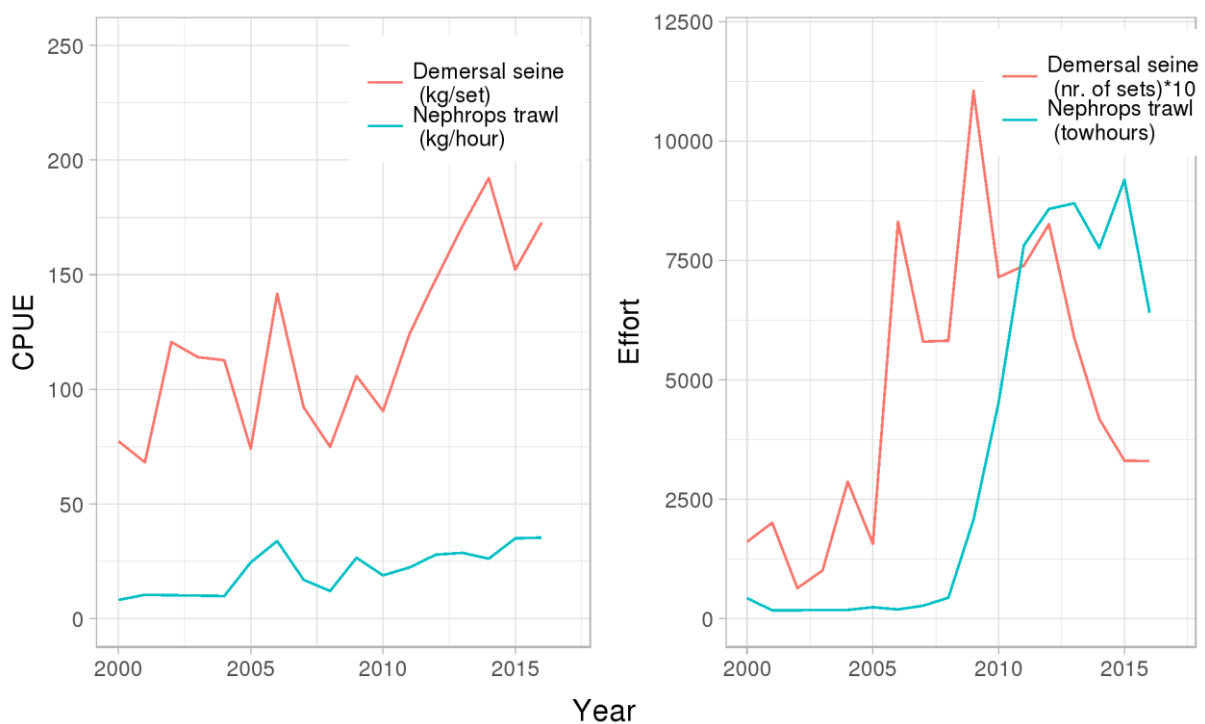
YEAR	NUMBER OF VESSELS			CATCHES (TONNES)			
	<i>Seiners</i>	<i>Nephrops Trawlers</i>	<i>Other</i>	<i>Demersal seine</i>	<i>Nephrops trawl</i>	<i>Other</i>	<i>Sum</i>
2000	8	4	7	53	12	31	96
2001	12	6	7	56	15	26	97
2002	7	9	6	33	23	20	76
2003	10	4	3	50	7	11	68
2004	13	4	4	85	21	14	120
2005	15	5	8	106	22	18	146
2006	17	9	7	216	40	28	284
2007	13	5	9	119	23	45	187
2008	19	7	8	126	36	34	196
2009	23	7	10	191	72	53	316
2010	17	11	12	89	110	52	251
2011	12	14	10	89	169	62	320
2012	17	14	9	134	171	104	409
2013	12	13	8	98	228	50	376
2014	9	14	10	74	171	82	327
2015	8	12	14	48	279	152	479
2016	11	10	17	56	199	207	462

## CATCH PER UNIT EFFORT (CPUE) AND EFFORT.

CPUE estimates of megrim in Icelandic waters are not considered representative of stock abundance as changes in fleet composition, technical improvements and differences in gear setup among other things have not been accounted for when estimating CPUE.

Non-standardised estimate of CPUE in demersal seine (kg/set) is calculated as the total weight in sets in which megrim was caught, according to logbooks. CPUE of megrim has been increasing since 2010 (Figure 5). In most recent years it has remained relatively stable between 150 to 200 kg/set. CPUE of *Nephrops* trawl (kg/h), in hauls where megrim was caught, has been slowly increasing since 2000. It should, however, be noted that megrim was poorly registered in logbooks before 2009, particularly from the *Nephrops* fishery.

Total fishing effort for megrim (number of sets where megrim was caught) in demersal seine was around 200 sets during 2000-2005 (Figure 5). After a rapid increase, it remained high in 2009-2012, but declined to about 300 sets in last two years. Effort (number of towing hours where megrim was caught) in *Nephrops* trawl increased rapidly from 2008-2012, and has remained high since then (Figure 5).



**Figure 5. Megrím. Non-standardised estimate of CPUE (left) and fishing effort (right) from demersal seine (kg/set or nr. of sets) in red and demersal trawl (kg/hour or towhours) in blue.**

**Mynd 5. Stórkjafna. Afli á sóknareiningu (vinstri) og sókn (hægri) með dragnót (kg í kasti eða fjöldi kasta) rautt og botnvörpu (kg/klst eða tog tímar) blátt.**

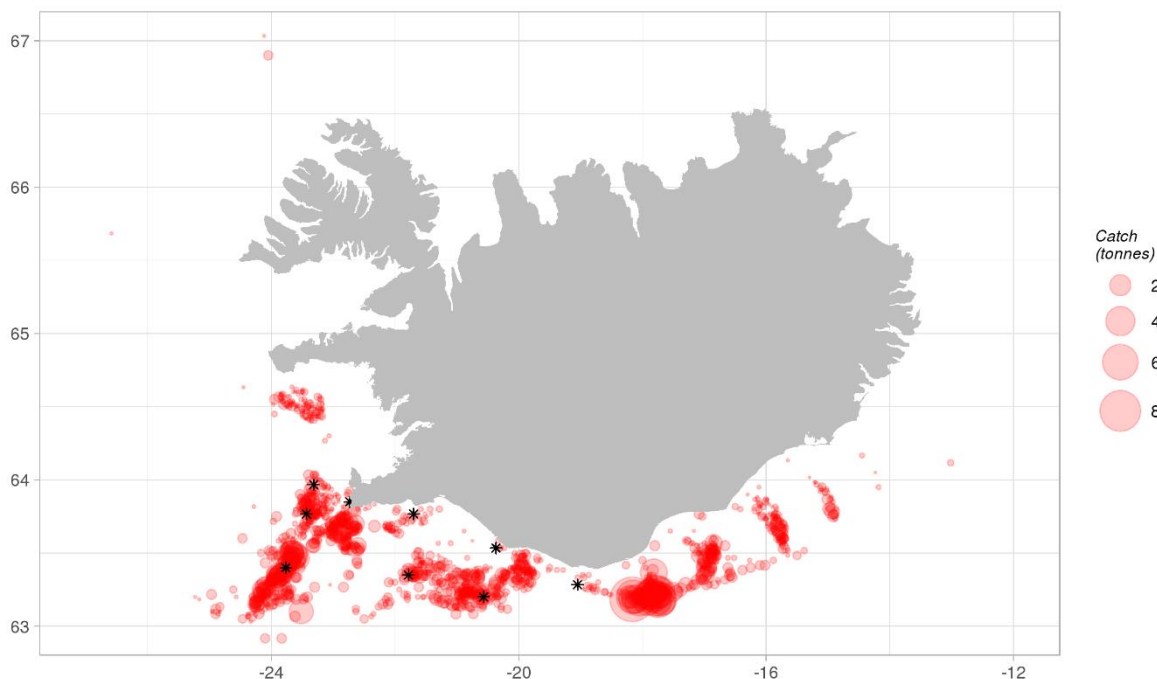
**AGE DISTRIBUTION OF LANDED MEGRIM**

Although only being caught as bycatch, samples are collected from landed catch (Table 2). The landings are mostly 7-12 years old fish, with 8-11 years olds amounting to over 70% of the numbers in most recent years.

**Table 2. Megrím. Number of samples and aged otoliths from landed catch.**

*Tafla 2. Stórkjafra. Fjöldi sýna og aldursgreindra fiska úr lönduðum afla.*

Year	Demersal seine		Nephrops trawl		Demersal trawl	
	Samples	Otoliths	Samples	Otoliths	Samples	Otoliths
2010	9	225	8	200	0	0
2011	8	200	15	401	0	0
2012	12	299	19	475	2	50
2013	11	275	12	300	4	100
2014	4	100	4	95	0	0
2015	5	124	9	225	1	25
2016	3	75	5	125	1	25

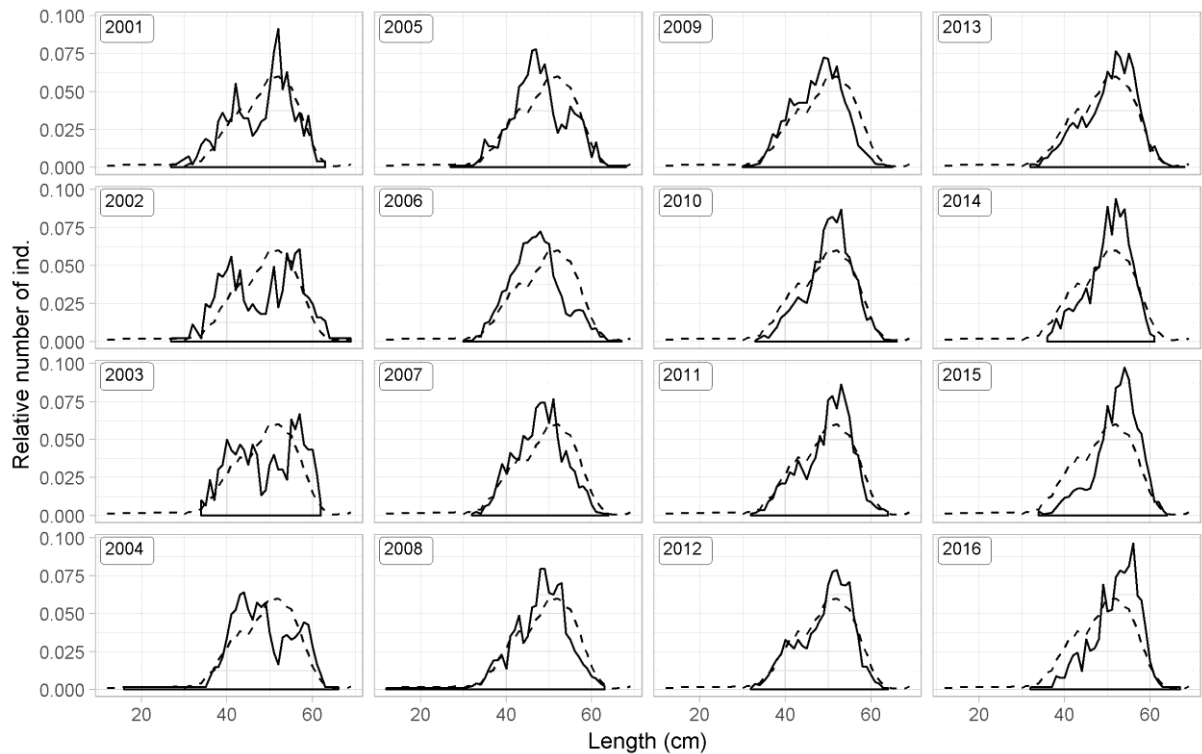


**Figure 6. Megrím. Fishing grounds in 2016 as reported in logbooks (red) and positions of samples taken from landings (asterisks).**

*Mynd 6. Stórkjafra. Veiðisvæði við Ísland árið 2016 samkvæmt afladagbókum (rautt) og staðsetningar sýna úr lönduðum afla (stjörnur).*

**LENGTH DISTRIBUTION OF LANDED MEGRIM**

Length distribution of landed megrim was relatively stable in 2001-2009, with average length ranging between 47 and 49 cm in most years (Figure 7). In 2010-2014 there were increased landings of larger megrim with average length of 50 cm. In the two most recent years the average length was 52 cm.



**Figure 7. Megrím. Length distribution from landed catch. The dotted line represents the mean length distribution for all years.**

*Mynd 7. Stórkjafra. Lengdardreifing aflasýna frá árinu 2001 með meðallengdardreifingu fyrir öll árin (punktalína).*

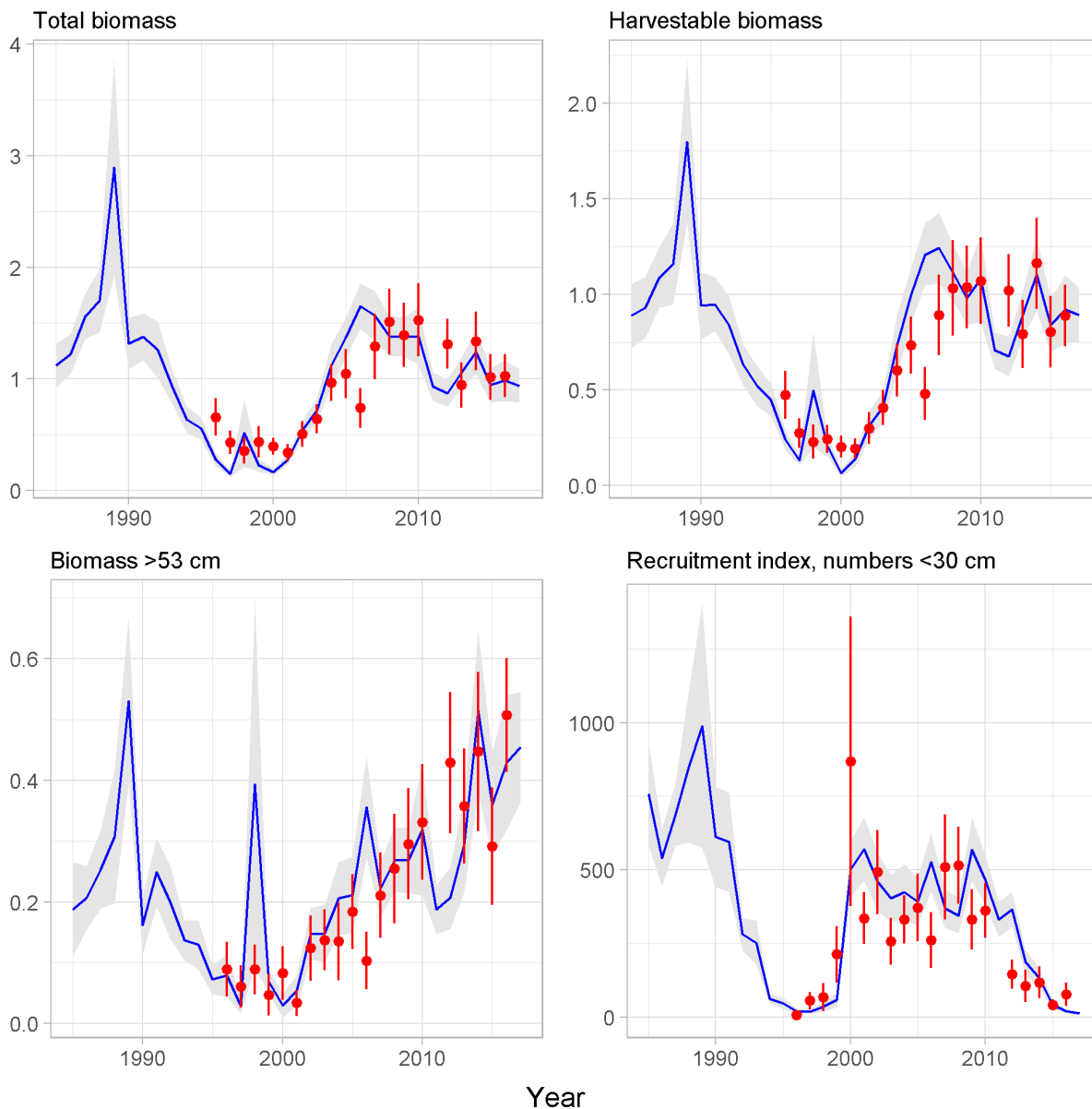
## SURVEY DATA

The Icelandic spring groundfish survey (hereafter spring survey, IS-SMB), which has been conducted annually in March since 1985, covers the most important distribution area of the megrim fishery. In addition, the Icelandic autumn groundfish survey (hereafter autumn survey, IS-SMH) was commenced in 1996. However, a full autumn survey was not conducted in 2011 due to a labour dispute and therefore the results for 2011 are not presented. The spring survey is considered to measure changes in abundance/biomass better than the autumn survey.

Figure 8 shows both a recruitment index based on abundance of megrim smaller than 30 cm, and trends in various biomass indices. Survey length distributions are shown in Figure 9 and Figure 10, abundance and changes in spatial distribution in Figure 11 - Figure 14.



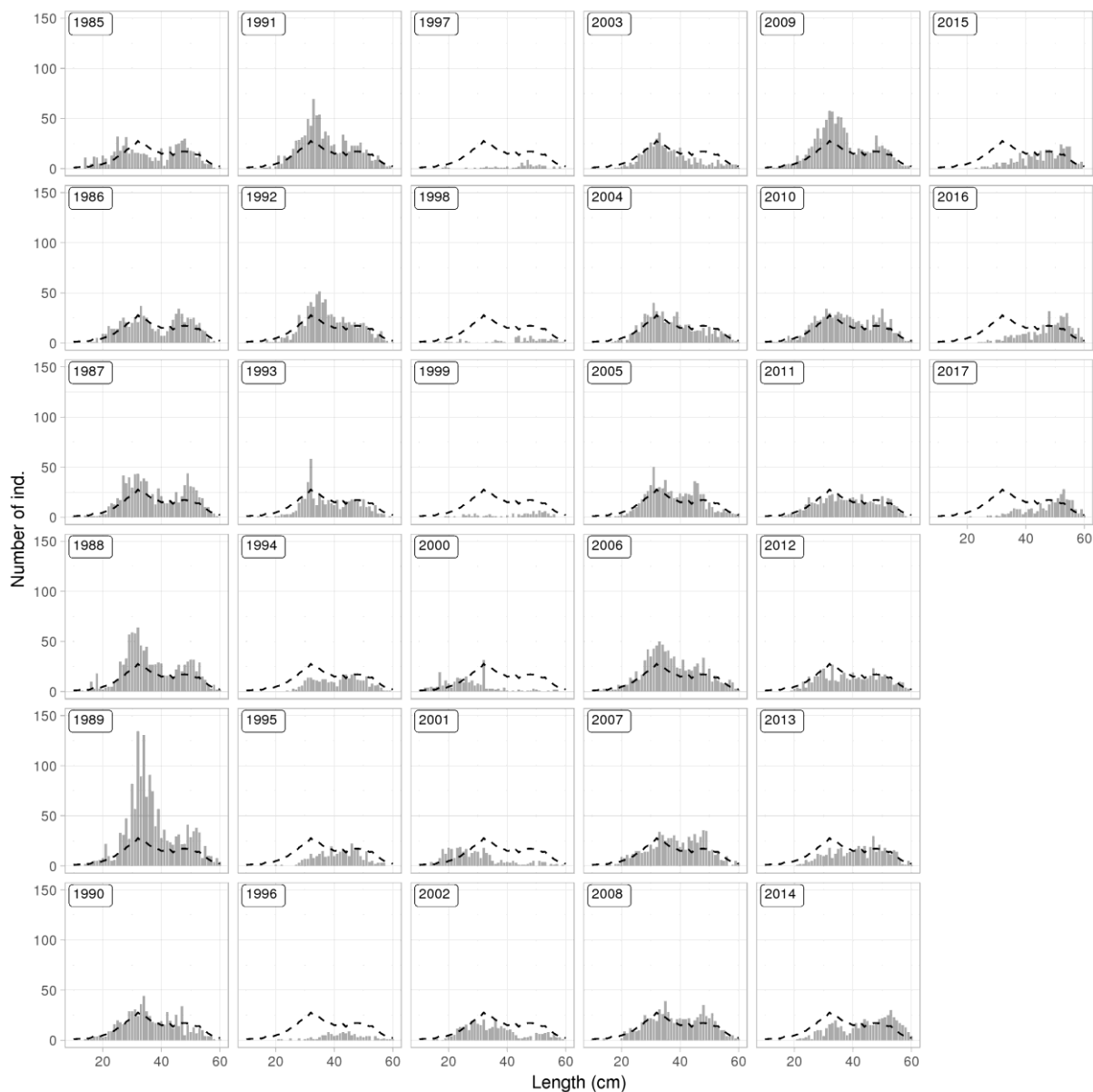
Total biomass index and the biomass index for megrim larger than 40 cm (harvestable part of the stock) has been increasing steadily since a low in 1999-2001 (Figure 8). The same holds for the index of megrim larger than 53 cm suggesting a decrease in fishing mortality. The index of juvenile abundance (<30 cm) has decreased in the last five years.



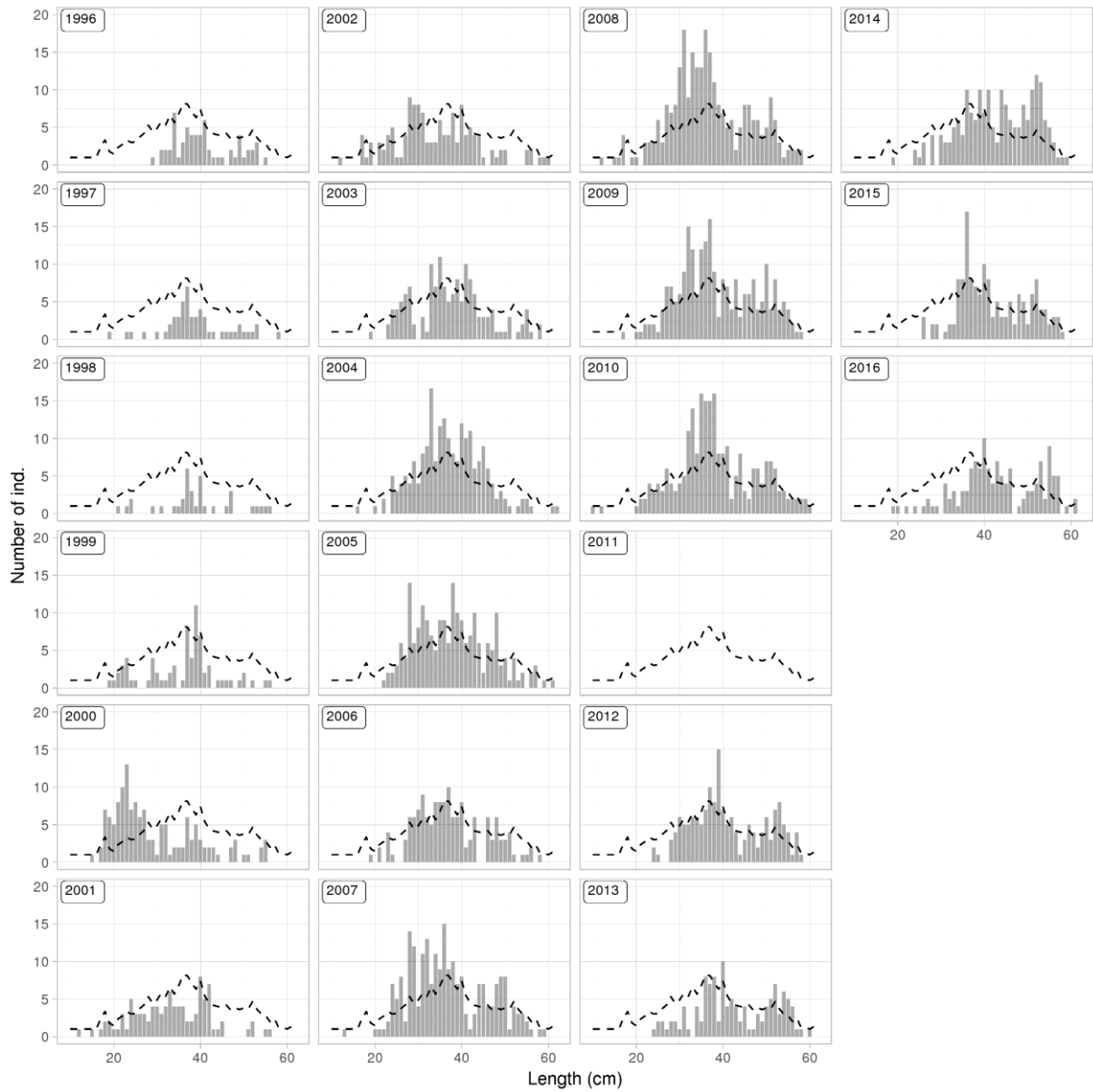
**Figure 8.** Megrím total biomass indices (upper left) and harvestable biomass indices (>40 cm) (upper, right), biomass indices of larger ind. (>53cm) (lower left) and juvenile abundance indices (<30 cm) (lower right) from the spring survey (blue) from 1985 and autumn survey (red) from 1996, along with the standard deviation.

*Mynd 8. Stofnvísitala stórkjöftu (efri til vinstri), vísitala veiðistofns (40 cm og stærri, efri til hægri) og vísitala stærri einstaklinga (53 cm og stærri, neðri til vinstri) og nýliðunarvísitala (neðri til hægri), úr stofnmælingu botnfiska að vori (blátt) frá árinu 1985 og hausti (rautt) frá árinu 1996, ásamt staðalfrávik.*

From the onset of the spring survey until 1993 there were little changes in the general length distribution of megrim and the average length of measured fish ranged between 36 and 39 cm (Figure 9). In the 1994-1999 surveys there were relatively more larger, fish increasing the average length to 44 cm in 1998. In the survey of 2000 there was a sudden change in the length distribution of megrim with relatively high number of small individuals and the average length fell down to 26.5 cm. This is seen as a sudden increase in recruitment in 2000 (Figure 8). Although the recruitment continued to be high the next years, the length distribution gradually shifted towards larger fish with increase in average length reaching a high of 48 in 2017. Comparable changes in length distribution of megrim are also seen in the autumn survey (Figure 10).



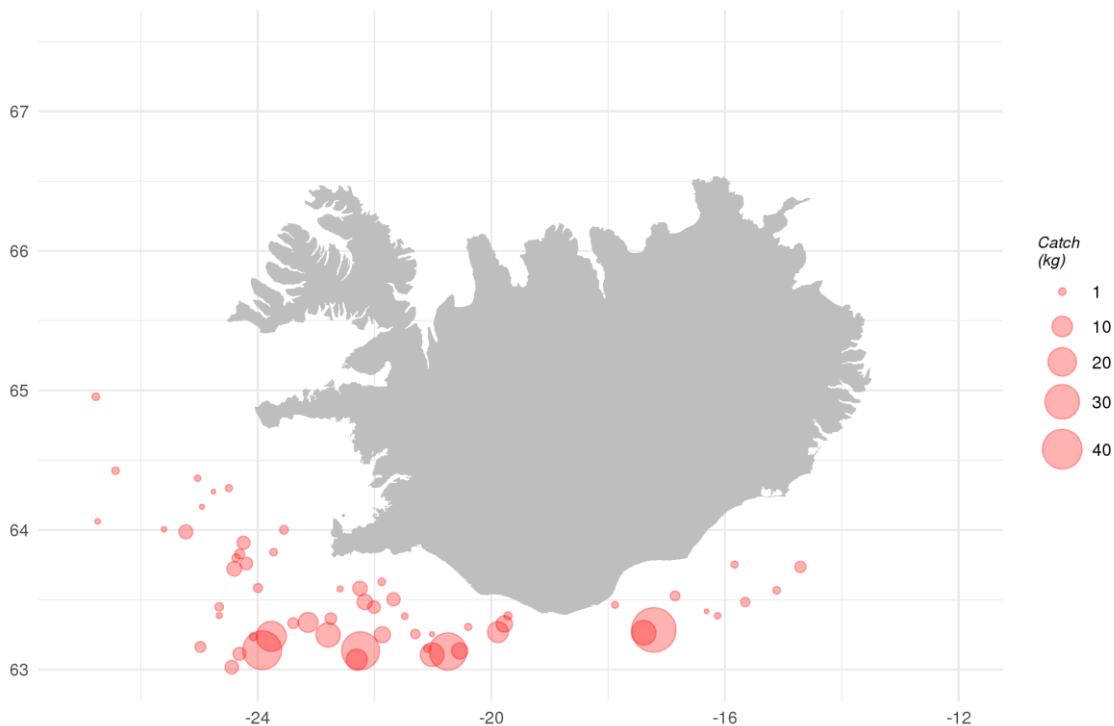
**Figure 9. Megrim. Length distribution from the spring survey. The dotted line shows mean length for all years combined. Mynd 9. Stórkjafna. Lengdarreifing úr stofnmælingu botnfiska að vori frá 1985 ásamt meðallengd allra ára (punktalína).**



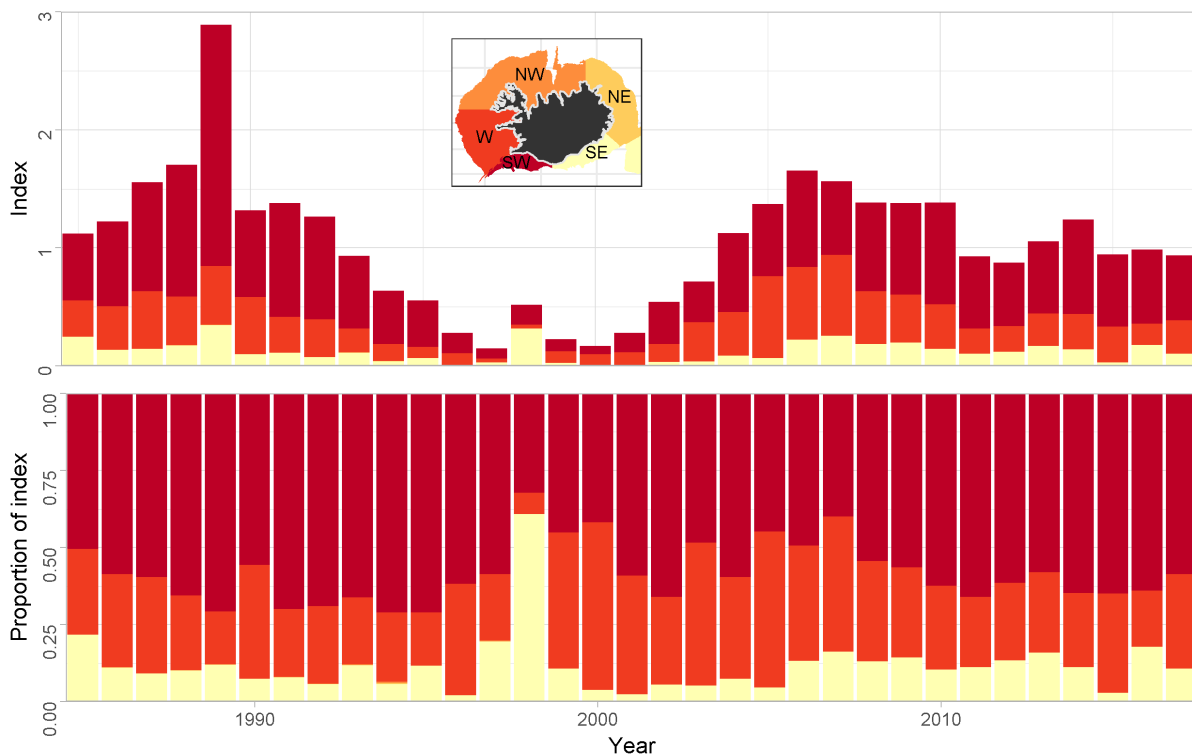
**Figure 10. Megrím. Length distribution from the autumn survey. The dotted line shows mean length for all years combined.**

***Mynd 10. Stórkjafa. Lengdardreifing úr stofnmælingu botnfiska að hausti frá 1996 ásamt meðallengd allra ára (punktalína).***

Megrim were mostly caught off the southern part of the country in the spring survey in 2017, particularly in the SW area (Figure 11). Spatial distribution of the biomass index of megrim in the spring survey has been relatively stable since 2007, with highest proportion of megrim caught in the SW area (Figure 12).

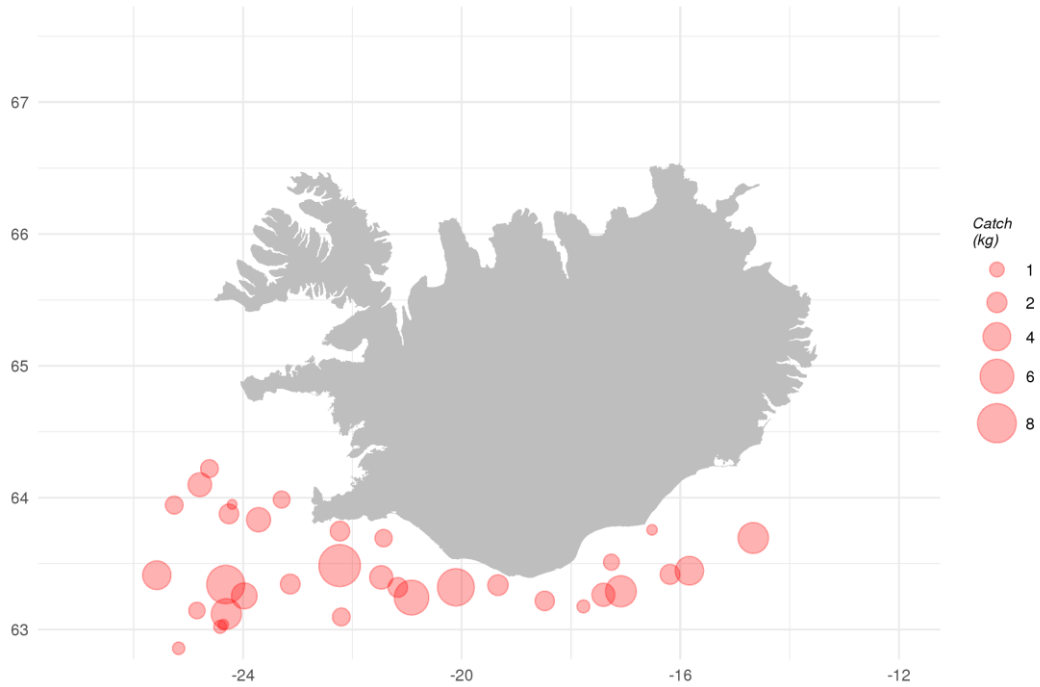


**Figure 11. Megrim. Spatial distribution in the spring survey in 2017.**  
*Mynd 11. Stórkjafa. Útbreiðsla í stofnmælingu botnfiska að vori 2017.*

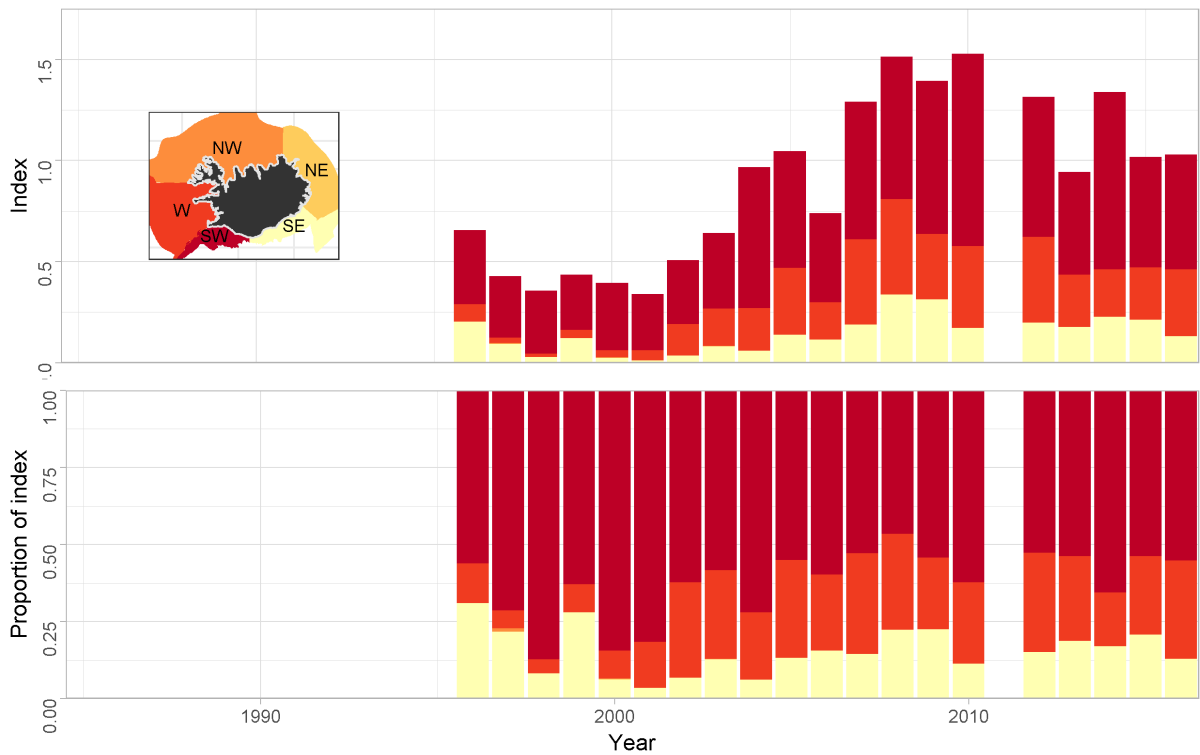


**Figure 12. Megrim. Spatial distribution of biomass index from the spring survey in 1985-2017.**  
*Mynd 12. Stórkjafa. Dreifing lífmassavísitölu í stofnmælingu botnfiska að vori, árin 1985-2017.*

In the autumn survey of 2016, the general distribution was similar to the spring survey (Figure 13). The same is true for the spatial distribution of megrim in the autumn survey since 1996 (Figure 14), where most of the biomass has been measured in the SW area, followed by the W and SE areas.



**Figure 13. Megrim. Spatial distribution of megrim in 2016 in the autumn survey.**  
*Mynd 13. Stórkjafta. Útbreiðsla í stofnmælingu botnfiska að hausti árið 2016.*



**Figure 14. Megrim. Spatial distribution of the index from the autumn survey in 1996-2016.**  
*Mynd 14. Stórkjafta. Dreifing vísitölu í stofnmælingu botnfiska að hausti, árin 1996-2016.*

## MANAGEMENT

Megrim is only caught as a bycatch and in small quantities. The Marine Research Institute (MRI) has therefore not made any recommendation on TAC for megrim.

## ADVICE

No TAC advice is made by the MFRI for megrim in the 2017/2018 fishing year.