

# MEGRIM – STÓRKJAFTA

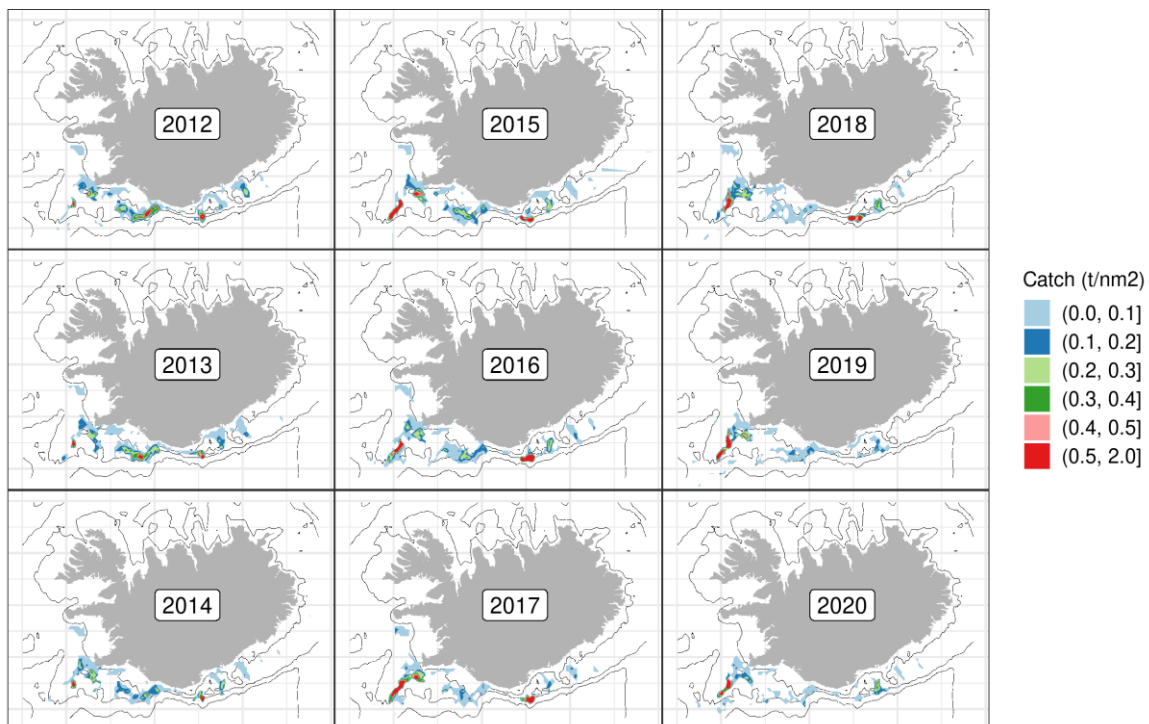
## *Lepidorhombus whiffiagonis*

### GENERAL INFORMATION

Megrím 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 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 maturity at 42 cm.

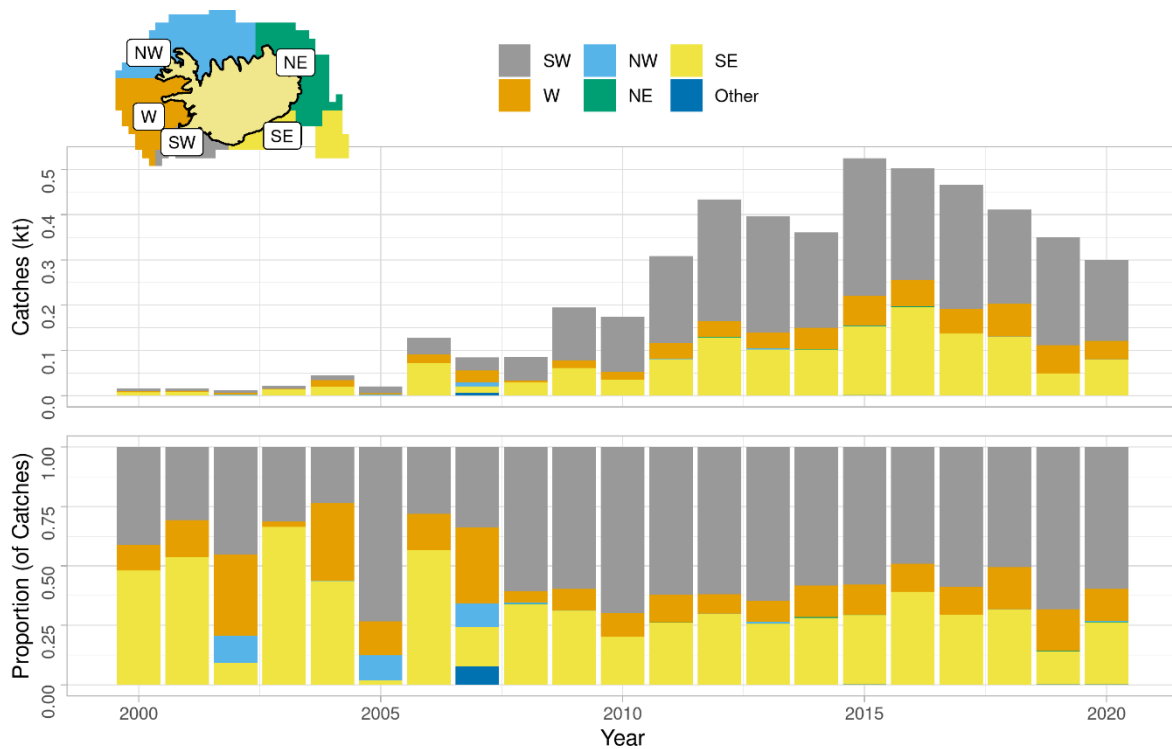
### THE FISHERY

Main fishing grounds for megrím are in the southeast, south, and southwest of Iceland, with smaller fishing grounds in the west (Figure 1). There is no target fishery for megrím in Iceland and it is taken as bycatch in other fisheries. Spatial distribution of the Icelandic megrím fishery is relatively stable, with around 90% caught off the south coast. In recent years, reported catches have increased as megrím was inadequately reported in logbooks before 2009 (Figure 2).



**Figure 1. Megrím. Geographical distribution of the Icelandic fishery 2012-2020. Reported catch from logbooks.**

*Mynd 1. Stórkjafta. Útbreiðsla veiða á Íslandsmiðum 2012-2020 samkvæmt afladagbókum.*



**Figure 2. Megrim. Spatial distribution of the Icelandic fishery by fishing area since 2000 according to logbooks. All gears combined.**

*Mynd 2. Stórkjaftha. Útbreiðsla veiða á íslensku veiðisvæði frá árinu 2000 samkvæmt aflaskýrslum. Öll veiðarfæri samanlagt.*

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

Megrim in Icelandic fishing grounds is mainly caught as bycatch in demersal seine and *Nephrops* and demersal trawls (Figure 4, Table 1). Catches in demersal seine have been decreasing in the past few years, while catches in *Nephrops* trawl and more recently in bottom trawl have increased. In 2020, approximately 50% of landed megrim was fished in *Nephrops* trawl and almost 40% in bottom trawl. Since 2000, the number of boats landing annually over one tonne of megrim has remained relatively stable (Table 1).

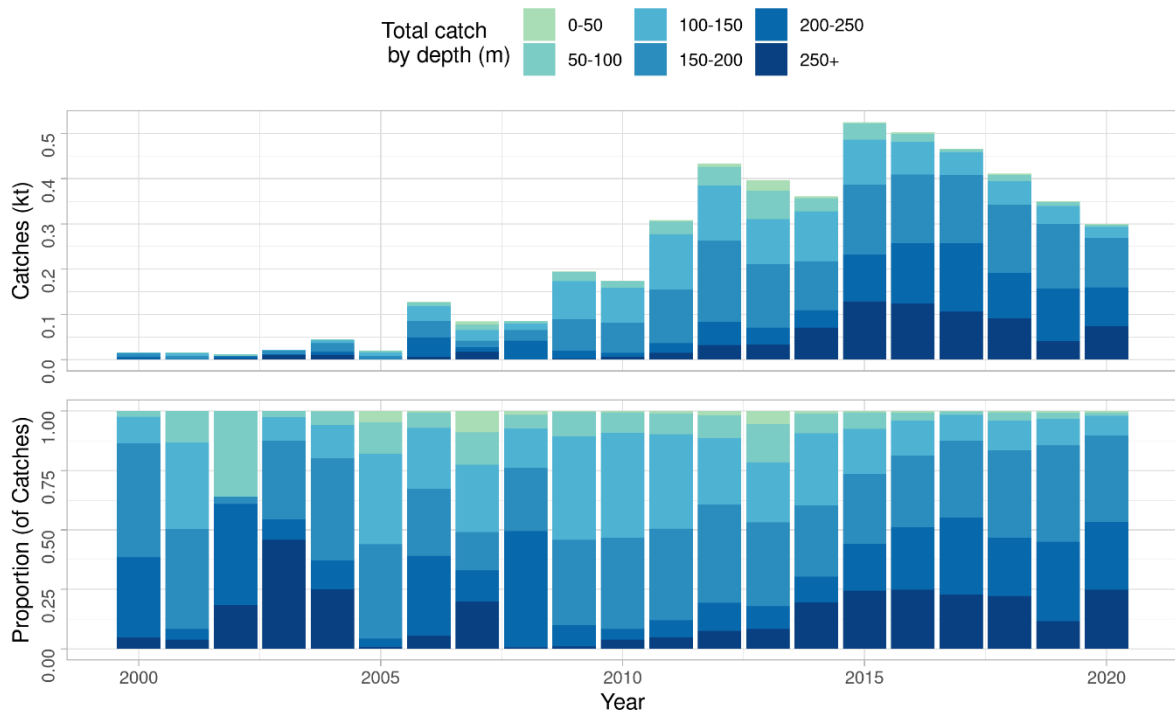


Figure 3. Megrim. Depth distribution catches according to logbooks since 2000.

Mynd 3. Stórkjaftra. Afli samkvæmt afladagbókum frá 2000, skipt eftir dýpi.

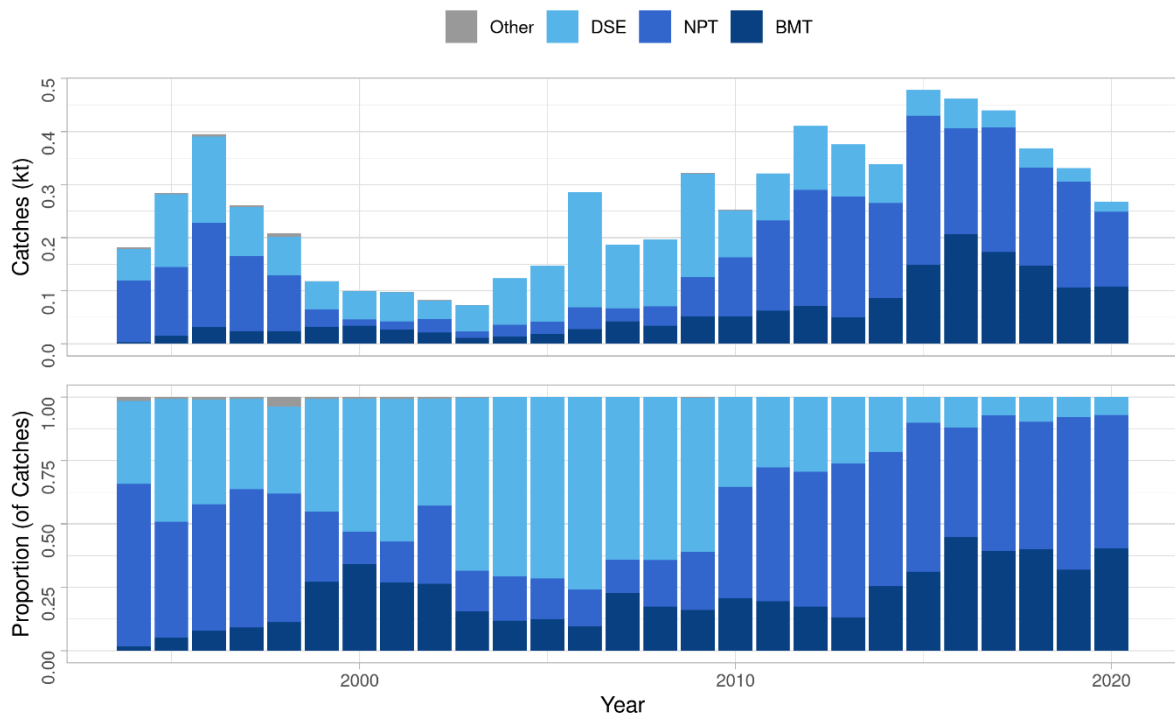


Figure 4. Megrim. Total catch (landings) by fishing gear since 1994, according to statistics from the Directorate of Fisheries.

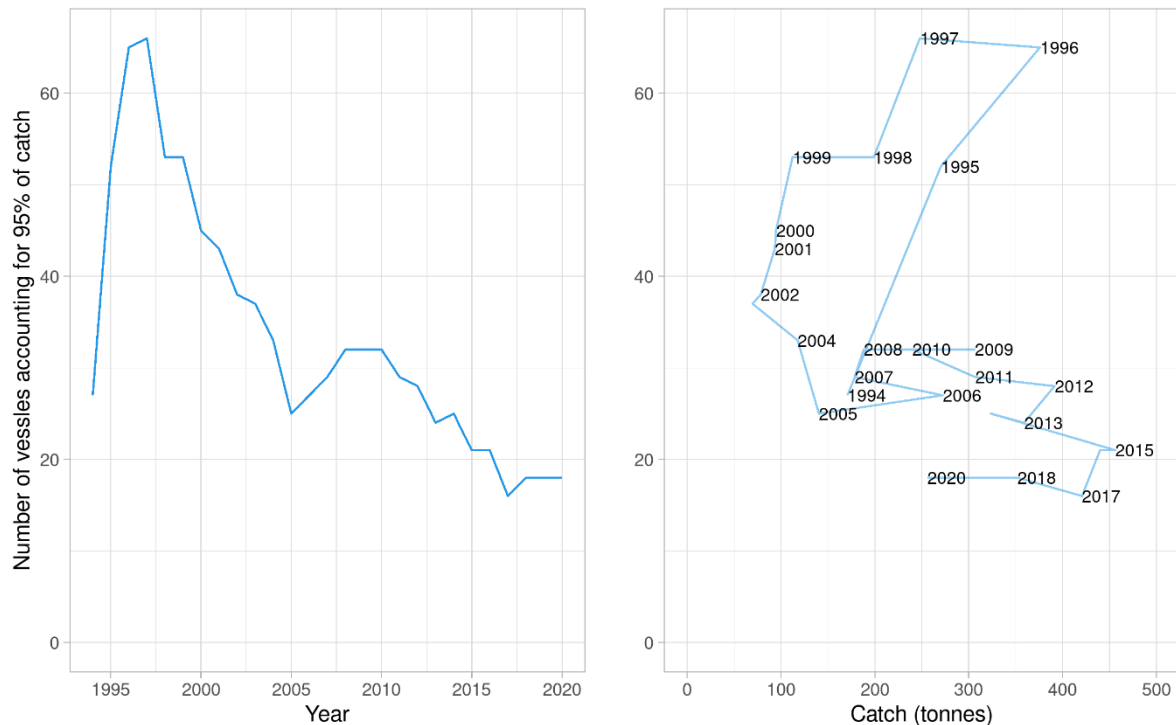
Mynd 4. Stórkjaftra. Landaður afli eftir veiðarfærum frá 1994, samkvæmt aflaskráningarkerfi Fiskistofu.

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

**Tafla 1. Stórkjafna. Fjöldi íslenskra skipa sem landað hafa yfir 1000 kg af stórkjöftu 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	55	190	215	460
2017	15	8	7	32	235	173	440
2018	8	9	13	36	185	147	368
2019	8	7	13	26	199	106	331
2020	5	7	14	19	141	108	268

The number of vessels accounting for 95% of the annual catches of megrim in Icelandic waters increased with increased catches in 1992-1996 from about 9 to 65 vessels (Figure 5). From 1996-2003, a drop in the number of vessels coincided with reduced catches. Since 2005, less than 20 vessels have accounted for 95% of annual catches (Figure 5).

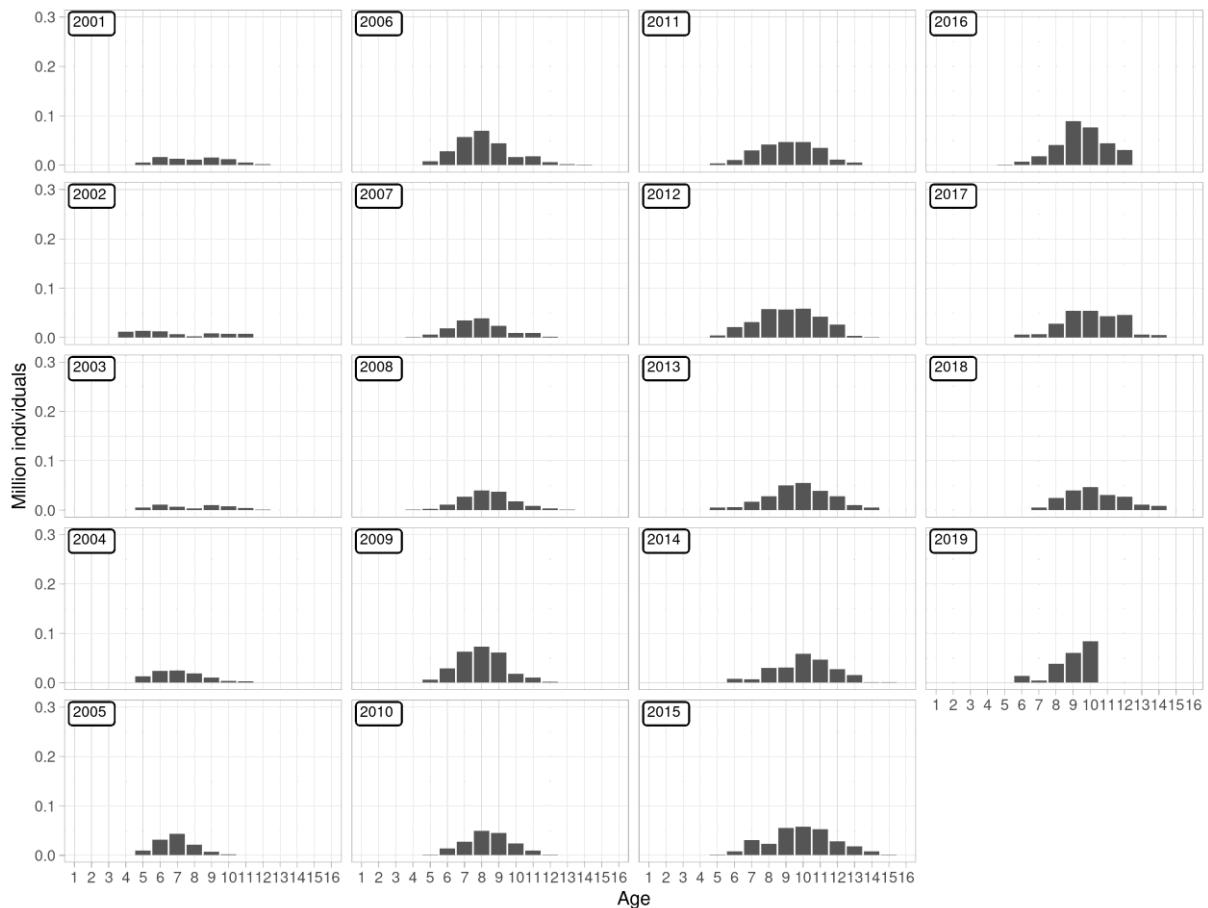


**Figure 5. Megrim. Number of vessels (all gear types) accounting for 95% of the total catch annually since 1994. Left: Plotted against year. Right: Plotted against total catch. Data from the Directorate of Fisheries.**

*Mynd 5. Stórkjafna. Fjöldi skipa og báta (öll veiðarfæri) sem veiddu 95% heildaraflans hvert ár frá 1994. Vinstri: Sýnt eftir árum. Hægri: Sýnt í samanburði við heildarafla. Gögn frá aflaskráningarkerfi Fiskistofu.*

## AGE DISTRIBUTION OF LANDED MEGRIM

Systematic age reading from the commercial catch started in 1996. Table 1 shows number of otoliths sampled from the commercial catch 2010-2019. Usually, 90-97% of the otoliths sampled are age read. During this period, total numbers of otoliths sampled has decreased considerably and last year only 50 otoliths were collected from landed catch. The sampling coverage in 2020 is shown in Figure 7. 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 (Figure 6).

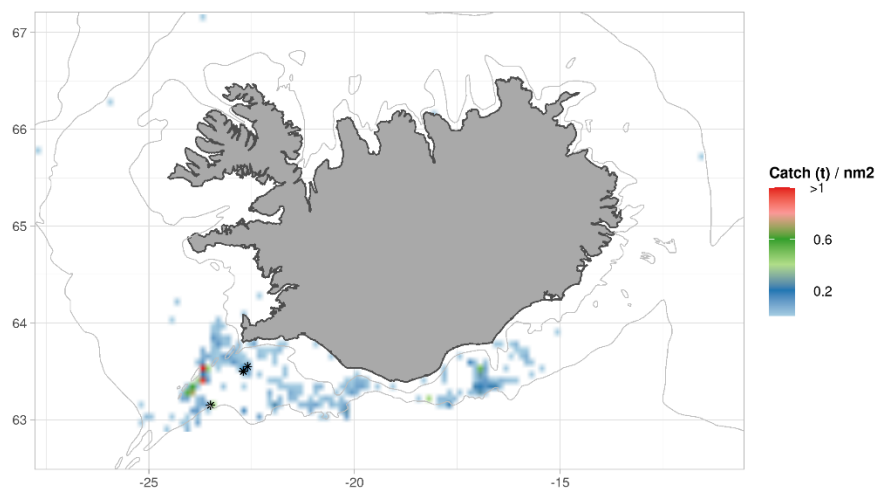


**Figure 6. Megrím. Estimated age distribution of landed catch based on landings and otoliths collected from landed catch. Data from 2020 was not available when this report was created.**

*Mynd 6. Stórkjafra. Áætluð aldursdreifing landaðs afla byggð á aldursgreiningum á fiskum úr afla. Aldursgögn frá 2020 voru ekki til staðar þegar þessi skýrsla var skrifuð.*

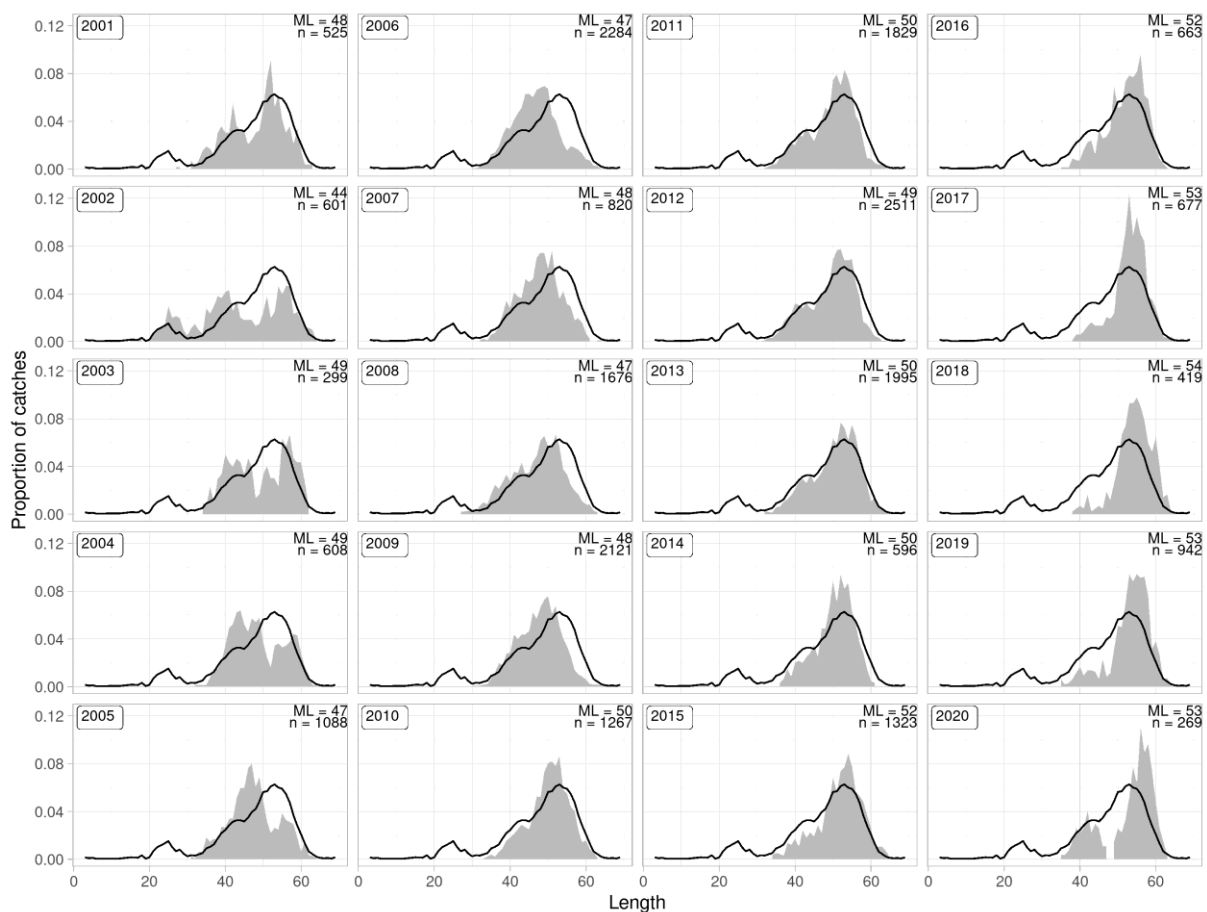
**Table 2. Megrím. Number of samples and extracted otoliths from landed catch.***Tafla 2. Stórkjafsta. Fjöldi sýna og kvarnaðra fiska úr lönduðum afla.*

Year	<i>Demersal seine</i>		<i>Nephrops trawl</i>		<i>Demersal trawl</i>	
	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
2017	2	50	7	175	0	0
2018	2	50	3	75	1	25
2019	2	50	5	125	0	0
2020	0	0	1	25	1	25

**Figure 7. Megrím. Fishing grounds in 2020 as reported in logbooks (colours) and positions of samples taken from landings (asterisks).***Mynd 7. Stórkjafsta. Veiðisvæði við Ísland árið 2020 samkvæmt afladagbókum (litir) 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 with exception of 2002 (Figure 8). Since 2010, landings of larger megrim (50 cm and larger) have increased.



**Figure 8. Megrim. Length distribution from landed catch. The black line represents the mean length distribution for all years.**

*Mynd 8. Stórkjafa. Lengdardreifing aflasýna frá árinu 2001 með meðallengdardreifingu fyrir öll árin (svört lína).*

## SURVEY DATA

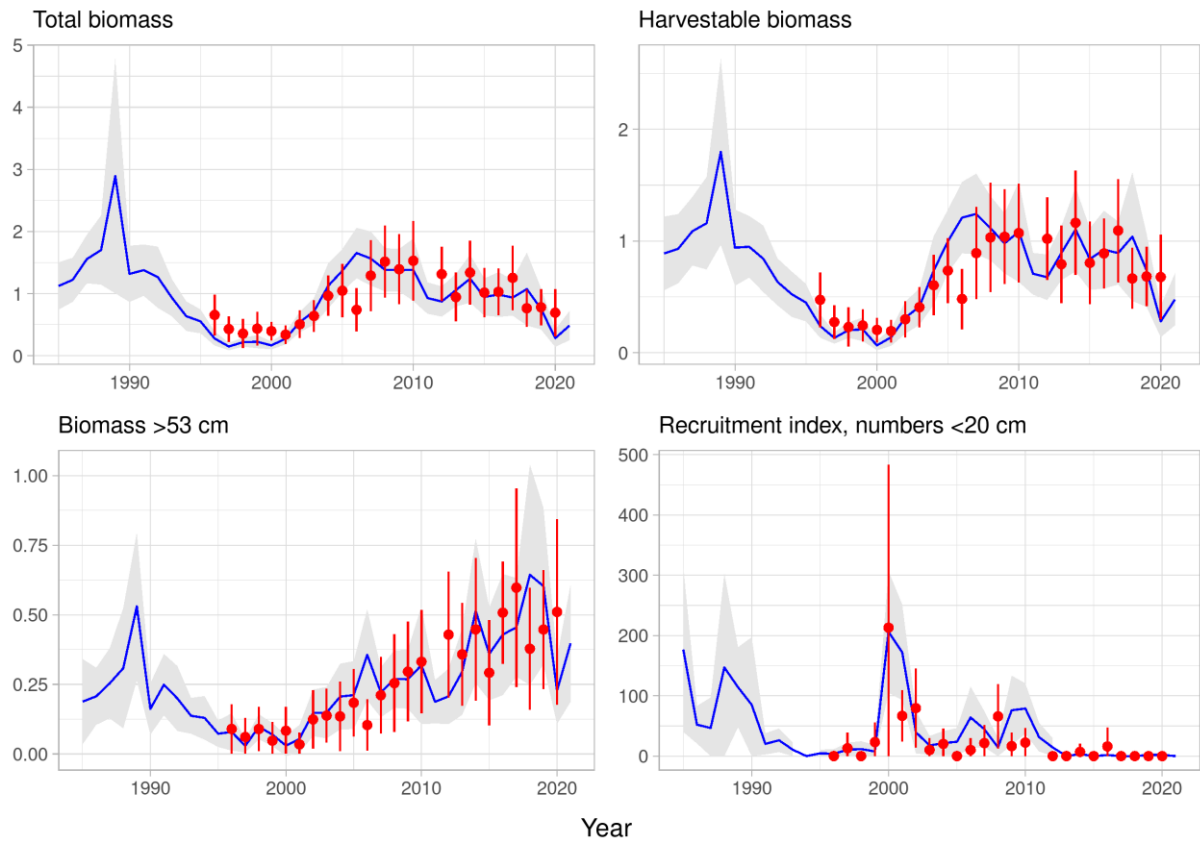
The Icelandic spring groundfish survey (hereafter spring survey, IS-SMB), which has been conducted annually in March since 1985, covers the most important distribution area of the megrim fishery. In addition, survey data on megrim is available from the Icelandic autumn groundfish survey (hereafter autumn survey, IS-SMH) since 1996. The autumn survey was not conducted in 2011. The spring survey is considered to measure changes in abundance/biomass better than the autumn survey.

Figure 9 shows trends in various biomass indices and a recruitment index based on abundance of megrim smaller than 20 cm. Survey length disaggregated abundance indices are shown in Figures 10-11, and abundance and changes in spatial distribution in Figures 12-15.

Total biomass index and the biomass index for megrim larger than 40 cm (harvestable part of the stock) increased steadily between 2000 and 2007 and stayed relatively stable until 2018 when the indices decrease (Figure 9). The index of megrim larger than 53 cm gradually increased 2000-2018, suggesting a decrease in fishing mortality. The index of juvenile abundance (<20 cm) has been low for the last eight



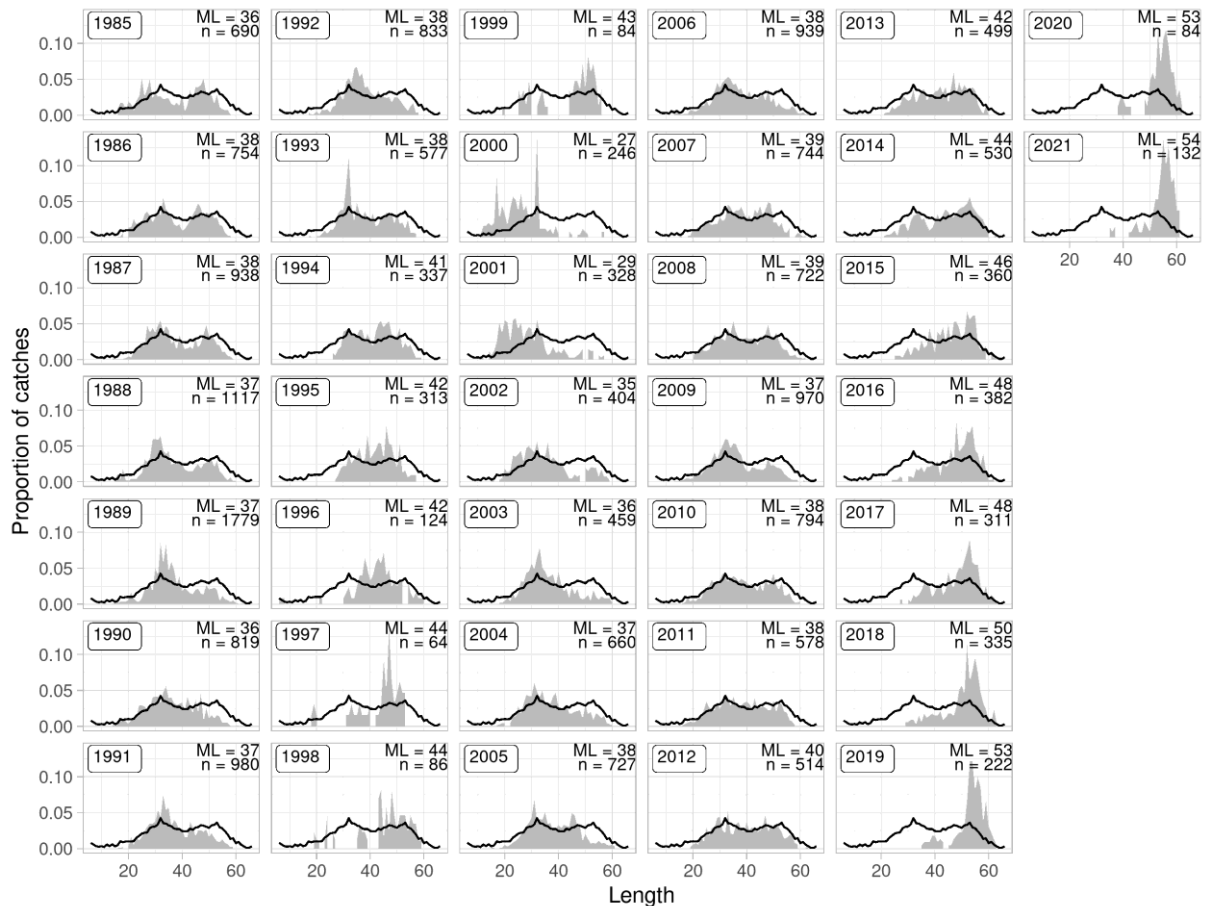
years. In 2019 and 2020, all indices except juvenile index decreased significantly, but picked up slightly in 2021.



**Figure 9.** Megrím. Total biomass indices (upper left) and harvestable biomass indices ( $\geq 40$  cm) (upper, right), biomass indices of larger ind. ( $\geq 53$  cm) (lower left) and juvenile abundance indices ( $\leq 20$  cm) (lower right) from the spring survey (blue) from 1985 and autumn survey (red) from 1996, along with the standard deviation.

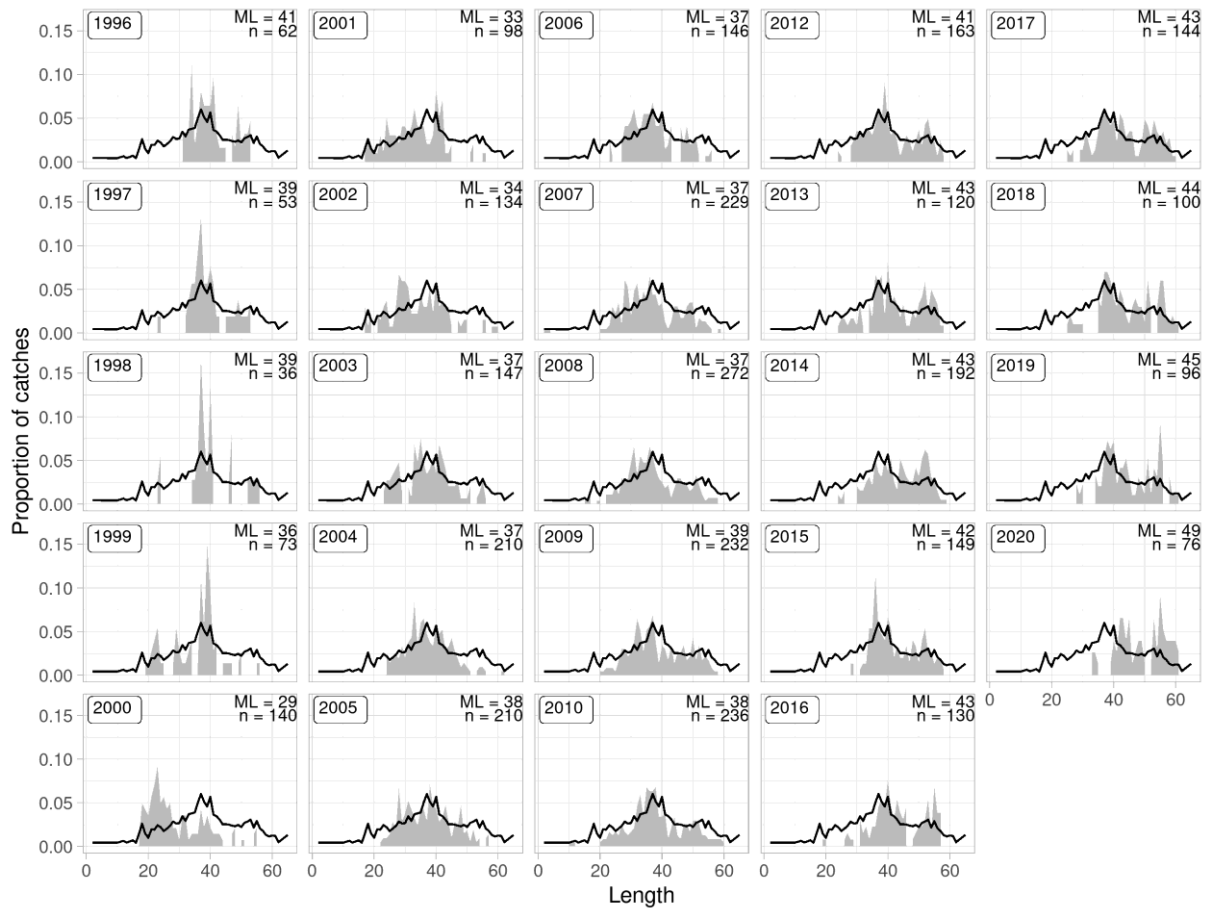
*Mynd 9. Stórkjafna. Stofnvísitala (efri til vinstri), vísitala veiðistofns ( $\geq 40$  cm og stærri, efri til hægri) og vísitala stærri einstaklinga (53 cm og stærri, neðri til vinstri) og nýliðunarvísitala ( $\leq 20$  cm, neðri til hægri), úr stofnmælingu botnfiska að vori (blátt) frá árinu 1985 og hausti (rautt) frá árinu 1996, ásamt staðalfrávik.*

From the onset of the spring survey in 1985 until 1993 there were little changes in the general length distribution of megrim and the average length ranged between 36 and 38 cm (Figure 10). In 1994-1999 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 decreased to 26.5 cm. This is seen as a sudden increase in recruitment in 2000 (Figure 9). Although recruitment continued to be high in the following years, the length distribution gradually shifted towards larger fish with average length reaching over 50-54 cm in 2018-2021. Comparable changes in length distribution of megrim are also seen in the autumn survey (Figure 11).



**Figure 10. Megrim. Length disaggregated abundance indices from the spring survey. The black line shows the mean for all years.**

**Mynd 10. Stórkjafa. Lengdarskiptar vísitölur úr stofnmælingu botnfiska að vori frá 1985 ásamt meðaltali allra ára (svört lína).**



**Figure 11. Megrim. Length disaggregated abundance indices from the autumn survey. The black line shows the mean for all years.**

*Mynd 11. Stórkjafta. Lengdarskiptar vísitölur úr stofnmælingu botnfiska að hausti frá 1996 ásamt meðaltali allra ára (black lína).*

Megrim was caught in the southern part of the country in the spring survey in 2021, particularly in the SW area around 300 m depth (Figure 12). 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 13).

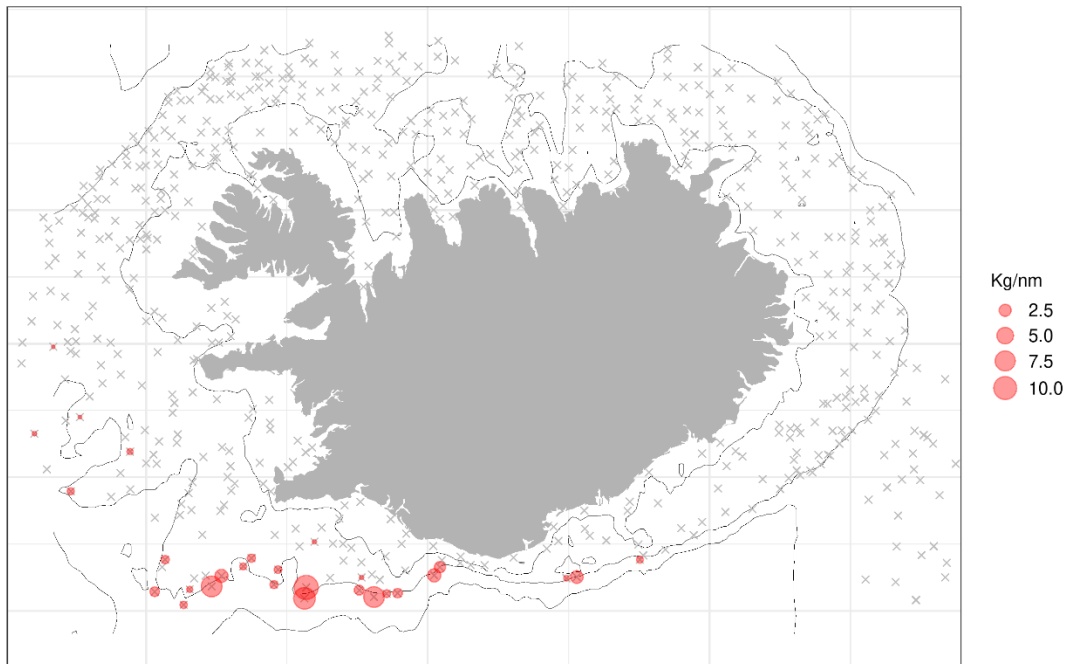


Figure 12. Megrim. Spatial distribution in the spring survey in 2021

Mynd 12. Stórkjafta. Útbreiðsla í stofnmælingu botnfiska að vori 2021

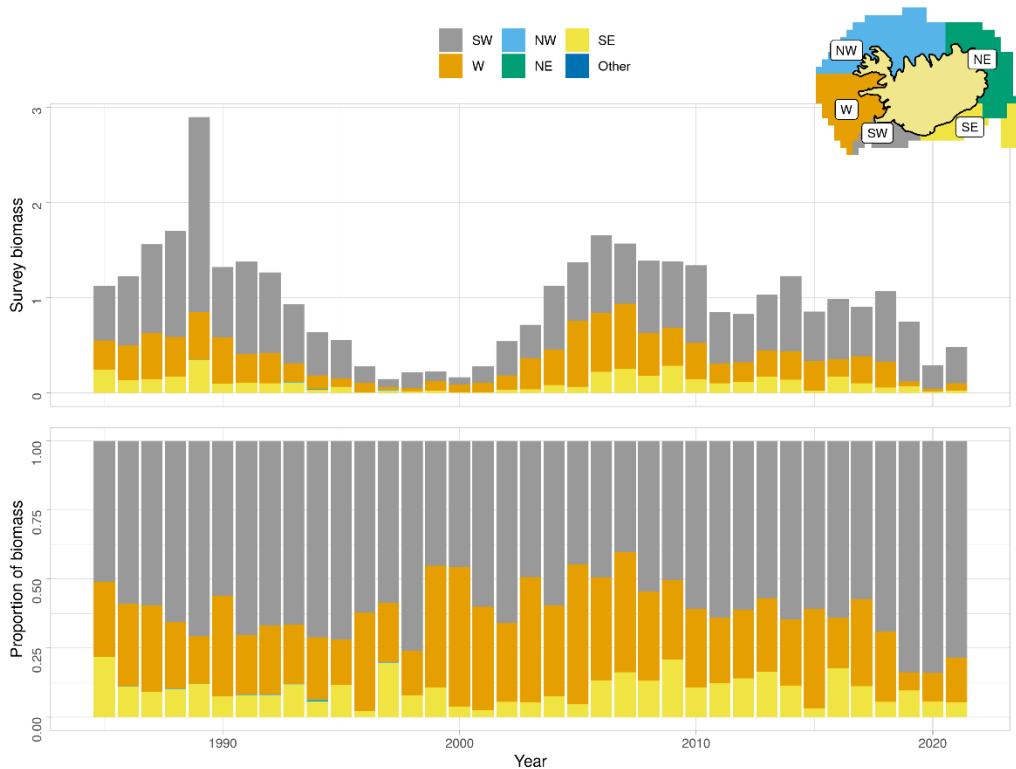
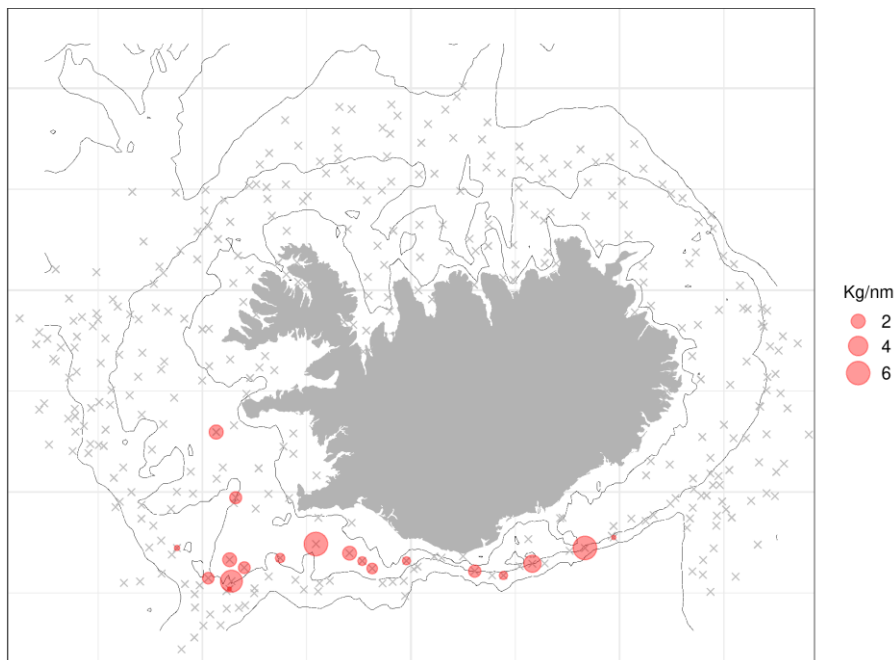


Figure 13. Megrim. Spatial distribution of biomass indices from the spring survey.

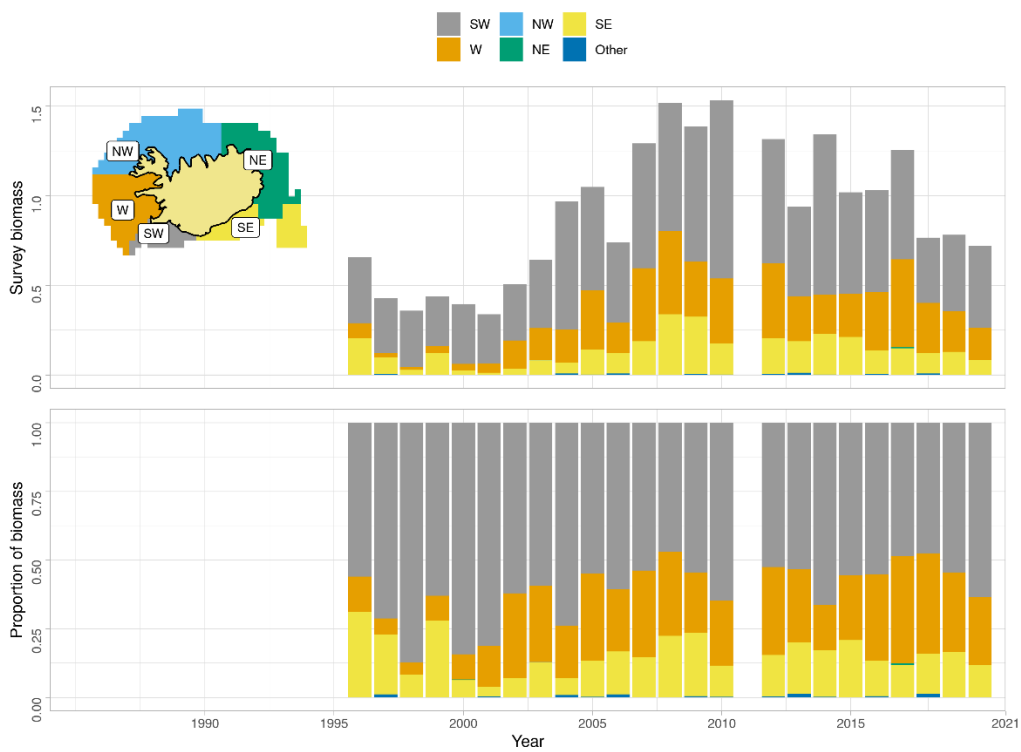
Mynd 13. Stórkjafta. Dreifing lífmassavísitölu í stofnmælingu botnfiska að vori.

In the autumn survey of 2020, the general distribution was similar to the distribution in the spring survey (Figure 14). The same is true for the spatial distribution of megrim in the autumn survey since 1996 (Figure 15), where most of the biomass has been observed in the SW area, followed by the W and SE areas.



**Figure 14. Megrim. Spatial distribution of megrim in the autumn survey in 2020.**

*Mynd 14. Stórkjafta. Útbreiðsla í stofnmælingu botnfiska að hausti árið 2020.*



**Figure 15. Megrim. Spatial distribution of biomass indices from the autumn survey.**

*Mynd 15. Stórkjafta. Dreifing lífmassavísitölu í stofnmælingu botnfiska að hausti.*

## MANAGEMENT

Megrim is caught as a bycatch and usually in small quantities. However, due to low recruitment for a prolonged time and substantial decline in survey biomass indices, the Marine and Freshwater Research Institute (MFRI) has therefore made a recommendation on TAC for megrim for the 2021/2022 fishing year.

**Table 3. Megrim. Recommended TAC, national TAC set by the Ministry, and landings (tonnes).**

*Tafla 3. Stórkjafna. Tillögur Hafrannsóknastofnunar um hámarksafla, ákvörðun stjórnvalda um aflamark og landaður afli (tonn).*

<b>FISHING YEAR</b>	<b>REC. TAC</b>	<b>NATIONAL TAC</b>	<b>CATCH</b>
<b>2010/11</b>	-	-	270
<b>2011/12</b>	-	-	429
<b>2012/13</b>	-	-	380
<b>2013/14</b>	-	-	369
<b>2014/15</b>	-	-	429
<b>2015/16</b>	-	-	498
<b>2016/17</b>	-	-	467
<b>2017/18</b>	-	-	387
<b>2018/19</b>	-	-	341
<b>2019/20</b>	-	-	289
<b>2020/21</b>	-	-	-