DAB
Limanda limanda

GENERAL INFORMATION

Dab is found in shallow waters all around Iceland but is most abundant off the southwest coast. It is a demersal species living on a sandy or muddy substrate and occurring at depths ranging from the intertidal zone down to 150 m but is most common at 20-40 m depth.

Females grow larger than males; only a small proportion of males become larger than 30 cm long, whereas about the same proportion of females grow larger than 35 cm. Size at sexual maturity differs considerably between the sexes. At the length of 12 cm about half the males have reached maturity, but females reach that level at 22 cm length.

THE FISHERY

Dab fishing grounds in 2002-2021, as reported by mandatory logbooks, are shown on Figure 1 and 2. Main fishing grounds for dab are in the west and southwest of Iceland, with smaller fishing grounds in the southeast and several fjords in the north (Figure 1 and 2). Before 2005, around 20-30% of the catch was taken in the southeast area, compared to 0-10% after 2005, suggesting a shift in the fishing distribution or distribution of the stock.

Dab is caught in relatively shallow water, with most of the catch (60-80%) taken between 21-80 m depth (Figure 3).

Primary fishing gear in which dab is mainly caught is demersal seine or around 95% of all catch (Figure 4). This proportion has been very stable through the years, as well as the amount caught in other gear (demersal trawl, longline and gillnets) with around 4% of the catch. Since 2000, the number of seiners reporting annual catches over 1000 kg of dab in total have decreased. (Table 1).

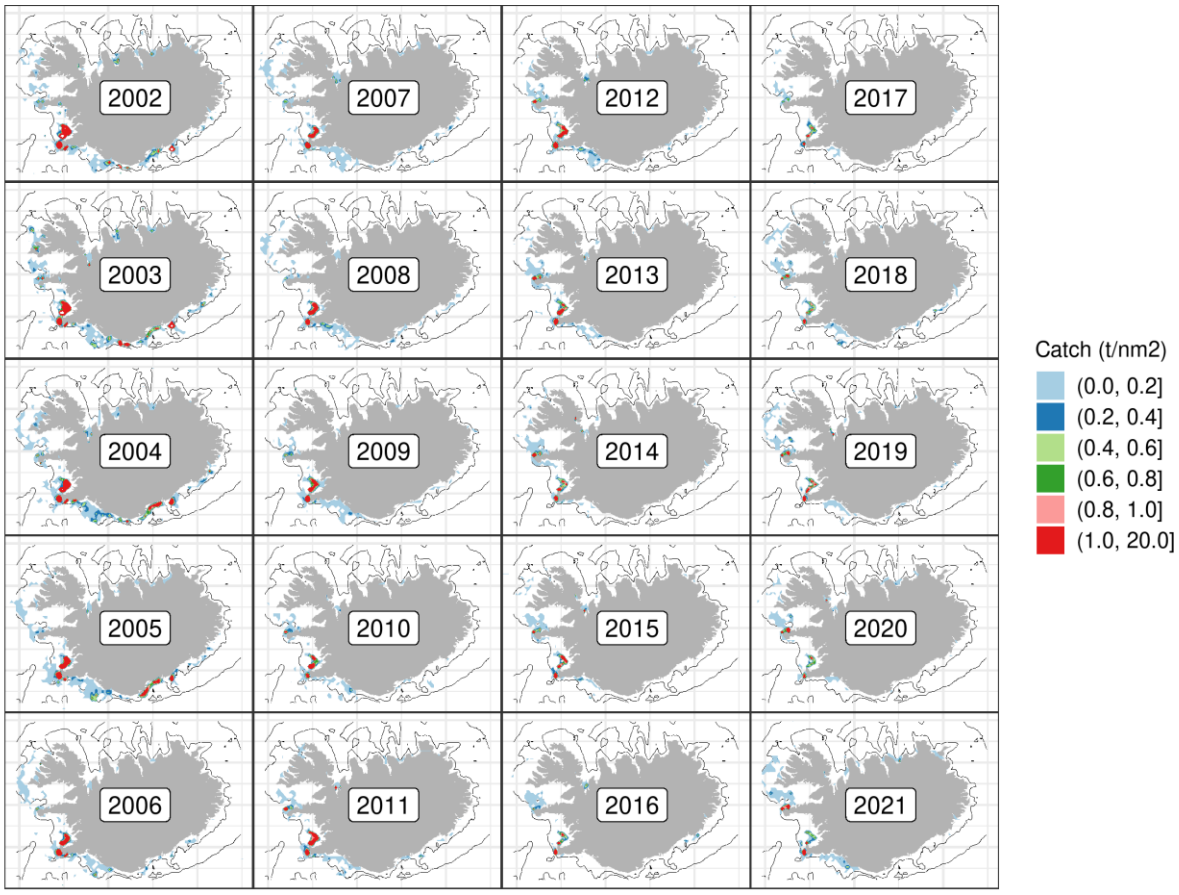


Figure 1. Dab. Geographical distribution of the Icelandic fishery since 2002. Reported catch from logbooks.

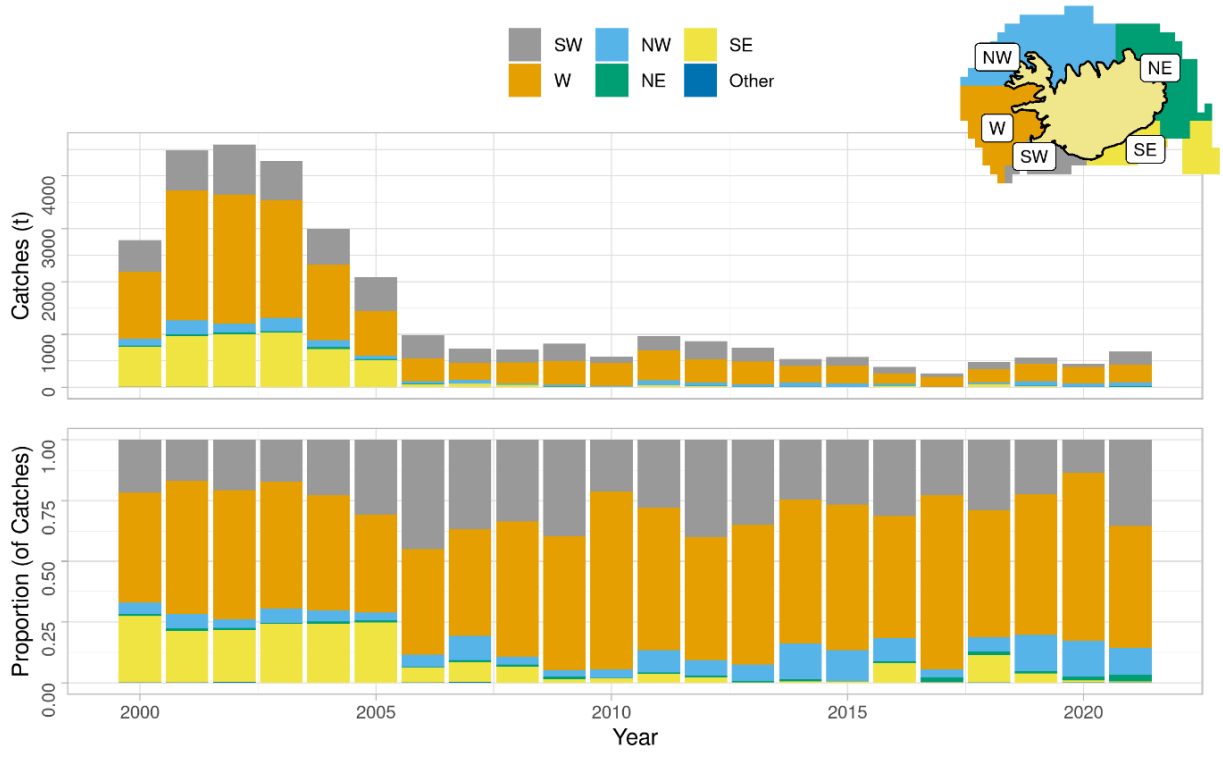


Figure 2. Dab. Spatial distribution of the Icelandic fishery by area since 2000 according to logbooks.

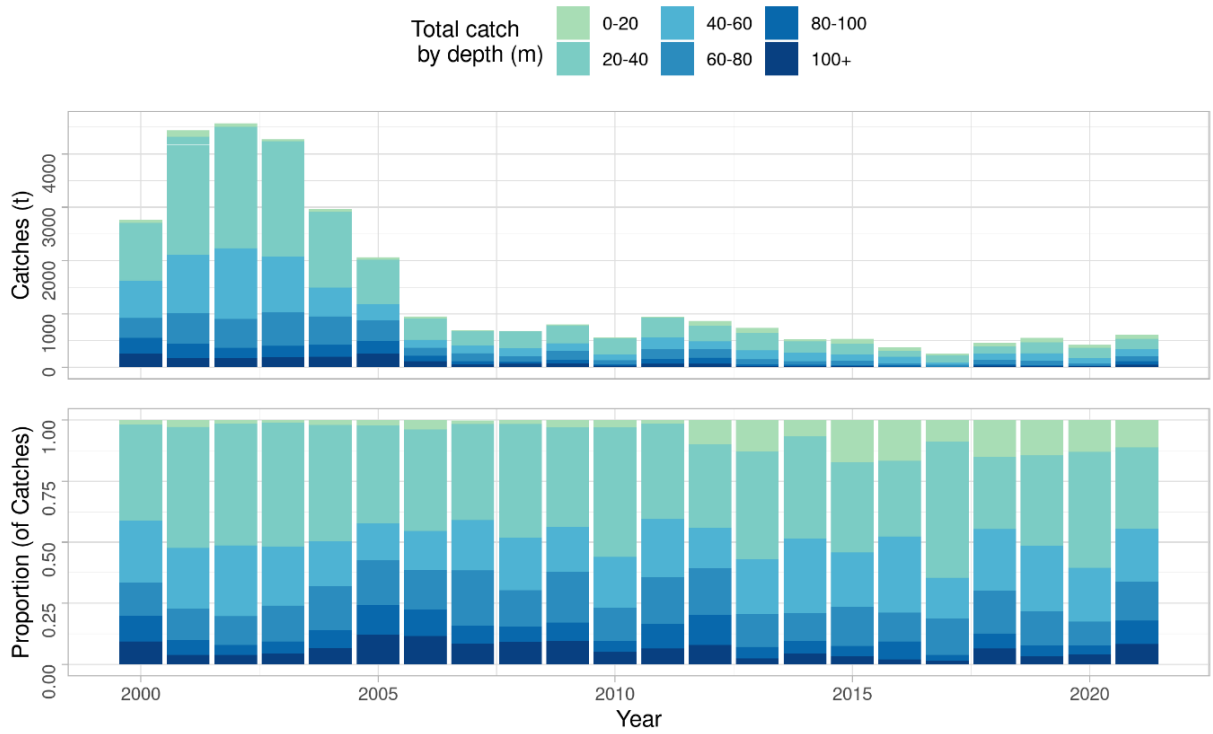


Figure 3. Dab. Depth distribution of catches according to logbooks.

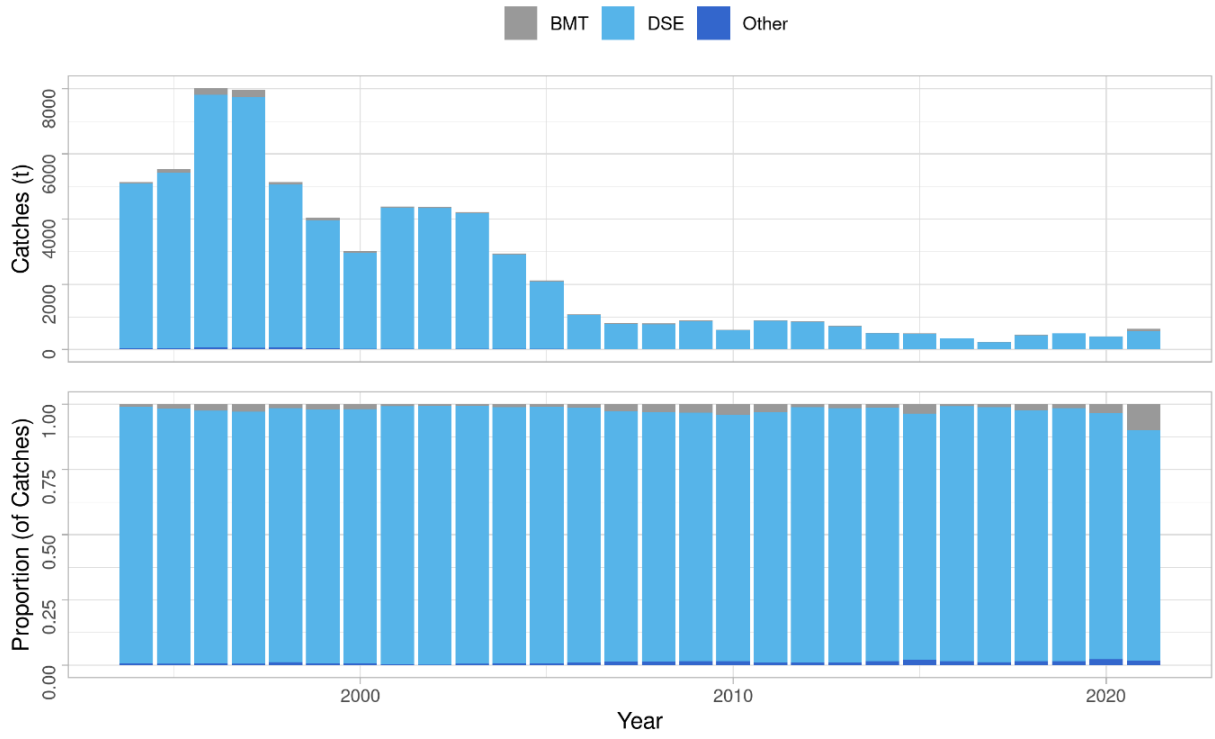


Figure 4. Dab. Total catch (landings) by fishing gear since 1994, according to statistics from the Directorate of Fisheries. BMT = bottom trawl, DSE = demersal seine.

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

	NUMBER OF VESSELS		CATCHES (TONNES)		
YEAR	*Seiners*	*Other*	*Demersal seine*	*Other*	*Sum*
2000	62	10	2948	64	3012
2001	67	7	4322	53	4375
2002	67	7	4323	35	4358
2003	73	7	4165	48	4213
2004	72	11	2894	60	2954
2005	53	10	2079	35	2114
2006	43	6	1055	24	1079
2007	44	7	777	33	810
2008	35	9	754	38	792
2009	35	8	838	45	883
2010	35	8	574	38	612
2011	36	8	866	37	903
2012	36	4	840	19	859
2013	33	4	690	18	708
2014	28	2	490	15	505
2015	20	5	472	28	500
2016	19	1	330	8	338
2017	13	1	226	5	231
2018	26	6	424	21	445
2019	28	7	487	15	502
2020	25	8	388	24	412
2021	29	8	555	74	629

CATCH PER UNIT EFFORT (CPUE) AND EFFORT.

CPUE estimates of dab 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 average weight of dab in sets in which dab was more than 10% of the catch. CPUE decreased rapidly from more than 500 kg per set in 2002 to less than 200 kg per set in 2007. Since 2009 CPUE has fluctuated around 250 kg per set (Figure 5).

Total fishing effort for dab in demersal seine is estimated as the number of sets where dab was more than 10% of the total catch. The fishing effort decreased from 2003 to historically low in 2017 but increased slightly since then (Figure 5).

Figure 5. Dab. Non-standardised estimate of CPUE (left, kg/set) and fishing effort (right, number of sets) from demersal seine.

AGE DISTRIBUTION OF LANDED DAB

Annually 300-500 otoliths are collected from demersal seine catches of dab, except for the last three years, when under 300 otoliths were collected (Table 2, Figure 6). The commercial catch consists mainly of 4-6 year old dab, and fish older than 8 years old are rarely seen in the fishery (Figure 7).

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

Year	***Demersal seine***	
	Samples	Otoliths
2010	7	350
2011	10	500
2012	10	500
2013	6	300
2014	13	500
2015	15	525
2016	9	350
2017	4	100
2018	6	200
2019	3	75
2020	3	150
2021	8	175

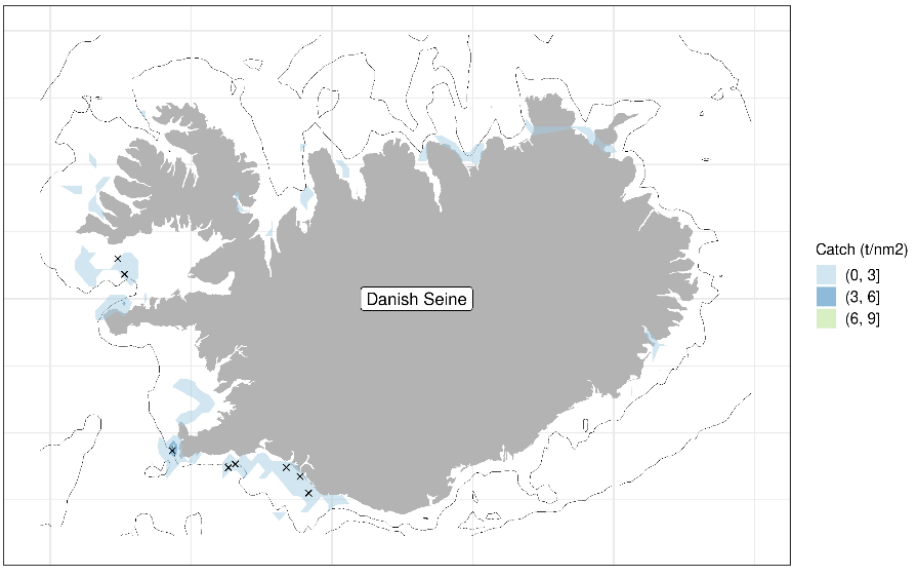


Figure 6. Dab. Fishing grounds in 2021 as reported in logbooks (colours) and positions of samples from landings (x).

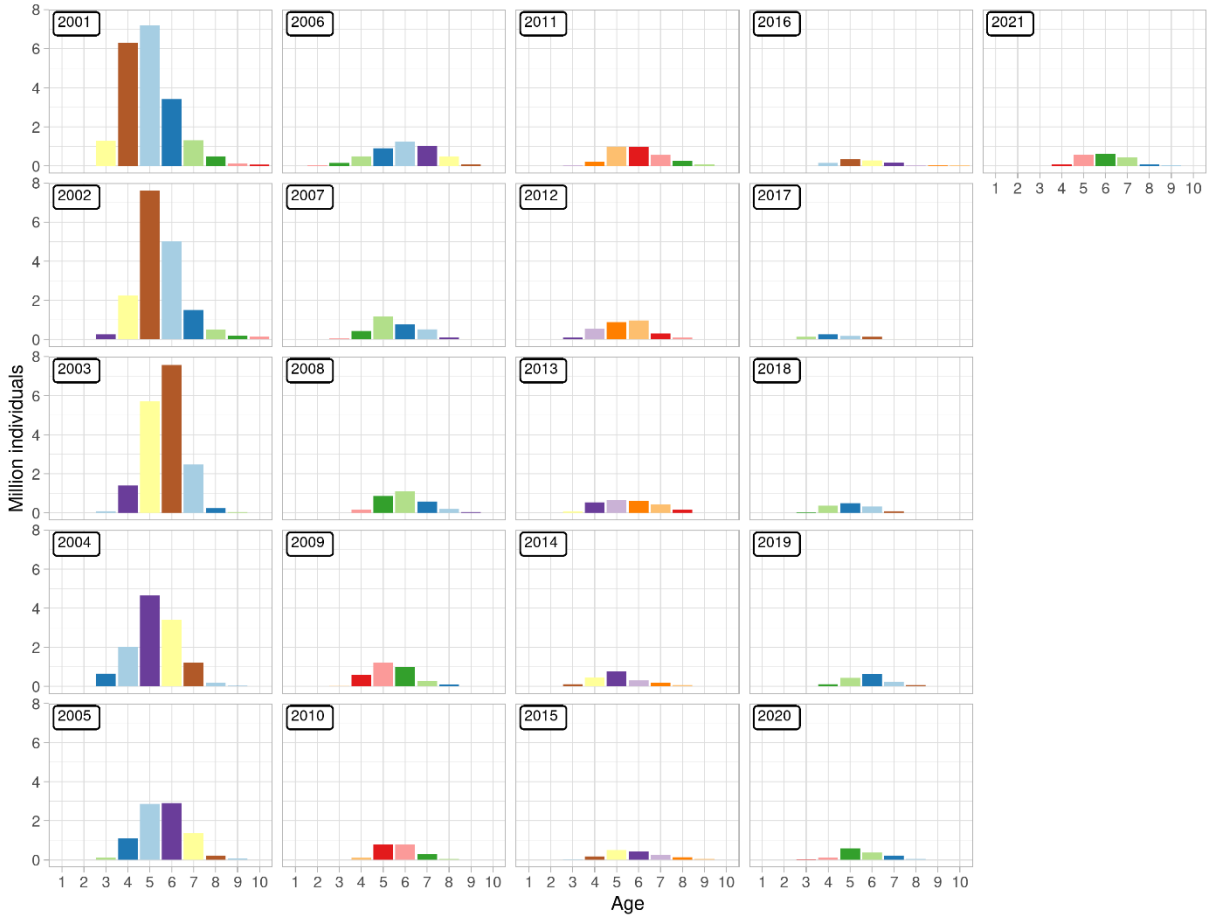


Figure 7. Dab. Estimated age distribution of landed catch based on landings and otoliths collected from landed catch.

LENGTH DISTRIBUTION OF LANDED DAB

For the years 1993-2001, the average length of dab in samples from landed catch was between 28.5-29.7 cm, lowest in 2001. In the following years the average length has been around 30-33 cm (Figure 8), with clear shift towards larger fish in last five years.

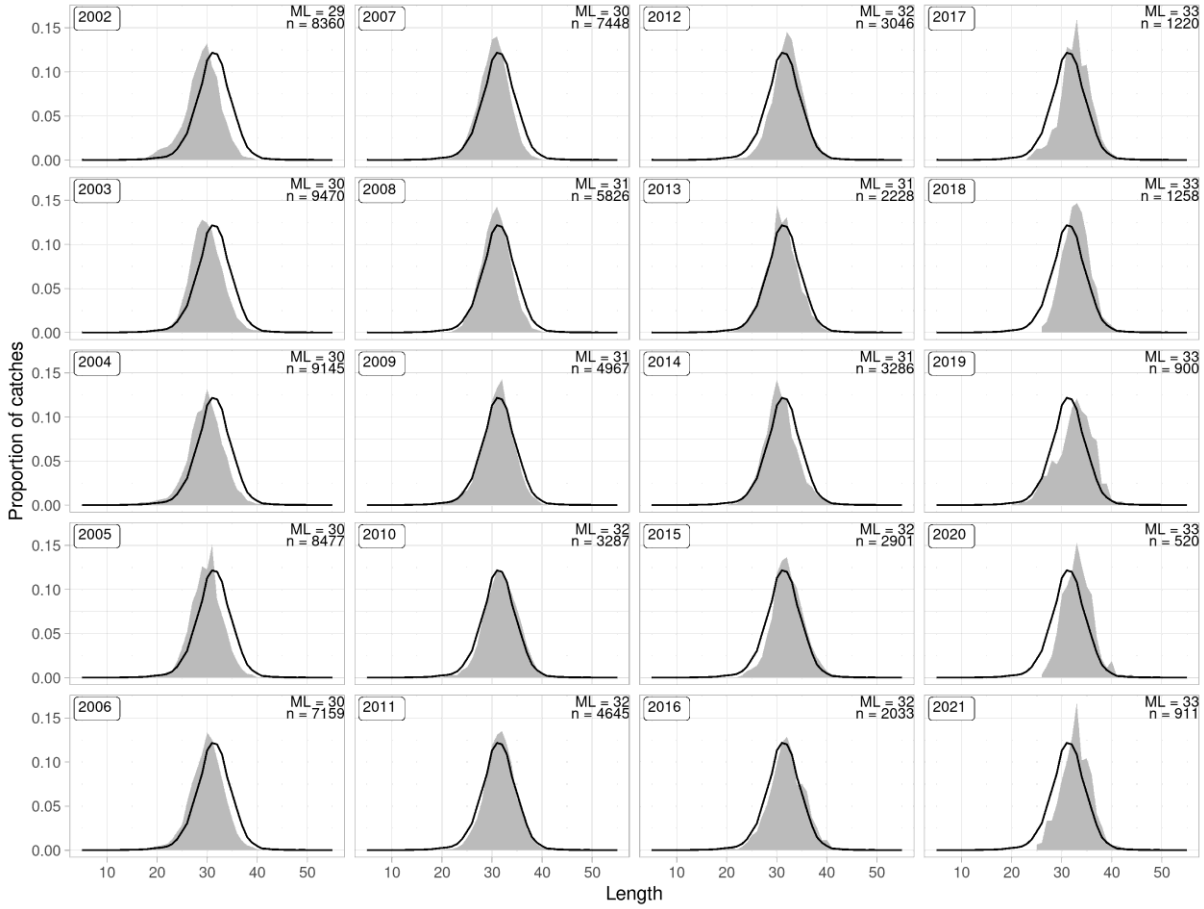


Figure 8. Dab. Relative length distributions from landed catch. The black line represents the mean length for all years.

SURVEY DATA

The Icelandic spring groundfish survey (hereafter spring survey, IS-SMB), which has been conducted annually in March 1985-2020, covers the most important distribution area of the dab fishery. In addition, the Icelandic autumn groundfish survey (hereafter autumn survey, IS-SMH) 1996-2019. The autumn survey was not conducted in 2011. The spring survey is considered to measure changes in abundance/biomass better than the autumn survey. It does not, however, adequately cover the main recruitment grounds for dab as recruitment takes place in shallow water which is not covered by the bottom trawl surveys. In addition to the spring and autumn surveys a designated flatfish survey with beam trawl (hereafter beam trawl survey, BTS) started in 2016 and expanded in 2017-2019 to cover of the recruitment grounds of dab and other flatfish species. It will potentially be used for stock assessment of dab in the future.

Figure 9 shows trends in various biomass indices and a recruitment index based on abundance of dab smaller than 20 cm. In the spring survey, total biomass index and the biomass index for dab larger than 25 cm (harvestable part of the stock) have been at lowest level in the time series since 2006, following high indices in 2001-2003 (Figure 9). In the autumn survey the biomass indices have been low since 2003 (Figure 9). There is some consistency between the spring and autumn surveys in recent years regarding recruitment indices, as the last small peak was registered in 2013 in both surveys. The recruitment indices in SMB 2022 were at the historical low. In last two years of SMB the biomass indices have fluctuated slightly at low levels. In 2021 SMH, all indices at lowest levels.

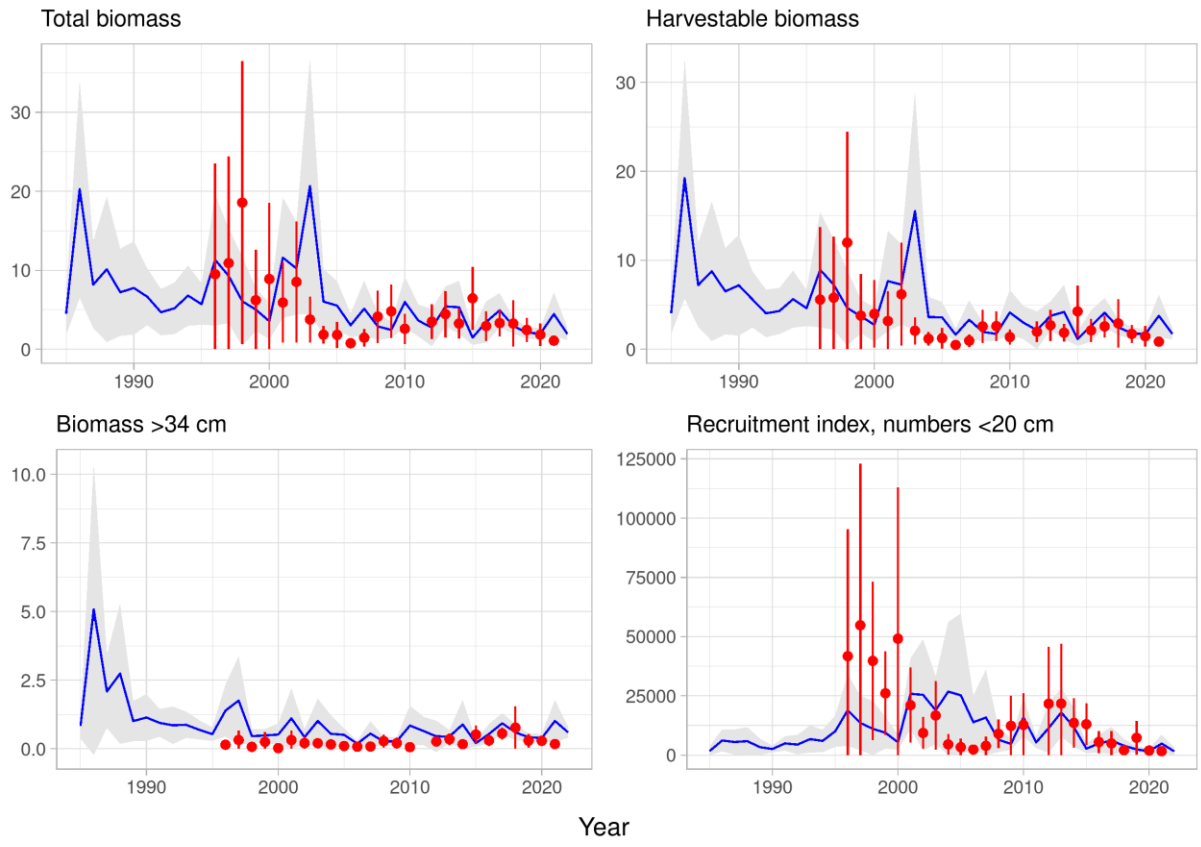


Figure 9. Dab total biomass indices (upper left) and harvestable biomass indices (>25 cm) (upper, right), biomass indices of larger individuals (>34 cm) (lower left) and juvenile abundance indices (<20 cm) (lower right) from the spring survey (blue) from 1985 and autumn survey (red) from 1996, along with the standard deviation.

The average length of dab in the first two years in the spring survey was 28.2 cm (Figure 10). From 1987 to 2002 the average length declined to 24 cm and stayed at that level for almost a decade. Since 2013 the average length has gradually increased to 25 cm and has remained at that length until 2022. Data from the autumn survey tells a similar story, with a marked increase in average size of dab in most recent years (Figure 11). In Figure 12, the length distribution from the beam trawl survey is shown. As the beam trawl survey was specially designed to target the recruitment grounds, juveniles down to 2 cm can be registered.

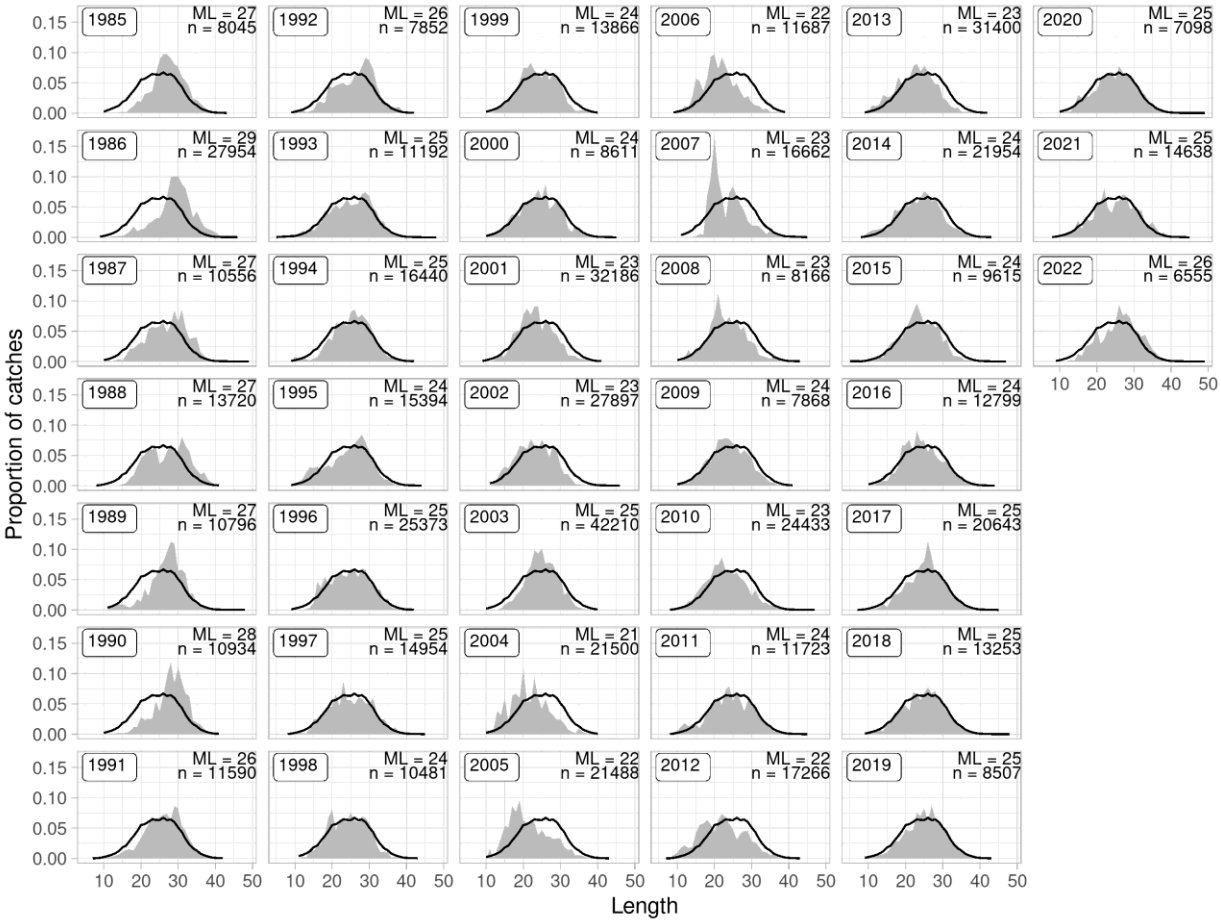


Figure 10. Dab. Relative length-disaggregated abundance indices from the spring survey. The black line shows the mean for all years.

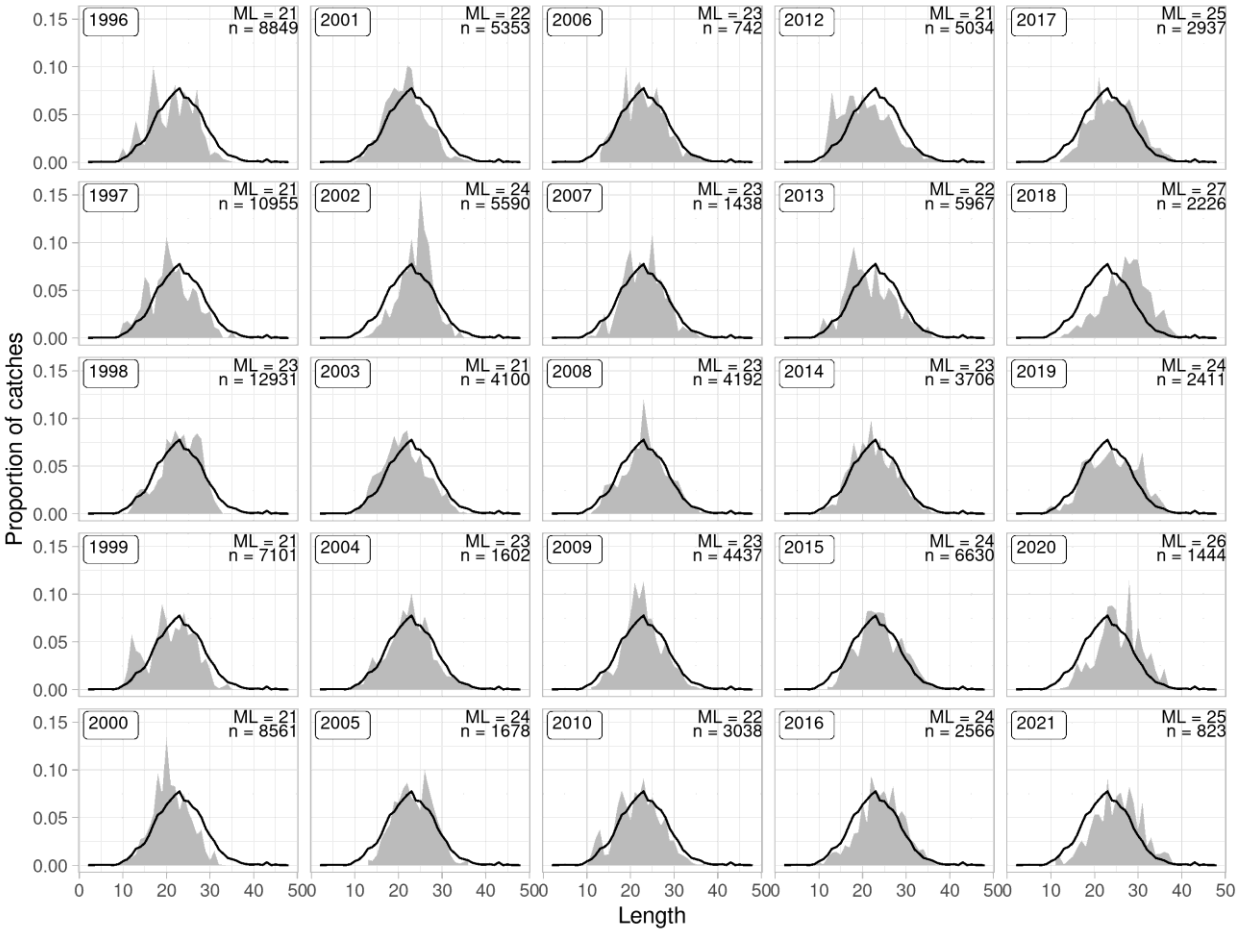


Figure 11. Dab. Length disaggregated abundance indices from the autumn survey. The survey was not conducted in 2011. The black line shows the mean for all years.

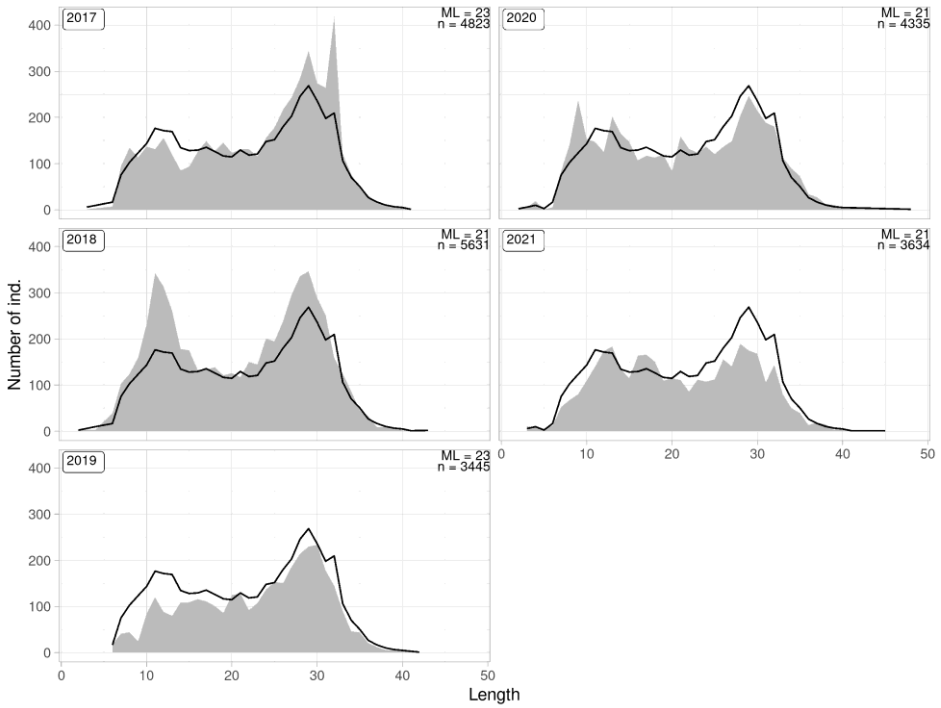


Figure 12. Dab. Length distribution from the beam trawl survey (BTS). The black line shows the mean for all years.

Dab was most abundant in the west and northwest in the spring survey in 2022 (Figure 13). In 1986-2004 a considerable part of the biomass was measured in the southeast. After 2004 this changed, and very little has been observed in this area ever since, suggesting a change in the spatial distribution of dab around the country (Figure 14). Biomass in the west and northwest areas has increased over the same time period.

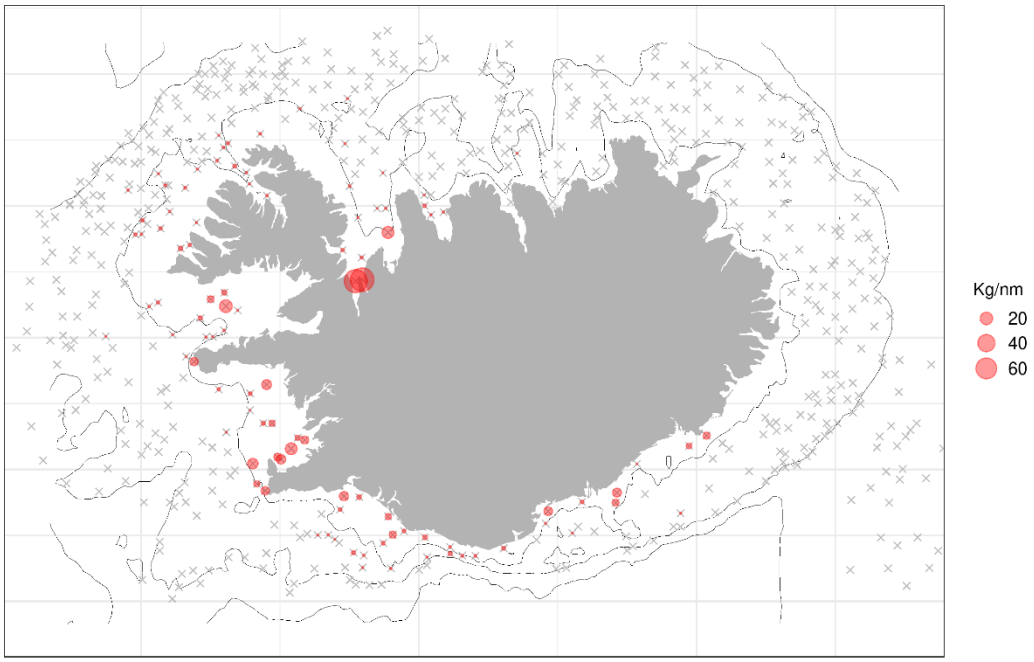


Figure 13. Dab. Spatial distribution in the spring survey in 2022.

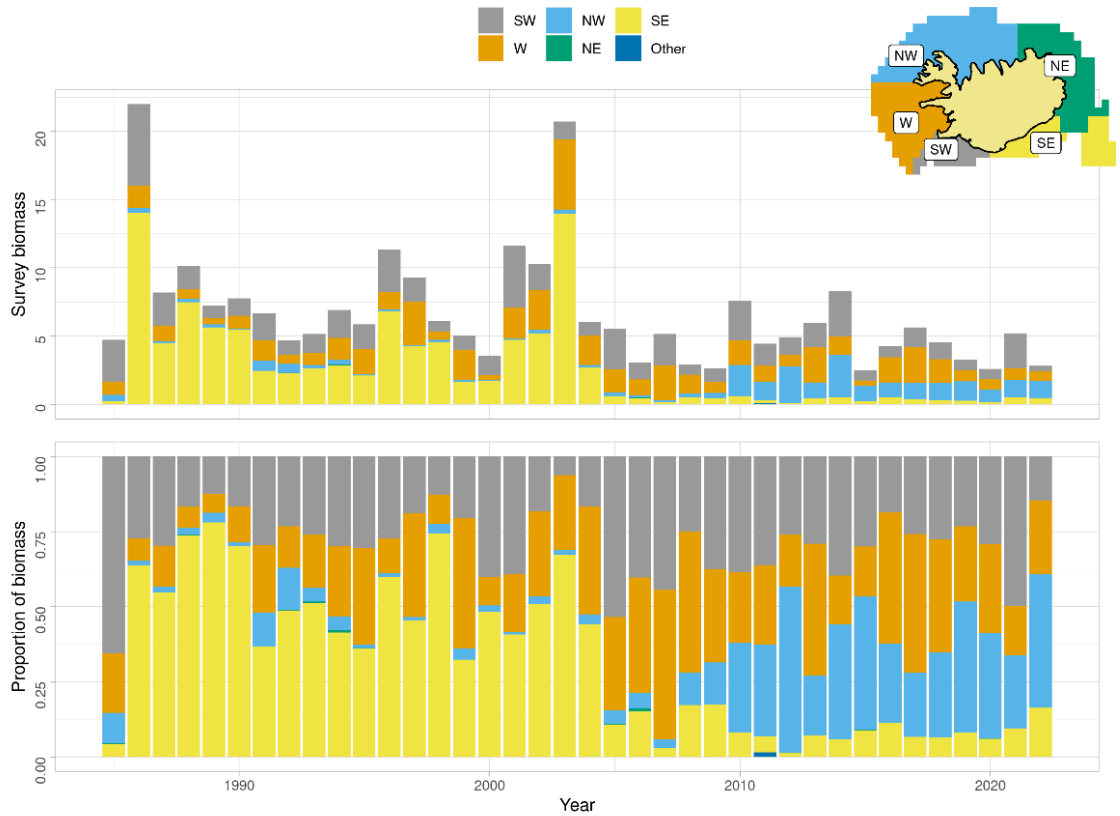


Figure 14. Dab. Spatial distribution of biomass index from the spring survey since 1985.

Dab was mainly observed in the south, west and northwest of Iceland in the 2021 autumn survey (Figure 15). Abundance is patchy, and most of the observed dab came from a few large tows. Comparable changes in spatial distribution of dab are observed in the autumn and spring surveys (Figure 16). The importance of the SE area diminishes as the importance of more westerly areas increases.

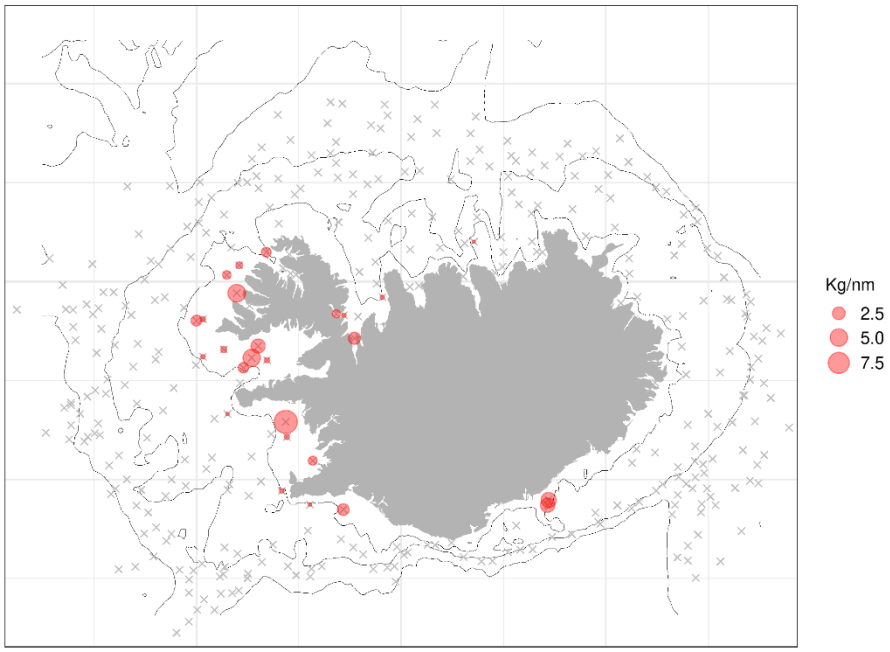
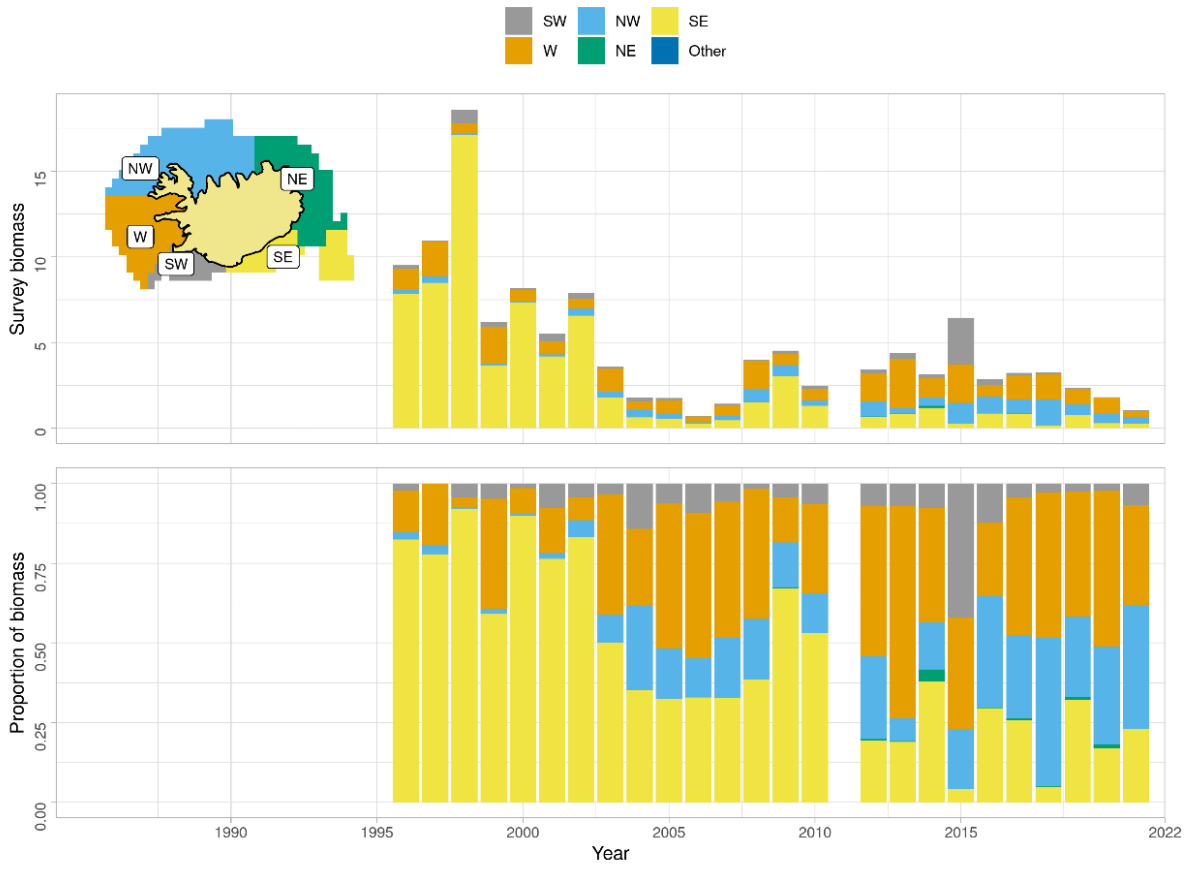


Figure 15. Dab. Spatial distribution in the autumn survey in 2021.



Figures 17 and 18, show spatial distribution of the dab in the beam trawl survey, which is conducted in late August (except for year 2019 when it was conducted in late July) at very shallow depth.

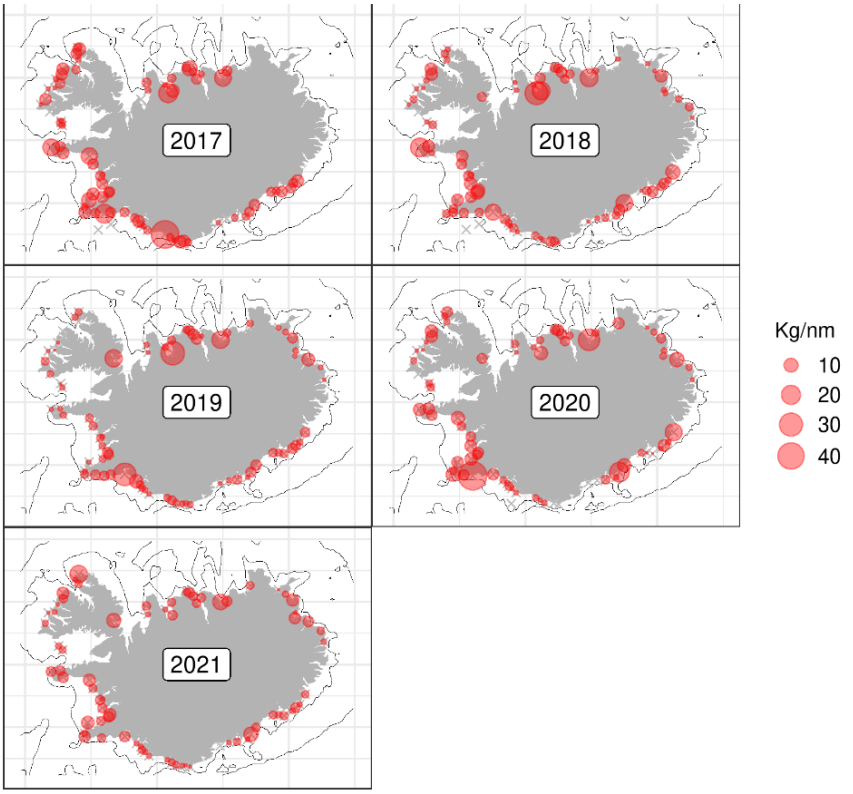


Figure 17. Dab. Spatial distribution in the beam trawl survey since 2017. The northeast area was not sampled in 2017.

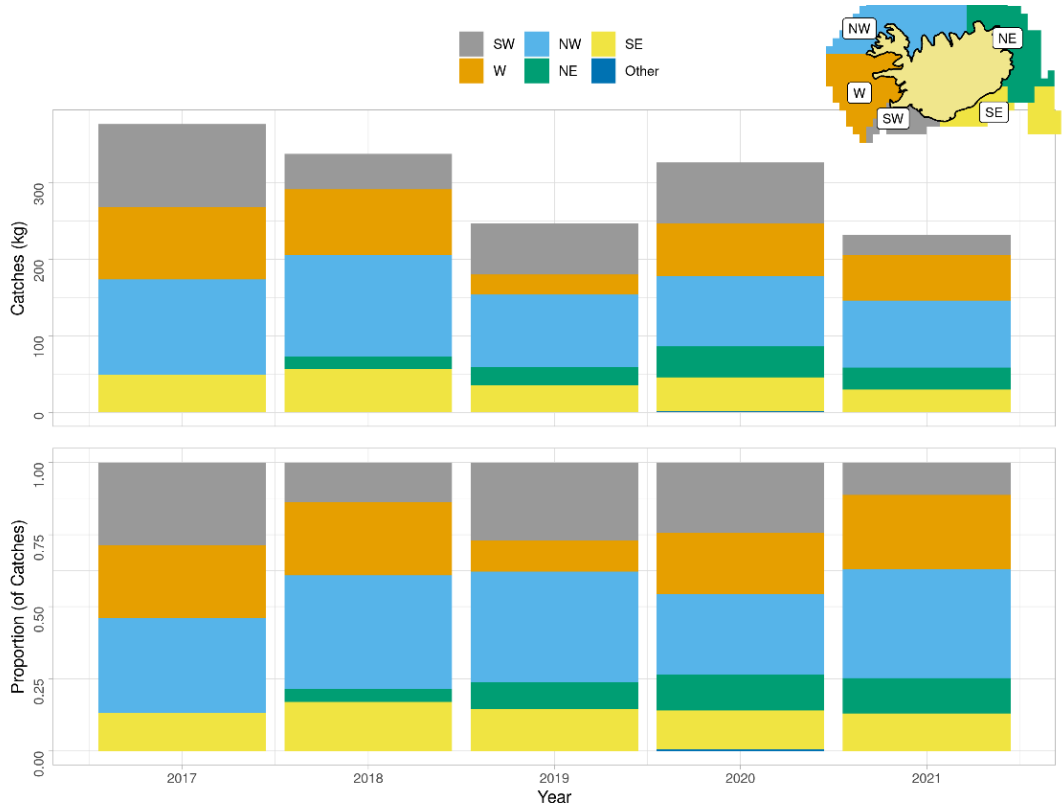


Figure 18. Dab. Spatial distribution of catch in the beam trawl survey since 2017. The NE area was not sampled in 2017.

MANAGEMENT

The Ministry of Food, Agriculture and Fisheries is responsible for management of the Icelandic fisheries and implementation of legislation. Dab was included in the ITQ system in the 1997/1998 quota year and as such subjected to TAC limitations (Table 5). For most of the fishing years up to 2004/05, the TAC was set according to recommendations, but for the fishing years 2005/06 to 2012/13, TAC was somewhat higher than recommendations. The quota area for dab has been specified as the area from Snæfellsnes south and east to Stokksnes. Since 2016, the MFRI has recommended that the defined quota area should be abolished, and all dab fishing grounds be under TAC limits.

Figure 19 shows the net transfers for dab in the Icelandic ITQ-system. The net transfer has nearly always been from dab to other species, the amount ranging from 5 to almost 60% of the allocated quota of the respected quota year. Transfer of dab quota from one quota year to the next is usually in the range of 7-15%. However, in the last five quota years it has been much higher with 2014/15 and 2016/17 quota years especially prominent.

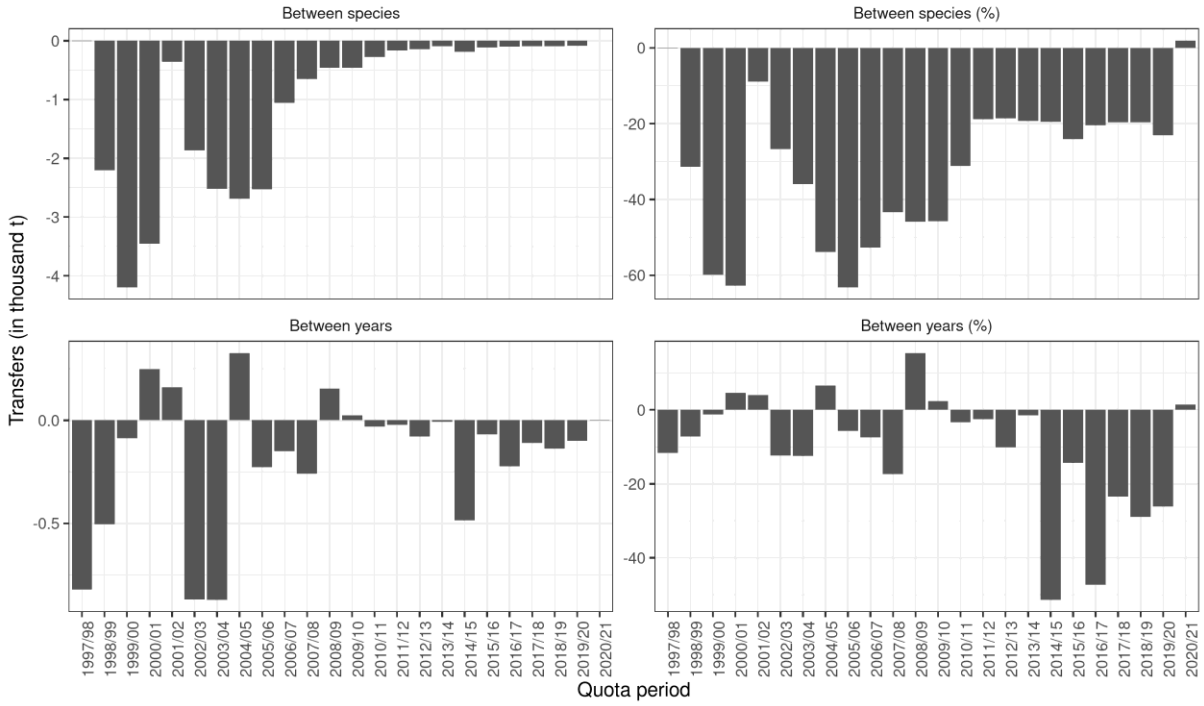


Figure 19. Dab. Net transfers of quota to and from Dab in the Icelandic ITQ system by quota year. Between species (upper): Positive values indicate a transfer of other species to dab, but negative values indicate a transfer of dab quota to other species. Between years (lower): Net transfer of quota for a given fishing year.

Table 5. Dab. Recommended TAC, national TAC set by the Ministry, and landings (tonnes) within the quota area from Snæfellsnes to Stokksnes and total landings.

FISHING YEAR	REC. TAC	NATIONAL TAC	LANDINGS FROM QUOTA AREA	TOTAL LANDINGS
1995/96	7000	-	-	6780
1996/97	7000	-	-	8179
1997/98	7000	7000	6045	6260
1998/99	7000	7000	4253	4471
1999/00	7000	7000	2749	3154
2000/01	4000	5500	2300	2931
2001/02	4000	4000	3808	4177
2002/03	7000	7000	4266	4652
2003/04	7000	7000	3612	3992
2004/05	5000	5000	2634	2880
2005/06	2500	4000	1247	1372
2006/07	1000	2000	796	1011
2007/08	500	1500	592	705
2008/09	500	1000	697	805
2009/10	500	1000	571	717
2010/11	500	900	596	815
2011/12	500	900	711	890
2012/13	500	800	587	780
2013/14	500	500	403	580
2014/15	1000	1000	334	546
2015/16	500	500	334	443
2016/17	500	500	181	206
2017/18	500	500	297	399
2018/19	500	500	271	451
2019/20	399	399	212	436
2020/21	319	319	329	587
2021/22	313	313		